

Ethically challenging situations encountered by veterinary team members

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Statement of originality

This is to certify that to the best of my knowledge, the content of this thesis is my own work. This thesis has not been submitted for any degree or other purposes.

I certify that the intellectual content of this thesis is the product of my own work, that the contributions of others are acknowledged, and that all the assistance received in preparing this thesis and sources have been acknowledged.

Anne Quain

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Abstract

In their daily work, veterinary team members often encounter ethically challenging situations (ECS). When they are unable to resolve ECS in alignment with their values, they may experience moral distress. Ethically challenging situations represent one among many potential workplace stressors that may lead to mental health morbidity and potentially even mortality of veterinary team members. This may in turn negatively impact the safety and welfare of animal patients receiving veterinary care. This thesis aimed to understand the types of ECS encountered by veterinary team members, and to evaluate strategies to manage these and mitigate their impacts.

Situated within empirical veterinary ethics, which utilises data to describe the ECS encountered by veterinary team members, the specific objectives were to: 1) determine the types of ECS encountered by veterinary team members working in a variety of settings, 2) identify potential risk factors for encountering ECS among veterinary team members, 3) identify practical measures that may assist veterinary team members in better navigating ECS and 4) evaluate the impact of participation in ethics rounds on veterinary team members.

A strategic search of ECS vignettes in the veterinary literature over thirty years (1990–2020) revealed that most scenarios featured a veterinarian as the protagonist, and most commonly depicted dogs, livestock in general and cattle. In addition, based on the initial literature review, futile or non-beneficial treatment of animal patients was identified as a growing source of moral distress for veterinary team members, particularly those working with companion animals. A strategic literature search was undertaken to help to define advanced veterinary care (AVC), and to identify ECS specifically associated with AVC. Challenges included defining AVC in relation to a standard of care (SOC), complicity in perpetuating poor quality of life, dysthanasia and caregiver burden, and financial cost and accessibility of veterinary care. In addition, conflicts of interest and the absence of ethical review of clinical application of 'cutting edge' treatments were identified. I suggest strategies that may mitigate these ECS. This discussion confirms the need for ethical review in clinical settings. Additionally, it supports calls for accessible veterinary care, and for veterinary patients to be offered a wider spectrum of care.

The COVID-19 pandemic led to widescale disruption of every facet of daily life, including for the veterinary sector. An online cross-sectional survey, distributed to veterinary team members worldwide, explored the frequency, stressfulness and types of ECS encountered by veterinary team members during the pandemic. The survey confirmed that, for many respondents, the frequency of ECS increased during the pandemic. During the early months of the pandemic, veterinary team members experienced both old (clients with limited finances, conflicts between the interests of clients and the interests of their animals) and new (conflict between personal wellbeing, or that of family and household members, and professional role, challenging decisions about what counts as an essential service) ECS. The resources utilised by veterinary team members to resolve ECS, and barriers to resolution of ECS, are discussed. This was the first study to describe the impacts of the pandemic on ECS experienced by veterinary teams globally. I found that many ECS involved stakeholders beyond the veterinarian-client-patient triad, and that the primary responsibility of veterinary team members did not always include these stakeholders.

Risk factors for experiencing an increase in ECS during the pandemic included: being a veterinary nurse or animal health technician, working with companion animals, working in the USA or Canada, and having low confidence dealing with ECS in the workplace. These results underscore the need to ensure that veterinary empirical ethics is inclusive of all veterinary team members.

Analysis of qualitative data collected in the survey enabled me to identify two key areas of concern that may lead to or exacerbate ECS during the early months of the pandemic: communication challenges and low or no-contact euthanasia. We analysed subsets of qualitative responses utilising reflexive thematic analysis, which provided rich insights into these factors. This enabled me to suggest some potential strategies to prevent or mitigate ECS. The studies presented in this chapter indicate that simply relying on better ethics training of veterinary team members might not be enough. Importantly, access to resources and practical measures (such as technology to facilitate telemedicine, and protocols to facilitate low-contact euthanasia) is required to prevent or mitigate the impacts of ECS.

Finally, I sought to determine the impact of an intervention, ethics rounds – a form of clinical ethics support service (CESS) widely used in human healthcare – on veterinary team members. While there are some published reports of ethics rounds being used in veterinary settings, this was the first to attempt to measure the impact of this intervention. The survey incorporated the Euro-MCD 2.0, an instrument designed to evaluate the outcomes of ethics rounds across three domains: moral competence, moral teamwork and moral action. After participating in a single session of ethics rounds, veterinary team members demonstrated improvement in the domains of moral competence and moral teamwork. Participants reported finding ethics rounds beneficial, for example, by helping to clarify their thinking about ECS, allowing them to see ECS from the perspective of others and providing a safe space for discussion. Carefully facilitated ethics rounds has the potential to improve the ability of veterinary team members to identify and navigate ECS, and to mitigate moral distress.

The research contained within this thesis has generated new knowledge to extend our understanding of ECS and has provided a basis for introducing ethics support services to veterinary team members. These findings are of relevance not just to veterinary team members and managers, but to clients and veterinary patients, as well as those training prospective team members, continuing professional development (CPD) providers, veterinary professional associations and regulatory bodies.

This research supports six key recommendations: 1) for veterinary empirical ethics research to include perspectives of non-veterinarian veterinary team members and clients, 2) to develop a validated measurement of veterinary team member moral distress, 3) to challenge the triad of veterinary stakeholders which has influenced veterinary ethics over the last 50 years, 4) to further evaluate and develop CESS, 5) to conduct regular surveillance of ECS and 6) to prepare veterinary team members, clients, animals and other stakeholders for ECS they may encounter in emergency situations.

Dedication

This thesis is dedicated to the estimated three billion animals who perished in the 2019/2020 bushfires in Australia.

*

'O cursed spite!

That ever I was born to set it right'

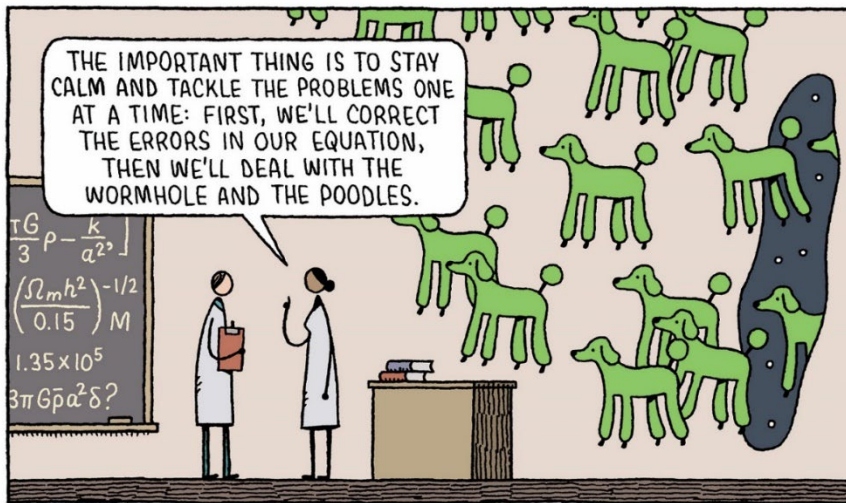
(William Shakespeare, *Hamlet*, Act I, Scene V)

*

'I have become increasingly convinced true philosophers don't wear tweed coats; they wear wetsuits.'

(Julia Baird, *Phosphorescence*, p216)

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Cartoon reproduced with the permission of Tom Gauld

Throughout this research, the acknowledgements sections in other PhD's have been a source of comfort because they allude to tough times – in the past tense. In my own tough times, drafting these pages reminded me why I started this and why I keep going. If you're reading this to find solace, take heart: it does all come together!

This PhD about ethically challenging situations generated ethical challenges. The question of whether it was an appropriate or indulgent use of my time loomed large. Perhaps I didn't need a PhD. A PhD is a luxury. It is an opportunity to pursue questions, to immerse oneself in scholarship. It is also, as one of my veterinary clients (who has a PhD) said, like 'having a best friend that no one wants to meet!' As I found out. I quickly learned that while I have an endless appetite for work, I found it very hard to spend time with my new 'best friend'. This was particularly evident when it felt like the world was ending, either personally (the loss of colleagues, friends and family members, including Michael and Phil, the breakdown of my marriage, relocating multiple times), globally (the COVID-19 pandemic, the ongoing climate emergency and its extreme weather events, both claiming human and animal lives and repeatedly closing campus), or everything, concurrently. It takes an army to support such a journey and I owe a debt of gratitude to the brave souls who accompanied me and my 'best friend' for part, or all, of the way.

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Reference

ANON. 1941. Death of Mr Hughie Hughes of Eureka. Barrier Miner Home Edition.

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Abbreviations

AHT	Animal Health Technician
AVA	Australian Veterinary Association
AVMA	American Veterinary Medical Association
CEC	Clinical ethics committee
CESS	Clinical ethics support service
COVID-19	Coronavirus disease of 2019
CSU	Colorado State University
DIT	Defining issues test
DVM	Doctor of Veterinary Medicine
EAEVE	European Association of Establishments for Veterinary Education
ECS	Ethically challenging situation
IQR	Interquartile range
KPI	Key performance indicator
MCD	Moral case deliberation
MN	Maintaining norms
NAVMEC	North American Veterinary Medical Education Consortium
OIE	World Animal Health Organisation (as of May 28 2022, known as the World Organisation for Animal Health, or WOAHA)
OR	Odds ratio
PI	Personal interest
PMIE	Potentially morally injurious event
PPE	Personal protective equipment
QOL	Quality of life
RCVS	Royal College of Veterinary Surgeons
RVN	Registered veterinary nurse
RVT	Registered veterinary technician
SARS-Cov-2	Severe acute respiratory syndrome coronavirus 2
SSVS	Sydney School of Veterinary Science
UK	United Kingdom
UP	Universal principles

USA	United States of America
VBG	Veterinary Business Group
VetDIT	Veterinary defining issues test
VPB	Veterinary Practitioners Board
VN	Veterinary nurse
VNCA	Veterinary Nurses Council of Australia
WHO	World Health Organization
WOAH	World Organisation for Animal Health (formerly, OIE)

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Michael Ward: data analysis, writing – review and editing, supervision.

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QUAIN, A., MULLAN, S. & WARD, M. P. 2021. Communication challenges experienced by veterinary professionals during the COVID-19 pandemic. *Australian Veterinary Journal*, 100(1-2):79-81. <https://doi.org/10.1111/avj.13125>

This manuscript is included in this thesis as part of Chapter 7.

Anne Quain: conceptualisation, literature review, study design, survey building and piloting, ethics application, data analysis, writing – original draft preparation, writing – review and editing.

Siobhan Mullan: conceptualisation, study design, survey refinement, ethics application, data analysis, writing – original draft preparation, writing – review and editing, supervision.

Michael Ward: data analysis, writing – review and editing, supervision.

All authors approved the final manuscript.

QUAIN, A., MULLAN, S. & WARD, M. P. 2022. Low and No-Contact Euthanasia: Associated Ethical Challenges Experienced by Veterinary Team Members during the Early Months of the COVID-19 Pandemic. *Animals*, 12, 560. <https://doi.org/10.3390/ani12050560>

This manuscript is included in this thesis as part of Chapter 7.

Anne Quain: conceptualisation, methodology, formal analysis, investigation, data curation, writing – original draft and preparation, writing – review and editing.

Siobhan Mullan: methodology, formal analysis, writing – review and editing, supervision.

Michael Ward: methodology, formal analysis, writing – review and editing, supervision, project administration.

All authors approved the final manuscript.

QUAIN, A., MULLAN, S. & WARD, M. P. 2022. “There was a sense that our load had been lightened”: a pilot study of virtual ethics rounds for veterinary team members. *Frontiers in Veterinary Science*, 9

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This manuscript is included in this thesis as part of Chapter 8.

Anne Quain: literature review, study design, survey building and piloting, ethics application, ethics rounds coordination and correspondence, ethics rounds facilitation, data analysis, writing – original draft and preparation, writing – review and editing.

Siobhan Mullan: study design, survey refinement, ethics application, ethics rounds coordination, data analysis, writing – original draft and preparation, writing – review and editing, supervision.

Michael Ward: study design, survey refinement, ethics application, data analysis, writing – original draft and preparation, writing – review and editing, supervision, project administration.

All authors approved the submitted manuscript.

Additional publications and statement of contribution

The following publications, produced early in my candidature, are not included within this PhD. Abstracts and links to full text articles are included in Appendix B.

FAWCETT (QUAIN), A., MULLAN, S. & MCGREEVY, P. 2018. Application of Fraser's "Practical" Ethic in Veterinary Practice, and Its Compatibility with a "One Welfare" Framework. *Animals*, 8(7), 109; <https://doi.org/10.3390/ani8070109>

Anne Quain: conceptualisation, writing – original draft and preparation, writing – review and editing.

Siobhan Mullan: writing – original draft and preparation, writing – review and editing, supervision.

Paul McGreevy: writing – original draft and preparation, writing – review and editing, supervision.

All authors approved the final manuscript.

FAWCETT (QUAIN), A., BARRS, V., AWAD, M., CHILD, G., BRUNEL, L., MOONEY, E., MARTINEZ-TABOADA, F., MCDONALD, B. & MCGREEVY, P. 2019. Consequences and Management of Canine Brachycephaly in Veterinary Practice: Perspectives from Australian Veterinarians and Veterinary Specialists. *Animals*, 9(1), 3; <https://doi.org/10.3390/ani9010003>

Anne Quain: conceptualisation, writing – original draft and preparation, writing – review and editing.

Vanessa Barrs: conceptualisation, methodology, writing – original draft and preparation, writing – review and editing, supervision, project administration.

Magdoline Awad: writing – original draft and preparation.

Georgina Child: writing – original draft and preparation.

Laurencie Brunel: writing – original draft and preparation.

Erin Mooney: writing – original draft and preparation.

Fernando Martinez-Taboada: writing – original draft and preparation.

Beth McDonald: writing – original draft and preparation.

Paul McGreevy: conceptualisation, writing – original draft and preparation, writing – review and editing.

All authors approved the final manuscript.

HERNANDEZ, E., FAWCETT (QUAIN), A., BROUWER, E., RAU, J. & TURNER, V. P. 2018. Speaking Up: Veterinary Ethical Responsibilities and Animal Welfare Issues in Everyday Practice. *Animals*, 8(1), 15; <https://doi.org/10.3390/ani8010015>

Elein Hernandez: conceptualisation, writing – original draft and preparation, writing – review and editing.

Emily Brouwer: writing – original draft and preparation, writing – review and editing.

Jeff Rau: writing – original draft and preparation, writing – review and editing.

Patricia Turner: writing – original draft and preparation, writing – review and editing.

All authors approved the final manuscript.

FAWCETT (QUAIN), A. 2019. Is a One Welfare approach the key to addressing unintended harms and maximising benefits associated with animal shelters? *Journal of Applied Animal Ethics Research*, 1(2): 177-208 https://brill.com/view/journals/jaae/1/2/article-p177_2.xml

As supervisor for the candidature upon which this thesis is based, I can confirm that the authorship attribution statements above are correct.

Professor Michael Ward

Professor Siobhan Mullan

DATE: June 2022

Chapter 1: Introduction

'There are some patients whom we cannot help; there are none whom we cannot harm' – attributed to Arthur L. Bloomfield (1888-1962) (Cox et al., 1962, Cuervo and Aronson, 2004).

1.1 Background

Like many others, I became a veterinarian out of a desire to help animals.

Specifically, I wanted to prevent or at least minimise suffering, and to enable animals to enjoy 'lives worth living'. Being in the presence of healthy, flourishing animal life gives me a deep sense of wellbeing. The irony is that I spent my working hours as a veterinarian in the proximity of often quite profound suffering – not just of animals, but of the humans attached to them (their owners or guardians) and veterinary team members (for the purposes of this discussion, veterinarians, veterinary nurses animal health technicians, animal attendants, practice managers, veterinary students and others involved in the delivery of veterinary care).

Having read the work of prominent veterinary ethicists Bernard Rollin and Jerrold Tannenbaum as an undergraduate, I had anticipated encountering conflicts between the interests of animals and the interests of their owners (Rollin, 2013, Tannenbaum, 1995). Naively, I had not anticipated the potential for conflicts between the interests of myself, animals (patients), their owners (clients) and the veterinary practice, between the interests of veterinary team members, and indeed between my own wellbeing and my professional role. I learned that despite my best intentions, there were often unintended negative consequences associated with providing veterinary care. Examples include feeling at times as if I were complicit in perpetuating animal suffering by not doing enough, or worrying that perhaps I was recommending a diagnostic or treatment modality for the wrong reasons.

In the scholarly literature on veterinary ethics that I had imbibed during my training, veterinarians were portrayed as autonomous decision makers. That did not reflect my reality as a junior, and even subsequently senior, employee working within veterinary teams, or indeed as an individual member of a profession. I worried that some of my moral reasoning – and indeed that of colleagues – consisted of post-hoc justification of acts performed out of habit. Perhaps this is why the moral reasoning of veterinarians doesn't develop to the level we might expect (Batchelor et al., 2015). As a teacher of veterinary ethics, I felt I could do more to better equip students to

navigate the ethically challenging situations (ECS) they would encounter in their future careers.

In the first year of my PhD I wrote the following stream of consciousness in my research journal: 'Most of us get a veterinary job, work in a system where we do things largely because this is how they are being done, then leave that job, having helped and harmed thousands of animals in contexts we don't generally question, perhaps without being changed, just getting through the surgery list, dealing with interpersonal conflict, worrying about our stress and often overlooking the stress of non-veterinary staff who work alongside us and may be more sensitive to suffering and less powerful to act on it.'

The research presented in this thesis emerged from a desire to minimise the unintended harms and maximise the benefits of veterinary work – to animals, clients and other stakeholders. The quote attributed to the late Dr Arthur Bloomfield is cited in discussions on clinical errors. However, I believe it also applies to the management of ECS. While one may read this quote as a negative statement, I draw great comfort from it: if we understand the potential for harm, we can mitigate or avoid it.

1.1.1 Animal welfare

There is a lack of consensus about the definition of “animal welfare”, even among animal welfare scientists (Fraser, 2008, Mellor, 2016). For the purposes of this discussion, animal welfare is characterised as “a state that is subjectively experienced by an animal” (Mellor, 2016), an integrated subjectively state that arises from “sensory and other neural inputs” (Mellor, 2016). These inputs arise from four domains – 1. nutrition, 2. the physical environment, 3. health and 4. behavioural interactions (including human-animal interactions) (Mellor et al., 2020). Sensory and neural inputs are interpreted and processed by the animal according to previous experiences, individual traits and species characteristics (Mellor, 2016). The fifth (mental) domain represents an animal's current welfare state, which may change in response to inputs from domains 1-4. Thus at any given time, the welfare of an animal varies on a continuum from “very bad to very good” (Mellor, 2016).

1.1.2 Ethically challenging situations

As outlined in Chapter 2, the term 'ethically challenging situation' (ECS) is used to refer to a situation in which veterinary team members are required to manage competing choices, or where they perceive a conflict between the interests of different stakeholders or parties who may be impacted by a decision. It encompasses moral dilemmas, ethical dilemmas and ethical conflict. As discussed in Chapter 2, ECS are common in veterinary settings, and are of particular concern because they may lead to moral distress and potentially moral injury.

1.1.3 Moral distress

Moral distress is defined as 'the experience of psychological distress that results from engaging in, or failing to prevent, decisions or behaviours that transgress, or come to transgress, personally held moral or ethical beliefs' (Crane et al., 2013). Therefore, veterinary team members unable to resolve ECS in alignment with their values may experience moral distress.

Moral distress among veterinary team members is a concern for two major reasons. First and foremost, if we assume that the interests of veterinary team members are aligned with the welfare of animal patients, moral distress may be an indirect marker of animal welfare compromise (Rollin, 1986). Secondly, as has been highlighted in the veterinary literature and discussed in Chapter 2, moral distress negatively impacts the wellbeing of veterinary team members, and may be associated with career attrition, and/or mental health morbidity and mortality (Arbe Montoya et al., 2019, Arbe Montoya et al., 2021, Crane et al., 2015). It has been suggested that equipping prospective veterinary team members, particularly veterinarians, with skills to better manage ECS may mitigate moral distress (Batchelor and McKeegan, 2012, Kipperman et al., 2018, Moses et al., 2018, Nieuwland and Meijboom, 2020).

1.2 Aims and objectives

The overarching aim of the research presented in this thesis is to gain a better understanding of the type of ECS encountered by veterinary team members, ultimately to better equip them to navigate these situations. I also explore strategies that may enhance moral competency among veterinary team members.

The objectives of this research were to:

1. Determine the types of ECS encountered by veterinary team members working in a variety of settings
2. Identify potential risk factors for encountering ECS among veterinary team members
3. Identify practical measures that may assist veterinary team members in better navigating ECS
4. Evaluate the impact on veterinary team members who participated in an intervention, ethics rounds.

Three separate studies were performed to achieve these objectives:

1. A **strategic literature search and thematic analysis** of vignettes depicting ECS was undertaken to extend the knowledge of the types of ECS that veterinary team members may encounter.
2. **Online surveys** with veterinary team members were undertaken during the pandemic to identify the frequency and types of ECS encountered during a transboundary mega-crisis. An additional aim was to identify risk factors for experiencing an increase in ECS during a crisis situation.
3. **Online surveys** prior to and following participation in **virtual ethics rounds** were used to assess the impact of ethics rounds on veterinary team members, incorporating a modified version of the Euro-MCD 2.0 to evaluate outcomes of ethics rounds. The aim of this study was to determine whether ethics rounds could benefit veterinary team members.

1.3 Thesis outline

This thesis contains this introduction (Chapter 1), a literature review (Chapter 2), six research chapters (Chapters 3–8) and a discussion (Chapter 9). All research chapters have been published in peer reviewed journals.

Chapter 2 provides an overview and discussion of relevant literature in veterinary ethics.

Chapter 3 reports the findings of a strategic literature search and thematic analysis of published ethical vignettes written by and for veterinary team members. This helped in the development of a code book, which was used to classify ECS identified in Chapter 8.

Chapter 4 provides a discussion of ethical challenges associated with advanced veterinary care. This analysis contributes to contemporary discussion around the ethical responsibilities of veterinary team members, particularly veterinarians, in a context of technological innovation and a general increase in the standard of veterinary care. In particular, it explores some negative consequences of advanced veterinary care, and strategies to mitigate these.

Chapter 5 reports the findings of an extended survey, administered in the early months of the COVID-19 pandemic, seeking to determine the frequency, stressfulness and types of ECS encountered by veterinary team members during a global pandemic. It also reports veterinary team members' approaches to managing recently encountered ECS.

Chapter 6 reports the findings of a risk factor analysis based on data collected in the study described in Chapter 5. The analysis determines which cohorts were at risk of experiencing an increase in ECS during the COVID-19 pandemic. These findings may facilitate better preparation of veterinary team members for managing ECS, and may minimise the negative impacts of ECS.

Chapter 7 uses additional qualitative data collected in the study described in Chapter 5. It explores potential practical solutions to factors that may present or exacerbate pandemic-associated ECS, notably a) communication challenges and b) low- and/or no-contact euthanasia. These discussions allow us to understand the nature and impact of challenges encountered by veterinary team members during a pandemic, some of the barriers to resolution of ECS, and potential strategies to mitigate these factors within the constraints of veterinary settings.

Chapter 8 reports the findings examining the impact of virtual ethics rounds (a form of clinical ethics support service utilised in human healthcare settings) on veterinary team members.

Chapter 9 discusses the major findings, the strengths and limitations of this research, and future directions for research based on the findings in this PhD. It offers recommendations for the ongoing training and support of veterinary team members with respect to the ECS they may encounter.

In addition to these chapters, Appendix A includes ethics approval for these studies granted by the University of Sydney Human Research Ethics Committee.

Appendix B includes abstracts of four papers developed and published in the early stages of this PhD. Each of these papers provide examples of application of ethical frameworks to actual or hypothetical ECS. This work assisted in the development of resources and skills for facilitating virtual ethics rounds.

Appendix C includes supplementary material associated with published papers.

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Chapter 2: Literature review

This review provides an overview of veterinary ethics from the latter half of the 20th Century. It situates veterinary ethics as a branch of applied, professional ethics, and situates this thesis in the emerging field of empirical veterinary ethics. After discussion of the relationship between veterinary ethics and professionalism, the evolution of veterinary ethics as a field of scholarship is outlined. The expression ‘ethically challenging situations’ (ECS), used throughout this thesis, is defined. The ‘triad’ of stakeholders in veterinary ethics is discussed and critiqued. Literature on the frequency, types and impacts of ECS encountered by veterinary team members is reviewed. Finally, I discuss strategies to aid veterinary team members in navigating ECS and mitigating their impact – particularly ethics teaching and clinical ethics support services (CESS).

2.1 What is veterinary ethics?

Ethics is a branch of philosophy predominantly concerned with how people ought to behave (Proudfoot and Lacey, 2009). Applied ethics is the application of ethical principles to a particular field. Veterinary ethics has been defined as a branch of applied ethics that ‘deals with the moral responsibilities and ideals of veterinarians in their capacity of providers of medical care for animals and as members of the veterinary profession when the profession speaks on issues relating to the use, treatment and medical care of animals’ (Tannenbaum, 2019). Alternatively, it is defined as ‘a field of ethics concerned with the practical application of ethical theories, principles, and moral standards to the conduct of individuals involved in veterinary service delivery systems that are meant to benefit animals, owners and the public’ (Kimera and Mlangwa, 2016). The former definition is broad, in that it considers wider questions around animal use; the latter explicitly refers to multiple stakeholders – animals, owners and the wider community – who may be impacted by veterinary care.

Veterinary ethics overlaps with animal ethics and environmental ethics. Animal ethics explores the moral status of animals, the implications of animal sentience, how animals ought to be treated and human-animal relations (Beauchamp and Frey, 2011). As veterinary settings are ‘a key site of human-animal relations’ (Hobson-West and Jutel, 2020), the field of veterinary ethics offers important insights and

perspectives into questions around how we can and should treat animals. Environmental ethics is a branch of ethics concerned with the moral status of the environment (including its non-human contents, which can include animals), and interaction between humans and the environment. Increasingly, veterinary professionals and organisations such as the World Organisation for Animal Health (WOAH, formerly OIE) support ‘One Health’ and ‘One Welfare’ frameworks, in which the environment is a stakeholder (Brennan and Y. S. Lo, 2022, Garcia, 2017, Fraser, 2016).

According to Tannenbaum, veterinary medicine is one of the learned professions (Tannenbaum, 2019). Traditionally, professions included medicine, law and divinity, but they have expanded to include veterinary medicine, teaching, accounting and others (Beaton, 2011). Human nursing has become professionalised, with nurses required to undertake tertiary studies, become registered, undertake continuing professional development (CPD), abide by professional codes of ethics (COEs), and be subject to disciplinary procedures where appropriate. In the same way, animal health technicians and veterinary nurses have become, or are in the process of becoming, professionalised in various jurisdictions (Kinnison et al., 2014, Jewell, 2014, Turner, 1984).

Tannenbaum distinguishes four branches of veterinary ethics: descriptive veterinary ethics, normative veterinary ethics, official veterinary ethics and administrative veterinary ethics (see Table 1). Descriptive ethics describes what *does* happen, and normative ethics describes what *ought to* happen (Borry et al., 2005). Ideally, all are in alignment – that is, veterinary team members do what they *should* do, and this conduct is supported by both professional organisations and legislation. But what ‘should’ be done isn’t always clear – particularly where there is continued disagreement about the moral status of animals, and where there are multiple stakeholders with potentially competing interests.

Table 1: Branches of veterinary ethics (Tannenbaum, 1995, Tannenbaum, 2019)

Branch of veterinary ethics	Description
Descriptive veterinary ethics	Descriptions of ethical/moral behaviour and belief systems, including descriptions of ethical reasoning

Normative veterinary ethics	How veterinary team members ought to or should act; what moral values they should adopt and promote, and what character traits should be reflected in their behaviour
Official veterinary ethics	The ethical standards set and enforced by the profession, as embodied in oaths, codes of ethics and policy statements
Administrative veterinary ethics	The ethical standards set and enforced by the government, i.e. laws, codes, standards and guidelines regulating the practice of veterinary medicine

In recent years, a number of authors have proposed various ‘agendas’ for veterinary ethics. Examples of suggested issues of concern for veterinary ethics research and teaching are listed in Table 2.

Table 2: Examples of suggested issues of concern for veterinary ethics research and teaching.

Source	Suggested issues of concern for veterinary ethics
(Rollin, 2012)	<ul style="list-style-type: none"> • The role of the veterinary professional in reforming confinement agriculture • Questions around the value of companion animals killed through veterinary malpractice • The use of complimentary and alternative medicines for which there is little or no supporting evidence • ‘Problematic animal use’ – horse showing, horse racing, rodeo • Production/husbandry related diseases in food animals • The breeding of companion animals with genetic diseases
(Kimera and Mlangwa, 2016)	<ul style="list-style-type: none"> • Justification for and techniques used to perform euthanasia/slaughter • The use of complimentary and alternative medicines or traditional remedies for which there is little or no supporting evidence • Population management of farmed, stray and wild animals, particularly in the context of infectious disease outbreaks • Animal breeding and genetic selection • Wildlife conservation, including the capture and treatment of wild animals • Veterinary business ethics including competition, advertising and profit-making • One Health: should ethical standards applied to humans be applied to animals?

(Ryan et al., 2019)	<ul style="list-style-type: none"> • The decision to assist in treatment and breeding of animals with extreme traits associated with health problems • Whether euthanasia is acceptable and, if it is, when and how it should be performed • Whether the veterinarian should perform cosmetic or convenience surgeries such as ear cropping, tail docking, declawing or debarking • Whether to treat an animal to extend their quantity of life, and how this impacts quality of life • Whether to use animals for blood transfusions or as sources of organs for transplants, which animals to source these from and how to treat source animals • When to breach client confidentiality in the interests of animal welfare, human welfare or public safety • How to manage cases where abuse, mistreatment or neglect of an animal is suspected • The decision to surgically spay or neuter an animal • Management of inappropriate or inadequate feeding of animals
(Tannenbaum, 2019)	<ul style="list-style-type: none"> • What forms of animal use are acceptable • Commercial relations with colleagues and clients • Determining and weighing conflicting interests of patients and clients • The veterinarian's limited legal authority • The veterinarian's legitimate interests • Behaviour and attitudes of animal owners and society • Managing competing interests under the umbrella of One Health

A trend across applied ethics since the 1990s has been the adoption of social science research methods, including surveys, interviews, focus groups and workshops. This enables researchers to document the types of ethical challenges faced in a particular setting, and to help frame ethical discussions in real-life contexts – referred to as the ‘empirical turn’ in bioethics (Borry et al., 2005). The empirical turn in bioethics was driven by dissatisfaction with abstract, theory-driven applied ethics, the rise of case-informed ‘bedside’ clinical ethics, feminist critiques of universalised ethics and the rise of evidence-based medicine (Borry et al., 2005). It was also driven by the view that empirical research would allow ethicists to better factor ‘actual experiences, meanings and moral decisions of caregivers and care-receivers’ into their deliberations (Borry et al., 2005). The research documented in this thesis falls within this body of empirical veterinary ethics. The discussion of how data generated by these empirical methods can contribute to veterinary ethics is only just beginning (Springer et al., 2022, Springer et al., 2021, Ashall, 2022). In identifying

the types of ECS that veterinary team members encounter, empirical veterinary ethics may inform veterinary education to ensure prospective veterinary team members are prepared, and provides the foundation for developing strategies and solutions for resolving ECS.

2.2 Veterinary ethics as professional ethics

2.2.1 Professionals, professionalism and trust

Susskind and Susskind argue that all professionals are – in some way or other – a solution to the same problem, notably ‘that none of us has sufficient specialist knowledge to cope with all of our daily challenges’ (Susskind and Susskind, 2015) (p3). Thus, while many people live with and rely on animals for companionship, food, fibre or labour, few are sufficiently equipped to diagnose or treat illness when this occurs. Similarly, they may be ignorant about the health and welfare needs of animals, and how to best meet these needs (Rioja-Lang et al., 2019, Horseman et al., 2016, Meyer et al., 2022).

In engaging the services of veterinary professionals, clients trust them – as they trust other professionals – to provide sound advice, charge appropriately for services that the clients may not have the skill to evaluate, maintain confidentiality, and avoid acting imprudently (Baud et al., 2019). They rely on veterinary professionals to keep their skills and knowledge current.

2.2.2 Threats to professions and professionalism

However, ‘professionalism’ and professional self-regulation are threatened by neoliberal political and economic ideologies, globalisation, managerialism, consumer movements, the widespread availability of specialised knowledge via the internet, intraprofessional conflict and professional misconduct (Kirkpatrick et al., 2021, Vriens et al., 2018, Adams, 2017, May, 2012). Trust in professions and professionals is in decline overall (Susskind and Susskind, 2015), though the level of public trust varies between professions (Edelman, 2021). Critics of professionalism argue that it is a tool for social control, used by social groups that dominate professions to self-regulate, gatekeep and maintain power over a profession’s accepted behaviours and social boundaries (Frye et al., 2020). According to Neo-Weberian social closure theory, professions, with the aid of the state, have successfully achieved social closure by restricting access to professional education and credentials and

opportunity to practice (Adams, 2017). Control over credentialing and licensing restricts the supply of professionals, increasing the costs of engaging professional services to the point of being inaccessible to many (Adams, 2017, Susskind and Susskind, 2015). Indeed, while lack of access to veterinary care is a complex problem, the Access to Veterinary Care Coalition reported that in the US, 'millions of pets do not receive adequate care because the costs are beyond the family's ability to pay' (Access to Veterinary Care Coalition, 2018). Animals not owned or in the care of humans are unlikely to receive veterinary care at all (Desmond, 2022). For animal owners, lack of access to veterinary care (for financial or practical reasons) and lack of trust in veterinary professionals may prompt those in need of veterinary services to turn to the internet, online pharmacies, or unqualified, lay practitioners for advice, diagnosis and treatment of animals in their care, with potentially negative animal welfare consequences.

Professionalism in healthcare requires altruism (putting the interests of others ahead of one's own), competence in one's practice and integrity, based on high moral standards, with little or no dissonance between professional values and those espoused outside of working hours (May, 2012). In an era in which the separation of work and life is seen as desirable, and where the private lives of many are published on social media, professionalism may be seen as anachronistic.

2.2.3 The 'grand bargain': ethics as the cornerstone of professionalism

Questions about how professions should be regulated, how professionals in general should behave, the role(s) of professionals in society and indeed whether professions should exist at all have ethical dimensions. According to the functionalist model of professions, individual professionals and professional organisations commit to deliver competence and integrity, aligned with a professional COE, in exchange for community trust, autonomy and self-regulation (Six, 2018, Brien, 1998). In other words, the community trusts that professionals know what they are doing, and use their special skills to act in the interests of others, adhering to a high standard of conduct and prepared for sanctions if this code is breached. This is what has been referred to as an unwritten 'grand bargain' (Susskind and Susskind, 2015) (p22). This commitment to practicing in the interests of others in alignment with a COE is

inherent in the Australian Council of Professions (ACOP) definition of a profession as:

...a disciplined group of individuals who adhere to ethical standards and who hold themselves out as, and are accepted by the public as, possessing special knowledge and skills in a widely recognised body of learning derived from research, education and training at a high level, and who are prepared to apply this knowledge and exercise these skills in the interest of others. It is inherent in the definition of a profession that a code of ethics governs the activities of each profession. Such codes require behaviour and practice beyond the personal moral obligations of an individual. They define and demand high standards of behaviour in respect to the services provided to the public and in dealing with professional colleagues. Often these codes are enforced by the profession and are acknowledged and accepted by the community (Australian Council of Professions, 2003).

Professionalism combines both civic (entailing responsibility to both social values and the interests of those engaging professional services) and technical components (the development and application of specialised knowledge and skills) (Sullivan and Benner, 2005). It has been stated that the functionalist conceptualisation of professionals is predicated on their 'superior moral fibre' (Gabbioneta et al., 2018). Professionals protect persons – and in the case of veterinary professionals, animals – in vulnerable situations, and contribute to public value (Sullivan and Benner, 2005). Professional COEs oblige benevolent use of the power that specialised knowledge and skills bestow upon professionals (Beaton, 2011). They also describe or assume professional goals and particular societal values that define the effectiveness of professional conduct (Vriens et al., 2018). They provide authority; the veterinary professional's position, where consistent with a COE, is not just based on their authority, it has the backing of the profession (Meijboom, 2018). The general nature of COEs may also facilitate some discretion regarding sanctions. The professional model requires that those who breach COEs be appropriately disciplined. Failure to appropriately discipline professionals who breach COEs undermines the privilege of self-regulation (May, 2012).

In addition to their skills, knowledge and expertise, doctors, veterinarians and other healthcare professionals may be conferred with 'Aesculapian authority' – authority vested in those perceived as healers (Rollin, 2002). Rollin describes Aesculapian authority as sapiential (pertaining to wisdom), moral (pertaining to the moral imperative to heal, relieve suffering and repel death) and charismatic (pertaining to the perception of healing professions as magical to lay persons). It can be used (and abused) to influence clients. As medicine and veterinary medicine, have shifted from a paternalistic model to one of shared decision making as 'ethical best practice' (Prentice and Gillam, 2018), it has been argued that care must be taken in exerting influence over animal owners – even where this is believed to be in the interests of animals. For example, Yeates and Main argue that influencing client decision-making is legitimate only when it is motivated by respect for the client's wishes and the animal's welfare – not when it is done to further the interests of the client or the veterinarian (Yeates and Main, 2010). Abuses of Aesculapian authority undermine trust in the veterinary profession. In a study of veterinarians, Gauthier found that 'opportunities for deviance (whether via billing ploys, substandard care, or questionable drug distribution) abound' (Gauthier, 2001). Thus the primary barriers to occupational deviance, legal and ethical standards, are flagrantly contravened in some workplaces.

Adherence to ethical standards or a COE is considered the foundation of trustworthiness of professions (Beaton, 2011, Friedson, 2001). Professional COEs are often too general or vague to provide helpful guidance in managing specific ethical challenges (Tannenbaum, 2019), thus professionals require the moral competence to interpret and apply COEs in particular situations (Meijboom, 2018). Moral competency is a critical element of professionalism in general, and of professionalism in the veterinary sector.

2.3 Veterinary ethics has evolved with the veterinary profession

The focus of veterinary ethics has evolved with changing public perceptions of animals and animal welfare, and changes in the profession itself. For example, Woods argues that in Britain in the first half of the 20th century, veterinarians faced substantial competition from unqualified persons who could use the title 'veterinary surgeon' (Woods, 2013). One way that veterinarians could differentiate themselves from such competition was to claim ethical superiority – while unqualified laypersons

and 'quacks' inflicted cruelty on animals, such suffering could be prevented by placing animals under the care of qualified veterinarians, who had full discretion over their treatment (Woods, 2013). During the period between the First and Second world wars, the fundamental purpose of veterinary expertise became the protection of public health in the food supply (Enticott et al., 2011a). The Second World War increased the standing of vets, acting as agents of the state to expand food production by increasing livestock productivity and animal health. In the UK, following the passing of the Veterinary Surgeons Act (1948), veterinary professional conduct became the focus of veterinary ethics. Clinical intervention – insofar as it was carried out by a trusted, qualified professional – was assumed to be ethical (Woods, 2013).

Rollin, who co-taught the first core curriculum veterinary ethics course at Colorado State University (CSU) in 1978 (Rollin, 2012, Kesel, 2022), argued that until the second half of the 20th century, at least in the USA, veterinary ethics was predominantly concerned with 'intraprofessional etiquette' – issues such as fee-splitting, advertising and competition. Meanwhile, 'the genuine ethical questions arising out of the practice of veterinary medicine remained unanswered' (Rollin, 1978). Rollin, a philosopher, was moved to explore veterinary ethics after his experience as a client: he was outraged that he had been offered a single invasive treatment option for his dog by a CSU surgeon, when he subsequently learned from other sources that less invasive alternatives were available (Kesel, 2022). At a time when the judicial council of the American Veterinary Medical Association (AVMA) was revising its *Principles of Veterinary Medical Ethics*, Rollin took aim at what he argued was the AVMA's apparent censorship of its members regarding 'controversial subjects', and failure to engage with what he called the 'fundamental conceptual problem of veterinary medicine':

To whom does the veterinarian owe primary allegiance, owner or animal? Is his role to be construed as like that of a mechanic called on to repair a piece of machinery, and like the mechanic, to be totally responsive to the whims of the owner? Or, is it to be seen as more like the role of a paediatrician called on to attend to a child, where the child retains certain rights, and the parent cannot choose to say, 'don't fix it'? (Rollin, 1978)

This question may represent a false dichotomy – in most jurisdictions, animals are legally classified as chattels or property, albeit modified by various anti-cruelty and animal welfare legislation (although some animals, for example those used as production animals, may be exempted from protections) (Cao, 2015, Hernandez et al., 2022). Not all veterinary work is therapeutic (Hobson-West and Jutel, 2020), or performed in the interests of animals (Grimm et al., 2018, Weich and Grimm, 2018), even where performed humanely with high regard for animal welfare. Consider the slaughter of farm animals, animal experimentation, some reproductive medicine, or ‘cosmetic’ or ‘convenience’ surgery on companion animals, including declawing of cats and ear-cropping of dogs. Nonetheless, this question, subsequently referred to as the ‘fundamental question of veterinary ethics’ by Rollin and others (Rollin, 2013, Coghlan, 2018, Mullan and Fawcett, 2017, Kipperman et al., 2018), has heavily influenced the discussion of veterinary ethics since.

In the same essay, Rollin described ‘an ever-increasing cynical and skeptical public’ (of which Rollin was one) to whom veterinary professionals had to answer. Indeed, from the 1970s, neoliberal challenges to professional power and privileges, combined with growing societal concerns about the treatment of animals, and the development of animal welfare science, prompted veterinarians to ‘recognise potential conflicts of interest between animals, owners, society and the profession, and to navigate them using new forms of ethical thinking’ (Woods, 2013). In part this may have been a survival strategy – the veterinary profession had been viewed by some as complicit in the intensification of farming, with associated negative impacts on the health and welfare of livestock, and indiscriminate antibiotic and pesticide use, as well as being slow to embrace the recognition of the affective states of animals highlighted by animal welfare scientists (Woods, 2013, Hemsworth et al., 2015). Historically, veterinarians focused on maintaining and restoring health or biological functioning to animals, leaving ethical questions about how animals are treated to others (Hernandez et al., 2022). It was largely consumers, non-government organisations (NGOs), and ‘activists’ – such as Ruth Harrison, author of *Animal Machines* (1964), an early exposé on factory farming – that drove the development of animal welfare science (Kirchhelle, 2021, Fraser, 2008).

At the same time, government support of veterinary expertise, at least in the UK, waned. There was a marked decrease in farm animal services, and a dramatic

reduction in veterinarians employed by governments, with a marked increase in veterinarians employed in private practice (Enticott et al., 2011a, Enticott et al., 2011b). The authority of veterinarians no longer derived from their role as agents of the state.

To maintain (or win back) public trust, protect their professional monopoly and maintain their social license, veterinarians themselves had to consider the appropriate exercise of their powers. The emerging field of veterinary medical ethics drew heavily on medical ethics and bioethics, research ethics and animal ethics (Kimera and Mlangwa, 2016). Similarly, instead of seeing calls to improve the welfare of animals as a threat to their professional practices, veterinarians reinvented themselves as champions of animal welfare. Animal welfare became the profession's stated *raison d'être* (British Veterinary Association, 2016), embedded into veterinary oaths globally (Bones and Yeates, 2012). This ideal 'influences public perception of the profession and compels people to engage with veterinary medicine' (Weich and Grimm, 2018). At the same time, it emphasises the animal patient's moral status as a subject (Weich and Grimm, 2018).

Animal welfare science evolved from a conception of welfare as largely the absence of negative experiences (captured in the 'Five Freedoms') to a holistic conception incorporating positive affective states (the 'Five Domains') (Mellor, 2016, Mellor et al., 2020, Webster, 2016). At the same time, the ethical relationship between veterinarians and animals became fundamentally reoriented towards animal as patient (as opposed to property), whose health, welfare and best interests mark the 'highest good' of veterinary practice (Weich and Grimm, 2018, Gray and Fordyce, 2020). This inevitably problematises the treatment of animals that is not in their best interests.

A review of the development of the *Royal College of Veterinary Surgeons Guide to Professional Conduct* found that over time, the focus shifted from a profession-centered, to an owner-centered, to an animal-centered view of veterinary obligations and duties (Woods, 2013). At the same time, regulatory bodies such as the RCVS broadened their definition of unprofessional or 'disgraceful' professional conduct to include clinical conduct (Woods, 2013). Instead of taking the benefits of veterinary care for granted, since the 1980s the veterinary profession began critically reflecting

on its impact of the welfare of patients under veterinary care. This resulted in a growing body of literature on the potential harms of veterinary care (iatrogenesis) to animals, both in terms of physical (Kogan et al., 2018, Oxtoby et al., 2015, Wallis et al., 2019, Oxtoby and Mossop, 2019) and psychological harms (Mandese et al., 2021, Griffin et al., 2021, Lloyd, 2017, Döring et al., 2009, Feilberg et al., 2021, Stanford, 1981). The focus became how to minimise or prevent these harms and promote welfare.

In the first half of the 20th century, the focus of the majority of veterinarians was on horses and livestock, as sources of transport, food and fibre (Gardiner, 2014). Later, dogs, cats and other species including avian, reptile and amphibian patients were reframed as legitimate veterinary patients, and so-called 'companion animals' became recipients of medicine where cost was not necessarily a limiting factor (Gardiner, 2014). Technological advances and specialisation increased the standard of veterinary care that could be delivered, raising unique ECS in the process (see Chapter 4 for a review of the types of ECS associated with advanced veterinary care in companion animal veterinary practice).

For many years the veterinary sector was comprised mostly of small, owner-run and managed private practices, with large animal work a key component of the workload (Henry et al., 2016). That has changed with the increased focus on companion animals, and a drive towards partnerships, group practices and large corporate chains facilitating resource sharing and increased buying power (Henry and Treanor, 2012, Henry et al., 2016, Page-Jones and Abbey, 2015). In addition to veterinarians, veterinary teams typically consist of qualified (and increasingly registered) veterinary nurses and animal health technicians (Turner, 1984). Where members of the veterinary team may have exercised discretion in the face of ECS, those working in larger practices may exercise less autonomy and face increased organisational constraints. A study of career identity in the veterinary profession found that 'some veterinary professionals equate being a commercial organisation with being unethical' (Page-Jones and Abbey, 2015). They argue that veterinary organisations can increase attraction and retention of employees by actively seeking to understand employees' values, attitudes and beliefs. Understanding the types of ECS that team members are concerned about, and the impact of these on the team, may be helpful

to employers in developing policies that minimise conflicts between professional, personal and workplace values.

The moral status of animals remains contested and varies across contexts (Tannenbaum, 2019, Fraser, 2008). This is determined in part by broader societal values around animals (for example, valuing dogs over rodents), as well as by the role of owners and ownership of animals (Desmond, 2022). Veterinary medicine and ethics thus remain 'profoundly anthropocentric' (Desmond, 2022). As highlighted by Desmond, veterinary oaths do not require a commitment to developing cross-species communication and empathy, and questions of 'who deserves care?' and 'who will get it?' depend on human interests (Desmond, 2022). Segments of the veterinary profession often adopt the name of the primary use for the animal species with which they predominantly work. Thus we have, for example, companion animal veterinarians, 'exotic' animal veterinarians, production or farm animal veterinarians and laboratory animal veterinarians. Within those, there may be further divisions. For example, companion animal veterinarians may be general practitioners, specialists, or those working in emergency and critical care. The ECS encountered by veterinary team members consequentially vary. These include broader questions about what forms of animal use are acceptable, as discussed in Chapter 3.

2.4 What does the term 'ethically challenging situation' refer to?

Morgan and McDonald define a moral dilemma, in a strict sense, as 'a conflict between responsibilities or obligations of exactly equal moral weight', and in a wider sense as 'when there are competing responsibilities with no obvious way to prioritise one responsibility over others' (Morgan and McDonald, 2007). They explain that, in veterinary settings, moral dilemmas are complicated by a lack of consensus around the moral status of animals, and duties and obligations which follow from this. Moral dilemmas are contrasted with 'practical dilemmas': 'moral choices that are hard to make because of contextual factors, such as potential negative responses from clients or loss of income. These situations are not moral dilemmas in a strict sense, because an ethically correct solution is apparent but is difficult to enact' (Morgan and McDonald, 2007). This distinction between 'practical dilemmas' and 'moral dilemmas' is problematic. For example, in a review of ethical challenges faced by veterinarians in Nigeria, the authors describe a scenario where veterinarians working in

slaughterhouses must choose between condemning carcasses containing zoonotic lesions (the ‘ethically correct’) course of action, and their lives:

...the butchers and meat vendors usually do not see the need for such carcass condemnation due to fear of financial losses...The butchers usually resist the meat condemnation and threaten the life of the inspector (veterinarian) if he/she insists on the condemnation. In this type of situation, veterinarians are in big dilemma as their lives are under serious threat, security personnel are usually absent in the abattoirs/slaughterhouses and they are under oath to protect public health (Njoga et al., 2019).

While Morgan and McDonald argue that ethical dilemmas discussed in the veterinary literature ‘are likely a combination of practical and moral dilemmas’ (Morgan and McDonald, 2007), these ‘contextual factors’ are often critical considerations. Additionally, veterinary team members’ perceptions vary as to whether a particular situation – such as a request for euthanasia of a healthy companion animal, or the breaching of client confidentiality to report a notifiable disease – is an ethical dilemma (Kipperman et al., 2018, Morgan, 2009)(Morgan p172).

Ultimately, ethical or moral challenges occur where ‘behaviours violate one’s personal moral beliefs regarding how things *should* be done or one’s personal obligations’ (Crane et al., 2015). Considering this definition and the above discussion, in this manuscript and associated publications, the term ‘ethically challenging situation’ (ECS) refers to situations in which veterinary team members are required to manage competing choices, or where they perceive a conflict between the interests of different stakeholders or parties who may be impacted by a decision. It encompasses moral dilemmas, ethical dilemmas, practical dilemmas (as described by Morgan and McDonald) and ethical conflict.

2.4.1 The veterinary ethical ‘triad’ – the space where veterinary ethically challenging situations occur?

Rollin’s fundamental question of veterinary ethics assumes a triad of stakeholders: the veterinarian, the owner and the animal. According to this model, ECS primarily emerge from conflicts between the interests of these stakeholders (Figure 1).

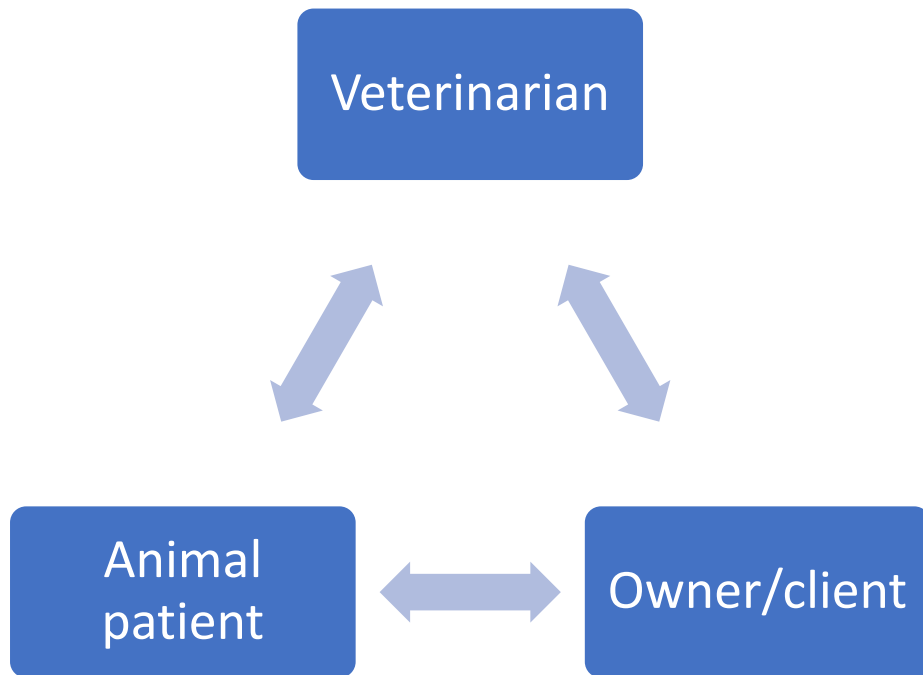


Figure 1. Schematic representation of the triadic relationship between veterinarian, patient and owner/client.

Tannenbaum described the veterinarian as the ‘servant of two masters’ – human clients and animal patients:

...veterinarians are expected to serve *both* their human clients and animal patients. Indeed, they are often called upon to serve as an advocate of both parties’ interests, even when these interests conflict. Thus, veterinarians will often speak out on behalf of the animal, telling the client how the animal feels or is likely to fare, and indicating what is or is not in its interests. At the same time, veterinarians are often asked to be advocates for their clients’ interests – to know, for example, what would make the pet owner happy, the racehorse owner wealthy, or the researcher successful (Tannenbaum, 1993) (p146).

However, the conception of ECS as occurring within this triadic relationship overlooks the reality that current veterinary team members rarely work in isolation, are often employed, and may not have complete decision-making autonomy.

The notion of the professional as autonomous decision maker has been highlighted as problematic in the context of other professions, for example engineering, where individual engineers are expected to do what is right and prevent what they recognise as wrong. This may lead to conflict with colleagues and employers:

The engineer is usually working with a team, and he or she first has to persuade the collaborators to modify or even stop a project because of ethical concerns. Moreover, the engineer is dependent on the employment contract he or she has signed towards the employer. Through this contract the engineer becomes subject to directives, and thus renounces his or her personal autonomy as far as professional work is concerned, and he or she undertakes to keep secret any internal business information. So, on principle the moral responsibility of the individual engineer is cut by industrial law. Even if, meanwhile, in some countries refusal to work and whistle-blowing are legally accepted in cases of serious concern, the engineer involved is usually risking his or her career. Engineering ethics, in terms of individual responsibility, in the borderline case is forcing the engineer to play the moral hero, a role that is neither desirable nor realistic (Ropohl, 2002).

Yet the pervasiveness of the conception of the veterinarian as an omnicompetent moral hero may explain why major surveys of ECS have focused on veterinarians, rather than non-veterinarian team members. This is also why the majority of the ECS about which veterinarians have been surveyed involve conflict between the interests of the client and those of the patient (see Chapter 3).

Like many other professionals, a veterinarian typically works in a business setting, and must follow a code of professional conduct that may conflict with business goals and priorities. For example, it may be in the interests of the clinical veterinary services to manage all cases in-house. However, the professional code of conduct may stipulate that a veterinarian must refer cases that are beyond the scope of their practice – as required in the NSW Veterinary Practitioner's Code of Professional Conduct, for example (Veterinary Practitioners Board of NSW, 2013). In addition, non-veterinary team members experience ECS, yet are not represented in the triad model.

The traditional triad model of veterinary ethics has been challenged. The Farm Animal Welfare Council describes the 'veterinary trilemma' as potentially conflicting duties and obligations to the patient, the client and the veterinary business rather than the individual veterinarian:

To whom – and for what – is the vet responsible? Is it to the animal (under his/her care), the client who pays the bills or the business that employs him (including himself/herself in the sense of his/her self-respect)? (Farm Animal Welfare Committee, 2012).

Similarly, the British Veterinary Association, in its 2016 Animal Welfare Strategy, refers to the veterinarian's trilemma as arising from 'duties to animals, clients and our employers' (British Veterinary Association, 2016). The triadic schematic is retained (see Figure 2), but this conception of the veterinary trilemma recognises that veterinary professionals work within a business context.

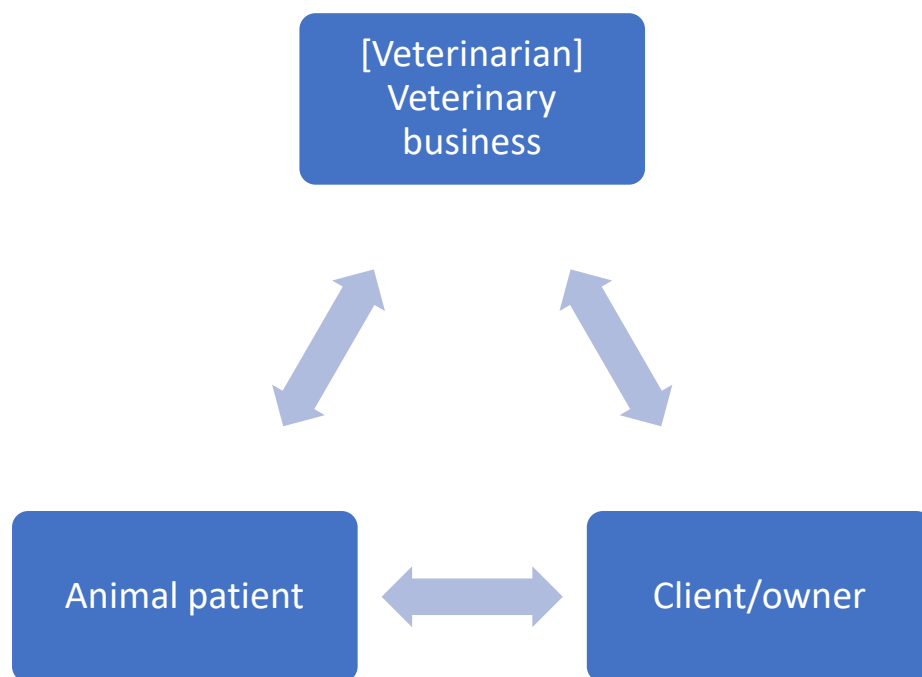


Figure 2. Schematic representation of the triadic relationship between the veterinarian working within the setting of a veterinary business, the patient and the owner/client.

Another limitation of the triadic model is that it focuses on the individual animal as a stakeholder, where – often due to economic drivers – animals may be perceived and treated as a group, herd, population or collective (Meijboom, 2018). Thus farm animal veterinarians, for example, are required to make ethical decisions with consideration of 'a much broader web of stakeholders and values' (Meijboom, 2018). To accommodate these, Dürnberger extends the model. He describes a 'triangle within a square': the triangle consisting of the veterinarian, animal and client, situated within a square including politics and legal requirements, society and its

expectations, other veterinarians in different roles (including colleagues, supervisors, employees and competitors) and veterinary offices (as the essential supervisory body) (see Figure 3) (Dürnberger, 2020a).

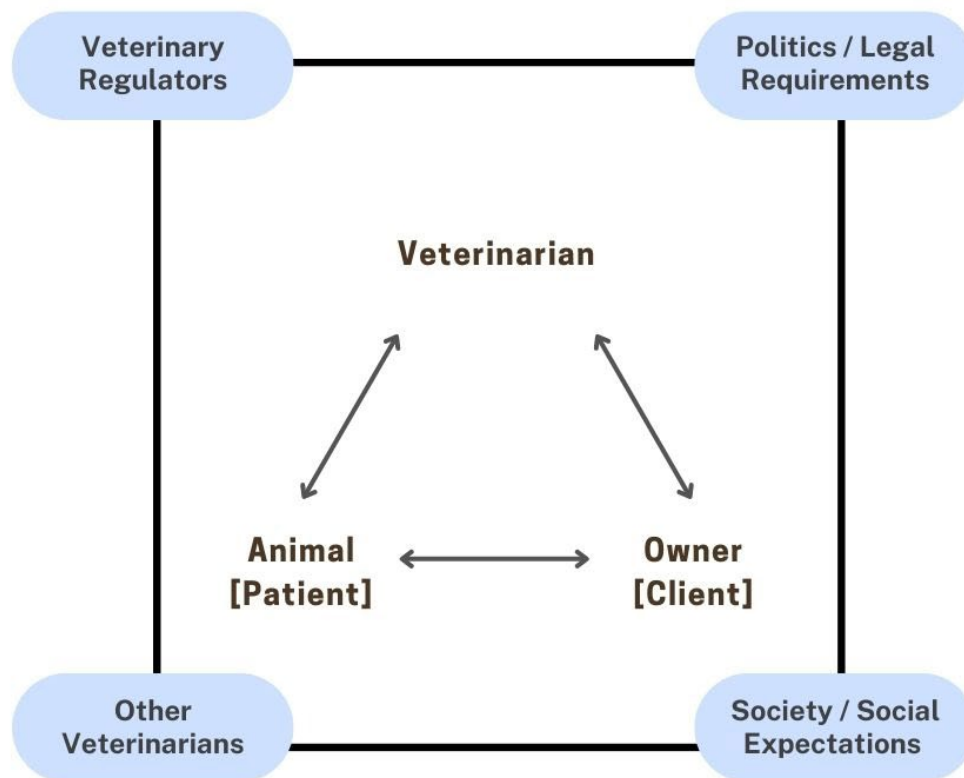


Figure 3. Schematic representation of Dürnberger's 'triangle within a square'.

Dürnberger adds that within the veterinarian there can be conflict between different roles, with the veterinarian at times acting as animal advocate, entrepreneur, social worker, agricultural worker, colleague, supervisor, employee, competitor and community member. For example, in addressing a case of farm animal neglect associated with a farmer suffering from mental illness, the veterinarian may be conflicted between acting in the best interests of the animal (animal advocate) and acting to support the farmer (social worker):

Should a veterinarian call the veterinary office because of animal welfare problems when he/she sees that a farmer will have even greater social problems as a consequence? (Dürnberger, 2020a).

But even this model falls short under One Health/One Welfare frameworks, which hold that the veterinarian should consider human and animal welfare, and environmental sustainability (Nieuwland and Meijboom, 2020, Garcia Pinillos et al., 2016, Garcia, 2017). While these responsibilities are embedded in some veterinary oaths (Hernandez et al., 2022), veterinary ethics – limited by the triadic conception of ethics – provides little guidance on how to attend to these stakeholders appropriately in day-to-day decision making.

While initially used to illustrate the complexity of veterinary as compared to medical ethics (conceived as a comparatively straightforward relationship between doctor and patient), the triadic model of veterinary ethics may be counter-productive in that it fails to acknowledge the many stakeholders impacting on, and impacted by, ECS in veterinary settings, including non-veterinarian members of veterinary teams. It fails to acknowledge the team-based care that increasingly occurs in veterinary clinical contexts. And it may overlook the advantages of working in a veterinary team. Team-based ethical decision making may be a useful means of drawing on diverse perspectives and approaches, maximising potential approaches to ECS, distributing the work required to navigate ECS, and potentially reducing emotional burden on individual veterinary team members (Moses, 2019).

Finally, this triadic conception may inhibit review of systemic factors that can give rise to ECS. In medicine, critics argue that framing ethics almost entirely within the physician-patient relationship fails to acknowledge that medicine in general, and medical schools in particular, can be conceived as moral agents. Instead, it reinforces individualism and potentially dissuades medical students from exploring broader issues, such as whether a medical curriculum could be immoral, or the role of professional organisations (Hafferty and Franks, 1994). Hafferty and Franks argue that ‘many ethics courses fail because they stress ethics at the individual patient-doctor level and do not address medicine as an institutional and organisational entity’ (1994, p11, see also Miles et al 1989). If we limit discussion of ECS encountered by veterinary team members to those pertaining to the client, veterinarian and owner, we risk the same failure. The inadequacy of this model became particularly apparent during the COVID-19 pandemic, when veterinary team members had to consider a broad range of stakeholders when navigating ECS. This is explored in Chapter 5.

2.5 Types of ECS

A predominant focus of the veterinary ethics literature has been on the type of ECS that veterinary team members, particularly veterinarians, encounter. The benefits of this focus are twofold. It enables educators to develop realistic scenarios, and for students to research and develop individual and collective responses (Magalhaes-Sant'Ana and Hanlon, 2016). Second, it facilitates identification of ECS that may be better addressed at a systems level. For example, if financial limitations of clients are a common ECS (Batchelor and McKeegan, 2012), there is scope to address this at the practice level, through development of policies detailing how to respond to such ECS (Kondrup et al., 2016), education of veterinary teams about communicating the costs of veterinary care (Kipperman et al., 2017), and more broadly through promotion of initiatives such as low-cost clinics (Haston and Pailler, 2021) and the development of pet insurance (Boller et al., 2020). Such policies and initiatives may reduce 'economic euthanasia' of animals (Boller et al., 2020, Anderson et al., 2021).

A review of the types of ECS encountered by veterinary team members is found in Chapter 3. Additionally, Richards and colleagues performed thematic analysis of semi-structured interviews of seven small animal veterinarians, identifying three major areas of ethical concern (Richards et al., 2020). These were:

1. disagreements between the veterinarian and owner about the interests of the animal patient
2. uncertainty in choosing and recommending the most appropriate treatment for a patient, and associated difficulties in communicating treatment options and costs to the owner
3. challenges in ethical decision making itself.

The first theme included discussion of pursuing futile treatment in the face of profound owner attachment, as well as situations involving unowned or stray animals with treatable conditions. The second theme related to clinical uncertainty that could be compounded by lack of understanding or disagreement with the owner or owners about the risks and benefits of treatment, as well as potential negative impacts of treatment on owners (for example by imposing financial or practical costs). The third theme revealed that veterinarians could feel constrained or supported by professional responsibilities, legislation or regulation, and peer or colleague

influence. The third theme highlights the deficiency in the triadic conception of veterinary ethics, identifying potential for conflict both within the veterinarian themselves, the veterinary team, and between the veterinarian and the state. It also suggests a need for providing further training of veterinarians to develop moral competency.

A discussion of ECS in veterinary settings in Nigeria identified four key challenges, notably:

1. the challenge of allegiance – the potential for the primary obligation of the veterinarian to vary
2. the dualistic nature of the veterinary profession – as both medical and agricultural
3. a strong bond between the client and animals – which may lead to refusal to euthanase by the client, even when euthanasia is in the interests of the animal
4. non-payment of compensation for condemned carcasses at slaughterhouses – prompting farmers whose carcasses are condemned to threaten the safety of veterinarians (Njoga et al., 2019).

This paper synthesised existing veterinary ethics literature with the local experience of the author. The first three challenges are similar to those outlined by Rollin (Rollin, 2012), but the fourth depicts a conflict between professional responsibilities and personal role that brings the consequences of ethical decisions into stark relief.

A survey of 782 Korean veterinarians identified a number of ECS, including:

- conflict between public health and profit for livestock producers
- conflict between animal welfare and profit for livestock producers or companion animal clients
- inappropriate use of antimicrobials
- neglect of sick animals
- violations in sanitation (animal products)
- inappropriate discounting of veterinary service fees
- failure to refer a case in order to secure profit
- unfair criticism

- overtreatment
- negligence in pain management (Chun et al., 2019).

It is not clear from this paper which (if any) of the above ECS were suggested by the authors, and which were offered spontaneously by respondents. However, these ECS align with the ECS identified in Chapter 3. In Chapter 5, we explored the types of ECS encountered by veterinary team members during the early months of the COVID-19 pandemic. In order to assist veterinary team members in navigating these challenges, we explored a subset of pandemic-associated ECS in papers included in Chapter 7.

2.6 Frequency of ethically challenging situations

Since 2012, a number of scholars have attempted to document the frequency of ECS encountered in veterinary settings, particularly by veterinarians, largely because of concerns that ECS are a key stressor. It is important to understand the frequency or prevalence of ECS to appreciate the impact of ECS on veterinary team members, and to justify investment in equipping veterinary teams with training and resources to manage ECS. The authors are not aware of any current surveillance systems in veterinary medicine, or in medicine more broadly, for detecting the incidence of ECS and moral distress. Studies that report the frequency of ECS encountered by veterinary team members are summarised in Table 3.

Table 3. Frequency of ECS encountered by veterinary team members

Author	Number of respondents	Region	Gender	Roles	Years in practice	Frequency of ethically challenging situations
(Batchelor and McKeegan, 2012)	N = 58	UK	Female: 74% Male: 26%	Veterinarian	1-25	Never: not reported 1-2x/week: 57% 3-5x/week: 34% 6-10x/week: not reported >10x/week: 3%
(Kipperman et al., 2018)	N = 484	USA	Female: 80% Male: 20%	Veterinarian (small animal)	0-53 (median 20)	>1x/daily: 13% 1x/daily: 6% A few x/weekly: 26% 1x/weekly: 8% >1x/month: 24% 1x/month: 6% A few x/year: 14% 1x/year: 2% <1x year: 1% Never: <1%
(Moses et al., 2018)	N = 889	USA, Canada	Not reported	Veterinarian	1–5 years 19%; 5–10 years 24%; Over 10 years 58%	Never: <1%-23% Rarely: 14-64% Sometimes: 27-39% Often: 2-32% Always: <1-1%
(Lehnus et al., 2019)	N = 183	Global	Female: 74% Male: 26%	Veterinary anaesthesia specialists, residents, post-residency/pre-	Not reported	Median of 1 ethically challenging situation per week (range 0-15).

				board examination veterinary candidates, nurses or technicians		
(Chun et al., 2019)	N = 782	South Korea	Not reported	Veterinarian	Not reported	Two-thirds of respondents experienced an ethical dilemma at least once per month.
(Dürnberger, 2020b)	N = 123	Germany	Female: 51% Male: 49%	Veterinarian (farm)	Median: 16.4	Never: <1% Rarely: 12% Sometimes: 40% Often: 41% Constantly: 6%

The above studies suggest that ECS are commonly encountered by veterinary team members. However, only one of the above studies includes non-veterinarian veterinary team members, and thus these surveys may not reflect the true frequency of ECS encountered by veterinary team members. These surveys assume that respondents had the ethical sensitivity to identify ECS. They also assume that the options presented would be considered ECS by respondents. Batchelor and McKeegan noted that 'veterinary surgeons differ in their ethical views and some will oppose actions that others will happily carry out' (Batchelor and McKeegan, 2012). In a Canadian study, some veterinarians were not conflicted about convenience euthanasia as they saw this as performing a service to clients (Rathwell-Deault et al., 2017). Respondents were generally limited to endorsing the ECS provided, which may not have described all or any of the ECS they encountered in their work. The frequency of types of ECS varied. For example, financial limitations imposed by the client occurred with high frequency (Batchelor and McKeegan, 2012, Crane et al., 2015, Kipperman et al., 2018), while suspected patient or pet abuse was less frequent (Crane et al., 2015).

2.7 Impact of ethically challenging situations on veterinary team members

2.7.1 Ethically challenging situations as one of a number of stressors faced by veterinary team members

Veterinary team members face a number of stressors, a subject of increasing concern given high rates of career attrition and mental health associated morbidity and mortality. The potential negative impact of ECS has become a topic of concern in the context of growing concerns about the wellbeing of veterinary team members. Kipperman and colleagues found that 9% of respondents said that ECS were the leading cause of work-related stress, while 42% said ECS were 'one of many equal causes of work related stress' (Kipperman et al., 2018).

There is an expanding body of literature documenting increased risks of burnout, psychological distress, secondary traumatic stress, suicidal ideation and suicide among veterinarians, veterinary nurses and animal health technicians (Bartram and Baldwin, 2008, Bartram and Baldwin, 2010, Crane et al., 2015, Milner et al., 2015, Platt et al., 2012, Platt et al., 2010, Wallace, 2017, Wallace, 2014a, Polachek and Wallace, 2018, Black et al., 2011, Deacon and Brough, 2017, Gardner and Hini,

2006, Hansez et al., 2008, Hatch et al., 2011, Lloyd and Champion, 2017, Scotney et al., 2015, Kogan et al., 2020, Rivera et al., 2021, Best et al., 2020, Moir and Van den Brink, 2020, Tomasi et al., 2019, Witte et al., 2019, Perret et al., 2020a, Dalum et al., 2022, Schwerdtfeger et al., 2020, Thompson-Hughes, 2019, Cohen, 2007, Nett et al., 2015).

Concerningly, veterinarians appeared to be twice as likely as other health care professionals and up to three to four times as likely as the general population to die from suicide (Bartram and Baldwin, 2010, Platt et al., 2010, Milner et al., 2015).

There is comparatively limited research on occupational stress in veterinary nurses and animal health technicians. However, reports about the increased incidence of suicide in veterinarians are concerning as nurses are exposed to similar occupational stressors (Lloyd and Champion, 2017). A study of suicides among veterinarians and veterinary nurses in Australia found that the suicide mortality rate of veterinary nurses was above that of the general population, although the difference was not statistically significant (Milner et al., 2015). In a survey of veterinarians and animal health technicians in Alberta, Canada, 21% of veterinarians and 18% of animal health technicians reported having suicidal thoughts in the past 12 months (Wallace, 2014a).

If not equipped to cope with stressors, or if stressors exceed an individual's capacity to cope, they can impact patient care. For example, veterinarian stress, illness and fatigue have all been identified as causes of error in veterinary settings (Oxtoby et al., 2015). The link between the mental health of veterinary team members and client satisfaction is unclear. In a Canadian study, 60 veterinarians completed a survey incorporating psychometric scales to measure resilience, perceived stress, anxiety, depression, emotional distress, emotional exhaustion, depersonalisation, personal accomplishment, burnout, secondary traumatic stress and compassion satisfaction (Perret et al., 2020b). In addition, 995 companion animal owning clients seen by these veterinarians were recruited over a two to three day period to complete a post appointment survey, including a client satisfaction questionnaire. The study revealed non-linear, complex associations between client satisfaction and veterinarian mental health. For example, in several models, higher client satisfaction was associated with poor veterinarian mental health, while lower client satisfaction was associated with mental health scores indicating wellness. Further studies are required to elucidate

the impact of veterinary team member mental health on patient care and the client experience.

The mental health of veterinary team members, particularly veterinary nurses and animal health technicians was negatively impacted by the COVID-19 pandemic (Mair et al., 2021, Mair and Lockett, 2021). For example, in a US study of veterinarians (n = 2,495) and non-veterinarian veterinary team members (n = 448), 81% of non-veterinarians and 67% of veterinarians reported that their practice was short-staffed at times, while 51% of non-veterinarians and 46% of veterinarians worked longer hours than usual (Burns, 2022). Additionally, 63% of non-veterinarians and 61% of veterinarians reported that their work increased their exposure to COVID-19. Non-veterinarians had higher levels of psychological distress (18.1% compared with 9.7% of veterinarians), while half had high levels of burnout compared to 31% of veterinarians. These findings must be interpreted cautiously, as they have not been subject to peer review. Additionally, non-veterinarian team members in this study were recruited via veterinarian respondents directly sharing the link, which may have biased selection.

2.7.2 Moral stress, moral distress and moral injury

Unlike other forms of occupational stress, ECS can give rise to particular types of psychological distress – moral stress, moral distress or even moral injury. The term ‘moral stress’ was first introduced into the veterinary literature in the mid-1980s to refer to psychological states associated with ECS, specifically with regard to humane killing of healthy animals, particularly in animal shelters. Rollin argued that moral stress

...is encountered by those whose jobs require that they kill animals for reasons other than the alleviation of intractable pain and suffering; i.e. for reasons that are not to the direct benefit of the animal... (Rollin, 1986) (p118).

He argued that moral stress ‘arises from a sense of discord and tension between what one is in fact doing and one’s reason for choosing that field, between what one feels one ought to be and what one feels oneself to be, between ideal and reality,’ (Rollin, 1986) p119, a tension later dubbed the caring-killing paradox (Reeve et al., 2005).

Unlike other forms of stress, which may be alleviated through management of symptoms and supportive care, the primary goal of managing moral distress is to address factors leading to the ECS that cause the distress (Dacar et al., 2019). For example, to address moral distress of those humanely destroying healthy animals, shelters had to consider strategies to reduce killing rates, including changing admission policies, investing in spay/neuter programs, educating the community about preventing companion animal overpopulation, and reviewing the role of shelters in facilitating the companion animal surplus. Open discussion about the harms of moral stress – alongside concerns about animal welfare – were significant drivers in the change of animal shelter management.

The terms 'moral stress' and 'moral distress' have been used somewhat interchangeably in the veterinary literature to refer to the psychological distress emerging from ECS. However, it may be helpful to consider these on a continuum of severity (Table 4), with moral stress representing the transient stress arising from experiencing an ECS (Arbe Montoya et al., 2019). If not resolved in alignment with one's values, ECS can lead to moral transgression. There are two broad categories of moral transgression: doing or failing to do things (acts of commission and omission), or being exposed directly or indirectly to the transgressions of others (Litz and Kerig, 2019). The former may be associated with emotions such as guilt and shame, while the latter is more likely to be associated with emotions like anger and resentment. Exposure to a moral transgression is a necessary but not sufficient condition for moral harm (Litz and Kerig, 2019). That is, different people may be exposed to the same potentially morally injurious event (PMIE), and while some may experience moral distress or even moral injury, others may not.

Table 4: Comparison of features of moral stress, moral distress and moral injury (adapted from (Litz and Kerig, 2019), (Crane et al., 2013) and (Arbe Montoya et al., 2019)).

	Moral stress	Moral distress	Moral injury
Description	Stress arising from exposure to ECS	‘The experience of psychological distress that results from engaging in, or failing to prevent, decisions or behaviours that transgress, or come to transgress, personally held moral or ethical beliefs’ (Crane et al., 2013). OR Occurs when there is 1) the experience of a moral event and 2) the experience of a psychological distress and 3) a direct causal relationship between 1 and 2.	The experience of psychological distress resulting from perpetuating, failing to prevent, bearing witness to or learning about acts that transgress deeply held or fundamental moral beliefs and expectations (Litz and Kerig, 2019).
Relative frequency	Often	Sometimes	Rare
Relative prevalence	High	Moderate	Low
Impact on individual (i.e. degree of psychological, social, spiritual impairment)	Little to moderate (no lasting harm)	Moderate to considerable	Extreme (strong magnitude of impact, threat to identity, collateral impact, chronic or persistent problems).

Potentially minor ethical challenges could have a cumulative impact on veterinary team members (Richards et al., 2020). In a qualitative study of small animal veterinarians,

participants described feeling anxious and personally stressed when they felt forced to act against their moral ideals or judgement – such as saving the life of an unowned animal with a ‘very treatable’ condition (Richards et al., 2020).

Moral conflict and resulting moral distress were one reason cited by veterinarians for leaving the profession (Arbe Montoya et al., 2021), as is the case in human

healthcare (Naboureh et al., 2020, Sajjadi et al., 2017, Sheppard et al., 2022). Meijboom argued that some farm animal veterinarians, overwhelmed with the range of stakeholders they must consider, leave practice or shift care to small companion animals (Meijboom, 2018). A qualitative analysis of veterinarians working in farm animal practice (n = 187) and those who had given up farm work (n = 141) reported that ethical discomfort with different welfare norms for farm animals and companion animals was reported by at least one respondent who subsequently left farm animal practice (Adam et al., 2019). Ethical discomfort was a push factor for veterinarians leaving clinical practice for laboratory animal practice (Anderson and Hobson-West, 2022). Narrative analysis of semi-structured interviews with veterinarians (n = 10) and veterinary nurses (n = 10) in the UK found ethical or moral mismatch between self and organisation were a source of negative emotions, while ethical alignment with the organisation yielded validation and enrichment (Page-Jones and Abbey, 2015).

It has been argued that burnout – an occupational phenomenon characterised by energy depletion or exhaustion, increased mental detachment from one's job, feelings of negativity or cynicism related to one's job and a sense of inefficacy and lack of accomplishment (Maslach and Leiter, 2017) – has been used to describe what is, in fact, moral injury (Dean et al., 2019). According to Dean and Talbot,

Moral injury occurs when we perpetrate, bear witness to, or fail to prevent an act that transgresses our deeply held moral beliefs. In the health care context, that deeply held moral belief is the oath each of us took when embarking on our paths as health care providers: Put the needs of patients first.

That oath is the lynchpin of our working lives and our guiding principle when searching for the right course of action. But as clinicians, we are increasingly forced to consider the demands of other stakeholders – the electronic medical record (EMR), the insurers, the hospital, the health care system, even our own financial security – before the needs of our patients. Every time we are forced to make a decision that contravenes our patients' best interests, we feel a sting of moral injustice. Over time, these repetitive insults amass into moral injury (Dean et al., 2019).

Dean and Talbot argue that the distinction is critical, as burnout suggests that the problem resides with the individual, who may not be 'resilient enough' to cope. Solutions are then focused on the individual – psychological first aid, stress management, mindfulness, wellness – without necessarily addressing systemic factors such as workplace culture. However, the term moral injury describes the challenge of knowing what to do, but being unable to act in alignment with one's values due to constraints beyond one's control (Dean et al., 2019). Rather than 'fixing' a broken individual, moral injury points to a need to change the workplace: 'Moral injury locates the source of distress in a broken system, not a broken individual' (Dean et al., 2019).

In discussing the impact of moral distress then, it is important to consider the incidence of burnout among veterinary team members. According to Maslach, burnout reflects mismatches of people with their work settings in one or more of six areas of work life: workload, control, reward, community, fairness and values (Maslach and Leiter, 2017). Thus a mismatch between an individual's values and sense of fairness, and their workplace can lead to burnout. Veterinarian burnout scores were nearly 40% higher than physician burnout scores (mean score 3.10 vs 2.24 respectively) (n = 2,874) (Volk et al., 2020). Both values were higher than the mean score for other employed adults (2.00). Furthermore, the difference between physicians and veterinarians was not a function of hours worked – overall, 41.8% of physicians worked 60 hours or more per week, compared with 19.6% of veterinarians, whereas only 6.4% of other employed adults worked these hours. In this study, factors most strongly associated with burnout scores were lack of work-life balance, not enjoying work, not finding work invigorating, and having personal conflict with one or more colleagues. Moral distress was not measured in this study.

The concept of burnout also overlaps with that of compassion fatigue. This is a state of physical and psychological distress in caregivers that results from ongoing and cumulative exposure to meeting the demands of high-needs individuals (Sweileh, 2020, Mathieu and McLean, 2014). Moses and colleagues found that 26% of veterinarians reported that their compassion for or ability to empathise with patients had waned over time, although this increased to 58.6% when respondents who answered 'sometimes' were taken into account (Moses et al., 2018). Similarly, 31.3%

of respondents reported that their compassion for clients had waned over time, increasing to 74.5% when respondents who answered 'sometimes' were taken into account. However, it is difficult to determine the degree to which ECS was responsible for such a change, as respondents weren't asked specifically about this. It did appear that ECSs were a trigger for seeking professional help. In cases where the veterinarian felt that they could not do the 'right thing', 11.7% sought professional help, while 9.6% sought professional help in cases where they felt conflicted or upset because a pet owner refused to do what the veterinarian thought was in the best interests of the patient (Moses et al., 2018).

Moral stress does not inevitably lead to moral distress or moral injury. Where veterinary team members manage ECS in a way that yields an outcome aligned with their values, or leads to personal growth, they may experience moral comfort – the feeling of satisfaction derived from resolving an ECS (Arbe Montoya et al., 2019). Moral competency – the ability to identify and manage ECS – has been reported to increase the likelihood of experiencing moral comfort in medical nurses (Corley, 2002).

2.7.3 Impact of ethical challenges on professional identity

The professional identity of an individual veterinary team member is a complex construct of their personal ethics as well as their professional priorities and values (Armitage-Chan and May, 2018). Acting in alignment with one's personal priorities and values leads to a positive sense of wellbeing and satisfaction (Page-Jones and Abbey, 2015), whereas being unable to act in alignment with these priorities and values leads to 'identity dissonance' (Armitage-Chan and May, 2018). This is described as a sense of unease, dissatisfaction with the outcome and a perception of a lack of control over one's actions. Moral distress can be experienced as a violation of professional integrity, leading to feelings of belittlement, impotence and isolation (Arbe Montoya et al., 2019). When moral integrity is threatened, so are personal and professional identity (Kelly, 1998). In medical nursing, moral distress has been described as 'an acute form of psychological disorientation in which [nurses] questioned their professional knowledge, what kind of nurses they were and what kind of nurses they were becoming' (Kelly, 1998). Without a clear sense of identity and of one's values and priorities, it is harder to determine the appropriate

course of action in the context of an ECS (Armitage-Chan and May, 2018), and this may exacerbate the problem.

2.7.4 Risk factors for experiencing ethically challenging situations, or experiencing higher stress from ethically challenging situations

In providing resources and targeting interventions, it may be useful to understand the risk factors for experiencing ECS more frequently or experiencing greater levels of moral distress. The most common potential risk factors explored among veterinarians are gender, age and years of experience. Batchelor and McKeegan found no association between stress ratings and years in practice, but did report that – while not statistically significant – the median stress rating associated with ‘convenience euthanasia of a healthy animal’ was higher for recently (one to two years) graduated veterinarians than those with over two years’ experience (Batchelor and McKeegan, 2012). Female veterinarians reported greater stress than males in association with ‘convenience euthanasia of a healthy animal’, and ‘client wishing to continue treatment despite compromised animal welfare/quality of life’.

Kipperman found that less experienced veterinarians, primary accession veterinarians and associates were more likely to report experiencing ECS than experienced veterinarians, referral veterinarians and practice owners (Kipperman et al., 2018). Female veterinarians (21.4%) were more than twice as likely as male (9.3%) to report experiencing ECS at least once per day, and three times more likely to report ECS as a leading cause of stress. However, the authors argue that this marked difference was likely explained by a lower rate of practice ownership, fewer years of work experienced and a lower probability of working as a referral veterinarian in the female cohort. Indeed, a study of mental wellbeing of veterinarians in the Netherlands (n = 1,760) found a higher percentage of burnout in female veterinarians (18%, versus 16% for males), but this difference disappeared when corrected for being employed or owning a practice (Mastenbroek, 2017). The authors suggest that this may be because practice owners have better access to job resources than employees, and thus apparent gender differences in the mental health of veterinarians is due to the unequal gender distribution of practice ownership. It may be that, at least in relation to ECS, practice owners have greater decision-making autonomy.

In a study of 782 Korean veterinarians, females reported facing ECS more frequently (2.2 times per month for female veterinarians vs 1.9 times per month for males) (Chun et al., 2019). One third of respondents reported that ethical decision making was strongly or very strongly stressful, with veterinarians under the age of 40 and those working exclusively in small animal practice reporting higher levels of stress associated with ECS. High levels of stress associated with ECS were negatively correlated with job satisfaction in relation to salary, working environment, social recognition and contribution to society.

Workload, occupational stressors and personality may moderate the frequency and stressfulness of ECS, and influence the development of moral distress (Arbe Montoya et al., 2019). Crane and colleagues found that working greater than average hours (41.4 hours, SD 14.9) per week was associated with more perceived stress in response to ECS, but greater number of years since graduation was associated with lower stress (Crane et al., 2015). Veterinarians demonstrating high trait perfectionism were more likely to feel stressed in relation to an ECS, and trait perfectionism accounted for 16% of the variation in stress among respondents. Perfectionism is a personality attribute known to influence how individuals feel about stressful events, particularly by applying rigid standards to themselves and others (Crane et al., 2015). This study found that the experience of ECS resulted in increased levels of stress only in veterinarians with high trait perfectionism, suggesting that high perfectionism creates vulnerability to moral stressors (Crane et al., 2015). Perfectionist traits have been identified in veterinarians, particularly those who are 'achievement oriented' (O'Connor, 2019). Interviews with new-graduate medical nurses (n = 22) found that many identified themselves as 'perfectionists', and struggled to live up to their own expectations (Kelly, 1998). Crane and colleagues speculated that perfectionists may rigidly adhere to what they consider to be the 'right' thing to do, with alternative approaches being considered unacceptable and thus a source of moral distress (Crane et al., 2015). They concluded that modifying individual expectations of moral perfectionism and challenging perfectionistic ideals are likely to be more achievable than addressing ECS in the veterinary workplace.

Narrative inquiry based on a Facebook discussion group including twelve recent veterinary graduates in the UK identified two variants of veterinary professional

identity: an academic, diagnostic-focused identity, prioritising definitive diagnosis and gold-standard treatment, and a challenge-focused identity, prioritising engaging with the client, challenging environment or veterinary business (Armitage-Chan and May, 2018). Diagnostic-focused veterinary professionals were most likely to see challenges related to their role, including ECS (for example, a client with financial limitations), as impediments to the potential for what they perceived to be a high standard of veterinary care. In contrast, challenge-focused veterinary professionals engaged with broader challenges, including ECS. It is possible that diagnostic-focused veterinary professionals are higher in trait perfectionism, although further studies are required to confirm this.

There is scant literature on the frequency and stressfulness of ECS for non-veterinarian veterinary team members. Moses and colleagues (2018) asked some veterinarians to report the degree of distress of non-veterinary staff in relation to ethical conflict. Veterinarians reported moderate to severe distress arising from ethical conflict, both for themselves and for their staff. For example, in relation to cases in which veterinarians reported they could not do the 'right thing', 78% reported that it caused them moderate to severe distress personally, and 73% reported that it caused their staff moderate to severe distress (Moses et al., 2018). Veterinarians reported that when they received what they considered to be an inappropriate request for euthanasia, 63.3% reported that their staff experienced moderate to severe distress. Although the impact on non-veterinary staff was not measured, 32.3% of veterinarians reported sometimes having disagreements with non-veterinarian staff about how best to proceed with a clinical case, while 2.8% of veterinarians reported that such disagreements occurred often. The limitation of this study was that it reported the veterinarian's perception of the feelings of non-veterinarian staff, so there was the possibility of over or under-estimation of distress experienced by non-veterinarian staff.

In a study investigating occupational stress in animal health technicians in clinical practice, conflict with veterinarians, which included but was not limited to moral and ethical conflict, was the third most prominent cause of occupational stress, after workload and dealing with the death and dying of patients (Foster and Maples, 2014). The authors did not elaborate on the types of moral and ethical conflict encountered.

While it did not address ECS specifically, a survey of 537 veterinarians and 453 animal health technicians in Alberta, Canada, found that conflict between the interests of the client and the interests of the patient was a regular source of stress. It was reported as being experienced often or most of the time by approximately 23% of veterinarians and 17% of animal health technicians (Wallace, 2014a). Approximately 50% of respondents found clients' financial situation a barrier to providing the best care for patients. Dealing with clients who were unable or unwilling to pay for appropriate treatment for animals, and clients with unrealistic expectations, were among occupational stressors which may lead to compassion fatigue (Polachek and Wallace, 2018).

Examples of stress related to ECS are embedded in literature aimed at veterinary technicians. For example, in an article on pain management, the author states that 'veterinary technicians often complain that their requests for patient analgesia go unheeded' (Shaffran, 2008). In an article on compassion fatigue, the author discusses how technicians have a lack of control over decision making, and 'must do what the veterinarian wants, when the veterinarian wants it' – even if they disagree (Cohen, 2007).

A review of the literature suggests that the experience of similar ECS may be very different in veterinarians compared with veterinary nurses. For example, in one paper discussing the role of the veterinary nurse in humane killing of healthy but aggressive animals, the author (a registered veterinary nurse) notes that veterinary surgeons have the choice to refuse to perform euthanasia. Veterinary nurses may disagree with the reasons for performing euthanasia, but refusal to assist may be a breach of duty of care to the animal. The author concludes that the veterinary nurse must feel confident in respectfully voicing any concerns, but ultimately support both the owner and veterinarian (Almond, 2017). Non-veterinarian team members may not have access to support structures or resources that veterinarians do. Veterinarians reported more supportive workplaces than did animal health technicians, and animal health technicians reported more frequent workplace conflict than did veterinarians (Wallace, 2014b).

The above studies are correlational, and causal direction of significant relationships may be interpreted differently. For example, ECS may lead to psychological distress,

but it is also possible that psychological distress sensitises veterinary team members to perceiving a situation as an ECS. Nonetheless, there is scope to explore risk factors for encountering ECS, and experiencing moral distress, among veterinary team members. The COVID-19 pandemic provided an opportunity to explore potential risk factors for experiencing an increase in ECS during a transboundary megacrisis. These findings are presented in Chapter 6.

2.8 What can be done to address moral distress among veterinary team members?

The primary goal in addressing moral distress is to address the moral or ethical issues leading to moral distress (Dacar et al., 2019). The abilities to identify ECS, engage in ethical debate and apply ethical principles or frameworks, are key day-one competencies identified by the WOA (OIE, 2012), the Royal College of Veterinary Surgeons (RCVS) (UK) (Royal College of Veterinary Surgeons, 2022), the European Association of Establishments for Veterinary Education (EAEVE) (Europe) (European Association for Establishments of Veterinary Education, 2019) and the North American Veterinary Medical Education Consortium (NAVMEC) (North American Veterinary Medical Education Consortium, 2011). Many scholars have called for improvements in the training of prospective veterinary team members to improve moral reasoning and better equip them to manage ECS (Batchelor and McKeegan, 2012, Kipperman et al., 2018, Moses et al., 2018, Brscic et al., 2021).

2.8.1 Are veterinary team members prepared for ethically challenging situations?

Veterinary team members, in particular veterinarians, generally do not perceive they have enough training in ethics. In the UK study, (n = 58), 78% of respondents reported that they felt they were not given enough ethics tuition during their training (Batchelor and McKeegan, 2012). In a study of 782 Korean veterinarians, only 18.8% had undergone ethics training, and 77.7% felt strongly or very strongly that there was a need for continuing education in veterinary ethics (Chun et al., 2019).

Training does not necessarily improve ethical or moral competence. In a study assessing the frequency, character and impact of ethically challenging situations encountered by US veterinarians (n = 484), 51% of respondents reported receiving training on approaching ECS in their veterinary curriculum (Kipperman et al., 2018). Of these, 39% agreed that they felt better prepared to address ECS, while 39% were

neutral and 23% reported that training did not prepare them to address ECS. When asked which interventions they believed would help reduce moral stress associated with ECS, 83.9% of respondents stated that training and tools for coping with ECS within veterinary curricula would be 'effective' or 'very effective' in doing so. The same proportion of respondents indicating that greater awareness within the profession of moral stress and burnout would be 'effective' or 'very effective' (Kipperman et al., 2018). Other interventions that respondents thought may be very effective or effective in reducing moral stress included:

- increased access to counselling and support services (77.8% of respondents)
- greater awareness of the costs of veterinary care among companion animal owners (74.9%)
- greater acceptance within the profession that it is ethical to decline select euthanasia requests (66.2%)
- greater acceptance within the profession that veterinarians are constrained by the wishes of the pet owner (57.7%)
- more explicit ethical guidelines from state and national veterinary organisations (53.9%).

However, neither of the above studies asked respondents to report how much, if any, formal ethics tuition they received. For example, Batchelor and McKeegan asked 'Do you feel you received adequate training in ethics during your veterinary education? Circle Yes/No' (original emphasis) (McKeegan, Pers Comms, 2018). Nor were they asked how ethics training was delivered – a variable that has been shown to influence development of moral reasoning (Verrinder and Phillips, 2015, Rest, 1994).

Moses and colleagues asked respondents how many hours of 'instruction or training about resolving differences of opinion about what is best care for patients' they received in their veterinary training (Moses et al., 2018). Most (70.7%) reported receiving none, 22.7% reported receiving between one and five hours, and 6.5% reported receiving more than five hours. However, as respondents were not asked specifically whether they had had training in resolving ECS or dealing with moral stress or distress, it is difficult to interpret this result. For example, a respondent may have undertaken an ethics course as a student, but if the focus was not on resolving differences of opinion about what is best care for patients, they may have responded

zero. Increased quantity or improved quality of ethics teaching may increase the strategies and resources available to veterinary team members for managing ECS.

2.8.2 The moral reasoning of veterinary team members

Studies investigating the moral reasoning of veterinarians and veterinary students reveal that there is marked scope for improvement. In-depth interviews of companion animal veterinarians regarding ethical decision making revealed that most relied on 'gut feeling' or moral intuition, as opposed to ethical frameworks, to manage ECS (Richards et al., 2020).

Ethics is taught to veterinary students to develop ethical awareness and knowledge, to develop individual and professional qualities, and to develop ethical skills including moral reasoning (Magalhaes-Sant'Ana et al., 2014). Moral reasoning, or moral judgement, is defined as:

a psychological construct that characterises the process by which people determine that one course of action in a particular situation is morally right and another course of action is wrong. Moral judgement involves defining what the moral issues are, how conflicts among parties are to be settled, and the rationale for deciding on a course of action (Rest et al., 1997).

A study comparing the moral reasoning abilities of practising veterinarians (n = 38), academic veterinarians (n = 27) and members of the general public in the UK (n = 33) found a large variation in the moral reasoning abilities of practising veterinarians (Batchelor et al., 2015). Investigators used the most common measure of moral reasoning, the latest Defining Issues Test (DIT-2), to classify respondents' moral reasoning according to Kohlberg's six-stage theory of cognitive moral development. This theory employs three schemas to classify moral reasoning:

- 1) Personal interest (PI)
- 2) Maintaining norms (MN)
- 3) Postconventional, or Universal Principles (UP).

The DIT is a scenario-based, multiple-choice test that enables respondents to select between different justifications for their ethical decision-making. Using this measure, practising veterinarians were found to be no better in their moral reasoning than members of the public, and were more likely to revert to a simplistic form of moral

reasoning (PI). A limitation of this study is that the DIT is based on human ethics issues (for example, whether to steal food during a famine) (Center for the Study of Ethical Development, 2017), and does not employ examples that would be expected to occur in a veterinary setting. Nonetheless, the study raised concerns that the moral reasoning skills of qualified veterinarians may be insufficient to meet the ethical challenges they encounter in their work. This may have negative animal welfare implications if veterinarians are unable to recognise or advocate for actions that are in their patients' interests (Batchelor et al., 2015).

A systemic review of 172 DIT studies of US college students found that higher education was associated with increased levels of UP reasoning, beyond development attributable to age (King and Mayhew, 2002). However, in a study of 98 veterinary medical students given the DIT in the first and fourth year of their studies, there was no significant improvement in moral reasoning as students progressed through the degree, despite exposure to a veterinary medical ethics course including multiple small group scenario-based discussions (Self et al., 1996). Because moral reasoning is expected to increase with age, the authors concluded that veterinary medical education actually inhibited moral development.

Verrinder and Phillips developed the Veterinary Defining Issues Test (VetDIT) to identify the capacity of veterinarians and others to make ethical decisions in relation to animals (Verrinder and Phillips, 2014b, Verrinder et al., 2016). The VetDIT incorporates six ethically challenging scenarios – three of the five human ethics scenarios from the DIT-2, and three animal ethics scenarios. The human scenarios involve decisions around stealing during a famine, reporting the criminal history of a political candidate, and cancelling a school meeting because of a history of violence at previous meetings. The animal scenarios involve a request for euthanasia of a healthy dog, the question of whether to report a pig farmer with poor husbandry, and a request for professional advice about the breeding of congenitally blind hens for intensive agriculture.

When compared with data from US students, Australian veterinary students had similar levels of moral reasoning for human ethics issues, with the majority exhibiting PI or MN level moral reasoning. Interestingly, they exhibited higher UP, similar MN and lower PI level moral reasoning when it came to animal ethics scenarios when

compared to human ethics scenarios (Verrinder and Phillips, 2014a). This suggested that they may be better at navigating animal ethics scenarios. However, a later study using a refined VetDIT-2 found that UP reasoning with regard to animal ethics scenarios was not unique to veterinary students. Other groups of tertiary students including students in veterinary technology, animal science, arts and medical degree programs also demonstrated higher UP levels of moral reasoning in relation to animal ethics issues than human ethics issues (Verrinder et al., 2016). There was no improvement in veterinary students' moral reasoning regarding human or animal ethics scenarios when first and third year cohorts were compared, suggesting that students' moral reasoning did not progress during the degree program (Verrinder and Phillips, 2015). These findings suggest the need to develop curricula that improve the moral competency of veterinary students.

Validation of the VetDIT continues, however, it is sensitive to interventions designed to improve moral reasoning (such as attending a workshop on moral development theory) and is able to differentiate groups that would be expected to have greater moral reasoning (for example, students holding a previous tertiary qualification) (Verrinder and Phillips, 2015). This study also suggested that participatory workshops may be more effective at improving moral reasoning than didactic lectures. However, as the VetDIT-3 was administered immediately after this intervention, it is not clear whether the benefits were sustained.

One of the major challenges in determining the impact of ethics teaching on the moral reasoning of professionals is the difficulty in discerning the causes of changes in ethical attitudes and behaviours. For example, some of these changes may result specifically from ethics teaching while other changes may arise from other aspects of the program (Wartman and Brock, 1989) (p774). In addition it is difficult to demonstrate longitudinal causal connections for any education intervention (Arce and Gentile, 2015) due to ethical challenges concerning allocating students to a control group, and the need for long-term follow-up following graduation. There is no evidence that ethics teaching improves moral reasoning or ethical decision-making, or even whether it affects levels of moral stress. However, almost three decades ago, Haffery and Franks argued that this should not preclude ethics teaching: 'there has been no proven correlation between the teaching of other basic science courses

and clinical competence and therefore ethics should not be singled out' (Hafferty and Franks, 1994) (p864).

Teaching in veterinary ethics tends to be focused on application of ethical frameworks, for example, utilitarianism (a branch of consequentialism) or deontology (Rollin, 2012). But these frameworks have their own limitations. For example, utilitarian approaches tend not to take into account broader concerns, or stakeholders such as the environment. Rights approaches do not readily accommodate animal welfare (Hernandez et al., 2022).

We did not find published studies explicitly examining the moral reasoning of animal health technicians or veterinary nurses. It is possible that this apparent gap reflects the assumption that AHTs and VNs work entirely under the direction of veterinarians. Nonetheless, this is somewhat surprising given that the literature on moral distress originated in the human nursing field (Jameton, 1984).

Ethics is not uniformly taught in veterinary schools. A survey of veterinary curricula of the AVMA Council on Education-accredited veterinary colleges and schools found that just 18 out of 30 offered a formal course with the term 'ethics' in the title, as did five out of seven responding international institutions (Shivley et al., 2016). A 2010 review of veterinary school websites and published literature found evidence of ethics courses being part of the compulsory veterinary curriculum in 55 of 99 European veterinary faculties (Magalhaes-Sant'Ana et al., 2010). It is possible that ethics teaching is integrated into other subjects and, depending on the data collection system, may therefore not be evident in such reviews. A subsequent survey of veterinary undergraduate curricula in Europe documented improvement in the teaching of animal welfare science ethics and law overall from 2013 to 2020, yet 37% of institutions still only partially met, or did not meet, day-one ethics competencies (De Bryne et al., 2020). This finding indicates scope for further improvement, and underscores the need for opportunities to develop ethics competencies after graduation. In Korea, at least until 2018, veterinary ethics was taught at only four of the 10 veterinary schools. There are no reviews of ethics teaching of veterinary nurses or animal health technicians.

2.8.3 Should ethics be taught as a standalone subject?

The debate as to whether ethics should be taught as a stand-alone subject, or integrated into other subjects, continues across professions (Gentile, 2017). However, it has been argued that this debate overlooks the reality that ethics education is continuous: 'Students and lecturers imbibe ethics through the architecture and aesthetic of the spaces where they study and teach and through systems of examination and assessment they are caught up in' (McPhail, 2001) (p291).

Explicit ethical teaching may be mitigated or undermined by the hidden curriculum. Hafferty and Franks argued that the hidden curriculum is more powerful in influencing students' ethical education than the formal curriculum:

Even the development of an exquisite, multi-disciplinary, four-year formal ethics curriculum staffed by the best role models that dollars and commitment can ensure, will afford students little more than a temporary haven in what amounts to a stormy ethical sea (Hafferty and Franks, 1994).

For veterinary students, the hidden curriculum may reduce sensitivity to animal welfare issues (Paul and Podberscek, 2000) or reduce empathic responses (Verrinder and Phillips, 2015), both of which may yield negative impacts for animal patients. Therefore, professional ethics teaching must be designed with consideration of the hidden curriculum.

McPhail argued that professional ethics teaching, as described in the medical, legal and engineering literature, promotes three objectives:

1. disruption
2. the development of a broad view of the profession and
3. the development of students' moral sensibility.

Professional ethics education should be disruptive, rather than based on 'the uncritical assimilation of professional codes of conduct' (McPhail, 2001). Students' ethical awareness can be disrupted by stimulating critical scrutiny of their settled ideas and encouraging them to consider the ways in which their routine practices (including routine veterinary care) affect humans and animals, directly and indirectly. McPhail argues that ethics teaching should not be about providing clear solutions to dilemmas, or rules detailing forbidden actions, but rather 'a process whereby

individuals become more consciously involved in the ethical choices that construct their identities.’ (McPhail, 2001).

2.8.4 There is a requirement for ongoing support for veterinary team members dealing with ethically challenging situations

There is a difference between deciding on an ethical course of action and enacting it. In veterinary settings, there are numerous barriers to the successful navigation of ECS. According to Hernandez and colleagues,

...current veterinary decision-making and participation may be hindered by limited training to ethical problem-solving, the constant economic conflict between advocating for improved animal care standards and maintaining client trust and making a living from practice, asynchronous legislative coverage of animal welfare even in the same country, and wide variations in societal concerns for food animal species (Hernandez et al., 2022).

Two key strategies to equip current veterinary team members in managing ECS are ongoing training or CPD, and clinical ethics support services (CESS).

2.8.5 Clinical ethics support services

A review of CESS is presented in Chapter 8. Briefly, CESS are a means of providing organisational support for healthcare or veterinary team members dealing with ECS in their day-to-day work. In Chapter 8, I discuss the development of CESS in human healthcare, and two major types of CESS: ‘top down’ approaches, exemplified by clinical ethics committees, and ‘bottom up’ approaches, exemplified by moral case deliberation (MCD) or ethics rounds (Fournier, 2016).

The adoption of CESS in veterinary settings is in its infancy. There are sporadic reports of both CECs (Rosoff et al., 2018), MCDs (Long et al., 2021) or combinations of these (Springer et al., 2018) utilised in veterinary clinical contexts. While descriptions of veterinary CESS have been published, little is known about the impact of these interventions on veterinary team members, including whether they improve ethical competencies or whether they mitigate moral distress. We evaluated the outcomes of ethics rounds, using an adapted version of the Euro-MCD 2.0, an instrument developed to assess outcomes of MCD in healthcare. This is described in Chapter 8.

2.9 Other strategies that may mitigate moral distress

In addition to training to improve ethical decision-making and CESS, a number of other strategies have been proposed to mitigate moral distress. One suggestion is to develop policies to address common ECS. For example, financial limitations of clients was encountered by 58.2% of Danish veterinarians ($n = 195$) between three and 10 times per month, yet only 9% of practices had a policy on what to do in these cases (Kondrup et al., 2016). Well-developed policies can aid veterinary team members in navigating such challenges and can provide additional 'moral authority'. However, policies imposed by management can be problematic if they conflict with the morals of individual veterinary team members, or diminish their ability to respond to contextual factors and individual circumstances (Kondrup et al., 2016).

Additionally, veterinary team members can contribute to policies and legislation administered by other bodies. For example, Dean and Talbot recommend that healthcare professionals 'understand how policy, regulation, and legislation work, and...find seats at every table where the decisions that impact clinical care are made' (Dean et al., 2019). For veterinary team members in Australia for example, this means active involvement with professional bodies such as the Australian Veterinary Association (AVA) and the Veterinary Nurses Council of Australia (VNCA), regulators including veterinary boards, and all levels of government (local, state and federal).

In human healthcare settings, psychological first aid, critical incident debriefing and professional supervision are used to support team members (Delany et al., 2021). As stressors may modify the ethical deliberation process, mitigation of occupational stressors in general (for example, staffing shortages or overtime) may be beneficial (Arbe Montoya et al., 2019). As human healthcare is increasingly driven by key performance indicators (KPIs), Dean and Talbot argue that clinician satisfaction should be a KPI: 'If we choose to link patient satisfaction with clinician compensation, why not link clinician satisfaction with executive compensation?' (Dean et al., 2019).

They also recommend that clinicians and administrators shadow each other for extended periods, to gain a sense of the challenges that each are managing, and to bring a different perspective to addressing systems-level problems. They stress the

need for recognition of common values and goals to promote community among healthcare team members:

It's time to view each other with the presumption of charity and to have each other's backs. Uniting for support, camaraderie, mentorship, and activism is a necessary step in making change (Dean et al., 2019).

This aligns with the recommendation of Longstaff, who founded The Ethics Centre, that organisations develop a purpose of mission 'that transcends mere survival' (Longstaff, 2020) in the light of which ethical decisions can be evaluated.

Arguably the primary aim of these interventions is not to mitigate moral distress in and of itself, but to explore and address the systems issues disclosed by moral distress (for example, issues that negatively impact the welfare of animals). The development of a scale to measure moral distress in veterinary team members prior to and following interventions is required so that the efficacy of proposed interventions to mitigate moral distress can be evaluated (Arbe Montoya et al., 2019).

Even so, it is important to consider the types of ECS that may lead to moral stress, moral distress and potentially moral injury among veterinary team members. This will be explored in Chapter 3.

2.10 References

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Chapter 3: Types of ethically challenging situations encountered by veterinary professionals

3.1 Background

As a lecturer in veterinary ethics, I have felt that there is a disparity between the ECS discussed in veterinary curricula, in particular, requests to euthanase a healthy animal and suspected abuse of an animal by a client, and what I have experienced as more common ECS. That is, high-stakes decision making in the face of incomplete information, conflict between the interests of animals, owners, and between veterinary team members, particularly employers and employees.

As discussed in Chapter 2, several surveys that aimed to document the type, frequency and stressfulness of ECS faced by veterinary team members, particularly veterinarians, had been undertaken. However, my own experiences led me to believe that the scope of ECS faced by veterinary team members was broader. Using these initial studies to develop a code book, I sought to generate a list of common themes regarding types of ECS depicted in 'hypothetical' ethical vignettes published in the veterinary literature.

3.2 Main article

Quain, A., Ward, M. P. & Mullan, S. (2022). What Would You Do? Types of Ethical Challenging Situations Depicted in Vignettes Published in the Veterinary Literature from 1990 to 2020. *Veterinary Sciences*, 9, 2.

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For supplementary material, see Appendix C.

Article

What Would *You* Do? Types of Ethical Challenging Situations Depicted in Vignettes Published in the Veterinary Literature from 1990 to 2020

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Abstract: Veterinary team members encounter a wide range of ethically challenging situations (ECS) in their work. Inability to resolve ECS in accordance with their values may negatively impact the wellbeing of veterinary team members. We sought to determine the types of ECS described in published ethical vignettes in the veterinary literature. We performed a strategic literature search, followed by a thematic analysis of vignettes published in the veterinary literature from 1990–2020. We identified 567 published vignettes in 544 publications. In the majority of vignettes, the protagonist was a veterinarian (61.6%) and the most common categories of animal involved were dogs (28.0%), livestock in general (10.8%), and cattle (10.6%). The primary type of ECS was coded for each scenario, generating 29 themes. These findings extend knowledge about types of ECS that may be encountered by veterinary team members. These themes can help to inform curricula and better prepare veterinary team members to navigate ECS. They may also highlight factors that contribute to ECS that can be addressed on a broad scale, such as through regulation, continuing professional development, or stakeholder education. Knowing that others may experience similar ECS may help veterinary team members feel part of a moral community.

Keywords: veterinary ethics; animal ethics; professional ethics; ethical dilemma; veterinary education; vignette; veterinarian; animal health technician; veterinary nurse; education



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1. Introduction

Ethically challenging situations (ECS) are encountered frequently in veterinary settings [1–9]. Inability to resolve ECS in alignment with one's values may lead to moral stress, moral distress, or moral injury [10–12]. Concerningly, moral distress and moral injury may negatively impact wellbeing [11], and may be factors in job turnover and career attrition [13]. Understanding the types of ECS encountered or experienced as particularly stressful by veterinary team members may aid ethical reflection and discussion [14], and may help to ensure that curricula adequately prepare prospective veterinary team members for future challenges.

Reflecting on ECS may reveal systemic factors that can be addressed on a broad scale. This may involve changes in legislation or regulation, development of continuing professional development (CPD) or stakeholder education, cultural change, changes in practice and protocols, or other initiatives. For example, surveys of ECS have identified client financial limitations as an ECS commonly encountered by veterinary team members [1–3,9]. This points to a need to improve accessibility of veterinary care [15], to educate animal owners about the costs of veterinary care and the availability of insurance where applicable [16], and to develop sustainable policies for dealing with clients who cannot afford to pay for animal treatment [17]. Developing and implementing these strategies is beyond the capacity of a single, individual veterinary team member. Rather, they require action

of employers of veterinary team members, professional associations, non-government organisations, and corporate and government bodies.

Vignettes or case scenarios are commonly used in medical [18] and veterinary ethics teaching [19]. A vignette is defined as “a brief, evocative description, account or episode” [20]. In the context of research, vignettes may be used to assess the impact of contextual factors impacting decision making, for example on the treatment options that veterinarians offer clients with limited finances [17], or whether they are willing to prescribe antimicrobials to sheep or beef farmers without a prior consultation. By incorporating sociocultural and contextual factors, vignettes facilitate application of ethical reasoning in scenarios reflecting ‘real life’ [18]. A number of textbooks employ vignettes to highlight ethical issues in veterinary contexts, facilitate stakeholder identification, provide different perspectives, and prompt the application of different ethical frameworks [21–24]. Veterinary students in Ireland reported feeling more comfortable discussing someone else’s situation or decision, rather than being required to make an immediate decision about what they might do themselves [19]. After participating in discussions of vignettes, the majority of veterinary students considered themselves better prepared to identify stakeholders and their conflicting interests (79.3%), and find possible solutions to ECS in the future (79.4%). These tutorials also helped students understand the ethical obligations of the veterinary profession (77.8%) and make more informed decisions (80.9%) [19]. Vignettes may also be used to evaluate different ethical approaches [25], assess moral reasoning [26,27] or even inform policy-making [28,29]. Writing brief vignettes on ethics-related themes can also provide a creative outlet, although further research is required to determine whether this helps veterinary team members cope with moral distress [30]. Several veterinary publications, for example, *The Canadian Veterinary Journal* [31] and *In Practice* [32], invite readers to submit vignettes depicting ECS for publication.

We sought to explore published ethical vignettes to gain insight into the types and range of ECS that may be encountered by veterinary team members.

2. Materials and Methods

To identify published vignettes, a strategic search was performed in Web of Science (all databases: CAB Abstracts, Current Contents Connect, BIOSIS Previews, and MEDLINE), PubMed, and Google Scholar, carried out between 14 January 2021 and 7 February 2021. Search terms utilised were: (ethic* OR moral) AND (case OR dilemma OR scenario OR vignette) AND (veterinarian OR veterin* OR veterinary technician OR animal health technician OR AHT OR RVT OR veterinary nurse OR RVN). The search was limited to articles published between 1 January 1990 to 31 December 2020, in English. Vignettes that were not available as full texts via Google were sourced via the University of Sydney library or interlibrary loan. Those that were not available as full texts via these sources, or not in English, were excluded.

Web of Science and PubMed entries were exported or manually entered into Endnote for sorting. Duplicates were removed. The remaining Endnote entries were filtered by title and abstract screening, followed by full-text screening to determine whether the article fulfilled inclusion criteria (Table 1). Google Scholar findings were filtered online by the first author using the same inclusion and exclusion criteria.

Rigorous qualitative research is acknowledged to be “context-bound, positioned and situated” [33]. In other words, analysis of qualitative data involves interpretation. Rather than being viewed as a threat to knowledge production, researcher subjectivity is viewed as a resource, with researchers taking an active role in data production [33]. Research questions, study design, and methods of analysis are inextricably linked to the perspectives through which the researchers view the world [34]. TA is ultimately “an *interpretive* activity undertaken by a researcher who is situated in various ways, and who reads data through the lenses of their particular social, cultural, historical, disciplinary, political and ideological positionings” (original emphasis) [35]. To this end, it is considered best practice to outline their own position and background, even briefly [35,36].

Table 1. Inclusion and exclusion criteria for screening search outputs.

Criteria	Inclusion	Exclusion
Outcome	Vignette (a brief, evocative description or scenario)	Not a vignette
Population	A vignette written with a veterinary team member (veterinarian, animal health technician, veterinary nurse, or associated ancillary staff, including those working in laboratory, academic, and regulatory settings) as a protagonist, and/or published in a journal or publication written for veterinary team members, depicting an ethical challenge or ethical dilemma.	Vignette is not written with a veterinary team member (veterinarian, animal health technician, veterinary nurse, or associated ancillary staff, including those working in laboratory, academic, and regulatory settings) as a protagonist, and/or published in a journal or publication written for veterinary team members, does not depict an ethical challenge or ethical dilemma, or is developed for a stated purpose other than to depict an ethical challenge or ethical dilemma.
Publication type	Vignette Article containing a vignette or vignettes depicting an ethical challenge or ethical dilemma.	Commentary on a vignette Systematic review Clinical case report/case series Randomised controlled trials Cohort studies
Availability	Available through the University of Sydney Library or interlibrary loan.	Unable to obtain full text of vignette.
Language	English	Language other than English.

The first author is a companion animal veterinarian, practicing as a primary accession veterinarian within metropolitan, urban, and regional areas within Australia, and a lecturer in the Sydney School of Veterinary Science. In teaching veterinary ethics, she draws upon both published surveys documenting the ECS encountered by veterinary team members, as well as published vignettes, some of which she contributed. The latter appear in this analysis. Her interest in the types and stressfulness of ECS stems from personal experience and discussions with colleagues and DVM students.

The second author is a veterinarian, lecturer in epidemiology and public health, and a researcher at the Sydney School of Veterinary Science. His veterinary practice experience is derived exclusively from government practices as a field veterinarian. He teaches research methodology to first-year DVM students and coordinates third-year DVM student research projects. The latter includes screening and checking research projects for ethics (animal and human) approval and best research practice and advising students on approaches to researching veterinary topics.

The third author is a veterinarian, researcher, and lecturer in veterinary ethics at University College Dublin. She has a long-standing interest in veterinary ethics, starting as a student and continuing through practice and into teaching. She instigated and coordinated a vignette-based series, 'Everyday Ethics,' in the UK veterinary journal *In Practice* for 10 years and 100 issues. Some of these vignettes were submitted by readers, others were proposed by potential responders, and some were written by the second author. All of these vignettes appear in this analysis.

The Endnote library was exported into NVivo12 Plus (QSR International). Data were analysed using principles of thematic analysis (TA) using an inductive approach aligned with codebook TA [37].

The analytical process involved six stages. Firstly, the first author read each vignette at least three times to familiarise herself with the vignettes. Secondly, initial codes were generated. Each vignette was coded inductively for semantic themes, employing a realist approach without a pre-existing theoretical framework. An iterative approach was used. Each vignette was initially coded three times according to the role of the protagonist, the

type of animal involved, and the primary ECS described. Where vignettes involved multiple protagonists or species, the vignette was coded according to the first mentioned. For example, if the vignette stated, “you are a veterinary technician . . . ” or “Dr X is a veterinarian”, it was categorised according to the role “veterinary technician” or “veterinarian” respectively. If a vignette did not specify a role but referred to a protagonist who had made a diagnosis or performed surgery, the role was classified as “veterinarian”. If the vignette did not specify a role or posed an ethical challenge for which the role within a veterinary team was not relevant—for example, where a role was not specified and the vignette raised a general question whether a type of animal use is acceptable—the role was coded “not applicable”. Where there was no protagonist, the vignette was coded “not applicable” for the role. Where the vignette did not refer to any animal (for example, those concerned with collegial relations), it was coded “not applicable” for the animal category. Types of ECS were initially coded according to ECS identified in surveys, as shown in Table 2. Where an ECS could not be coded according to an existing code, a new code was generated.

Thirdly, initial themes were generated. To facilitate initial coding of semantic themes associated with the type of ECS, we identified surveys and reviews focused on determining the type, frequency, and/or stressfulness of ECS encountered by veterinary team members. From each of these, we compiled a list of specific types of ECS, either directly from the survey where this was available, or in other cases, key ethical challenges identified. A codebook approach is often utilised with large datasets, providing structure that offers some efficiency in analysis [38]. In addition, new themes were generated through inductive data engagement and analysis [35], the latter overlapping with reflexive TA [33].

The list of codes was examined to identify clusters of codes and complex codes which were grouped together as themes deemed to best represent the data. Themes were reviewed for both internal coherence and distinctiveness from other themes. This involved regularly re-reading all coded extracts from each theme. Where extracts did not fit a theme, these were either reallocated to a more appropriate theme or allocated to a new theme. The first and third authors discussed coding and initial generation of themes.

The fourth and fifth stages—refining themes and developing a thematic map, and defining and naming themes—were performed concurrently, and involved further discussion between all authors. The sixth and final stage involved construction of a table describing key ECS within each theme. We counted the number of vignettes coded for each theme, to indicate the prominence of themes relative to one another. While this is not typical of a TA approach [36], we chose this approach due to the large breadth but relatively shallow depth of data collected, as has been done in other studies, including veterinary surveys involving large numbers of free-text responses [39].

Table 2. Specific or key ethically challenging situations (ECS) encountered in veterinary settings explored in published surveys/reviews, utilised for initial coding of vignettes.

Study	Participants	Practice Type	Source of ECS	Specific or Key Ethically Challenging Situations Listed in Publication
Batchelor and McKeegan [1]	<i>n</i> = 58	Small animal Large animal Equine	“Common” scenarios based on review of literature.	<ol style="list-style-type: none"> 1. Convenience euthanasia of a healthy animal 2. Financial limitations of the client restricting the treatment options 3. The client wishing to continue treatment despite compromised animal welfare/quality of life

Table 2. Cont.

Study	Participants	Practice Type	Source of ECS	Specific or Key Ethically Challenging Situations Listed in Publication
Crane et al. [2]	<i>n</i> = 540	Small animal Large animal Mixed Specialist	Focus group of 11 veterinarians (3 rural based, 8 urban based); review of literature.	<ol style="list-style-type: none"> 1. Working in a situation where the owner would not pay for the recommended treatment 2. Carrying out the owner's wishes that were not in the best interest of the animal patient 3. Balancing the welfare of the human client with the welfare of the animal patient 4. Assisting other veterinarians who they believed were providing incompetent care 5. Performing euthanasia in general 6. Performing euthanasia for reasons they did not agree with 7. Suspected patient/pet abuse.
Magalhaes-Sant'Ana [29]	<i>n</i> = 20	Veterinary practitioners, veterinary inspectors, veterinary nurses in Ireland.	Three-round policy Delphi with vignette methodology.	<ol style="list-style-type: none"> 1. Adequate food safety standards (e.g., to prevent manipulation of meat inspection reports) 2. Responsible disease eradication programs (e.g., to prevent inappropriately influencing the interpretation of a tuberculosis test result) 3. Responsible casualty slaughter certification (e.g., to prevent incorrectly certifying an animal as being fit for transport) 4. Responsible veterinary exports certification (e.g., to prevent certifying a herd with an unknown disease status) 5. Responsible animal insurance schemes (e.g., to prevent client pressure to change vaccination date) 6. Responsible use of social media by veterinary professionals (e.g., to prevent posting a picture of an animal without client's consent) 7. Working relationships between veterinarians and veterinary nurses (e.g., nurse being asked to do something that conflicts with his/her ethical values) 8. Guidance on referrals and second opinions (e.g., to prevent failing to refer an animal to another colleague) 9. Guidance on continuing veterinary education (e.g., to prevent asking for the certificate from a seminar you paid for but did not attend) 10. Responsible clinical research and teaching involving animals (e.g., vet students taking samples from owned animals for their Master of Veterinary Medicine) 11. Performing convenience animal euthanasia (e.g., putting down surplus foals) 12. The provision of 24 h and emergency veterinary care (e.g., to prevent lack of adequate overnight care) 13. Prudent prescription and administration of veterinary medicines (e.g., to prevent excessive use of antibiotics) 14. The role of veterinary professionals in unregulated animal fairs, races and shows (e.g., to prevent failing to report abuse to animals) 15. Responsible advanced treatments in small animal medicine (e.g., pet cloning or cat kidney transplants).

Table 2. Cont.

Study	Participants	Practice Type	Source of ECS	Specific or Key Ethically Challenging Situations Listed in Publication
Kipperman et al. [3]	<i>n</i> = 484	Small animal (including: shelter medicine, mobile, emergency, feline only) Mixed Specialist Academic Non-listed	Not specified.	<ol style="list-style-type: none"> 1. Client financial limitations compromising the quality of the care the respondent could provide for the patient 2. Euthanasia requested because of economic limitations, which the respondent believed was due to lack of financial means 3. Euthanasia requested where the respondent believed the client had the financial resources, but was unwilling to pay for treatment 4. Euthanasia requested because of client convenience 5. Euthanasia requested without a reason, but the respondent felt it was not in the animal's best interest 6. Treatment requested when a patient's prognosis was hopeless or recovery is very unlikely 7. Client unwilling to treat or euthanase a patient that the respondent believed was terminal and suffering 8. Having to perform empirical therapeutic trial instead of diagnostic testing because of costs or owner preference
Moses et al. [4]	<i>n</i> = 889	Small animal Equine Food animal Exotic animal	Not specified.	<ol style="list-style-type: none"> 1. A conflict of opinion with pet owners about how they wished to proceed in the treatment of their pets/ Pet owner's attitudes or beliefs about treatment made it difficult to provide the care the respondent thought was appropriate 2. Being asked to do something in their clinical practice that felt to the respondent like the wrong thing to do 3. A case where the respondent felt like they could not do the "right thing" 4. Receiving an inappropriate request for euthanasia 5. Managing cases where the respondent felt that a pet owner requested treatment when the respondent considered those efforts to be futile/Refuse to provide treatment that the respondent felt was futile 6. Recommending euthanasia to pet owners if they did not bring up the topic 7. Recommending euthanasia to pet owners when they already said they would not consider it 8. Being asked to do things that are outside of the respondent's skill set for financial or other reasons 9. Disagreements with other veterinarians about how best to manage a case the respondent shared with them 10. Disagreements with non-veterinary staff members about how best to proceed with a clinical case 11. Feeling conflicted about prioritising the needs of animal owners over patients

Table 2. Cont.

Study	Participants	Practice Type	Source of ECS	Specific or Key Ethically Challenging Situations Listed in Publication
World Small Animal Veterinary Association [40]	$n = 8$	Small animal	Compiled by the animal welfare guidelines group.	<ol style="list-style-type: none"> 1. The decision to assist in treatment and breeding of animals with extreme traits associated with health problems 2. Whether euthanasia is acceptable and, if it is, when and how should it be performed 3. Whether the veterinarian should perform cosmetic or convenience surgeries such as ear cropping, tail docking, declawing, or debarking 4. Whether to treat an animal to extend their quantity of life, and how this impacts quality of life 5. Whether to use animals for blood transfusions or as sources of organs for transplants, which animals to source these from and how to treat source animals 6. When to breach client confidentiality in the interests of animal welfare, human welfare, or public safety 7. How to manage cases where abuse, mistreatment or neglect of an animal is suspected 8. The decision to surgically spay or neuter an animal 9. Management of inappropriate or inadequate feeding of animals.
Lehnus et al. [5]	$n = 183$	Veterinary anaesthetists (including Diplomates, residents, and nurses or technicians performing anaesthesia)	Not specified.	<ol style="list-style-type: none"> 1. Ethical disagreement with colleagues regarding whether decisions are in the best interests of the patient 2. Performing anaesthesia against one's conscience 3. Financial constraints which limit the type of treatment that can be given (where owner wishes to continue treatment within their means) 4. Ethical concerns around modern intensive care medicine

3. Results

3.1. Development of Initial Codebook

We identified nine publications, comprising seven surveys, one committee report, and one policy Delphi listing key ethically challenging situations encountered by veterinarians. Of these, seven listed specific or key ethically challenging situations, either in a questionnaire or as a summary (see Table 2). The policy Delphi provided summaries of ECS in rounds two and three [29]. As the ECS outlined for the second round was more closely aligned with ECS depicted in the surveys, we utilised the summary from the second round in coding.

Two surveys “deliberately refrained from giving concrete examples or a given definition of ‘morally challenging situations’” [6,8]. These surveys of German farm veterinarians ($n = 123$) and Bavarian veterinary officers ($n = 81$) asked respondents to report the frequency of ECS in broader terms, notably: “1. I wasn’t sure what was the morally right thing in this situation; 2. I was sure what was the morally right thing to do, but I could not, or only partially, implement it; 3. My personal moral convictions contradicted the legal requirements; 4. No matter how I decided . . . there were always weighty moral reasons against this decision; 5. I knew what would have been morally right, but the implementation would have meant a considerable extra effort for me.” Because of the broad nature of these ECS in comparison to those listed the other publications, we did not utilise these in coding.

3.2. Vignettes

Web of Science (all databases) and PubMed searches returned 862 and 641 records, respectively, a total of 1503 records (Figure 1). A Google Scholar search yielded 992 hits.

At this stage there were a total of 2495 records, of which 1166 were duplicates. Therefore, 1329 records were screened. After screening, based on the title, abstract, or full text, there were 546 articles containing 567 vignettes (for bibliographic information, see Supplementary Material S1). Figure 1 provides a flow diagram of the literature searches.

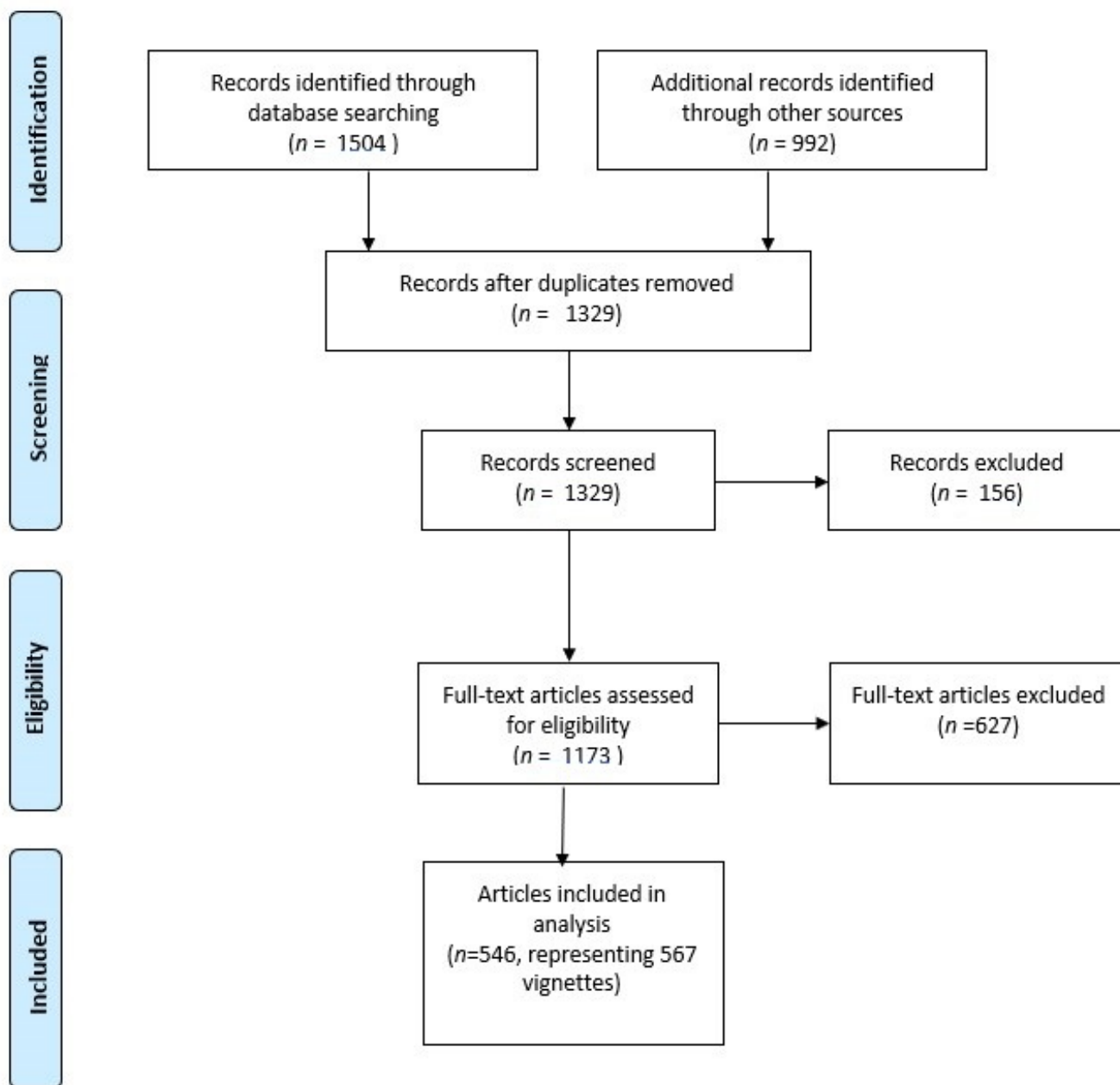


Figure 1. Flow diagram of literature searches [41].

The majority of vignettes came from two sources: the *Canadian Veterinary Journal* (61.0%, $n = 346$) and *In Practice* (26.1%, $n = 148$), both publications aimed at veterinarians. The *Australian Veterinary Journal* accounted for another five vignettes (0.9%). Vignettes featured in journal articles that were designed for veterinary students and veterinarians accounted for 4.2% [19,29]. A smaller number of vignettes appeared in publications targeted specifically at veterinary nurses and animal health technicians, including a vignette-based textbook (*Exploring the Grey Zone*) [23] (4.8%, $n = 27$); *Veterinary Technician* (1.9%, $n = 11$), *The Veterinary Nurse* (0.5%, $n = 3$); and *Veterinary Nursing Journal* (0.5%, $n = 3$). Vignettes were contributed by a combination of panels (for example, the *Canadian Veterinary Journal*

noted that cases would be provided by a panel comprising large and small animal clinicians [42]), column, or journal editors (some of whom polled readers in online discussion forums [43,44]), and readers [42,44], some of whom chose to remain anonymous. The exceptions were articles which described the development of vignettes on the basis of focus groups, literature reviews and other sources [19,29], and a vignette-based textbook for which cases were “purposely created . . . to represent the more realistic scenarios in which there is often more than one correct course of action . . . ” [23].

The role of the protagonist in each vignette is presented in Figure 2. The majority of vignettes described ECS faced by veterinarians (61.6%, $n = 349$). In addition, where the protagonist was a practice owner (7.2%, $n = 41$), veterinarian practice owners were specified in the majority (87.8%, $n = 36$) of these vignettes. The next most frequent category was “not applicable” (19.2%, $n = 109$).

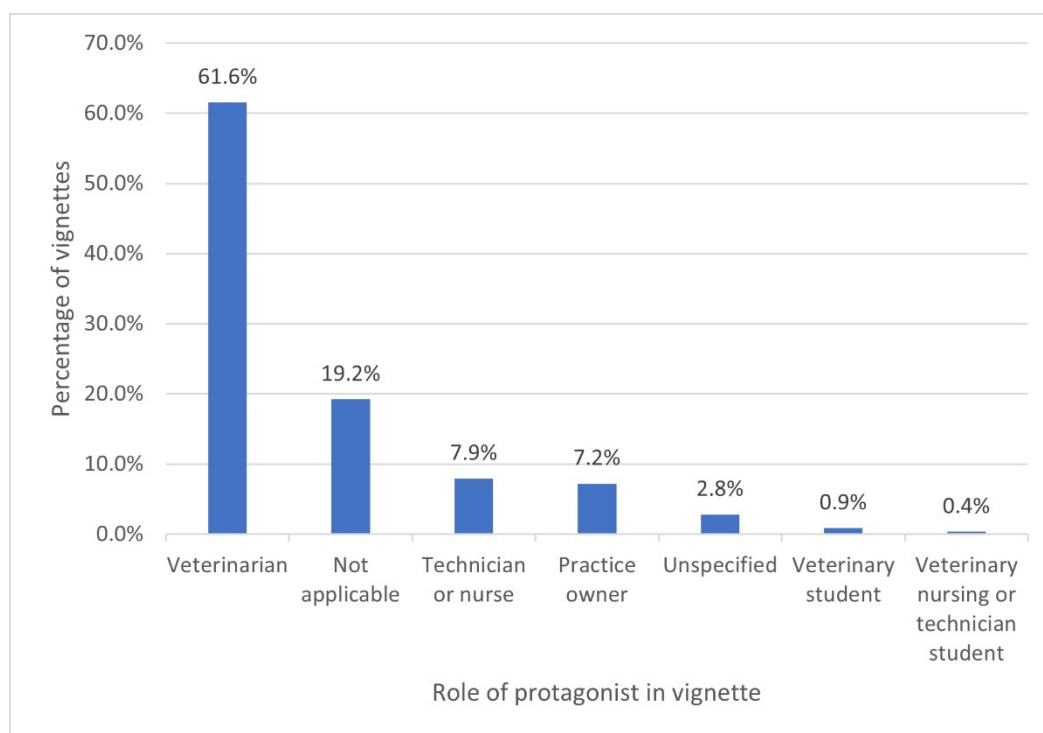


Figure 2. Bar chart depicting the role of the protagonist in ethical vignettes ($n = 567$).

The categories of animals featured are presented in Figure 3. The most frequent category was dogs (28.0%, $n = 159$), followed by livestock in general (10.8%, $n = 61$), cattle (10.6%, $n = 60$), cats (9.0%, $n = 51$), animals in general (7.1%, $n = 40$), and companion animals in general (6.7%, $n = 38$). Some cases did not feature an animal (6.7%, $n = 38$), for example those focused exclusively on collegial relations.

Themes generated from the types of ECS described in the vignettes are described in Table 3. In total, 29 themes were generated.

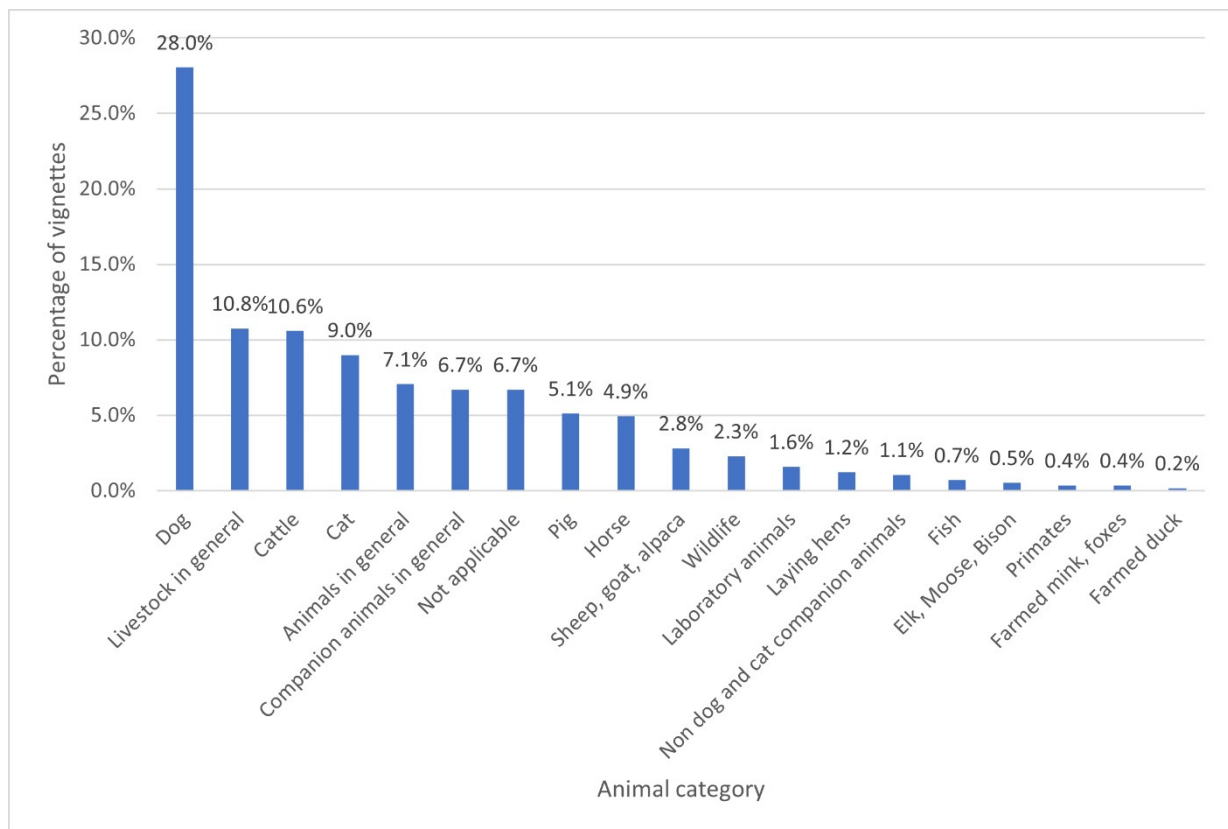


Figure 3. Bar chart depicting the primary category of animal in ethical vignettes (*n* = 567).

Table 3. Themes generated from a review of ethical vignettes published in the veterinary literature from 1990 to 2020, with a summary of key ethically challenging situations described within each theme.

Theme	Key Ethically Challenging Situations (ECS) Described within Theme	Number of Vignettes Coded
How to manage a client who refuses a recommendation or does not adhere to advice	How do veterinary team members manage clients who refuse to euthanase an animal with poor welfare or deteriorating quality of life? What if a client refuses to follow advice in situations where public health is at risk? How should a veterinarian respond if a client refuses to allow them to examine animals on a property that require veterinary attention? What if a client wishes to pursue inappropriate, high-risk, or potentially harmful treatment? How do you manage a client who does not adhere to instructions?	43
What forms of animal use are acceptable?	Are some forms of animal use unacceptable? On what basis do we determine whether a form of animal use is acceptable or not? How can we justify different treatment of different species or groups of animals? What limits should be placed on animal use? Do animals have rights? Should veterinary team members take/promote a position on animal use? Is it better for veterinary team members to opt out of poor animal welfare (AW) practices or work for change from within settings where AW is poor?	39

Table 3. Cont.

Theme	Key Ethically Challenging Situations (ECS) Described within Theme	Number of Vignettes Coded
Animal welfare (AW) governance	How should AW be legislated, policed, or otherwise protected and promoted? How do agencies charged with enforcement manage conflicts of interest? How is AW governance funded? Is enforcement adequate? Is “ag-gag” legislation acceptable? How should AW legislation, guidelines and policies be interpreted? Under what circumstances should veterinary team members challenge legislation, guidelines, and policies around animal welfare? Should AW be dictated by consumer preference? How should non-stun slaughter be regulated?	30
What should veterinary team members do when clients breach welfare laws or regulations?	Whether to report clients, suspected animal abuse, animal neglect and animal hoarding, animal doping or animal fighting? Should reporting of animal neglect or cruelty be mandatory? How should the veterinary team approach a vulnerable or mentally unwell client who is neglectful of or cruel to animals? Can veterinary team members be compelled not to report clients?	29
Euthanasia of companion animals	What are acceptable grounds for euthanasia? What if consent for euthanasia is contested between owners? To what length should veterinary team members go to establish ownership prior to euthanasia? Which methods of euthanasia are appropriate? How should veterinary team members manage objectionable requests for euthanasia?	28
Research and education	In what circumstances should animals be used in research and education? What limits should be placed on animal use? How should veterinary students be selected? Should universities be influenced by the needs or preferences of animal industries, or the veterinary profession? How should relationships between educational institutions and industry be managed?	28
Ensuring food safety, food security, and biosecurity	How do veterinarians manage conflicts between AW and food safety or food security? How do veterinarians manage conflict between food safety requirements and their client’s productivity? In what circumstances should veterinarians become whistle blowers regarding food safety? How should veterinarians assess and manage risks to food safety? To what extent can food animals be treated for certain conditions? Should food safety controls apply to production animals kept as companions?	27
Scope of practice	What falls within and beyond a veterinarian, veterinary nurse, or animal health technician’s scope of practice? In what circumstances is it acceptable to perform a procedure that is beyond one’s scope of practice? At what point should one refer or defer to an experienced colleague? What if clients pressure veterinary team members to do something beyond their scope of practice? To what extent do responsibilities extend after hours?	26
Confidentiality and privacy	How should veterinary team members manage conflicts between client requests for privacy and AW, public health, or codes of professional conduct? What should veterinary team members do if a one client (e.g., who sells an animal or herd) fails to disclose health information to another client (e.g., the purchaser)? To what extent should veterinary team members respect human privacy? What if the mental wellbeing of people is at stake?	25
Management of errors and complications	When and how should errors be disclosed? How should errors made by other veterinary team members (including those in other practices) be managed? How should veterinary team members be held accountable for errors? What reparations, if any, should be made and what limits, if any, should be placed on these?	25
Conflict of interest (COI)	What counts as a real or perceived COI? Are overservicing and overtreatment due to COI? How should COIs be managed or eliminated?	23

Table 3. Cont.

Theme	Key Ethically Challenging Situations (ECS) Described within Theme	Number of Vignettes Coded
Conflict between the interests of animals and the interests of their owners	Is it reasonable to delay euthanasia of a suffering animal due to client emotional needs? How should the veterinary team member respond if a client can only afford animal treatment by forgoing their own needs? How should animals behaving aggressively, or those that have attacked or injured humans, be treated?	21
How to balance animal productivity with animal welfare	How do veterinary team members manage conflict between productivity and performance (of animals, businesses, or both) with AW? To what extent is it reasonable for an animal or animals to have compromised welfare if they can continue to be productive? How do we assess financial costs associated with improving AW? In what circumstances is it reasonable to transport sick or injured animals?	21
Labelling and use of pharmaceuticals including antimicrobials	What, if any, limits should be placed on use of antimicrobials in animals? How should veterinary team members balance the needs of individual animals and other stakeholders when prescribing or dispensing antimicrobials? What, if any, limits should be placed on drug or prescription diet sales? What factors should be taken into account when considering off-label use or compounding of medications for animals? Are cost concerns justification enough for off-label use of medication?	21
Clients with limited finances	How should the veterinary team proceed if the client does not have immediate funds to provide the recommended treatment? Is it acceptable to provide a lower standard of care where client finances are limited? Under what circumstances is "economic euthanasia" acceptable? Is it acceptable to amend records so that insurers or other third parties cover costs?	20
Collegial relations and wellbeing of veterinary team members	How should conflict between veterinary team members be managed? How should these issues be dealt with in job interviews? What counts as discrimination, bullying or sexual harassment and how should these be addressed? How can veterinary team members manage conflict between personal wellbeing and professional role and maintain appropriate boundaries? How should veterinary team members manage conflicts between loyalty to colleagues and honesty?	19
Working with or assisting other team members who are providing incompetent care	What should veterinary team members do if colleagues, including superiors, provide incompetent care, or care below the acceptable standard of care? What if those colleagues are suffering from health problems, including substance abuse?	19
Shared decision making and informed consent	Under what circumstances is it reasonable to perform a procedure without owner consent? How far can one proceed without consent? Is it ever ethically acceptable to withhold information from a client or clients? What constitutes shared decision making? To what extent is it acceptable, if ever, for a veterinary team member to influence a client? How should veterinary team members manage disagreement regarding consent between different owners of the same animal or animals?	17
Slaughter and killing of farm animals	What methods of slaughter or killing should be used? Which animals should be slaughtered in an emergency animal disease outbreak? Is it acceptable to vary slaughter methods in some situations (e.g., emergency animal disease outbreaks)? Should animals that are surplus to need be slaughtered/humanely killed? Are there viable alternative options?	14
Incorporating evidence into practice and making clinical decisions in the absence of evidence	What constitutes appropriate and acceptable evidence? How should veterinary team members utilise evidence? How should clinical decisions be made where there is scant available evidence, where policies are non-existent or unclear, or where we have a lack of experience? How should we balance published evidence and experience?	13

Table 3. Cont.

Theme	Key Ethically Challenging Situations (ECS) Described within Theme	Number of Vignettes Coded
Management of stray or unowned dogs and cats	Who is responsible for the care and welfare of stray or unowned animals, including costs? Is there a basis for treating stray or unowned animals differently than owned animals? To what extent can veterinary team members police animal ownership? How should the fate of stray or unowned animals be decided?	13
Standard of care (SOC)	What is an appropriate SOC? What about requests to treat below a SOC? What is too high a SOC? What do you do if someone is not providing a minimum SOC? How do you manage variation of SOC across jurisdictions?	11
Treatment and management of wild and free roaming animals	How should we treat individual wildlife patients versus populations? Should wildlife or pest species be treated differently than companion animals? Are particular methods of killing species deemed to be pests ethically acceptable? Can wild or free roaming animals enjoy acceptable welfare?	11
Breeding animals and selecting for particular traits	Is it acceptable to select animals that are better adapted to existing husbandry systems, rather than changing animal husbandry? How can veterinary team members address poor breeding practices whilst ensuring welfare of individual animals? To what extent should human preference inform selection and breeding of animals?	8
Convenience surgeries and mutilations	Are there circumstances in which procedures such as ear cropping, tail docking, debarking, or declawing can be justified? What if colleagues perform these procedures, or clients threaten to perform such procedures themselves?	8
Competition between veterinarians and practices	How to respond to clients from competing practices? Under what circumstances should one report a competing veterinarian or practice for misconduct? Are non-competition clauses in contracts acceptable? What limits if any should be placed on these?	8
Futile or non-beneficial treatment of animal patients	At what point is treatment considered futile? How do veterinary team members manage differences of opinion about what treatment is considered futile or non-beneficial? Is it ethical to offer or provide futile or non-beneficial treatment? How and where do veterinary team members draw the line between potentially beneficial and futile treatment?	8
Remuneration and charging for veterinary services and product sales	How should veterinary team members be paid (e.g., salary, performance)? How do practices balance AW with making a profit? How should veterinary products be priced and sold? Is it just to sell products through veterinary channels only?	8
Assessment and measurement of animal welfare and quality of life	How do we resolve differences in animal welfare assessment? How do we ensure that animal welfare and quality of life assessment yield meaningful information?	4

4. Discussion

Analysis of published veterinary ethical vignettes reveals that veterinary team members may encounter a broad range of ECS in their work. The fact that we identified 567 vignettes comprising 29 themes confirms that many ECS are not unique, which may give veterinary team members a sense of moral community [45].

The sources of vignettes varied, and included panels, column or journal editors, journal readers, researchers, and book authors. It was not possible for us to determine the degree to which vignettes reflected the actual experiences of veterinary team members, if at all. Indeed, some vignettes were developed deliberately to provide an example of reportedly common scenarios [29] or to provoke ethical reflection [23]. Nonetheless, as veterinary team members ourselves, we found the vignettes plausible and realistic. The protagonist of the majority of vignettes, also accounting for the majority of respondents to surveys on ECS, was the veterinarian in clinical practice. This reflects the reality that the

majority of veterinarians in western countries work in clinical practice [46–51]. Historically, veterinarians worked sole charge, however, veterinarians now tend to work within teams incorporating paraprofessionals [52]. Additionally, veterinary nurses and animal health technicians have undergone professionalisation, including the introduction of professional associations, a register, a code of ethics, disciplinary proceedings, and CPD [52,53]. Veterinarians are not alone in experiencing ECS in their work, nor are they the sole decision makers in their workplace. To reflect the reality of veterinary workplaces, it may therefore be helpful to develop more vignettes that feature non-veterinarians, or veterinary teams, as protagonists.

A perspective missing almost entirely is that of the client, animal owner, or guardian. While vignettes serve a purpose in the education of veterinary team members about ECS they may encounter, the client—where featured—is almost invariably portrayed as the source of the ECS, or a barrier to its resolution, rather than as someone who may be experiencing ethical challenges themselves. In portraying clients in this way, there is a risk of failing to consider their perspectives and interests. One vignette describes a veterinarian's assessment of a farm dog that they are called out to examine, and diagnoses a fractured left femur [54]. In the scenario, the veterinarian offers the options of surgical repair or euthanasia, leaving the dog with analgesics while the owners decide. The owners choose neither, instead nursing the dog at home, and in time the dog makes a complete clinical recovery. According to the vignette, the protagonist is "... shocked that the dog was left with a broken leg, shocked that it is now running around at [their] feet" and realises that they "should have followed up to ensure that the dog was euthanased" [54]. However, the dog's recovery and subsequent "good life" move the veterinarian to ask, "Was offering surgery or euthanasia the only appropriate options to suggest in this case?"

After reading the ethicist's response to the vignette, the owners of the dog depicted in the vignette wrote to the journal, ostensibly in defence of their veterinarian. However, their letter provides insight into the factors that impacted their decision making—not discussed with their veterinarian at the time—including their own assessment of the dog's pain and beliefs about analgesia and animal welfare, and financial constraints they faced "as parents of five children and living solely on a farm income" [55]. Further discussion between the veterinarian and the clients may have revealed further constraints and opportunities and led to the provision of alternative options—such as splinting, cage rest, and extended analgesia—along a spectrum of care [56,57]. This correspondence also demonstrates that, despite providing contextual information, vignettes do not provide all relevant information. It is a reminder that, in addressing ECS, veterinary team members should consider the information that may be missing, or sources of additional data that may help characterise the ECS and develop an appropriate response.

Companion animals ("dogs", "cats", "companion animals in general") and livestock ("livestock in general" and "cattle") accounted for the majority of species or category of animal depicted in vignettes, probably because veterinary team members are most likely to encounter these groups of animals. The prevalence of companion animal-related vignettes may reflect the reality that, in most western countries, the majority of veterinary teams care exclusively or mostly for companion animals or small animals [46–51]. Dogs may have featured more prominently in vignettes due to a perception that they form strong affiliative bonds with humans, who are responsive to the canine gaze [58]. Dog owners may also have stronger bonds than cat owners, be more likely to seek veterinary attention for them, and consider more costly (and potentially more involved) intervention when compared with cat owners [59,60]. Dogs may feature more prominently than cats as owners of cats may avoid taking them to veterinary clinics due to "feline resistance" to carriers or transportation, and fearful behaviour in veterinary settings [61].

Aside from the companion animal bond, companion animals may have featured more prominently in vignettes due to a broader spectrum of treatment options (introducing more variables to consider in decisions around euthanasia) [62], and ethical challenges associated with advanced veterinary care [63]. This focus of the veterinary profession on

companion animals has been criticised as socially irrelevant in the face of the growing human population, stress on global resources, and increasing threats to biosecurity [64].

Livestock featured heavily in themes such as “what forms of animal use are acceptable”, “ensuring food safety, food security and biosecurity”, “how to balance animal productivity with animal welfare”, and “slaughter and killing of farm animals”. Vignettes that featured cattle primarily (10.6%, $n = 60$) were more likely to feature dairy cattle (55.0%, $n = 33$) than beef cattle (23.3%, $n = 14$) or unspecified (21.7%, $n = 13$). This may reflect increasing public concerns about practices such as culling of male calves and the separation of calves and cows [65].

Horses were specifically featured in less than 5% of the vignettes. This is somewhat surprising given increasing concerns about the welfare of working equids, the use of horses in sport and recreation (particularly in relation to breeding, potential conflicts of interest of veterinarians attending to sporting horses, the use of whips and nosebands, and fate of surplus animals) [66–72]. It is possible that such issues are believed to be beyond the remit of veterinary team members, who have a largely clinical focus, as they raise broader issues around animal use.

The relative prevalence of these species may reflect the change in the focus of clinical veterinary practice in the 20th and 21st century. This focus shifted from the horse at the beginning of the 20th century, to the dairy cow, to companion animals from the middle of the 20th century to the present day [73].

Animal categories including “sheep, goats and alpacas”, “wildlife”, “laboratory animals”, “laying hens” and “non dog and cat companion animals” featured in less than 5% of vignettes, while “fish”, “elk, moose, bison”, “primates”, “farmed mink and fox” and “farmed duck” featured in less than 1% of vignettes. This may reflect the relatively small number of veterinary team members working with these categories of animals, rather than reflecting the range of ECS they encounter. This aligns with a review of papers presented at the World Association for the History of Veterinary Medicine, which found that fish, wildlife and exotic species were among the least commonly discussed [73].

Given concerns about the impact of occupational stressors on the wellbeing of veterinary team members [74–81], we believe that it is important to equip current and prospective veterinary team members with knowledge and skills to successfully navigate ECS. We believe the themes generated from these vignettes, using published surveys of ECS, provide a useful foundation. For example, in knowing that veterinary team members may encounter ECS relating to the client who refuses a recommendation (for example, a recommendation to put an overweight dog on a diet [82] or to perform a caesarean on a heifer [83]), or does not care appropriately for sick animals per your instructions [84], educators, professional associations, organisations, and employers may find it beneficial to provide opportunities for training in communication and conflict management [85]. For example, learning motivational interviewing techniques may improve communication with farmers around herd health management [86].

Veterinary team members support and often engage in animal use themselves (for example, keeping of companion animals, utilising animals in education and research, farming, or consuming animals). They also engage with colleagues and clients with diverse and dynamic views about what forms of animal use are acceptable. Numerous vignettes raised the question of what forms of animal use are acceptable, suggesting the need for veterinary team members to reflect on their own views and consider relevant evidence, for example, from animal welfare science. This is reflected in the OIE recommendations on Day 1 veterinary competences, which specify that veterinarians should “provide leadership to society on ethical considerations involved in the use and care of animals by humans” (2.9, Veterinary Legislation and Ethics) [87].

It is important to reflect on factors that may have influenced the development of themes presented here. For example, conflict between the interests of animals and the interests of their owners. Rollin stated that the “fundamental question of veterinary ethics” is “to whom does the veterinarian owe primary obligation—animal or owner?” [21]. Tannenbaum

described the veterinarian as the “servant of two masters”—human clients, on the one hand, and animal patients on the other:

“... veterinarians are expected to serve *both* their human clients and animal patients. Indeed, they are often called upon to serve as an advocate of both parties’ interests, even when these interests conflict. Thus, veterinarians will often speak out on behalf of the animal, telling the client how the animal feels or is likely to fare, and indicating what is or is not in its interests. At the same time, veterinarians are often asked to be advocates for their clients’ interests—to know, for example, what would make the pet owner happy, the racehorse owner wealthy, or the researcher successful.” [88] (p. 146)

However, the conception of ECS as occurring within this triadic relationship between veterinarian, client/owner, and patient overlooks the reality that veterinary team members rarely work in isolation, are often employed, and may not have ethical responsibility with complete decision-making autonomy. This predicament has been raised in the context of other professions, for example engineering, where engineers are expected to do what is right and prevent what they recognise as wrong. This may lead to conflict with colleagues and employers:

“The engineer is usually working with a team, and he or she first has to persuade the collaborators to modify or even stop a project because of ethical concerns. Moreover, the engineer is dependent on the employment contract he or she has signed towards the employer. Through this contract the engineer becomes subject to directives, and thus renounces his or her personal autonomy as far as professional work is concerned, and he or she undertakes to keep secret any internal business information. So, on principle the moral responsibility of the individual engineer is cut by industrial law. Even if, meanwhile, in some countries refusal to work and whistle-blowing are legally accepted in cases of serious concern, the engineer involved is usually risking his or her career. Engineering ethics, in terms of individual responsibility, in the borderline case is forcing the engineer to play the moral hero, a role that is neither desirable nor realistic”. [89]

Yet the pervasiveness of the conception of the veterinarian as a “moral hero” in veterinary settings may explain why the majority of vignettes feature a veterinarian as the protagonist, why major surveys regarding ECS in veterinary settings have focused on veterinarians [1–4,6–8], rather than non-veterinary team members, and why many of the ECS about which veterinarians have been surveyed involve conflict between the interests of the client and those of the animal patient [1–4,6–8].

As an alternative to the veterinarian–client–animal triad, Durnburger talks about “a triangle within a square”: the triangle consisting of the veterinarian, animal, and client, situated within a square including politics and legal requirements, society and its expectations, other veterinarians in different roles (including colleagues, supervisors, employees, and competitors), and veterinary officers (as the essential supervisory body) [7]. It may be that the use of such a model may alter the way veterinary team members perceive and experience ECS.

Similarly, veterinary team members are guided in their daily work by codes of professional conduct and animal welfare legislation, but interpretation is not always easy, and laws and regulations are not uniformly enforced [90]. Additionally, legislation may constrain professional judgement, preventing veterinary team members from acting in alignment with their values. For example, Portuguese legislation preventing euthanasia of unowned companion animals except in cases of intractable pain and suffering, was perceived as a potential barrier to ethical behaviour by veterinarians [28]. Vignettes coded under the theme “animal welfare governance” suggest a need for resources to help veterinary team members understand how animal welfare and veterinary legislation is developed, what their obligations are, anticipating and managing unintended consequences, understanding limitation, and how legislation is updated or changed. Educators and professional

bodies may need to ensure they provide up-to-date, relevant training that goes beyond an overview of animal welfare governance and describes implementation. Workplaces and professional bodies may be able to provide clear pathways for seeking appropriate advice.

Veterinarians and other veterinary team members, including registered veterinary nurses and animal health technicians, are required to make professional judgements and be able to justify these according to sound principles. According to the Royal College of Veterinary Surgeons “Day 1 Competencies”, veterinarians, for example, “must be able to think through the dilemmas they face when presented with conflicting priorities and be prepared to justify the decisions they make. As well as decisions relating to individual patients, animal groups, populations of animals and clients, veterinary surgeons must take account of the possible impact of their actions beyond the immediate workplace, for example, on public health, the environment and society more generally” [91].

Limitations

For pragmatic reasons, each vignette was only coded according to what the authors perceived as the primary ECS depicted, yet vignettes varied in complexity (as real-world ECS may vary in complexity), with some depicting multiple, often overlapping ECS which could have been coded differently. For example, a vignette describing a “recently qualified veterinary nurse” who has “noticed that some of the procedures used in the practice do not concur with what she was taught”, specifically, procedures that the nurse feels are below the standard of what she was taught [92], was coded as “standard of care”. However, the vignette also notes that the nurse raised concerns with veterinarians in the practice, only to be “brushed off with flippant remarks” [92]. Therefore, the vignette could have been coded as “collegial relations and wellbeing of veterinary team members”. In this instance, we deemed that “standard of care” was the primary ECS raised. That said, vignettes were often presented as if they contained a single ECS. For example, many vignettes in the *Canadian Veterinary Journal* typically close with a question, in bold, posed as a single ethical dilemma. For example, “If the behaviour of caged rodents can never be representative of human behaviour, is such experimentation ever justified?” (original bold) [93].

It is possible that published vignettes may not reflect ECS most commonly encountered by veterinary team members. This may be because veterinary team members have become desensitised to common ECS, or that they have established workable approaches to deal with common ECS [1]. In medical training there is a tendency to focus on case studies involving less common but perhaps more extreme ECS: “When residents select cases they tend to unduly emphasise life support and decisions regarding resuscitation and ignore the much more common cases, such as mild hypertension; teaching residents to recognise the ethical components of such everyday cases is an important goal of our program as well” [94]. While we assumed that, collectively, this body of vignettes is reasonably representative of ECS encountered by veterinary team members, it is therefore possible that at least some vignettes represent outliers. It is important for readers to note that the numbers of vignettes coded under each theme cannot indicate the frequency of the particular types of ECS represented in that theme encountered in veterinary settings. For example, in this study, the fourth most frequently coded theme was “What should veterinary team members do when clients breach welfare laws or regulations?” However, in a survey of 540 veterinarians, “suspected patient/animal abuse” was the least frequent ECS encountered, but the most morally significant [2]. Those composing and selecting vignettes for publication may be motivated to write about a topic that is more likely to interest a reader, rather than more commonly encountered ECS.

Our search strategy omitted vignettes from the grey literature, a potentially rich source of ECS encountered by veterinary team members. Inclusion of grey literature, including newsletters, research and committee reports, conference proceedings and abstracts, dissertations and even online forums, may reduce publication bias [95]. It is particularly helpful in the context of a paucity of information in peer-reviewed literature [95]. However, there are several disadvantages to using the grey literature, including the challenge of develop-

ing a sensitive and specific search strategy, and lack of consistency in title and indexing information [95]. We elected not to incorporate a grey literature search for these reasons.

The majority of vignettes were published prior to the COVID-19 pandemic, during which veterinary team members encountered novel ECS including decisions about what counts as an essential veterinary service, conflict between the wellbeing of household members and professional role, and whether to perform non-contact vet visits [9]. For some veterinary team members, widespread shortages of personal protective equipment (PPE), hand sanitiser, ventilators, and other equipment in human healthcare settings rendered their use in veterinary settings ethically challenging [96]. We only found one vignette that explicitly referred to the pandemic [97]. There may be a substantial lag time between encountering a new or novel ECS and writing about it, in which case we may see more vignettes dealing with pandemic-associated ECS in the future.

Thematic analysis is not performed in an epistemological vacuum. A realist approach to thematic analysis assumes a predominantly unidirectional relationship between meaning, experience, and language. However, this may overlook the diverse sociocultural contexts and structural conditions that underpin these scenarios in the first place [98]. Due to publication and sampling bias, it is most likely that veterinary team members from relatively well-off, English-speaking contexts would be more likely to contribute vignettes to the publications that invited these. We coded vignettes according to the primary ECS that we identified; however, this may not reflect the ECS as experienced by the author. Published vignettes may have undergone editing following submission to the extent that they may no longer accurately reflect the emphasis originally intended. In the medical literature, case analysis is acknowledged to be “prone to misunderstandings and misinterpretations” [18], and is highly dependent on the quality and extent of information provided.

What counts as an ECS may vary between veterinary team members. The vignettes analysed in this study were presented as ethical challenges or ethical dilemmas, based on an underlying assumption that they would be experienced as such. However, one study found variation among veterinarians as to whether a particular scenario was experienced as ethically challenging (a ‘dilemma’) or not at all [3]. Whether something is experienced as an ECS may depend on interaction between characteristics and perspectives of those involved and contextual factors. It may be of interest, in future studies, to survey veterinary team members about which vignettes—or aspects of vignettes—they find ethically challenging, and why that is the case.

While vignettes provide contextual factors that may complicate ECS, it is impossible to depict every iteration of an ECS that a veterinary team member may encounter. Durnburger found that a key dilemma faced by German farm-animal veterinarians was conflict between personal convictions and external constraints [8]. We agree that it is important to equip veterinary team members to recognise and address these broader conflicts. Vignettes may facilitate application of ethical reasoning and problem solving.

The authors acknowledge that reliance on case-based teaching in ethics may overemphasise the weight of isolated decisions of individuals, while underplaying the broader institutional and social contexts that create and shape ethical challenges [94]. It is important that those utilising vignettes in the teaching of veterinary ethics are attentive to the possibility that the appropriate response may require systemic change that transforms the options available, or allows an ECS to be avoided [94].

Supplementary Materials: The following are available online at <https://www.mdpi.com/article/10.3390/vetsci9010002/s1>, S1: Reference list of vignettes analysed in our article.

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3.3 Further discussion

Analysis of hypothetical ECS over a 30-year period proved to be a valuable exercise, yielding themes that I believe complement and extend the types of ECS documented in published surveys. The 29 themes developed in this paper provide a broad overview of the types of ECS that may be encountered by veterinary team members. They may be useful in developing undergraduate, postgraduate and Continuing Professional Development (CPD) curricula for veterinary team members, and may be helpful in the development of practice protocols and policies. For example, recurrent ECS involving clients refusing recommendations or failing to adhere to advice may lead to negative consequences for animals, the environment or public health. In addressing these types of ECS, it is important to consider potential barriers to adherence. For example an owner may have concerns – which they may be embarrassed to share with the veterinary team – about the impact of giving analgesia on their relationship with a cherished companion animal (Taylor et al., 2022). In addition, educators, professional organisations and veterinary team members may draw on evidence-based strategies in communication (Adams and Kurtz, 2017, Pun, 2020, Svensson et al., 2020) and human behaviour change (Glanville et al., 2020) in addressing associated ECS. Within this theme, the question of potentially inappropriate, non-beneficial, harmful, or high risk treatment emerged as a concern. This will be explored further in Chapter 4.

It was interesting that the theme ‘what forms of animal use are acceptable’ was so prominent. This shows the importance of discussions about broader questions of animal use and the role of veterinary team members, both within veterinary teams as well as between veterinary team members and broader stakeholders. Yet there may be a reluctance by veterinary team members to discuss such issues. According to the BVA, ‘at the societal level, the veterinary profession may have traditionally tended to pursue *proximate* welfare solutions – optimising welfare within the status quo – rather than *ultimate* solutions, providing societal leadership to change the status quo’ (British Veterinary Association, 2016). These themes provide a useful list of topics that may be explored in ethics rounds (see Chapter 8).

This analysis identified that non-veterinarian team members (including veterinary nurses, animal health technicians and students) are underrepresented as stakeholders in published hypothetical ECS. Additionally, as highlighted in the

discussion, it identifies an absence of the client perspective. Published literature on veterinary ethics gives the impression that moral distress is suffered by veterinary team members (especially veterinarians), with no regard for moral distress that may be suffered by clients. For example, 'economic euthanasia' resulting from 'client financial limitations' may cause moral distress not just to the veterinary team, but also to the owner of the animal. Consideration of the perspective of the client may improve shared decision making, create space to consider further alternatives, or generate momentum to drive systemic change that mitigates or eliminates these ECS. There is scope for further research of the ECS encountered by these underrepresented groups. I will explore further the ECS faced by veterinary team members including veterinary nurses and animal health technicians in Chapters 5 and 6.

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Chapter 4: Ethical challenges associated with ‘advanced veterinary care’

4.1 Background

As discussed in Chapter 2, the development of the field of bioethics was prompted by advances in medical care, and by prominent medicolegal cases. While progress in veterinary medicine has led to the availability of more humane treatments, it has also led to more human-like treatments, which are not necessarily more humane (Weich and Grimm, 2018, Rollin, 2011). As identified in Chapters 2 and 3, futile or non-beneficial veterinary care could be a source of moral distress for veterinary team members. Team members may have concerns that they could become complicit in the suffering of animals and potentially other stakeholders such as their owners. I reviewed the veterinary ethics literature to identify ECS associated with advanced veterinary care, and potential strategies to mitigate these situations.

4.2 Main article

Quain, A., Ward, M. P. & Mullan, S. (2021). Ethical Challenges Posed by Advanced Veterinary Practice. *Animals*, 11. <https://doi.org/10.3390/ani11113010>

Commentary

Ethical Challenges Posed by Advanced Veterinary Care in Companion Animal Veterinary Practice

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Simple Summary: Veterinary care of companion animals, particularly dogs and cats, continues to advance, with some companion animals receiving a standard of care equal to or exceeding that of human patients. While this has the potential to improve animal welfare and benefit other stakeholders, including animal owners and veterinary team members, it also poses ethical challenges. We discuss key ethical challenges associated with AVC, including its relationship to standards of veterinary care, its potential to perpetuate poor quality of life and suffering, cost and accessibility of veterinary care, conflicts of interest, and concerns about experimentation without appropriate ethical review. We conclude by suggesting some strategies for veterinary teams and other stakeholders, such as professional bodies and regulators, to address these concerns.

Abstract: Advanced veterinary care (AVC) of companion animals may yield improved clinical outcomes, improved animal welfare, improved satisfaction of veterinary clients, improved satisfaction of veterinary team members, and increased practice profitability. However, it also raises ethical challenges. Yet, what counts as AVC is difficult to pinpoint due to continuing advancements. We discuss some of the challenges in defining advanced veterinary care (AVC), particularly in relation to a standard of care (SOC). We then review key ethical challenges associated with AVC that have been identified in the veterinary ethics literature, including poor quality of life, dysthanasia and caregiver burden, financial cost and accessibility of veterinary care, conflicts of interest, and the absence of ethical review for some patients undergoing AVC. We suggest some strategies to address these concerns, including prospective ethical review utilising ethical frameworks and decision-making tools, the setting of humane end points, the role of regulatory bodies in limiting acceptable procedures, and the normalisation of quality-of-life scoring. We also suggest a role for retrospective ethical review in the form of ethics rounds and clinical auditing. Our discussion reinforces the need for a spectrum of veterinary care for companion animals.

Keywords: advanced veterinary care; standard of care; companion animals; veterinary ethics; conflict of interest; quality of life; dysthanasia



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1. Introduction

The first half of the twentieth century saw the key focus of veterinary practice pivot from equine patients and livestock, as sources of transport, food, and fibre, to dogs and cats, primarily for companionship. According to Gardiner, dogs, and later cats, were reframed not only as legitimate veterinary patients, but as “suitable recipient[s] for a new type of scientifically driven veterinary medicine, where cost was not always a limiting factor in deciding upon treatment, as it was with livestock” [1].

According to The CALLISTO Project, the term “companion animal” refers to “domesticated, domestic-bred or wild caught animals, permanently living in a community and kept by people for company, amusement, work (e.g., support for blind or deaf people,

police or military dogs) or psychological support—including dogs, cats, horses, rabbits, ferrets, guinea pigs, reptiles, amphibians, birds and ornamental fish” [2]. Although large animals such as horses and cattle can and do fulfil the role of companions, companion animal practice, sometimes referred to as small animal practice, tends to focus on dogs, cats and other small companion animals [3]. For the purposes of this discussion, the term “companion animal” will refer to the latter.

As companion animals were increasingly considered family members [4], companion animal practice borrowed methods and values from human medicine. According to Knesl and colleagues, “the strengthening of the bond between humans and their pets has changed the landscape for veterinary medicine, with highly bonded owners showing an increasing willingness to do whatever it takes to maintain the health of their animals” [5]. To this end, it could be said that companion animal practice has co-evolved with the human–companion animal bond. People are spending more time with, and more money on, caring for companion animals [6]. In developed countries, companion animals can receive a standard of healthcare similar to or at times exceeding that available to humans [7].

In this paper, we explore ethical challenges posed by the advanced veterinary care of companion animals. However, first, it is important to explore what we mean by advanced veterinary care.

2. What Constitutes Advanced Veterinary Care?

The Oxford English Dictionary defines “advance” as “a step forward, a degree of progress actually accomplished; a development; an improvement” [8]. The history of veterinary science is a history of advances in scientific knowledge and its practical application. The term “advanced” is defined as “far on or ahead in any course of development; (hence) progressive, ahead of one’s time” [9]. What is ahead of one’s time now may subsequently become the acceptable standard, or even below the standard in the future. Because clinical veterinary care is continually advancing, there is no fixed definition of what constitutes advanced veterinary care (AVC), as it would rapidly become outdated [10]. Yet, the term is commonly used by veterinarians and others to refer to a particular type of veterinary care.

Advances and AVC are motivated by a drive to improve the quality of care, though what is meant by improved quality of care in the veterinary sector is not easily defined [11]. For example, it may be assessed according to improved animal welfare, improved clinical outcomes, improved client satisfaction, or even other factors such as practice profitability.

Conceptually, AVC has been positioned as being at one end of a continuum or spectrum of acceptable care, with basic veterinary care situated at the other end of the spectrum [12]. According to this model, basic veterinary care is characterised by low costs, low technology, basic skills and being less resource dependent, while AVC is characterised by higher costs, advanced skills, state-of-the-art techniques and equipment, and being more resource dependent [13]. However, proponents of this view add that this spectrum does not imply that AVC is “better”, “acceptable”, “successful”, “standard of care”, a “product of practice experience” or “more challenging” when compared with care along that spectrum [13]. AVC is considered as going beyond the “standard of care” at which general practitioners are expected to practice.

Standard of care (SOC), also known as standard of practice, has been defined as that required of and practiced by the average, reasonably prudent and competent veterinarian [12,14]. The SOC is referred to in codes of conduct. For example, the Veterinary Practitioner’s Code of Professional Conduct in New South Wales states that, in addition to animal welfare, “the basic principles of professional conduct for a veterinary practitioner are . . . the maintenance of professional standards to the standard expected by: (i) other veterinary practitioners, and (ii) users of veterinary services, and (iii) the public” [15]. It further requires that veterinarians “must maintain knowledge to the current standards of the practice of veterinary science in the areas of veterinary science relevant to his or her practice” and ensure that they practice according to current standards [15].

The SOC may vary according to the context in which the veterinarian is practicing [14,16]. Like AVC, it is difficult to determine exactly what constitutes SOC, as this too is evolving [14]. In human medicine, SOC has been defined through landmark legal cases, evidence-based clinical practice guidelines, and statutes defining medical malpractice [17]. In the era of evidence-based veterinary medicine (EBVM), it is important that the SOC changes in light of new knowledge, skills, and technology, underpinned by good quality evidence [18].

In order to characterise AVC, a literature search on Web of Science Databases (incorporating Web of Science Core Collections, CABI: Cab Abstracts, MEDLINE, Current Contents Connect, BIOSIS Previews, Zoological Record and SciELO Citation Index) was undertaken using the terms “advanced care” and “dog” or “cat”, limited to the subject area “veterinary sciences”. The search was limited to a five-year period (6 September 2016 to 6 September 2021) and yielded 127 journal articles. Of these, 20 focused on intensive care unit patients, 16 on advances in treatment, nine on advances in diagnostics, and two on advances in data collection. An additional three papers reviewed advances over periods ranging from 40–100 years, and the remainder were irrelevant (not focused on companion animals; focused on laboratory animals or *in vitro* studies only; or discussed animals in an advanced disease state or of an advanced age).

The term “advanced” has been most commonly used in the context of advanced imaging, where modalities including ultrasound, computed tomography (CT) and magnetic resonance imaging (MRI) have been considered advanced in relation to conventional (film or digital) radiography and planar scintigraphy [19]. Advanced imaging offers the possibility of more accurate diagnosis and staging than conventional imaging, and increased sensitivity and increased diagnostic confidence, with the potential for improved patient outcomes. However, increased sensitivity may increase the prevalence of incidental imaging findings in asymptomatic patients, or symptomatic patients undergoing imaging for another reason, referred to as “incidentalomas” [20]. These pose ethical challenges in both human and veterinary medicine, including how to communicate such findings to patients or clients, and whether further diagnostics or treatments should be performed [20,21]. Indeed, “overdiagnosis” is a recognised problem associated with increasingly sensitive diagnostic testing for conditions such as breast cancer in human patients, leading to treatment that does not benefit and may even harm the patient (“overtreatment”) [22]. It has been also argued that over-reliance on advanced imaging may lead to a reduction in the history taking and physical examination skills of veterinarians, leading to an inflation of veterinary costs [19].

In addition to advanced imaging, in recent discussions of veterinary ethics, AVC has been associated with cancer chemotherapy, radiotherapy, immunotherapy, stem-cell treatment, personalised medicine, hip arthroplasty, heart-valve replacement, dialysis, 3-D printing of prostheses, interventional radiology, stereotactic radiosurgery, interventional cardiology and surgical innovation [23–28]. However, what is considered to be AVC may vary between practitioners: a procedure that is considered routine by a veterinary surgical oncologist may be considered advanced by a general practitioner.

In many countries, AVC in companion animals is generally provided by veterinary specialists. As AVC has become more common, there has been a rapid increase in veterinary specialists. For example, in the US, the number of veterinarians working in referral or specialty practice increased by 98.4% between 2008 and 2013, and by 49.1% from 2013–2018 [29]. According to Tannenbaum, specialists “... provide advanced services that are not within the province of ordinarily competent generalists” [16]. Furthermore, they must perform to a higher standard of competence than general practitioners [16].

A number of commentators have suggested the potential unintended consequence of AVC in reducing the spectrum of care offered by general practitioners [13,30]. For example, veterinary students are commonly taught surgical skills by surgical specialists in teaching hospitals, with access to sophisticated, expensive diagnostic imaging and treatment modalities. Patients seen in such facilities are more likely to have uncommon or complex conditions. Furthermore, those admitted to university teaching hospitals

as emergency patients tend to be referred internally to specialist services, under “an assumption that owners will want to pursue expensive diagnostic testing and advanced treatment for their pets” [12]. As a result, according to Stull and colleagues, “veterinarians (most notably recent graduates) may be unaware of, and lack the knowledge and skills to offer, a wide spectrum of care options for a given condition and therefore may be unable to communicate to clients the relative effectiveness and costs of options along this spectrum” [30].

Concerningly, AVC may be conflated with SOC, leaving practitioners and those who do not practice AVC exposed to charges of incompetence or negligence, or the risk of professional liability [14]. As a result, some veterinarians may practice AVC defensively, to reduce the risk of complaints and liability [12]. Even specialists are not immune to such influences. An investigation of the impact of client complaints on small animal veterinary internists found that just over 70% changed the way they practiced medicine due to fear of a client complaint, and 80% agreed to perform treatment requested by an owner even where they did not feel it was medically necessary [31]. Around 35% performed invasive procedures, against their professional judgement, to avoid a client complaint, where the owner demanded this treatment [31]. According to Rosoff and colleagues, “the skills to carry out technologically sophisticated diagnostic and therapeutic actions—in many ways mirroring those routinely employed in human medicine—have developed within a culture and professional standard of yielding to what clients (i.e., owners) want to have done to and for their animals” [28].

For the purposes of this discussion, AVC will be defined as veterinary care that exceeds the current SOC, including veterinary intensive care, which is typically—but not exclusively—provided by specialists.

3. Poor Quality of Life, Dysthanasia and Caregiver Burden

While AVC may be driven by a desire to improve clinical outcomes, for example, by curing or managing disease, and may achieve this, this is not the inevitable or only possible end result. Broadly speaking, any veterinary intervention may lead to better, unchanged or worsened patient quality of life (QOL). Ethical concerns have been raised regarding AVC where it leads to unchanged or worsened patient QOL: the potential to prolong the life of the patient, despite poor or declining animal welfare. Furthermore, in providing such care in some situations, there is a risk that veterinary team members become complicit in animal suffering.

The term “dysthanasia” (from the Greek *dys*, for difficult, and *thanatos*, referring to death) has been used to describe death associated with “excessive treatment in relation to the clinical condition and its expected prognosis” [32]. In medicine, discussions around dysthanasia have largely focused on intensive care units, where treatments that have the potential to delay death such as artificial ventilation, haemodialysis, parenteral nutrition, the use of drugs (particularly vasoactive sympathomimetic amines) and resuscitation are common [32]. While these measures may provide vital supportive care in the face of acute illness, it is their use in patients who are unlikely to recover that has been criticised, as they may lead to people dying in ways that conflict with their expressed preferences [33]. Similarly, some interventions in veterinary intensive care may be viewed by veterinary team members as being at odds with the perceived interests of the patient [34,35]. An example is cardiopulmonary resuscitation (CPR) of elderly animals, or those with terminal illnesses. While euthanasia is a major confounding factor in assessing CPR outcomes in dogs and cats, outcomes of resuscitation are poor. In a prospective study of 172 dogs and 47 cats administered CPR following cardiac arrest, 7% of dogs and 19% of cats survived to hospital discharge [36]. Unlike human patients, who may document their wishes via an advanced care directives to avoid dysthanasia, companion animals cannot opt out of heroic life-prolonging treatment.

Provision of AVC may be considered futile or non-beneficial in some cases and may lead veterinary team members to experience moral distress. In a survey of UK veterinarians

($n = 58$), a client wishing to pursue treatment despite poor animal welfare was rated as the most stressful ethical dilemma [37]. A survey of 889 veterinarians in North America found that 57% sometimes and 22% often managed cases where an animal owner requested treatment that the veterinarian considered to be futile [38]. In the same study, 51% of respondents reported refusing to provide what they considered to be futile treatment. A survey of 183 veterinary anaesthetists found that 63% were concerned that veterinary interventions were associated with animal suffering, and 18% reported that euthanasia was delayed “beyond the point the anaesthetist felt was appropriate” [39].

Complicating decisions to continue treatment despite poor QOL is a lack of consensus around what constitutes a minimal QOL for companion animals, and what constitutes acceptable morbidity risk. For example, a retrospective study of eight cats with oral neoplasia treated with radical mandibulectomy (removal of 75–90% of the mandible) [40] sparked a debate regarding the ethical justification of the intervention. A veterinary specialist criticised the authors’ conclusion that the treatment should be considered given high morbidity and mortality rates reported in the case series [41]. The authors defended their recommendation on the grounds that removal of lytic tumours in animals removes a source of profound pain and thus improves QOL [42]. The outcomes evaluated by the original study included survival, local disease recurrence, metastasis, whether cats could meet nutritional requirements with oral feeding, and owner satisfaction, but did not incorporate QOL assessment or overall welfare scoring, nor was this required by the journal.

Owners and clinicians may be biased in their assessment of outcomes in which they have invested emotional, financial or technical resources. The use of appropriately constructed, validated, multi-dimensional QOL scoring tools at multiple time points may help to minimise this bias by ensuring all relevant factors are considered [43]. In the above case, objective assessment of QOL may have aided this discussion, but the study was retrospective. Therefore, while it would be ideal for journals to require authors to include QOL assessment when investigating outcomes of an intervention, this should be underpinned by access to validated QOL scoring tools [44,45], widespread availability of training on how to use them, and their routine use in veterinary practice.

Tannenbaum argued that the drive to provide AVC may be difficult to resist for those with the ability to do so. He wrote that “specialists are trained, they *exist*, to provide advanced procedures. A difficult medical case cannot only excite a specialist’s intellectual curiosity (there is nothing wrong with this) but also provide a challenge to the specialist’s acumen—perhaps even to the state of knowledge of the speciality itself. Thus, specialists can have a professional interest in solving a problem rather than ‘giving up’ with euthanasia” [16]. It should be noted that a desire to intervene and prolong life is not necessarily exclusive to specialists. More recently, Taylor observed that “a question being increasingly asked is whether there are many clinicians who currently view euthanasia as a failure rather than a considered, considerate option for a struggling animal” [46].

Furthermore, the desire to prolong life may be driven by owners, who may seek out practitioners offering AVC because they wish to avoid euthanasia or ensure they have done everything in their power to save their companion animal. As a pioneer in the study of the human–companion animal bond [4], Serpell argues that strong anthropomorphic attachments to companion animals may lead owners to pursue prolonging the life of an animal, even if that animal has a terminal illness and is suffering [47]. He argues that such tendencies have been facilitated by AVC and “the increasing availability of previously inaccessible treatment options” [47]. Depictions of veterinary care in the media and television may fuel unrealistic client expectations [46]. Given that the majority of veterinarians are current or former pet owners with “histories of strong emotional attachments to companion animals” [48], Serpell questions their ability to achieve “sufficient psychological distance” to permit an unbiased assessment of their welfare [47].

However, even in situations where veterinarians disagree with an owner’s desire to pursue what the veterinarian may consider to be futile treatment, in most jurisdictions in

the world, animals are considered the property of the owner under law. Owners may have a right to refuse euthanasia, even where death is imminent. In such cases, veterinarians may be forced to continue to treat an animal, even where they feel it is against the animal's best interests. As in the field of medicine, there is a dearth of evidence indicating when treatment is, beyond reasonable doubt, futile [32]. Unlike laboratory animals, the veterinary treatment of companion animals is not limited by pre-determined humane endpoints. This may lead to a situation where a beloved companion animal, under the care of a veterinary team, may suffer more at the end of their lives than a laboratory animal undergoing an experiment with ethics committee oversight, where humane endpoints are predetermined [49].

It has been argued that the availability of AVC incorporating aspects of home care for animals with chronic conditions may increase caregiver burden among companion animal owners [50]. Caregiver burden is described as distress associated with the emotional, financial and practical demands of caring for a patient [51]. Owners caring for chronically ill dogs described impacts on multiple dimensions of their lives, including changes in the use of their homes, changes in working schedule, altered routines, medication regimes and increased veterinary visits [50]. While some owners find a sense of purpose in increased caring responsibilities, around half of owners looking after seriously ill companion animals reported high levels of burden [51]. While this burden was lessened with the knowledge that euthanasia could be chosen for an animal, this choice was experienced as an added burden by some owners [50].

4. Financial Cost and Accessibility of Veterinary Care

Unless subsidised, for example by a charity, as part of a clinical trial or for teaching purposes, the cost of veterinary care is borne entirely by companion animal owners. Due to its association with sophisticated, newer technology and application by specialists, AVC is associated with higher costs. This raises ethical questions around equity, as AVC is not accessible to the majority of veterinary patients.

The costs of AVC occur in the context of rising costs of veterinary care in general, particularly for companion animals [52]. Cost is a recognised barrier to accessing to veterinary care, as it is in human health care. In order to remain sustainable and make a profit, service providers must charge clients for products, services and time. Overheads include equipment costs, staffing (higher in facilities providing specialist and 24-hour care), other operational costs, insurance, training and professional development. Rising costs may be due in part to an increase in SOC. In addition, veterinary students graduate with significant debt, and require higher wages to service these debts [53,54]. It has been suggested that increased costs in veterinary care in general may be related to an increase in veterinary student tuition fees over the last two decades [53].

In bioethics, the question of access to healthcare falls under the principle of justice, insofar as it relates to questions of fairness, entitlement, and equitable distribution of healthcare resources [55]. Ideally, healthcare should be universal, continuous and affordable for patients and clients; however, due to costs and other barriers (for example access to transport), veterinary care is not accessible to all companion animal owners. There is no "safety net" to ensure that all companion animals receive required care [28].

In a survey of US dog and cat owners, 40% reported that cost prevented them from seeking veterinary care in the past five years [56]. According to the Access to Veterinary Care Coalition, over 29 million companion animals live in households participating in the Supplemental Nutritional Assistance Program, with millions more living in households that are financially struggling [57]. Additionally, veterinary care may simply not be available in some underserved communities. Barriers to veterinary care impact animal welfare, as well as the experiences of animal owners and veterinary team members [58].

Surveys of ethical challenges encountered by veterinary team members consistently identify client financial limitations as the most common [37,59,60] or one of the most common [39,61,62] ethical challenges encountered. These studies do not discuss potential moral distress experienced by companion animal owners who wish to pursue treatment

but are not in a financial position to do so. Higher costs associated with AVC are likely to pose a barrier to access to AVC. This means that a large proportion of owners cannot fund the care their animals need, while a smaller proportion of owners can pay for AVC—even when this care is not required or recommended [28].

It could be argued that this really is not a problem with AVC. After all, all veterinary medicine, including AVC, is a form of private medicine, paid for by clients whose funds would otherwise not necessarily be spent treating animals *not* owned by those clients [7]. However, AVC is associated with increased costs in veterinary medicine, both directly as a result of costs incurred through provision of advanced care itself, and indirectly, through raising the overall SOC. An unintended consequence of this is an increase in the overall cost of pet ownership [63], and a reduction in the accessibility of veterinary care.

Furthermore, it may not be appropriate that the veterinary market dictates what types of treatment are available. Where it does, it is possible that owners with access to substantial funds may pursue “highly interventional” medicine and surgery [7].

As with all veterinary interventions, AVC may lead to increased costs to clients when unnecessary diagnostics and treatments are carried out. “Overutilisation” or “overservicing” subject animals to unnecessary discomfort, while also subjecting clients to unnecessary costs [16,20].

Strong attachment to animals may influence an owner’s willingness to incur higher veterinary fees [64]. In a survey of 50,000 Canadian households, Ipsos-Reid segmented pet owners into four categories: pet humanists (31%); pet pleasers (25%); conscientious pet lovers (24%); and pet traditionalists (20%) [65]. Pet humanists were defined as caring and devoted pet owners, and despite having the second highest level of income (when compared with conscientious pet lovers), were the highest consumers of veterinary services. They may feel guilty for declining treatment for financial reasons. According to the report, “if their pet developed a chronic disease a full 41 percent [of pet humanists] would spend \$1000 or more trying to aid in its recovery and 85 per cent would go into debt if necessary to provide for the pet’s well-being” [65]. The authors added that “the loyalty and devotion of these people to their pet is attractive . . . the pet humanists segment is, therefore, the primary target for the pet food and pet service market” [65].

Pet humanists were also the most likely owners to insure their pets. Pet insurance may reduce “economic euthanasia” [66–68], benefitting animals, their clients and veterinary team members who may otherwise experience moral distress. However, pet insurance premiums may not be affordable for many pet owners. It is possible that the growth of pet insurance has been driven by increased costs associated with AVC [69]. At the same time, increased costs of veterinary care drive up the cost of pet insurance premiums [46].

An alternative means of paying veterinary bills is crowdfunding. Platforms such as GoFundMe promote themselves to pet owners for this purpose [70], while others such as CoFundMyPet encourage veterinarians to promote crowdfunding to their clients [71]. While crowdfunding may facilitate payment of veterinary fees, it may facilitate provision of “extreme” interventions [72]. While it may solve ethical challenges related to finance, crowdfunding presents additional ethical challenges for multiple stakeholders—including fundraisers, funders, platforms and regulators [73]. For example, crowdfunding may be undertaken by those with the means to pay veterinary bills [74], or to defraud funders [75,76].

5. Conflicts of Interest

Tannenbaum described conflicts of interest as “the basic fact of veterinary ethics”, primarily because of the potential conflict between the interests of the client and those of the animal [16]. He expanded that “time and again, veterinarians are thrust into the middle of these conflicts, wishing to satisfy the needs of both patient and client but unable to do so.” [16]. Conflicts between the interests of the owner and the interests of the animal are one of the most common ethical challenges faced by veterinarians and veterinary team members [37,38,59–62]. Yet, it is possible for veterinarians, like other healthcare

professionals, to be influenced by considerations other than the needs of the client and the patient.

Like other professionals, veterinarians earn an income for their work, and may have a financial interest in performing AVC and higher cost interventions. This creates a potential conflict of interest [28]. For example, a veterinarian may recommend a particular treatment because they, or the practice, will earn more, rather than because that particular treatment is in the animal's best interests. According to Rosoff and colleagues, "even those vets on salary, like their human medical counterparts, are well aware of the necessity to generate sufficient income to support themselves and their institutions. Hence, there is an inherent conflict of interest that may underpin their recommendations and could lead to overtreatment or inappropriate treatment" [28].

As mentioned previously, professional development may create a potential conflict of interest. In a study of companion animal veterinarians in Austria, the use of new technologies and techniques were correlated with veterinarians' desire for self-improvement, and identified as a source of motivation in working life [77]. Springer and colleagues hypothesised the existence of four ethical decision orientations utilised by companion animal veterinarians when managing ethically challenging situations. One of these, "development oriented", prioritises a veterinarian's own desires to advance veterinary practice [69]. Development-oriented veterinarians agreed more strongly with the statements that "veterinary medicine should offer the same diagnostic options as human medicine"; "it is important to promote the advancement of small animal medicine for future patients" and "it is important for the veterinary profession to keep developing innovative methods, even though it is impossible to predict possible complications" [69]. While attitudes to the rapid development of diagnostic and treatment options varied between countries (for example, UK veterinarians were less development oriented than those in Denmark or Austria), this may reflect other factors, such as being more accustomed to mandated continuing professional development (CPD) [69]. Less experienced and younger veterinarians were more likely to be development oriented. This may reflect their relatively recent training and exposure to AVC in university teaching hospitals [69], or other factors such as a less nuanced understanding of standard of care, inability to predict unintended consequences of AVC, or a combination of these. It is possible that the development-oriented veterinarian may prioritise AVC over the interests of their patient.

Credentialement requirements may create a conflict of interest for veterinarians in training. For example, veterinarians specialising in dentistry must meet minimum required case-log quotas, and therefore "may be tempted to perform orthodontic procedures on questionable cases for the sole purpose of meeting the quota requirement" [78]. Alternatively, AVC interventions may be performed by an already credentialed specialist to publicise or market their skills and services, for example on social media, in newsletters or publications, or even on television.

Another conflict of interest may occur when the treatment of a patient becomes a clinical trial. In such an instance, the veterinarian's interest in testing a hypothesis (for example, that treatment X will result in therapeutic outcome Y) may be in conflict with the interests of the patient (for example, to receive a different treatment, or no treatment at all) [16]. We will discuss this further in Section 6.

6. When Does Advanced Veterinary Care Become Experimentation?

According to Verstraete and Tannenbaum, one of the core principles common to veterinary codes of ethics is that "veterinarians should base diagnoses and treatments on the best available scientific knowledge, and should not employ techniques of which the efficacy and safety have not been established by sufficient scientific evidence" [78].

The first part of this statement promotes a development-oriented approach, requiring veterinarians to stay abreast of the "best available scientific knowledge", while setting limits on its application. Notably, it should be applied only when the safety or efficacy of a technique have been established. However, the safety and efficacy of novel or in-

novative techniques may not have been established before they are used on veterinary clinical patients. What amounts to “sufficient scientific evidence” is open to interpretation. There may be scant evidence supporting innovative diagnostic and treatment modalities and techniques.

In a letter to the *Veterinary Record* in 2017, eleven veterinary specialists raised concerns about what they perceived as a “progressive loss of clarity between acts of veterinary surgery and animal experimentation, particularly with respect to companion animals” [27]. They argued that while experimental treatment on laboratory animals is overseen by ethics committees, the need for such oversight in companion animal practice was potentially greater due to the potential influence of competing interests of animals, animal owners, veterinarians and other parties such as sponsors.

Such concerns are the basis of “EthicsFirst”, “a group of veterinary and non-veterinary professionals who share common concerns about related areas of companion animal clinical practice in which boundaries are being pushed to extremes” [72]. These include “unproven interventions” and “unregulated research”. Through publications and presentations, EthicsFirst seeks to promote “independent and prospective ethical review” of “extreme” interventions, in addition to prioritisation of animal welfare [72].

The use of novel or innovative treatments in veterinary practice is less regulated than it is for medical procedures [79]. There may be a lack of consensus on what counts as “novel”, “innovative”, or indeed “experimental” in a clinical setting, particularly a setting where empirical treatment trials on individual patients are common due to cost constraints [59]. In the United Kingdom, the Veterinary Surgeons Act (1966) states that “the clinical investigation and management of the health of animals is generally considered to be recognised veterinary practice when it involves an intervention which is of direct benefit to the animal or its immediate peer group” [80]. There is a danger of “selective interpretation” of what constitutes “recognised veterinary practice” [72]. Additionally, veterinarians who work in clinical practice may have limited exposure to ethics committees and may struggle to identify instances where there is a need for ethics oversight—particularly if the “experiment” does not fit the format of a randomised controlled trial.

While there is clear legislation in most jurisdictions regarding research on laboratory animals and human patients, laws and standards for clinical research on veterinary patients are not well defined [81]. This means that veterinary clinical studies may lack oversight by an ethics committee, which would otherwise ensure that the study meets scientific, ethical, quality and animal welfare standards [81]. Bertout and colleagues point out that ethical oversight of veterinary clinical studies is particularly challenging in private practice settings, where the availability of such a review is lacking: “as such, private veterinary hospitals sometimes face hurdles when initiating or conducting clinical studies and must rely on the ethical review conducted by other participating centres or the sponsor, convene their own review panel, or end up having to forgo an ethical review altogether” [81].

The latter is disadvantageous to those wishing to publish their research, as journals (including this one) require authors to confirm that their research has been approved by or exempted from ethical review by an animal ethics committee, or written ethical justification of their work using the 3Rs [82]. To capture veterinary clinical studies in private practice settings, professional veterinary organisations may be able to provide ethical review and oversight. For example, the Royal College of Veterinary Surgeons provides an Ethics Review Panel for “practice-based researchers, who may not normally have access to such through university or industry connections” [83].

Such measures may be helpful in the context of prospective studies intended for publication, but the requirement for their input may not be flagged in situations where publication is not an intended outcome. Furthermore, deliberations, which require time for preparation and convening of a committee, may not assist individual patients for whom delayed intervention would yield negative consequences. As described by veterinary ethicist Moses: “Only a small fraction of pet owners are able to afford hospital stays long enough to allow for someone to notice the ethical nature of a conflict, ask for a consultation,

and have it done in the time frame during which decisions must be made” [84]. Getting the balance right between the provision of timely ethical oversight, and the ability of clinicians to exercise clinical judgement, may be challenging.

All veterinary treatment requires informed owner consent. In the case of experimental treatment, in addition to information about the potential risks of proceeding, as well as the evidence base (or lack thereof) for the treatment when compared to alternatives if these are available, owners should be informed that a treatment is experimental. This may be difficult, as some owners may cling to the hope, however unjustified, that an experiment will extend the life of their companion animal. The first author, as a staff member in a veterinary school who also works with companion animals, regularly receives unsolicited queries from owners of companion animals with life-limiting conditions seeking information about potential clinical trials they could enrol their animals in for this very reason.

7. How Can We Address Ethical Concerns Associated with Advanced Veterinary Care?

Thus far, we have outlined concerns about AVC identified in the veterinary ethics literature, including poor quality of life or negative impacts on animal welfare, dysthanasia, increased caregiver burden, financial costs and impacts on accessibility, conflicts of interest and a lack of oversight for what amounts to experimentation. These concerns are not exclusive to AVC, but may be exacerbated in the context of AVC, for example due to its potential to be more invasive or more costly. Despite these concerns, we believe that individual animals, their owners and veterinary professionals and practices can benefit from improved treatment of companion animals through improved animal welfare, an enhanced human–animal bond, professional development, compassion satisfaction, and income. However, the concerns raised demonstrate that AVC, simply by virtue of being “advanced”, is not enough to ensure “good” practice. Ethical AVC requires prospective and retrospective ethical review and thoughtful implementation.

The use of ethical frameworks, for example utilitarianism, the ethical matrix, and the four principles of biomedical ethics, prompt structured reflection on the potential harms relative to the potential benefits of healthcare [85,86]. For example, according to the first two principles of biomedical ethics, non-maleficence and beneficence [85], veterinary professionals should aim to minimise harms and maximise benefits associated with veterinary care. Indeed, Bley employs these principles as the basis of guidelines for clinical decision making in veterinary oncology [87]. According to this model, if treatment promotes a patient’s basic needs and interests or increases wellbeing, and the frequency, durational and intensity of side effects is outweighed by these, the treatment can be justified on ethical grounds.

Fraser’s “practical” ethic for animals requires that we provide good lives for animals in our care, treat suffering with compassion, be mindful of unseen or unintended harms and protect the life sustaining processes and balances of nature [88,89]. According to this framework, it is important that veterinary care is compatible with a good life (or a life worth living [90], or positive welfare [91]), aims to minimise suffering, has minimal negative unintended consequences, and is practiced sustainably. The latter tends to be considered in relation to livestock, but is rarely raised in relation to companion animals [92,93]. While it is possible that AVC may result in negative impacts in the environment, for example through the use of inhalational anaesthetics [94] or cytotoxic chemotherapeutic agents [95], we did not find authors raising specific concerns about AVC in this regard. Indeed, there is scope for AVC practitioners such as specialist anaesthetists to develop and promote sustainable practices. For example, advanced monitoring equipment may permit a reduction in inhalational anaesthetic use and associated greenhouse gases [94]. There is a need for further studies regarding the potential harms of all types of veterinary practice to the environment, and effective mitigation strategies [96]. In the future, environmental sustainability may be seen as a feature of AVC, and veterinary practice in general.

Fraser’s “practical” ethic ensures that the interests of the companion animal are central to ethical deliberation, emphasising the need to promote positive welfare and treat suffering

with compassion. However, it is important that secondary interests are identified and appropriately managed. The Vet Ethics Tool, developed by Grimm and colleagues, was developed in response to concerns raised by the Association of Veterinary Anaesthetists (AVA) regarding “apparent inappropriate overtreatment of some companion animals” [49]. In aiding ethical deliberation around a proposed treatment, the tool requires users to consider primary factors, notably the interests of the animal, potential immediate and long-term harms and benefits of the proposed treatment, as well as risk and harm mitigation strategies. It also requires the consideration of secondary factors, including the experience of the team, the quality of the evidence on which the proposed treatment is based, the potential impact on the client (including the financial impact) and their relationship with the animal, the ability of the client to provide suitable aftercare, and a final priority check (whether secondary factors outweigh primary factors). The tool employs a traffic light system, with red indicating that alternative treatment options should be considered; orange indicating a need to reconsider the procedure and/or clinician’s responsibility, and green indicating valid justifications for the proposed treatment [49]. Importantly, the tool does not and cannot establish where the line is drawn between acceptable and unacceptable treatment. However, if applied conscientiously, it ensures a comprehensive assessment of primary and secondary justifications for a proposed intervention. Furthermore, it may be a useful tool in stimulating discussion among veterinary team members and may reduce the risk of interventions that lead to poor QOL or dysthanasia. The use of ethical frameworks and tools such as the Vet Ethics Tool in clinical settings may improve the ability of veterinary team members to recognise and manage conflicts of interest. The inclusion of a person or persons from outside of the organisation in these deliberations may reduce organisational bias.

In the light of concerns about companion animals being subjected to essentially unregulated experiments in some situations, as part of these deliberations, humane endpoints should be established and agreed upon in advance of commencing treatment, and owner consent appropriately documented [97]. This discussion should also include information about the potential caregiver burden associated with treatments [50]. In addition, discussion of proposed clinical trials or novel interventions should be undertaken by an ethics committee applying the 3Rs framework to help ensure that alternative treatments are considered, that an appropriate number of animals are enrolled in the study, and that methods are refined to minimise harms [98]. It is critical that negative or unexpected outcomes are published, as this can reduce the risk of flawed approaches being re-attempted [79].

Additionally, regulatory bodies may determine that some procedures should not be performed at all or should only be performed where stringent conditions are met. For example, the RCVS currently “does not support the use of living source donors for feline renal transplantation” because removal of a kidney from the source cat involves inflicting pain and discomfort which does not benefit that animal (27.33) [99]. Where dead animals are used as source animals, the animals must not have been euthanised for the purpose of donation (27.37); the owner of the source animal must provide informed consent (27.38), and centres which perform such procedures must consult with an ethics committee that includes a layperson (27.41e). In addition, the team performing the procedure must include veterinarians with Diplomate or Board certification in medicine, soft tissue surgery and anaesthesia, or microvascular surgery and critical care (27.41a), ensuring an appropriate skill set.

The use of QOL scoring tools, as well as pain scoring tools, needs to be normalised in veterinary clinical settings as well as in peer-reviewed companion animal studies, to provide baseline data and facilitate evaluation of the impact of AVC on the welfare of animal patients. The routine use of such instruments could improve the assessment of animal welfare in companion animal practice settings and may increase awareness of both veterinary team members and animal owners of the welfare of animals. Recording scores in electronic patient records may assist in the inclusion of patient welfare in retrospective studies. Ideally, owners should be able to access the same tools for QOL and pain scoring

in companion animals, as there may be differences in scoring between veterinary team members and animal owners [100].

Formal clinical audit, currently utilised sporadically in veterinary settings, requires evaluating outcomes against explicit criteria with the goal of improving and refining practice [101]. Clinical audit should be cyclical, to ensure continuous improvement. Informal clinical audit may occur in the form of morbidity and mortality rounds [102,103]. The focus of the latter is typically adverse or unexpected outcomes in the morbidity and mortality rounds [102]. Such discussions may be broadened to incorporate ethical aspects of cases. Alternatively, ethics rounds may be helpful in identifying and alleviating moral distress among veterinary team members [84,104,105] and refining future practice. The authors of this study are conducting a pilot study to determine the impacts of virtual ethics rounds on veterinary team members.

Discussions around costs of AVC highlight disparities in access to veterinary care, and the need for a “safety net” for animals [57]. This underscores the need for veterinarians to be equipped to provide a spectrum of care, which in turn requires adequate exposure to general practice and primary care, as well as specialist or referral settings [12,13]. It has been argued that AVC should be accompanied by approaches that enable more clients to pay for it [16]. While strategies such as pet insurance can be helpful, premiums are not affordable for all pet owners. The availability of a spectrum of care is required to ensure that the welfare needs of the majority of companion animals can be met.

8. Conclusions

The veterinary ethics literature raises a number of ethical concerns regarding the AVC of companion animals. Awareness of these concerns, and the application of ethical frameworks and tools may aid in the reduction of harms and maximisation of benefits of AVC. Routine QOL assessment of veterinary patients in clinical settings and inclusion of QOL assessment in publications will aid evaluation and refinement of veterinary interventions including AVC. Clinical audit and ethics rounds may help to identify and alleviate distress among veterinary team members and may help refine AVC.

The provision of AVC highlights disparities in access to veterinary care and underscores the need for the availability of a spectrum of care.

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4.3 Further discussion

As discussed in this chapter, advanced veterinary care can, in some circumstances, be construed as overtreatment. In human healthcare, 'overtreatment' is defined as intervention that is unlikely to improve a patient's health or welfare, is misaligned with their expressed interests, or both (Clapp et al., 2022). Potential outcomes include iatrogenic harm, financial burden to the patient or family, emotional burden, and wasted time and resources (Clapp et al., 2022). Clapp and colleagues identify three systemic factors driving overtreatment:

1. the emphasis on patient choice in Western medical ethics
2. a profound cultural belief in the benefits of medical intervention and a tendency to 'heroicise clinicians and patients who achieve miraculous survival'
3. an emphasis on prolonging length of life, even at extensive cost
4. fee-for-service payment plans that reward doctors for treating, rather than for determining whether treatment is right for the patient (Clapp et al., 2022).

These factors are increasingly present in veterinary settings, with owner choice substituting for patient choice.

In the veterinary literature, overtreatment is defined as 'the application of therapeutic interventions that provide no net benefit or do more harm than good for patients' (McKenzie, 2016). Overtreatment includes treatment that is given as a result of overdiagnosis, defined as 'a constellation of factors that lead to the correct identification of disease for which subsequent testing and treatment, on balance, causes patients more harm than good' (McKenzie, 2016). Overtreatment and overdiagnosis may be associated with increased morbidity and mortality, increased distress of veterinary patients, increased distress to owners, and increased financial costs. Additionally, owners who cannot afford the financial costs of care, or those who cannot cope emotionally, may elect euthanasia, even where the disease diagnosed may have had little clinical consequence for the patient (McKenzie, 2016). A qualitative study of how UK veterinary practitioners experience and respond to adverse events confirmed that complaints prompted defensive strategies, which included overtreatment of veterinary patients (Gibson et al., 2022).

There is overlap between overtreatment and futile care. The latter has been defined as occurring when ‘...the continuing of current treatment or institution of new treatment is not expected to alter the clinical course of the patient, even if such treatment confers some benefit to the owner’ (Peterson et al., 2022). The authors predict that requests for futile care will likely continue to increase with increased availability of advanced and specialised veterinary care. Their survey of 477 US-based small animal general and specialty veterinarians found that 42% had encountered futile care more than six times per year, and 61% reported witnessing futile care in inpatient and outpatient settings (Peterson et al., 2022). Importantly, 71% of respondents agreed there were some situations in which provision of futile care is appropriate. For example, this may include situations where an animal was kept alive until an owner could be present for euthanasia.

Veterinary care becomes problematic when treatment of disease and the extension of life are considered without prioritising the best interests of the animal patient (Gray and Fordyce, 2020). According to Taylor, overtreatment occurs when procedures that constitute routine veterinary practice are performed ‘on an inappropriate patient at an inappropriate time’ (Taylor, 2022). One example might be performing treatment that has the potential to benefit the patient, but which has not been tried before.

Misguided beliefs of stakeholders (including owners) may skew decision making in favour of intervention that is not in an animal’s interests. In an analysis of a subset of survey data comprising responses from 464 Canadian veterinarians working in clinical practice, there was a moderate positive correlation ($r = 0.28$) between animal suffering (as reported by veterinarian respondents) and unrealistic client expectations (Wallace, 2017). The statistical significance of this correlation was not reported. This correlation warrants further exploration.

Concerns have also been raised about the role of animal health insurance in facilitating overtreatment, particularly in companion animals (Loeb, 2018). In a study by Springer and colleagues of small animal veterinarians in Austria, Denmark and the UK ($n = 648$), Danish and UK veterinarians who strongly empathised with clients, or were motivated to advance veterinary medicine, were more likely to recommend health insurance to clients (Springer et al., 2021). The authors speculated that insurance itself may increase the likelihood that veterinarians

recommend advanced, more costly interventions for insured pets. This finding highlights a need for the development of ethics policies by veterinary professional organisations and insurance companies.

While animals are typically considered property under the law, veterinary decision making about them is usually constrained by animal welfare protection laws. These function to a) ensure that patients are given essential treatment (which may be limited to first aid or euthanasia) and b) to prevent treating an animal in such a way that would cause harm or unnecessary suffering (such as prohibited procedures or experimental treatments beyond standard or recognised veterinary practice) (Gray and Fordyce, 2020). It is the latter principles of animal welfare legislation, concerning the prevention of harm or suffering, to which those seeking regulation of advanced veterinary care appeal (Fordyce, 2022, Taylor, 2022).

As has been suggested in human medicine, addressing some of the ECS identified in this review may require adjusting payment models to mitigate financial incentives for non-beneficial or futile treatment (Clapp et al., 2022). It may also require challenging the presentation of untested treatments in media stories, which can then drive demand (Clutton et al., 2022). Additionally, the veterinary profession, including editors of veterinary journals, must commit to generating the highest quality evidence for interventions, including evidence for the impact of interventions on quality of life as well as physical state (Taylor, 2022), and publication of 'no-impact' intervention studies.

Dr Louis Kwantes, Canadian Veterinary Medical Association (CMVA) President (2021–2022), openly concurred with the recommendations in the article presented in this chapter in his monthly column. He agreed that offering a spectrum of veterinary care, utilising prospective ethical review and decision-making tools for advanced veterinary care and innovative procedures, and regular use of QOL assessment tools may benefit animals, predicting that this would help to reduce mental health challenges for both clients and veterinary team members (Kwantes, 2022).

As defined in the article, advanced veterinary care presents a number of ECS. In Chapter 5, I will explore the ECS associated with the COVID-19 pandemic.

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Chapter 5: Types of ethically challenging situations encountered by veterinary team members during the COVID-19 pandemic

5.1 Background

In March 2020, the World Health Organization declared a global pandemic (Ghebreyesus, 2020), prompting governments to impose restrictions on human movement to minimise the transmission of the SARS-CoV-2 virus. I was contacted by several veterinarians seeking advice about ECS arising as a result of these restrictions. For example, one colleague, seeking to do as much as possible to assist in an unprecedented crisis, became involved in an audit of ventilators used for the treatment of animals, to ascertain how many could be repurposed to treat human patients (Litton et al., 2020). Another colleague expressed concern when ventilators were requisitioned by local health authorities from the emergency clinic in which they worked, so the ventilators could be on 'stand-by' for the treatment of humans. Meantime, animals that could previously have been treated with mechanical ventilation could no longer receive such treatment. Should my colleague have advocated more strongly for their animal patients?

My working conditions as a locum companion animal veterinarian changed dramatically. Notably, 'no-contact' consultations and staffing changes were suddenly imposed, including team-splitting to facilitate service continuity in case of COVID exposure in one team. There was a global shortage of personal protective equipment (PPE). Like my colleagues, I felt vulnerable: interacting directly with clients and colleagues posed an unknown level of risk. Some of my clients and colleagues were immunosuppressed. Others had vulnerable family members. I became aware – as did my colleagues – of a conflict between personal wellbeing and the wellbeing of family members, and a commitment to care for animal patients and their owners. I sought to identify the types, frequency and stressfulness of ECS encountered by veterinary team members during a pandemic, and to explore the approach of veterinary team members to ECS during the pandemic.

5.2 Main article

Quain, A., Mullan, S., McGreevy, P. D. & Ward, M. P. (2021). Frequency, Stressfulness and Type of Ethically Challenging Situations Encountered by Veterinary Team Members During the COVID-19 Pandemic. *Frontiers in Veterinary Science*, 8. <https://doi.org/10.3389/fvets.2021.647108>

For supplementary material, see Appendix C.



Frequency, Stressfulness and Type of Ethically Challenging Situations Encountered by Veterinary Team Members During the COVID-19 Pandemic

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Ethically challenging situations (ECS) are common in veterinary settings and can lead to moral stress. However, there is no published information about how a global pandemic affects the frequency and types of ECS encountered by veterinary team members. An online mixed methods survey was developed to determine the frequency, stressfulness and types of ECS experienced by veterinarians, animal health technicians and veterinary nurses since the advent of the global COVID-19 pandemic in March 2020. Responses from 540 veterinary team members from 22 countries were analyzed. With the advent of the COVID-19 pandemic, the median frequency of ECS encountered by respondents increased from several times per month to several times per week (Spearman Rank Correlation 0.619, $P < 0.0001$). The most common ECS (encountered at least several times per week) were: *challenging decisions about how to proceed when clients have limited finances* (64.4%), *conflict between personal well-being and professional role* (64.3%), *conflict between the interests of clients and the interests of their animals* (59.6%). These were followed by *challenging decisions about what counts as an essential veterinary service* (48.1%); *conflict between well-being of family/household members and professional role* (46.3%); and *challenging decisions about whether to perform non-contact veterinary visits* (46.3%). The most stressful ECS (reported to be very or maximally stressful) were: *conflicts between the interests of clients and the interests of their animals* (50.2%), *other* (42.9%), *conflicts between the interests of my employer and my own interests* (42.5%), *challenging decisions about how to proceed when clients have limited finances* (39.4%), *conflict between personal well-being and professional role* (38.0%), and *conflict between well-being of family/household members and professional role* (33.6%). Thematic analysis of free-text responses revealed biosecurity, client financial limitations, animal welfare, working conditions, and client relations as prominent themes. This is, to the best of our knowledge, the first study to describe the impacts of the pandemic on ECS experienced by veterinary teams globally. It identifies an increase in the

frequency of ECS associated with the COVID-19 pandemic, and a number of stressors unique to the pandemic. We identified a number of resources and strategies that may help veterinary team members navigate ethical challenges that may emerge in their daily work, as well as in the context of global crises.

Keywords: COVID-19, veterinary ethics, surveys, biosecurity, moral stress, pandemic

INTRODUCTION

Under normal circumstances, ethically challenging situations (ECS) are commonly encountered in veterinary settings and can lead to moral stress. Previous surveys have identified the most common ECS as client financial limitations restricting treatment options (1–3), and euthanasia in general (2). However, the most stressful ECS include clients wishing to continue treatment despite an animal's poor quality of life (4), suspected animal abuse (2), and euthanasia requests from clients who have funds but are unwilling to pay for treatment (3). In a study of 889 North American veterinarians, most reported feeling conflicted over what care to provide, and over 70% reported that obstacles preventing provision of appropriate care caused them or other veterinary team members moderate to severe distress (5). In general, veterinarians did not feel that their training adequately prepared them to manage ECS (3–5).

The COVID-19 pandemic, described as the second transboundary mega-crisis to impact contemporary societies in the 21st century after the global financial crisis (6), has necessitated radical change to everyday behaviors and working practices in most countries. Veterinary teams around the world were required to adapt to social distancing, restrictions on the types of services offered, restriction of non-essential travel, and pressure to reconsider what counts as a valid veterinary-client-patient relationship (VCPR). In addition, the limited surge capacity of human health care systems means that some veterinary teams donated or were required to forfeit personal protective equipment (PPE), medical equipment such as ventilators (7) and even staff for human healthcare (8). Due to restrictions on movement and closures of non-essential services, veterinarians may have been required to cull animals, for example surplus livestock (9) or animals in research settings (10). In some cases, veterinary team members were forced to limit the range and volume of services provided, due to lack of staff, limited access to PPE, or restrictions impacting ancillary services such as diagnostic laboratories and suppliers of goods and services (11, 12). One study documented a reduction in mental well-being of equine veterinarians and veterinary nurses since the advent of the COVID-19 pandemic (13).

Key stakeholders in veterinary ECS have historically been considered to be the veterinarian or veterinary team member, the animal patient and the client (14). Because of the highly infectious nature of SARS-CoV-2, and limited surge capacity of healthcare systems, veterinary team members now had to consider a wider range of stakeholders, including family members, human health care providers, and the community at large. As stated by Singleton and colleagues, “in the veterinary

sector SARS-CoV-2 has led to practitioners being faced with a daily struggle to balance their responsibility to preserve animal welfare with ensuring the continued health of the public, colleagues and their families” (15).

Understanding the types of ECS encountered by veterinary team members during an unprecedented global crisis can assist in preparing for and potentially circumventing such challenges in the future.

To the authors' knowledge there are no published data on the impact of a transboundary mega-crisis on the ECS faced by veterinary team members. To address this gap, we conducted a survey to determine (1) the frequency, stressfulness and types of ECS encountered by veterinary team members during a global pandemic and (2) veterinary team members' approaches to recent ECSs.

MATERIALS AND METHODS

Survey

We developed a survey comprising 29 questions, presented in three sections (see **Supplementary Table 1**). In the first section, participants were asked how often they experienced any ECS prior to the advent of COVID-19. They were then asked to describe, in their own words, the most common and the most stressful ECS encountered since the advent of COVID-19, respectively. Following this, they were asked to rate the frequency of a list of different ECS that they may have encountered in their work during the pandemic. This list was drawn from previous surveys of ECS in veterinary settings (2–5), review of available literature on the veterinary sector and COVID-19 at the time (March–April 2020), and discussion with veterinary colleagues (mostly in Australia, Italy, New Zealand, the US and the UK), about ECS encountered.

In the second section, participants were asked to consider the most recent situation in which they felt significant difficulty determining the ethically right thing to do. They were asked to choose a situation that had run its course and were advised that the example could come from any aspect of patient care or any other kind of situation in their workplace. They were asked to answer the following closed-ended questions in relation to that nominated situation: the type of ECS (from the same list as above), who or what was their primary obligation in this situation, how stressful was the situation, which strategies or resources they employed in the face of this situation, how helpful those strategies or resources were, how they rated the acceptability of the eventual outcome, what (if any) barriers to achieving an acceptable outcome they encountered, and, in

reflecting on the case, what additional types of assistance or resources they would have found useful.

In the final section, participants were asked 9 demographic questions, including their professional role, country of work, year of graduation, year of birth, gender, caseload, hours worked per week in their current role, whether they were taught ethics as part of the training toward their qualification, and whether they had undertaken any ethics training after gaining their qualification. Participants were also asked how confident they are in dealing with ECS in their workplace, and to what extent they are free to make and act on ethical decisions in their workplace. For each closed-ended question, participants could select “other” and provide a free-text response. The final question asked participants “is there anything else you would like to add about your experience with ethically challenging situations since the advent of COVID-19?” This question was included to act as a safety net, to facilitate identification of pertinent issues that were not addressed in the preceding questions (16). There were no restrictions on the length of answers.

Research Electronic Data Capture (REDCap) was the survey platform used. REDCap is a secure web application used for building and managing surveys, as well as data storage and export, hosted by the University of Sydney.

The survey was piloted by veterinarians and veterinary nurses from a variety of backgrounds (industry, companion animals, equine practice, wildlife, veterinary education). Questions were refined on the basis of feedback from these individuals. The study was approved by the University of Sydney Human Research Ethics Committee (project 2020/291).

Recruitment and Consent

A three-pronged online recruitment strategy was employed to maximize the networking potential of the study team and professional networks, and to distribute survey invitations as widely as possible across geographic boundaries (17). First, survey invitations were placed on websites or in electronic newsletters of professional bodies, professional organizations and special interest groups. The organizations who shared or published the link are listed in **Supplementary Table 2**. Second, a link to the survey was shared on social networking sites including Facebook and Twitter, as well as on the blog of one of the authors (AQ). Followers of these pages were able to share the link if they wished to. Third, survey invitations were distributed to professional networks of the study team via email.

Respondents were encouraged to share the survey link with colleagues, a snowball sampling technique which is an efficient and valid approach for recruiting unknown populations in online surveys (17). Respondents were invited to participate on a voluntary basis. No incentives were offered.

To meet the inclusion criteria, respondents were required to be a veterinarian, animal health technician or veterinary nurse over the age of 18 years. Participation was open to all geographic locations from the period 13 May 2020 to 14 July 2020. The landing page of the survey was a participant information statement, providing detailed information about the purpose of the study, the estimated completion time

(15–20 min), information about data storage and feedback, and assurance of the confidentiality and anonymity of responses. Submission of responses via REDCap indicated consent to participate. Data were stored on the physically and electronically secure, restricted-access University of Sydney server, which is routinely backed up and accessible only by the study team.

Data Cleaning

Where respondents had selected “other” from the drop-down menu and subsequently specified a response already represented by an option in the drop-down menu, it was re-categorized as such. Only those responses which were not reflected in the drop-down menu were retained in the “other” category.

Quantitative Data

Survey data from REDCap were downloaded into Microsoft[®] Excel[®] for Microsoft 365 MSO (16.0.13328.20262). Responses were organized into categories for the purpose of descriptive statistics. Summary statistics were calculated for the demographic variables and for the ECS variables. Likert-style data were plotted using stacked bar graphs.

For the question on the frequency of specified types of ECS encountered since the COVID-19 pandemic, the categories “several times per day,” “daily” and “several times per week” were combined into “at least weekly” in order to better visualize the patterns present in the data.

For the question on the stressfulness of specified types of ECS encountered since the COVID-19 pandemic, the categories “very stressful” and “maximally stressful” were combined, as were the categories “a little bit stressful” and “moderately stressful” in order to better visualize the patterns present in the data.

IBM SPSS version 24 was used for statistical analysis. Pre- and post-COVID ECS distributions were assessed for normality, and median scores were calculated. The correlation (Spearman rank, r_{SP}) between respondents pre vs. post COVID-19 ECS was estimated. Differences between groups were tested using the chi square test for categorical variables. A two-sided $p < 0.05$ was considered significant.

Thematic Analysis

Thematic analysis of free-text responses was performed as described by Braun and Clarke (18, 19). Briefly, one author (AQ) familiarized herself with the data by reading all free-text responses multiple times. Using NVivo[®] 12 Plus software (QSR International), open codes were applied to represent concepts described by respondents. Themes and subthemes were actively constructed through an iterative data process analysis. Responses could be coded under multiple themes. A random subset of data (10%) was re-coded by two members of the research team (AQ and SM) to ensure inter-coder agreement on themes and subthemes at a minimum level of 80% (20). The authors then discussed differences in their coding. Frequencies of themes and subthemes were measured (21). Quotations from respondents are identified by professional role.

RESULTS

In total, 551 respondents completed the survey and pressed the “Submit” button at the end of the survey indicating their consent to participate. Of these, two were test responses and 9 pressed submit without providing any answers to survey questions. Therefore, 540 responses were analyzed. With the exception of one respondent, who did not answer one question, all respondents completed all questions. Therefore, 540 responses were analyzed for all questions, with the exception of the questions asking respondents to specify the most recent type of ECS they had encountered ($n = 539$), year of birth ($n = 528$), and whether the respondent had anything else they would like to add ($n = 173$). Most respondents were female ($n = 434$, 80.4%) and worked as veterinarians (78.3%, $n = 423$). Most (68%, $n = 367$) worked in companion animal practice. Those who selected “other” listed their caseload as comprising consultancy, shelter veterinary services, conservation biology, policy and research, and goats only. Most respondents worked 31–40 (34.4%, $n = 186$) or 41–50 (30.6%, $n = 165$) hours per week (65%, $n = 351$) (see **Table 1**). The year of graduation ($n = 540$) ranged from 1958 to 2020, with a mean of 2004 (SD 11.510) and median of 2007. The year of birth ($n = 528$) ranged from 1926 to 2000, with a mean of 1979 (SD 11.911) and median of 1980.

The frequency of ECS encountered by veterinary team members increased following the advent of the pandemic (**Figure 1**). Prior to the pandemic, the median frequency with which veterinary team members reported encountering ECS was several times per month (interquartile range (IQR) once per month to several times per week). Following the advent of the COVID-19 pandemic, the median frequency increased to several times per week (IQR several times per month to at least once daily) ($r_{SP} 0.619$, $P < 0.00001$) (**Table 2**).

The frequency at which respondents encountered different types of ECS is presented in **Figure 2**. The three most common ECS (encountered at least several times per week since the advent of the pandemic) were: *challenging decisions about how to proceed when clients have limited finances* (64.4%, $n = 348$), *conflict between personal well-being and professional role* (64.3%, $n = 347$), and *conflict between the interests of clients and the interests of their animals* (59.6%, $n = 322$). These were followed by *challenging decisions about what counts as an essential veterinary service* (48.1%, $n = 260$), *conflict between well-being of family/household members and professional role* (46.3%, $n = 250$), and *challenging decisions about whether to perform non-contact veterinary visits* (46.3%, $n = 250$).

Of the 22 respondents who additionally selected “other,” two did not provide an answer at all, and two simply provided contextual information which did not specify an ECS. The remaining 18 responses are included in **Table 3**.

The most stressful ECS was perceived to be *conflicts between the interests of clients and the interests of their animals*, reported as very or maximally stressful by 50.2% ($n = 250$) of the 498 respondents who had encountered it. More than one third of respondents reported the following ECS to be very stressful or maximally stressful (**Figure 3**): *other* (42.9%, $n = 18/42$), *conflicts between the interests of my employer and my own*

interests (42.5%, $n = 178/419$), *challenging decisions about how to proceed when clients have limited finances* (39.4%, $n = 195/495$), *conflict between personal well-being and professional role* (38.0%, $n = 194/510$), and *conflict between well-being of family/household members and professional role* (33.6%, $N = 154/459$).

When respondents were asked to consider the most recent situation in which they experienced significant difficulty deciding upon the right thing to do, 539 provided a response that specified the type of ECS (**Figure 4**). The most commonly selected types of ECS were *challenging decisions about how to proceed when clients have limited finances* (22.4, $n = 121$), *conflict between the interests of clients and the interests of their animals* (15.2%, $n = 82$) and *conflict between the interests of my employer and my own interests* (12.1%, $n = 65$). Of the two respondents who selected other, one provided an irrelevant response, and one described having a disagreement with colleagues around case management.

When asked how stressful they found their most recent ECS, most respondents (54.2%) reported that this situation was either very stressful (37.2%, $n = 201$) or maximally stressful (17%, $n = 92$), another third of respondents indicated that it was moderately stressful (32.6%, $n = 176$) and 11.3% ($n = 61$) reported it was a little bit stressful. Only 1.9% ($n = 10$) reported that it was not stressful at all.

Almost half of respondents considered that ultimately, their primary obligation was to individual animal patients (480%, $n = 259$). The next most frequently selected categories were the community as a whole (13%, $n = 70$), other (12.6%, $n = 68$), my colleagues (10.2%, $n = 55$), individual clients (8.0%, $n = 43$), my employer (7.4%, $n = 40$), conservation of species (0.7%, $n = 4$) and the government (0.2%, $n = 1$).

Among the 68 response in the “other” category, respondents listed self (22.1%, $n = 15$), dual primary obligation (19.1%, $n = 13$) [humans and animals ($n = 5$), self and family ($n = 3$), workplace and regulator ($n = 1$), self and community ($n = 1$), self and colleagues ($n = 1$), family and work ($n = 1$), community and livestock industry ($n = 1$)], family (17.6%, $n = 12$), students/trainees/interns (11.8%, $n = 8$), business (4.4%, $n = 3$), the human animal bond (4.4%, $n = 3$), professional organizations (1.5%, $n = 1$), and the greater good (1.5%, $n = 1$). Additionally, two respondents (2.9%) stated that they were unsure of their primary obligation, two respondents who selected other did not provide any response (2.9%), and eight (11.8%) provided an irrelevant response.

The most commonly reported resource employed by respondents to help in the face of an ECS was discussion with colleagues (63.1%, $n = 341$), followed by workplace policies (32.2%, $n = 174$), reference to a professional code of conduct or veterinary oath (25.6%, $n = 138$), and discussion with a spouse or partner (21.1%, $n = 114$) (**Figure 5**).

While only 15.2% ($n = 82$) of respondents reported using an ethical framework, several respondents employed an ethical framework but did not recognize it as such. The most common ethical framework was utilitarianism, employing a cost-benefit analysis or harm reduction approach. For example,

“I used my knowledge of the clients, their known health status, our mutual trust, the need for euthanasia of their pet in the home

TABLE 1 | Frequency table for the demographic information on respondents to mixed methods survey on ethically challenging situations encountered by veterinarians, animal health technicians and veterinary nurses globally in the COVID-19 era in 2020 ($n = 540$).

Demographic parameter	Category	Number	Percentage%
Gender	Female	434	80.4
	Male	102	18.9
	Other	4	0.7
Role	Veterinarian	423	78.3
	Veterinary nurse	97	18.0
	Animal health technician	11	2.0
	Other animal health professional	9	1.7
Caseload	Companion animal practice clinical	367	68.0
	Mixed animal practice clinical	38	7.0
	Academia/teaching	34	6.3
	Zoo and/or wildlife practice clinical	27	5.0
	Equine practice clinical	13	2.4
	Exotic/unusual pet practice clinical	12	2.2
	Practice management	12	2.2
	Non-government organization	10	1.9
	Scientific research/laboratory animals	8	1.5
	Government	8	1.5
	Other	5	0.9
	Industry (e.g., pharmaceutical companies, food companies)	4	0.7
	No longer working as a veterinarian	1	0.2
Hours/week	0–10	21	3.9
	11–20	31	5.7
	21–30	64	11.9
	31–40	186	34.4
	41–50	165	30.6
	50+	73	13.5
Country	Australia	319	59.1
	United States of America	125	23.1
	Canada	26	4.8
	United Kingdom	25	4.6
	New Zealand	12	2.2
	Singapore	10	1.9
	Germany	6	1.1
	China	4	0.7
	Netherlands	3	0.6
Other*	13	2.4	

* Other included one respondent (0.2%) from each of the following countries: Austria, Belarus, Cambodia, Denmark, France, Hong Kong, Republic of Ireland, Jamaica, Lithuania, Mexico, Spain, Thailand, Zimbabwe. Percentages may not add to 100 due to rounding to one decimal place.

environment and the refusal of a referral/emergency service to allow it.” (198, veterinarian, Australia)

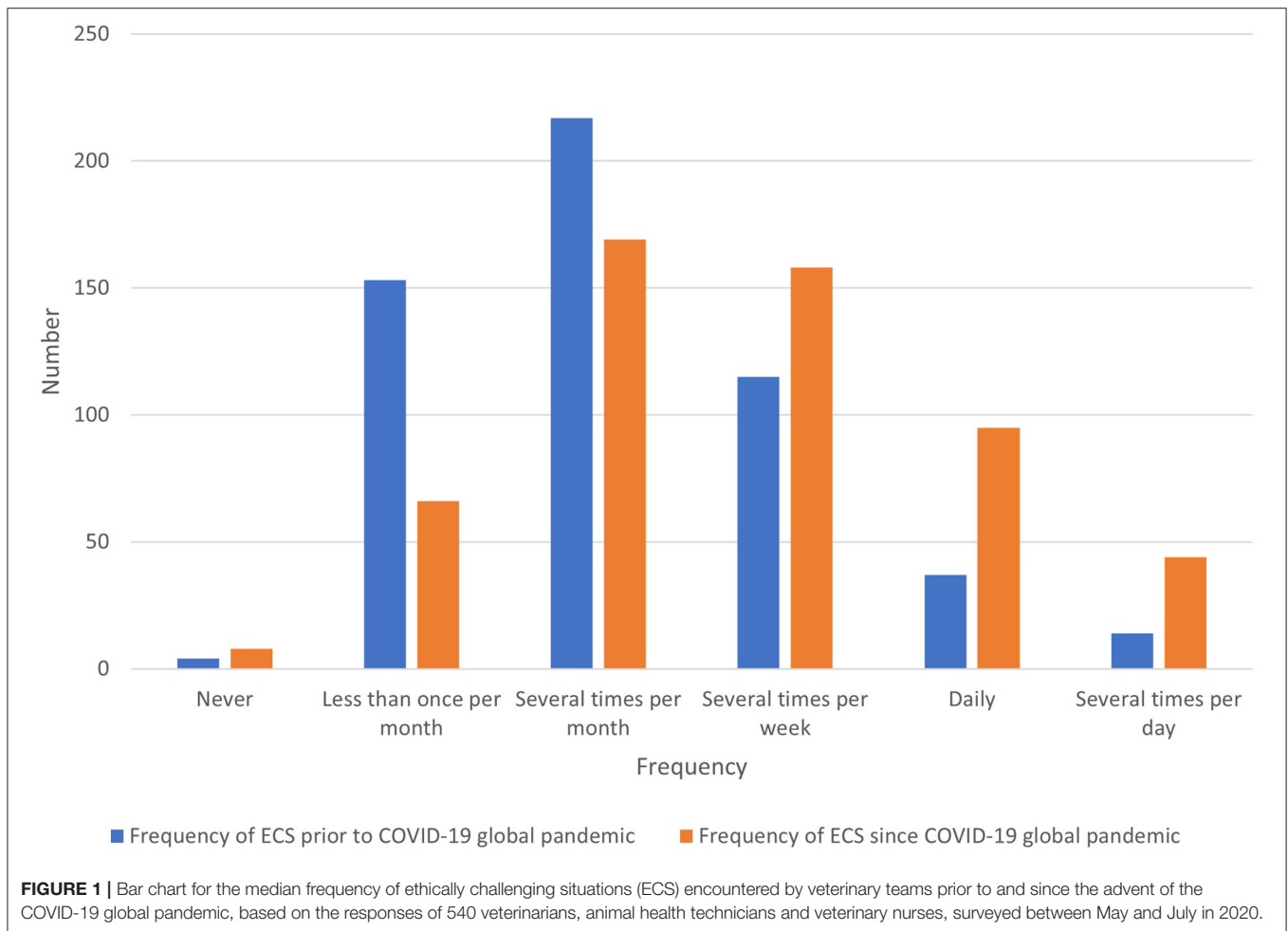
Others appealed to a sense of what was “right” but did not elaborate on norms or rules they referred to in deliberation.

“I could only do what I felt was right for the client and the pet and what I could live with.” (222, veterinarian, US)

or

“What I felt was ultimately right although difficult/scary for me to do.” (270, veterinarian, Australia)

Other resources respondents used (7.8%, $n = 42$) were: application of unspecified problem solving skills ($n = 5$), reference to one’s primary obligation ($n = 4$), risk minimization ($n = 4$), attending to personal well-being (yoga, meditation, mindfulness or exercise) ($n = 3$), communication with other stakeholders ($n = 3$), accessing and comparing guidelines from a number of organizations ($n = 3$), discussion with a friend or housemate ($n = 2$), a union, professional organization or regulatory body ($n = 3$), empathizing with one or more stakeholders (for example, trying to put oneself in the shoes of the owner) ($n = 2$), consulting a lawyer or legislation ($n = 2$), appealing to a sense of what feels “right ($n = 2$),”



consulting a coach ($n = 1$), discussion with an insurer ($n = 1$), consultation with subject matter expert ($n = 1$), reference to scientific literature ($n = 1$), utilize principles of triage ($n = 1$), applying “common sense” ($n = 1$), utilizing one’s own resources (unspecified) ($n = 1$), reference to past experience ($n = 1$) and a sense of common humanity ($n = 1$).

More than one third of respondents (35.9%, $n = 194$) found the resources and strategies they used somewhat helpful, while 30.4% ($n = 164$) found them helpful, 17.0% ($n = 92$) found them very helpful, and only 3.1% ($n = 17$) found them maximally helpful. In contrast, 6.3% ($n = 34$) found they were not helpful at all. In addition, 7.2% ($n = 39$) selected “not applicable” to this question.

Only 4.6% of respondents ($n = 25$) rated the outcome of the ECS as ideal, while 19.8% ($n = 107$) rated it as good, 46.1% ($n = 249$) rated it as an acceptable outcome which could be improved, 22.0% ($n = 119$) rated the outcome as uncertain, and 7.4% ($n = 40$) felt that the outcome was unacceptable.

The most common barrier to resolving an ECS to the respondent’s satisfaction (Figure 6) was pressure from an employer or client (40.9%, $n = 221$), followed by financial limitations (38.9%, $n = 210$) and differences in values between

stakeholders (33.3%, $n = 180$). Lack of time was a barrier in more than one quarter of cases (27.4%, $n = 148$). Only 6.1% ($n = 33$) of respondents reported not being aware of any barriers to resolving the ECS they described.

Other reported barriers included lack of personal resources ($n = 4$), rapidly changing recommendations, guidelines or restrictions ($n = 3$), lack of information or uncertainty ($n = 3$), lack of guidance from regulatory bodies, professional organizations or governments ($n = 2$), concerns for personal safety ($n = 2$), vulnerable clients ($n = 2$), government policies ($n = 2$), workplace culture ($n = 2$), shortage of human resources ($n = 1$), physical distancing ($n = 1$), a lack of services normally available ($n = 1$), unrealistic client expectations ($n = 1$), lack of support from a professional body ($n = 1$), racism ($n = 1$), and lack of resources in general ($n = 1$).

When asked to reflect on the ECS and consider which types of assistance they would have found useful, almost half (46.7%, $n = 252$) felt that professional reassurance that their decision was the correct one would have been useful (Figure 7). More than one quarter (26.1%, $n = 141$) reported that additional help in mediating conflict among different points of view would have been useful, and 25.7% ($n = 139$) reported that alternative

TABLE 2 | Comparison of frequency of ethically challenging situations (ECS) encountered by veterinarians, animal health technicians and veterinary nurses prior to and since the advent of the COVID-19 global pandemic (*n* = 540).

		Frequency of ECS since COVID-19 global pandemic						
		Less than once per month	Several times per month	Several times per week	Daily	Several times per day	Never	Total responses
Frequency of ECS prior to COVID-19 global pandemic	Less than once per month	56	57	23	10	4	3	153
	Several times per month	8	108	74	22	4	1	217
	Several times per week	0	4	60	38	13	0	115
	Daily	1	0	0	25	11	0	37
	Several times per day	1	0	1	0	12	0	14
	Never	0	0	0	0	0	4	4
	Total responses	66	169	158	95	44	8	540

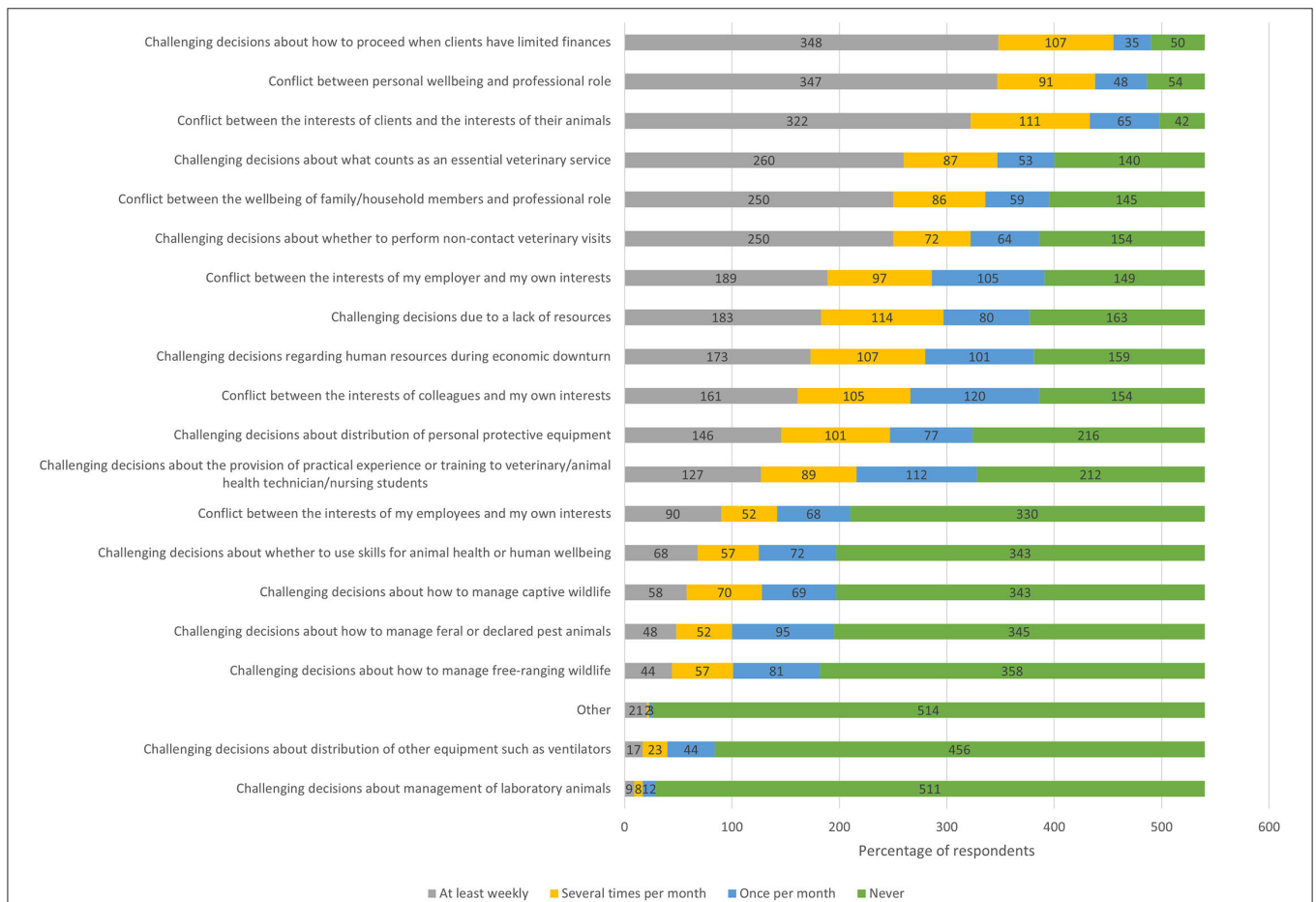


FIGURE 2 | Stacked bar chart for the most commonly experienced ethically challenging situations encountered by veterinary team members since the advent of the COVID-19 pandemic, based on the responses of 540 based veterinarians, animal health technicians and veterinary nurses, surveyed between May and July in 2020.

suggestions for ethically appropriate courses of action would have been useful.

Among respondents who selected other, desired assistance for navigating ECS tended to fall into one of three major categories. The first category comprised practical support, and included

human resources (*n* = 5), ability to provide financial support to clients (*n* = 2), more resources in general (*n* = 2), support in caring for one’s family (*n* = 1), the support of an animal welfare organization (*n* = 1), more time (*n* = 1), financial support from the government (*n* = 1), communication skills (*n* = 1), flexibility

TABLE 3 | Other situations where decision-making may be ethically challenging, as described by participants.

Role	Country	Ethically challenging situation as described by participant
Veterinarian	Australia	Disagreements between colleagues. One person wants to do A and another wants to do B.
Veterinarian	Australia	Challenging decision about clients surrendering their animals out of failure to take care of them due to the imposed lockdowns.
Veterinarian	USA	Challenging to deal with staff who do not want to work or do not want to be effective at work or who just want a paycheck.
Veterinarian	Australia	Challenging decisions involving a difficult case, when clinicians do not collaborate and communicate effectively in order to achieve a better outcome.
Veterinary nurse	Australia	Seeing clients from other clinics that have been turned away from them as they are "too busy" to see them, when we are also double or triple booked. Some are from up to several hours drive away because everywhere is too busy.
Veterinarian	Germany	Home schooling an 8-year-old while working full time! how to deal with (euthanasia) home visits which I consider ethically essential.
Veterinarian	Australia	Allowing more than one owner into the clinic to be with their pet during euthanasia.
Veterinarian	Australia	Whether to wear PPE during home euthanasia visits. On the one hand I am wanting to protect the clients. I am not so worried about my own health. However, it feels impersonal. Also lack of physical contact with the owners at this time is challenging. Such as not being able to shake their hand or give them a hug.
Veterinarian	UK	Decisions around euthanasia which has to be carried out by others on site - mainly animal technicians - due to lack of ability to use animals in research due to lack of lab facilities (wastage).
Veterinarian	Germany	Hearing or reading pseudoscience, conspiracy theories, anti-vax-non-sense....there is always the question whether to keep my mouth shut or take the risk of a shitstorm;)
Veterinarian	USA	Information barrage from human healthcare, veterinary healthcare, federal, state, and university sources regarding epidemiology, legal, and policy changes.
Veterinarian	USA	We have had several owners and visitors wishing to enter the building, but our policy says they cannot.
Veterinarian	USA	Allowing DVMs to see enough cases to have reasonable income while limiting the schedule.
Veterinarian	USA	Provision of futile medical care to animals who are suffering.
Veterinarian	Australia	Challenging decisions about tolerance for risk of potential SARS-CoV-2 exposure to clients, carried by visiting veterinary team.
Veterinarian	Australia	I work as a vet in the live export industry. COVID-19 has put pressure on supply chains for both chilled meat and live animal exports. Now more than ever, it feels like I am stuck between two competing ideologies for and against the live export industry. People's opinions and heightened emotions are inhibiting sound decision making processes around balancing animal welfare with food security.
Veterinarian	USA	Lack of volunteers to perform duties; lack of donations to support operation.
Veterinarian	Australia	Difficulty with conflict with clients with regards to COVID protocols.

from one's employer ($n = 1$) and pet insurance for the animal to fund diagnostics and treatment ($n = 1$). The second category referred to guidance, for example from guidelines, legislation or policy. This included the formal recognition of veterinary services as essential ($n = 1$), enforcement from a regulatory body ($n = 1$), effective government leadership ($n = 1$) and flexibility in policies ($n = 1$). The third category comprised ethics and decision making support, and included support for clients in making ethical decisions ($n = 2$), the ability to not worry about what others think ($n = 1$), the ability to discuss ECS within the workplace ($n = 1$), to be subpoenaed ($n = 1$) and "Black Lives Matter" ($n = 1$). One respondent said that they should not need other resources, and another did not specify what they intended when selecting other.

Most respondents (54.3%, $n = 293$) reported receiving some form of ethics training in obtaining the qualification for their current role, while 29.8% ($n = 161$) had none and 15.9% ($n = 86$) did not recall.

Following their qualification, 51.7% of respondents ($n = 279$), reported undertaking further training in ethics. Respondents

could select multiple responses to this question. Just under one third (33.0%, $n = 178$) had undertaken continuing professional development (CPD) in ethics, 11.7% ($n = 63$) sat on an institutional ethics committee, 8.3% of respondents ($n = 45$) undertook university coursework in an ethics or bioethics degree, and 5.4% ($n = 29$) undertook another form of ethics training. These other forms of ethics training included private reading or discussion ($n = 11$), coursework for another a non-ethics or bioethics degree ($n = 6$), on the job training ($n = 2$), leadership training ($n = 2$), CPD that indirectly touches on ethics ($n = 2$), teaching ethics ($n = 2$), personal or professional experience ($n = 2$), membership of a professional organization ($n = 1$), and publishing in ethics ($n = 1$). Less than half of respondents 48.3% ($n = 261$) reported undertaking no post-qualification ethics training.

Most respondents were confident enough that they could get by (42.8%, $n = 231$) or reasonably confident (39.3%, $n = 212$) that they were able to deal with ECS in their workplace, while 3.3% ($n = 18$) reported that they couldn't be more confident. In contrast, 12.0% of respondents ($n = 65$) reported that they were

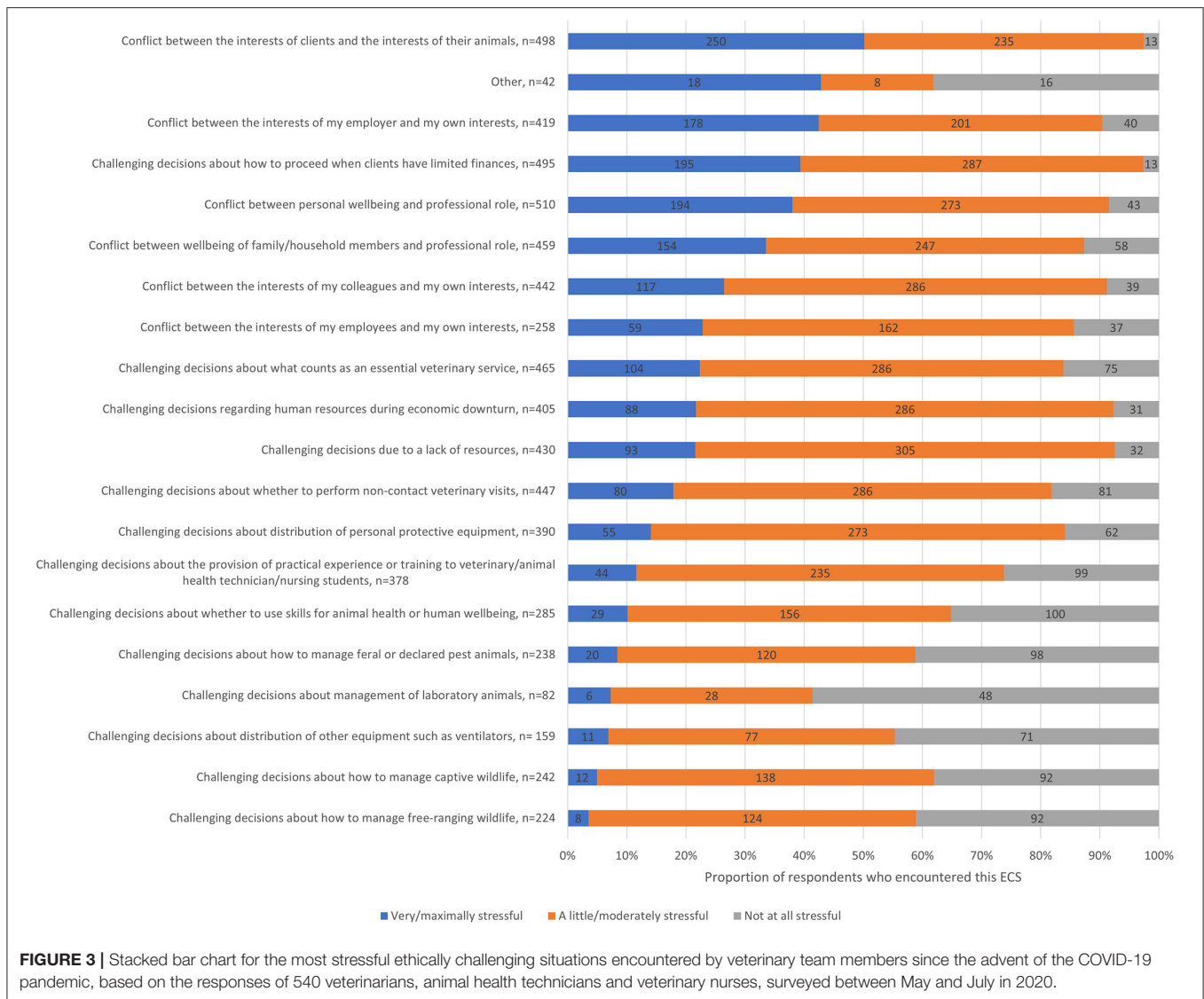


FIGURE 3 | Stacked bar chart for the most stressful ethically challenging situations encountered by veterinary team members since the advent of the COVID-19 pandemic, based on the responses of 540 veterinarians, animal health technicians and veterinary nurses, surveyed between May and July in 2020.

under confident, and 2.6% ($n = 14$) were not confident at all in dealing with ECS.

The majority of respondents (52.4%, $n = 283$) reported that they were free to make and act on ethical decisions most of the time, compared to 20.4% ($n = 110$) sometimes, and 18.0% ($n = 97$) always. On the other hand, 7.4% ($n = 40$) were rarely and 1.9% ($n = 10$) were never free to make decisions in their workplace.

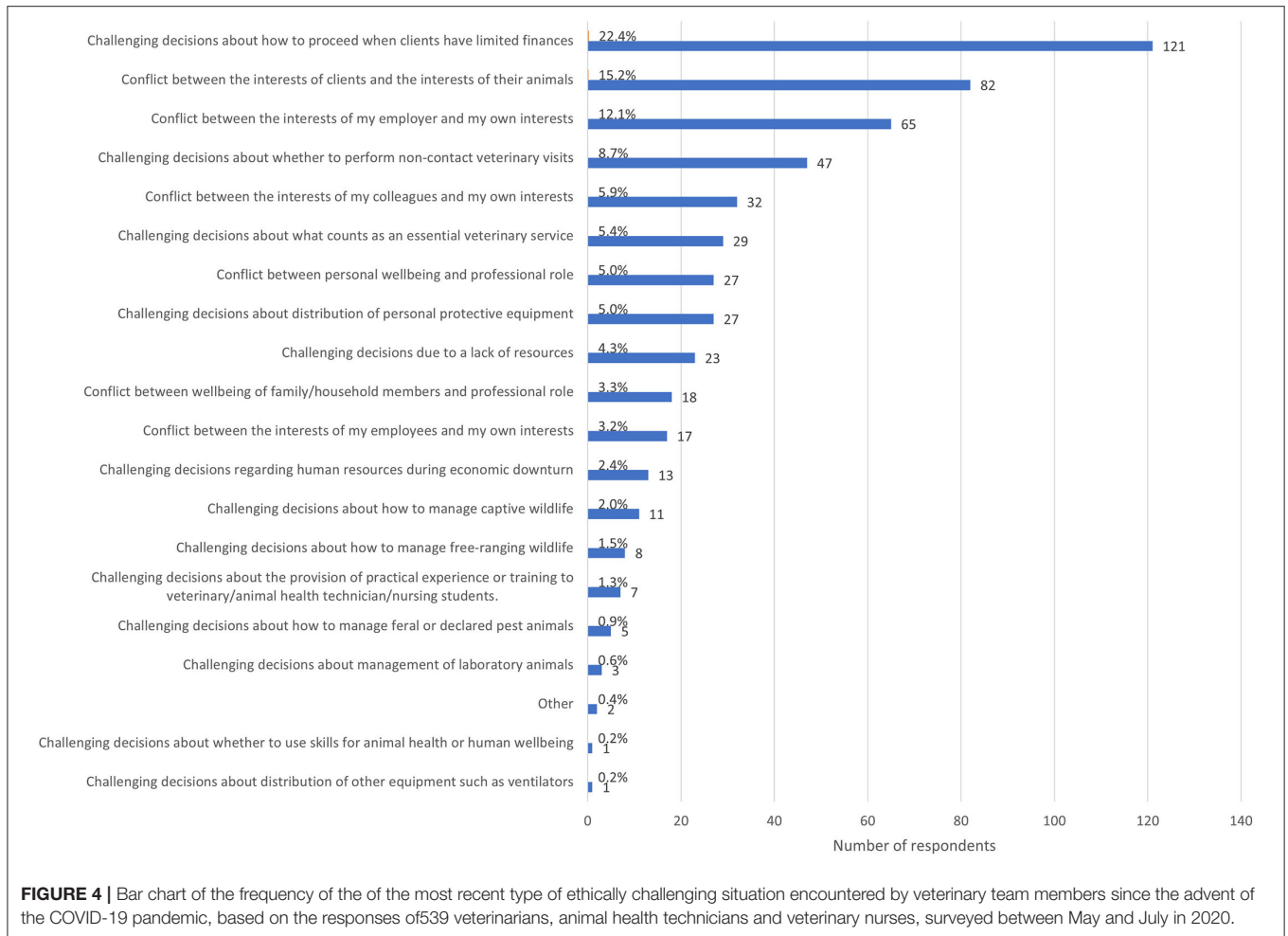
Thematic Analysis

Overall, there were 17 major themes identified across responses to the three open-ended questions. When asked to describe the most common ECS since the advent of COVID-19, 540 respondents provided a comment (100%), providing 13829 words for analysis. The length of these comments ranged from 1 to 245 words. The most prominent themes were biosecurity (featuring in 48.7% or $n = 263$ responses), client financial limitations (27.8%, $n = 150$),

animal welfare (12.6%, $n = 68$), working conditions (11.5%, $n = 62$) and client relations (3.1%, $n = 17$) (Figure 8).

When asked to describe the most stressful ECS since the advent of COVID-19, all respondents provided a comment ($n = 540$), providing 10,234 words for analysis. The length of these comments ranged from 1 to 473 words. The most prominent themes were biosecurity (emerging in 40.2% of responses, $n = 217$), client financial limitations (22.0%, $n = 119$), working conditions (16.5%, $n = 89$), animal welfare (12.4%, $n = 67$), and client relations (6.9%, $n = 37$) (Figure 9). There was substantial overlap of themes between the first two questions, with 264 respondents reporting that the most common ECS they encountered since the advent of COVID-19 was also the most stressful.

Readers are referred to **Supplementary Table 3** for excerpts from free-text responses illustrating themes and subthemes



regarding the most common and most stressful ECS encountered by respondents since the advent of the COVID-19 pandemic.

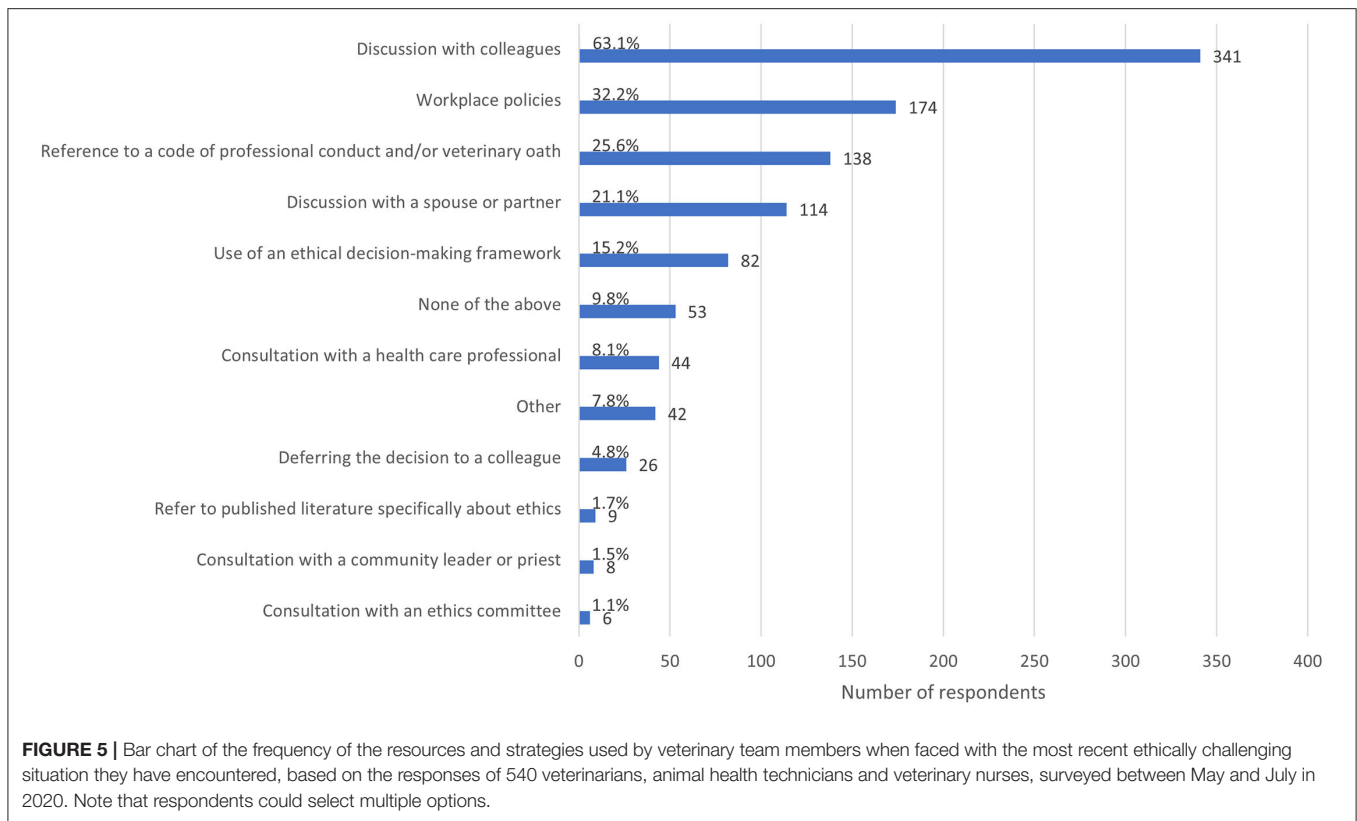
When asked if there was anything else they would like to add about their experience with ECS since the advent of COVID-19, 195 respondents (36.1% of the total sample) provided a comment. Of these, 22 wrote “no,” “none,” “n/a,” or “nil,” leaving 173 comments totaling 8038 words remaining for analysis. The length of these comments ranged from 2 to 298 words. Many respondents utilized this section to expand on themes they had already mentioned, particularly biosecurity (39.9%, $n = 69$), working conditions (23.1%, $n = 40$), the fact that they had not experienced ECS or that there was no change in the ECS they had experienced since the advent of the pandemic (17.3%, $n = 30$), client relations (10.4%, $n = 18$), and client financial limitations (9.2%, $n = 16$). The most prevalent new themes were COVID-19 heightening anxiety or stress in general (6.9%, $n = 12$), the challenge of maintaining personal wellbeing (5.8%, $n = 10$), and a sense that veterinary teams or the veterinary profession did well in a pandemic situation (4.6%, $n = 8$) (see **Figure 10**).

Readers are referred to **Supplementary Table 4** for excerpts from free-text responses illustrating themes and subthemes from additional comments provided by respondents.

DISCUSSION

This is the largest global survey on ECS encountered by veterinary team members. The results of this study indicate that veterinary team members experienced increased frequency of ECS during a global pandemic. The median frequency of ECS encountered by veterinary team members increased from several times per month to several times per week with the advent of the COVID-19 global pandemic. The pre-pandemic frequency of ECS reported by veterinary team members is comparable with previous surveys on the frequency of ECS experienced by veterinarians. Pre-COVID-19 surveys suggested that veterinarians experience an ECS at least weekly, with 57% of UK veterinarians reporting 1-2 ethical dilemmas per week (range 0 to more than 10 times weekly) ($n = 58$) (4), 52% of US veterinarians experiencing an ECS at least weekly ($n = 484$) (3), and veterinarians, animal health technicians and veterinary nurses globally ($n = 183$) reporting a median of one ethical dilemma per week (22).

The increase in frequency of the ECS reported by respondents is likely due to a range of factors, including an increased frequency of established ECS such as client financial limitations,



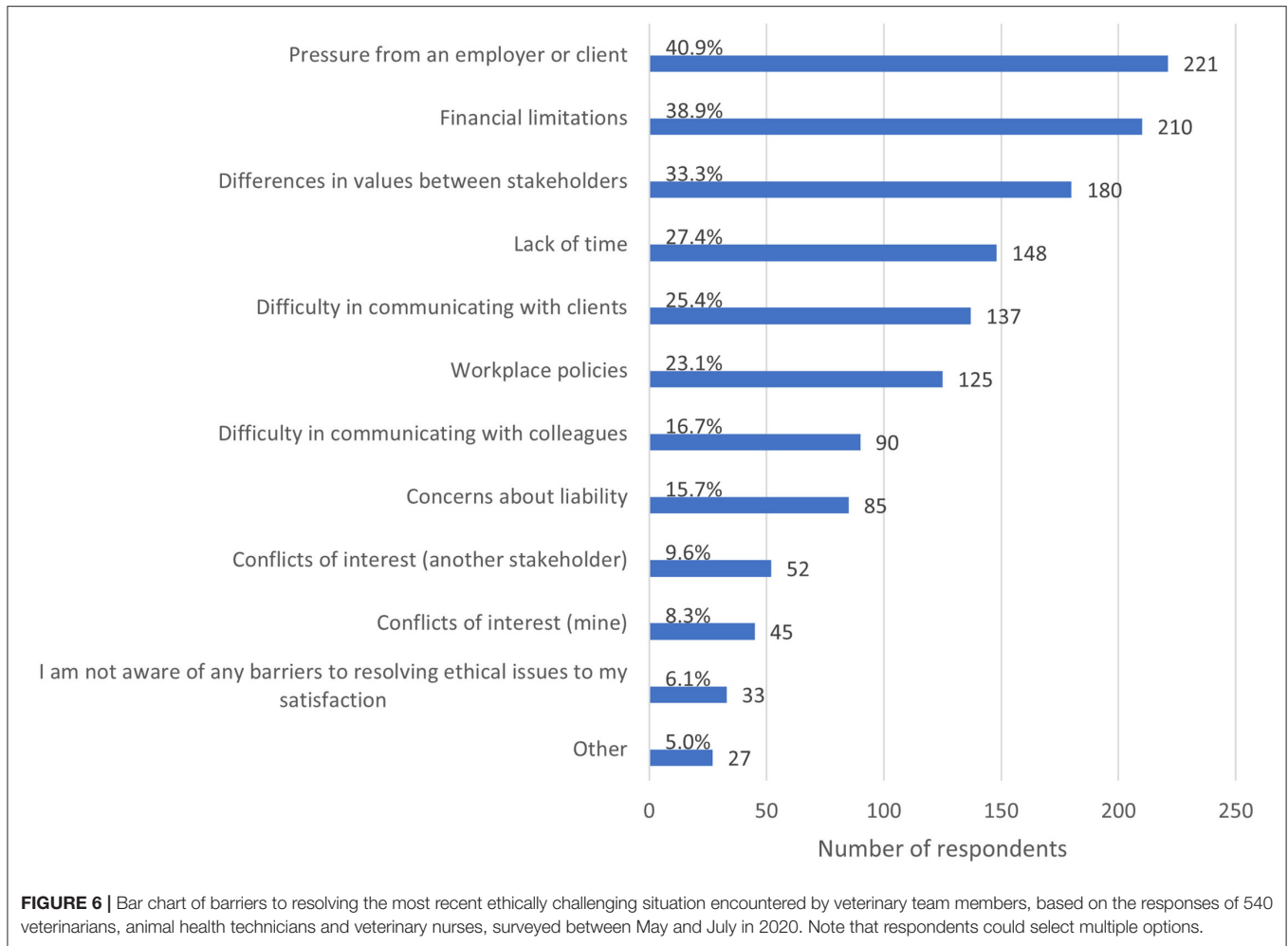
increased workload experienced by many veterinary teams, and the emergence of new or novel ECS associated with the COVID-19 pandemic itself.

We found that the COVID-19 pandemic was associated with both established and novel ECS in veterinary settings. The most common ECS, experienced by over two-thirds of respondents at least several times per week since the advent of the pandemic (64.4%, $n = 348$), was *challenging decisions about how to proceed when clients have limited finances*. This ECS was experienced as very or maximally stressful by 39.4% of respondents who encountered it ($n = 195/495$) of respondents, and was selected by 22.4% ($n = 121$) of respondents as the most recent type of ECS on which respondents chose to reflect. Additionally, client financial limitations emerged as a major theme in analysis of free-text responses, with respondents noting both an increase in client financial limitations reducing standard of care, and an increase in economic euthanasia.

Previous surveys have identified client financial limitations as common ECS encountered by veterinarians and veterinary team members. For example, veterinary anesthetists and technicians reported that animal care was impacted by financial constraints in 29% of ethically challenging cases (22). However, while identified as the most common ECS in some surveys of veterinarians, the same respondents reported client financial limitations as the least stressful ECS (2, 4). It has been speculated that this may be because financial limitations are accepted as common, that veterinarians may find a way of working within client cost constraints, or that cost constraints are seen as

the client's responsibility (4). While this may have been the case prior to the pandemic, it is possible that the frequency and extent of client financial limitations exceeded the coping threshold of many veterinary team members. In the context of a global pandemic, the number of financially limited clients encountered by any one veterinary team member may become overwhelming, with fewer opportunities to work within cost constraints, recognition that clients who have lost jobs due to the pandemic are not responsible for their financial limitations, or a combination of these. In the US, 72% of small animal emergency hospitals reported that clients had more financial limitations than prior to the pandemic (23). It is likely that the long-term economic impacts of COVID-19, particularly large-scale unemployment (24), will decrease the accessibility of veterinary care for many people, compromising animal health and welfare. In addition, long-term economic consequences of the pandemic are likely to compromise regional, national and cross-border veterinary services (25). A survey of 565 British Veterinary Association Voice of the Veterinary Profession members found that up to 95% of respondents reported some level of concern about the potential impacts of a recession on the veterinary sector, with the most concern reported by government, charity and equine veterinarians (26).

The next most commonly encountered ECS was *conflict between personal well-being and professional role*, encountered by 64.3% ($n = 347$) of respondents at least several times per week. Similarly, almost half of respondents encountered *conflict between the well-being of family/household members and*

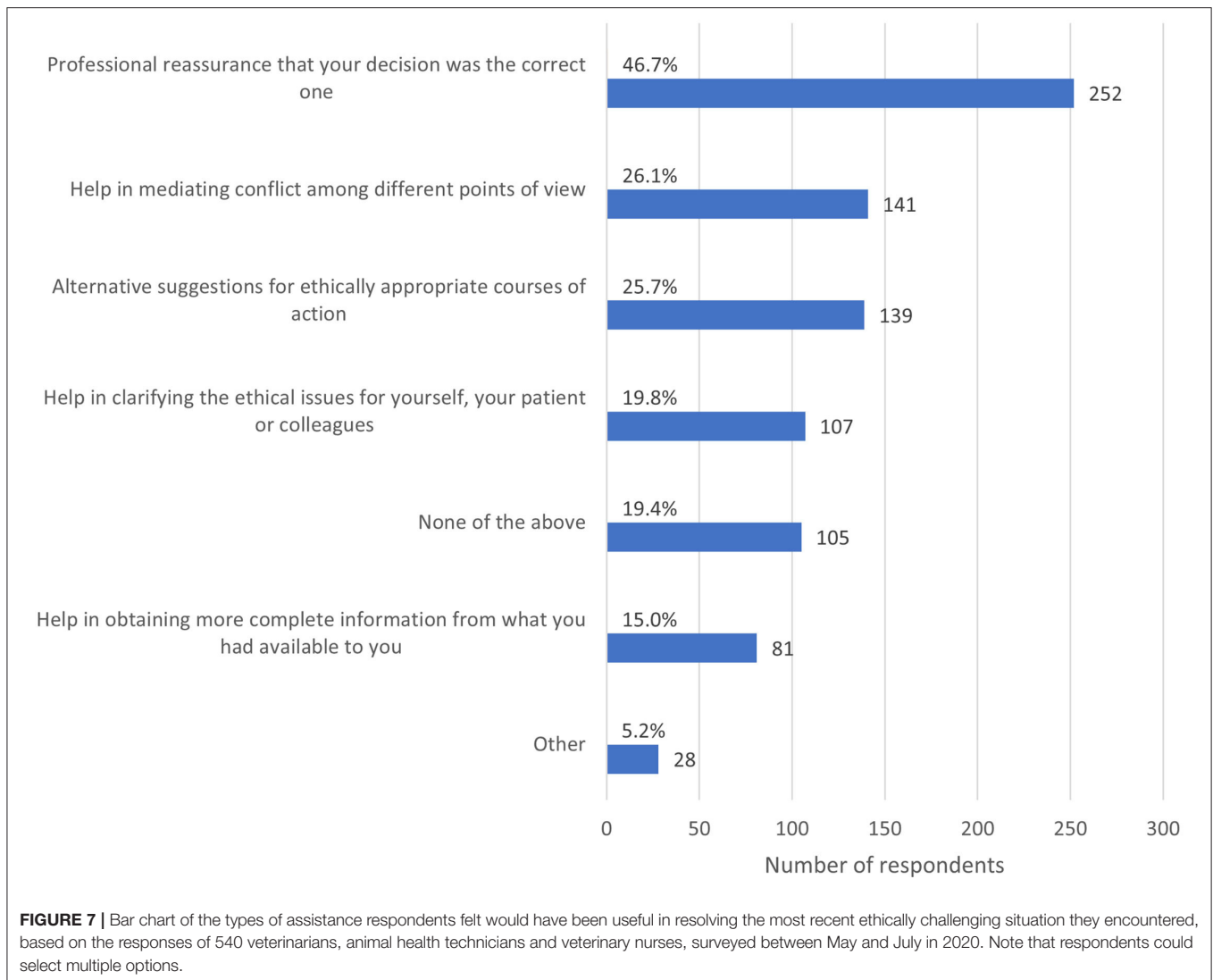


professional role (46.3%, $n = 250$). Both of these ECS were experienced as very or maximally stressful by 38.0% (194/510) and 33.6% (154/459) of respondents who encountered these, respectively. The impact of these challenges was underscored by emergence of biosecurity as the predominant theme in the thematic analysis. For example, an Australian veterinarian reported that it was stressful navigating the “high risk to myself for contacting [sic] disease or being a carrier and passing the disease on to my family” (respondent 466), while a veterinarian from China reported their most stressful ECS as “should I personally stop work to shield my vulnerable son but this will leave my colleagues and patients under more stress” (respondent 910). Veterinary team members had to struggle with the question of, as one US-based veterinarian put it, “what exposure limit is acceptable?” (respondent 780). As revealed in the thematic analysis, feeling torn between the risk of exposure to SARS-CoV-2 and the need to provide a service and/or support colleagues may have led to sickness presenteeism in some veterinary team members. While the impact of moral stress on the well-being of veterinary team members has been highlighted previously (2, 3, 5, 27), ECS arising due to the personal vulnerability of veterinary team

members or their families to infectious disease have not been widely discussed.

Our thematic analysis revealed that ECS experienced during COVID-19 were often associated with uncertainty around biosecurity. It is possible that appropriate biosecurity guidelines, protocols and contingency plans may have reduced the conflict between personal well-being, and that of family or household members, and professional role, by ensuring that veterinary team members and organizations can operate with minimal risk to themselves, their colleagues and their families. These include strategies to discourage sickness presenteeism – which presents a risk to colleagues, clients and those in their networks – and encourage sickness absenteeism, such as paid pandemic leave for those required to self-isolate or undergo COVID-19 testing, and employment or contracting of trained staff to cover for those absences.

To this end, the pandemic exposed a lack of preparation among veterinary facilities. In their survey of small animal emergency hospitals in the US, Wayne and Rozanski reported that prior to the pandemic, fewer than half (44%) of hospitals had contingency plans for short-term disruptions such as snow days, while only 24% had disaster or business continuity plans.



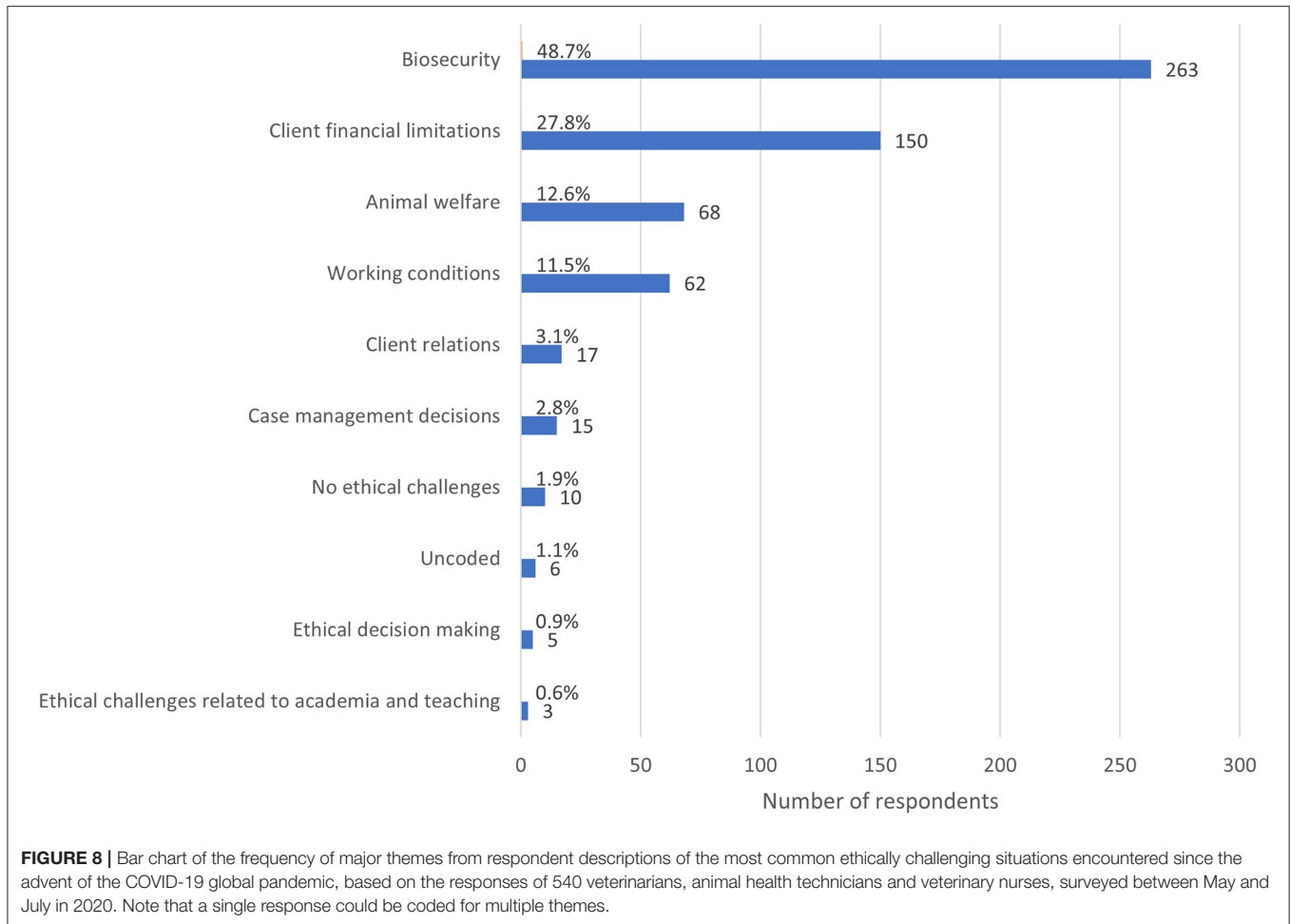
The remaining 32% had no plans for either short or long-term disruption (23). This is concerning, given the protracted disruption associated with the current pandemic, concern about subsequent “waves” of infection, and the possibility of intersections of COVID-19 with other disruptive events, including climate hazards and geopolitical issues (28).

Challenges arising from a conflict between personal well-being and professional role may arise in part due to uncertainty around the primary obligation of veterinary team members. Almost half (48.0%, $n = 259$) of respondents considered that ultimately, their primary obligation was to animal patients. However, the remainder of respondents were divided, revealing a lack of consensus among veterinary team members that may exacerbate moral conflict.

Tannenbaum described the veterinarian as the “servant of two masters” – human clients, on the one hand, and animal patients on the other (29). Rollin described the “fundamental question of veterinary ethics” as: “to whom does the veterinarian owe

primary obligation – animal or owner?” (30). Rollin goes on to compare veterinarians who take the position that the animal is their primary obligation with pediatricians (30). But even prior to the pandemic, only 50% of US veterinarians reported that they prioritized patient interests, while only 20% reported that other practitioners prioritized patient interests (3). This survey did not reveal which interests were prioritized instead of patient interests. While it has been argued that veterinarians should be strong patient advocates, in acting for and advancing a case on behalf of patients and their interests (31), such a position may be challenging to maintain in a public health crisis, where the interests of animals and humans (including veterinarians and their families) are perceived to be in direct conflict.

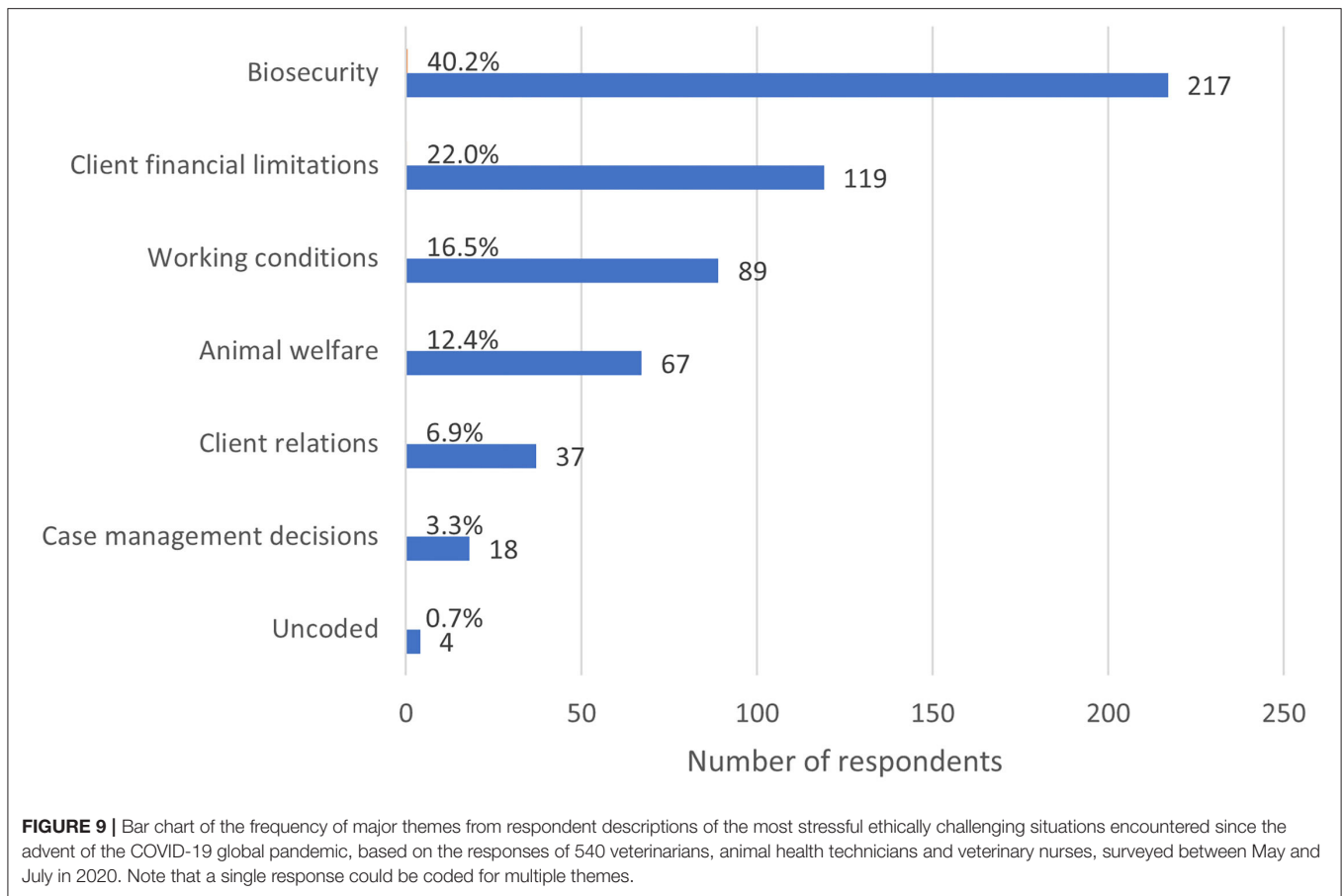
Recognizing that most veterinarians are employed, in its Animal Welfare Strategy, the British Veterinary Association describes the veterinarian’s dilemma as arising from duties to animals, clients and employers (32). It is interesting, therefore, that more respondents reported that they felt their primary



obligation was to the community as a whole (13.0%, $n = 70$), other (12.6%, $n = 68$) or colleagues (10.2%, $n = 55$) compared to individual clients (8.2%, $n = 43$) and their employer (7.4%, $n = 40$).

There is a perception that in human healthcare, the primary obligation is – in theory – clearer. Oaths, such as the Hippocratic Oath, act as a moral compass in the face of ECS (33). According to the revised Declaration of Geneva, the health and well-being of the patient should be the first consideration (34). However, in most contexts, animals – unlike children – are considered the property of the owner, by law. Furthermore, the primary obligation of human healthcare professions shifts in the context of resource scarcity where the surge capacity of health-care systems is exceeded, and distributive justice must be explicitly considered. In the context of the COVID-19 pandemic, this was evidenced, for example, by the need for health care workers to determine how to triage human patients requiring mechanical ventilation in the face of a ventilator shortage (35). We asked respondents to report their primary obligation in a recent ECS. Whether veterinary team members' primary obligation changed in the context of a global pandemic, or even in the context of a specific ECS, could be examined in future studies.

Conflicts between the interests of clients and the interests of their animals emerged as both a common and stressful ECS encountered by veterinary team members, experienced by 59.6% of respondents ($n = 322$) at least weekly and experienced as very or maximally stressful by 50.2% (250/498) of respondents. This has been identified consistently in the veterinary literature as a common and stressful ECS. For example, in a survey of 889 North American veterinarians, 32% reported often having conflicts with pet owners about how to proceed with the care of their patients, while 53% reported having conflicts sometimes (5). In a survey of 484 small animal veterinarians in the US, 52% reported experiencing an ethical dilemma regarding the interests of clients and the interests of their patients at least weekly (3). Further investigation is required to determine the nature of these conflicts. For example, it is possible that some of these ECS involved situations in which the client's financial interests were in conflict with an animal's need for a certain standard of veterinary care, or veterinary care of any kind. They may also involve situations in which a client wishes to pursue treatment deemed by the veterinarian not to be in an animal's interests. It should be noted that in this context, the interests of animals are those perceived by the veterinary team member. It is possible that a client believes that they know the interests of their animal



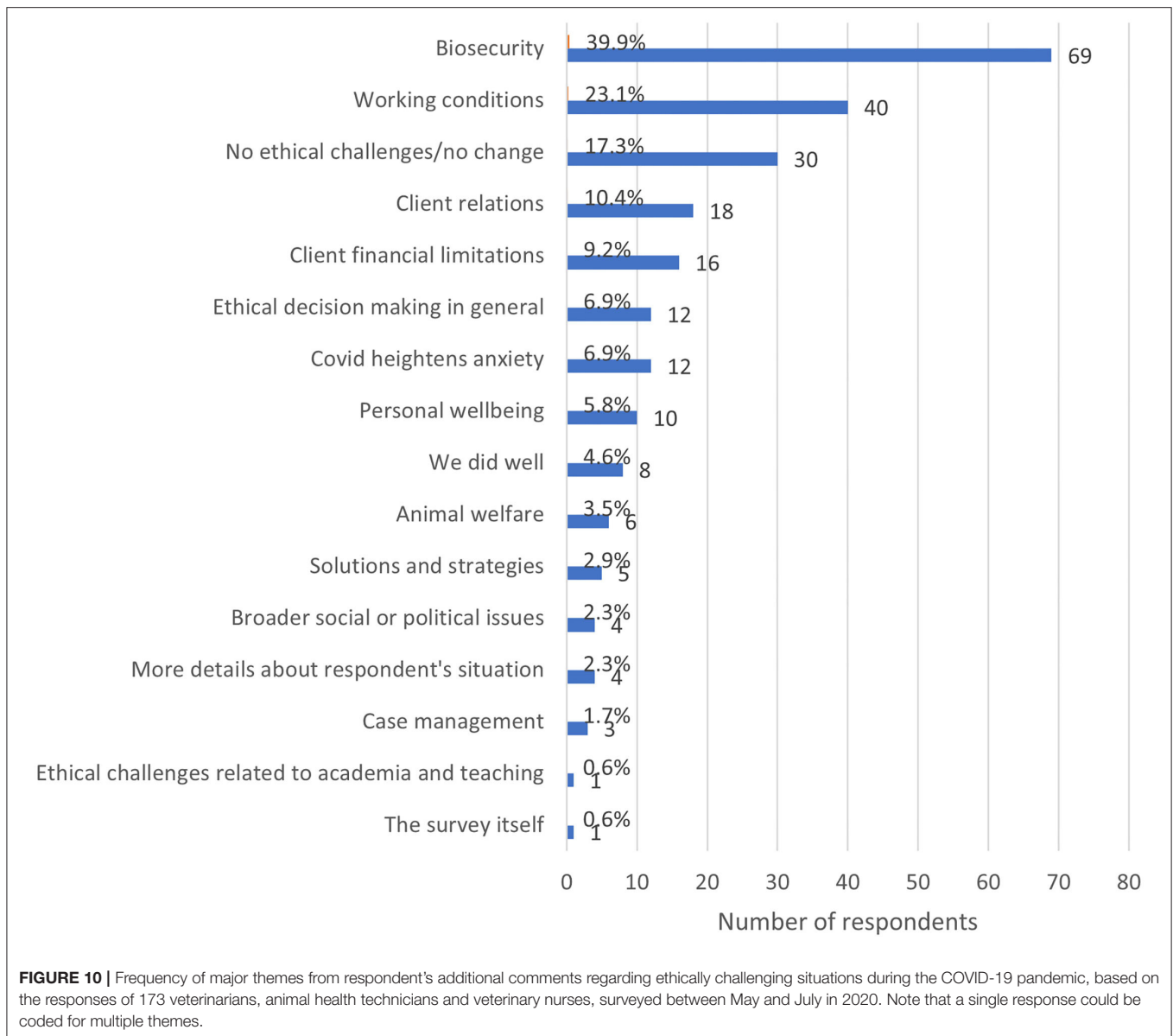
better than the veterinary team member, and, in some cases, they may be correct. Failure to recognize the perspective and relevant experience of another party may exacerbate conflict (36). This is a known gap, at least for veterinarians. In a survey of 889 veterinarians in North America, 71% reported that they had no training about resolving differences of opinion about what is best care for patients (5).

We found that 48.1% ($n = 260$) of respondents struggled with *challenging decisions about what counts as an essential veterinary service* at least several times per week, with 22.4% ($n = 104/465$) of respondents experiencing this ECS as very or maximally stressful. In the free-text comments, respondents reported struggling with determining what counted as an essential or emergent case – likely exacerbated by the absence of an end-date for pandemic-associated restrictions, and variation in official guidance and multiple waves of SARS-CoV-2 infection. This finding aligns with that of Wayne and Rozanski, who found variation in services that US-based veterinary hospitals would provide during the pandemic (23). Similarly, a roundtable discussion on how the COVID-19 pandemic impacted the practice of avian and companion animal veterinary medicine revealed variation in both what was considered an essential service, and the safest way for veterinary hospitals to provide services (12). Respondents raised concerns about unintended consequences of uncertainty about what counts

as an essential service, including delayed presentation of veterinary patients.

Part of the dilemma around the question “what counts as an essential service” is that the answer varies depending on the perspectives and time frame taken into account. As one UK-based veterinary nurse wrote, “Dental disease-not immediately life threatening but potentially may cause life altering issues if not treated” (respondent 430). It has been noted that some veterinary services, including preventative measures against diseases with a significant public health or economic impact such as rabies or tuberculosis, have been reduced or suppressed during lockdown (25, 37). This, combined with non-veterinary factors such as increased contact between wildlife and livestock, reduced population control, and longer on-farm stays of livestock, are likely to affect the distribution and incidence of transmissible animal diseases and zoonoses (25). Such programs may not be considered “essential” in that service reduction in the short-term may not compromise animal welfare or public health, but the reduction or absence of such services has the potential to cause significant harm over time.

Veterinary team members commonly reported having to make *challenging decisions about whether to perform non-contact veterinary visits*, with 46.3% ($n = 250$) encountering this ECS at least several times per week, with 17.9% ($n = 80/447$) finding this very or maximally stressful. While some respondents reported



enjoying non-contact consultations, many reported struggling with communication, animal handling in the absence of the owner (particularly fearful aggressive animals), and non-contact euthanasia. This is not surprising. Much communication is non-verbal, and the inability to talk to an owner face-to-face may increase the risk of miscommunication or misunderstanding. As revealed by a number of respondents in free-text comments (see **Supplementary Table 3**), communication challenges were further exacerbated by PPE such as masks. As research reveals the impact of human-animal interactions on the welfare of animals (38), there has been increased awareness of the potential iatrogenic harms of veterinary care (39), and a profession-wide emphasis on minimizing fear, anxiety and stress in veterinary patients (40). The presence of a familiar person during a veterinary examination may provide a source of calm in what

are otherwise likely to be perceived as threatening circumstances (41). In a small study of 32 owned dogs, dogs showed fewer indicators of fear when their owners were present (42). It is therefore unsurprising that a number of respondents raised concerns about the welfare of animals, the well-being of owners and the safety of veterinary team members when animals were examined away from the presence of their owners (see **Supplementary Table 3**).

In addition to impacts on animal welfare, non-contact euthanasia in particular may cause distress in clients. The veterinary euthanasia experience can alleviate or aggravate the grief of clients. A survey of 2354 pet owners in the UK conducted prior to the pandemic found that their experiences of administration practices (such as paperwork and payment), as well as emotional support at the time of the animal's euthanasia,

were key influences on their satisfaction with the euthanasia experience (43). It is challenging for time-poor veterinary team members to provide streamlined administration practices and appropriate reassurance to clients. One Australian veterinarian expressed the ethical challenge thus: “in the case of very sick animals/emergencies/euthanasia’s owners are distressed about not being able to be with their animal. Do you cave and let them be there knowing that if you get covid19 the entire clinic team and possibly other clients could get infected, or stick to the policy knowing you are causing emotional distress to the owner and animal?” (respondent 136).

In addition to the types of ECS that respondents could select from in the survey, a number of respondents specified “other” ECS, and indeed, these were experienced as very or maximally stressful by 42.9% (18/42) respondents who encountered them. This may reflect recall bias, where the ECS that comes to mind is the most salient to the respondent. Had the types of ECS specified as “other” been offered as choices that respondents could select from, it is possible that some would have been reported as very frequent. This information can be used to refine future studies on ECS, and incorporated into ethics teaching scenarios where possible.

Respondents used a range of strategies and resources to resolve ECS. Most respondents (66.3%, $n = 358$) found the resources and strategies they used somewhat helpful (35.9%, $n = 194$) or helpful (30.4%, $n = 164$), while 20.2% ($n = 109$) found them very or maximally helpful, and 6.3% ($n = 34$) didn’t find them helpful at all. Additionally, 7.2% of respondents ($n = 39$) answered “not applicable” for this question.

Almost two thirds of veterinary team members (63.1%, $n = 341$) turned to discussion with colleagues in attempting to resolve ECS, an approach that has been documented previously. For example, a qualitative study of 7 small animal veterinarians in Australia found that discussing ECS and decisions with other veterinarians was a valued source of advice, facilitating benchmarking of their own experiences against those of others (44). However, this study also found that some veterinarians had experienced negative judgement of their ethical decisions by veterinarians and nurses, which may act as a barrier to discussion.

The next most frequently used resources were workplace policies (used by 32.2% of respondents, $n = 174$) and codes of professional conduct and/or veterinary oaths (used by 25.6% of respondents, $n = 138$). Codes of professional conduct and oaths are necessarily general, but can help guide those they apply to with regard to core professional values or primary obligation. Workplace policies are likely to be most useful with regard to expected ECS in known circumstances, for example client financial limitations (45) or managing requests for what veterinary team members deem to be futile care. Inflexible policies may also act as a barrier in some situations. While 32.2% of respondents used workplace policies to resolve an ECS, 23.1% ($n = 125$) identified workplace policies as a barrier. The quality and enforcement of policies may determine whether they help or hinder resolution of ethical challenges.

Ethical frameworks were knowingly used by only 15.2% ($n = 82$) respondents. This is consistent with a qualitative study which found that veterinarians tended to rely on “ethical

intuition” rather than application of ethical frameworks to decide what to do/how to manage and ECS (44). A survey of veterinarians in the US ($n = 484$) found, alongside policies of state and national veterinary organizations, considerations of ethical theories were least commonly used in navigating ECS (3). In a study employing the Defining Issues Test to measure moral reasoning ability, practicing veterinarians in the UK performed similarly to members of the public, regardless of number of years in practice (1). In contrast, academic veterinarians had greater moral reasoning skills than both practicing veterinarians and the general public. The authors speculate that this may be a function of education, environmental factors (the normalization of exchange of ideas and opinions in academia), or a combination of factors. The use of ethical frameworks requires time, which may be scarce in practice settings, particularly during a global pandemic where many veterinary teams experienced an increased workload. In experimental settings, cognitive fatigue was shown to impact moral reasoning (46). Cognitive fatigue may be exacerbated by increased anxiety. A systematic review found that COVID-19 was associated with an increase in reported levels of psychological distress in the general population (47).

In addition, increased workload may lead to or exacerbate cognitive fatigue. Consecutive online surveys of 24-h small animal emergency veterinary hospitals in the US found that most reported caseload increases of at least 10%, with 44% reporting increases of at least 25% (48). Nonetheless, most hospitals had not made changes to operations or staff to accommodate these increases. Additionally, as our findings suggest, the impact of increased workload was exacerbated by staff shortages, including those associated with COVID-19 infection, potential exposure or other COVID-related absences (23, 48). In health care settings, inefficiency in workflow adaptation negatively impacts both quality of care and patient safety, while also eroding team cohesion and leading to moral stress of team members (49). This has the potential to further exacerbate cognitive fatigue.

Poor moral reasoning may lead to decision regret, rumination and moral stress, which negatively impact the well-being of veterinary team members. Importantly, insufficiently mature ethical reasoning or lack of ethical sensitivity may lead to negative animal welfare implications if veterinary team members cannot identify or effectively advocate for a course of action that is in an animal’s interests (1, 50).

Almost all respondents (93.9%, $n = 507$) experienced at least one barrier to resolving an ECS to their satisfaction, with pressure from an employer or client [reported by 40.9% ($n = 221$) respondents] and client financial limitations (38.9%, $n = 210$) the most common. The pressure to generate income, a subtheme in the thematic analysis, may be a key reason for pressure from employers, while client financial limitations may be a key reason for pressure from clients. Both pressure to generate income and client financial limitations may be exacerbated with the ongoing pandemic. As these pressures are in direct conflict, if they occur concurrently they are likely to exacerbate stress on veterinary team members.

Though less common, *conflict between the interests of my employer and my own interests* [encountered by 35.0% ($n = 189$) of respondents at least several times per week], was experienced

as very or maximally stressful by 42.5% ($n = 178/419$) of respondents who encountered it. *Conflict between the interests of my employees and my own interests* was experienced by 16.7% ($n = 90$) of respondents at least several times per week, and 22.9% ($n = 59/258$) found this very or maximally stressful. This is likely because of the power differential between employers and employees, as the stress experienced by employees may be heightened by fear of negative consequences such as change in working conditions or fear of losing their job. This is consistent with a non-peer-reviewed British Veterinary Association survey ($n = 565$) which found that 31% of veterinarians were quite concerned about job security (26). The thematic analysis revealed areas of conflict between personal interests and those of an employer, including disagreements around biosecurity. For example, a veterinarian in Germany reported feeling stress related to “working close together with colleagues that do not wear protection like face masks and therefore increase my risk to get infected (and this being announced as acceptable by my boss)” (respondent 79). Conflict may also arise around perceived pressure to generate income. For example, a US-based veterinarian reported “job threatened because I’m not producing enough revenue - told to charge more with no consideration to medical necessity” (respondent 89).

Interestingly, conflict between veterinary team members and their employers (as opposed to colleagues) has not emerged as an explicit theme in previous surveys of ethical challenges encountered by veterinary team members. The free-text responses suggest that factors contributing to the emergence of this conflict include conflict around pandemic measures, including biosecurity measures such as mask-wearing or determining what is an essential service. Other factors may include disagreements about workload management, perceived pressure to generate income, poor team morale do to concerns about job security (**Supplementary Table 3**), or general heightened anxiety (**Supplementary Table 4**).

Further studies are required to determine how the pandemic has exacerbated this conflict to a point of significance. Managing conflict between employers and veterinary team members has the potential to improve team morale and working conditions, as well as perceived job security.

Professional reassurance that their decision was the correct one was the leading form of assistance desired by respondents (46.7%, $n = 252$) when navigating an ECS. This may be one reason that so many veterinary team members turn to colleagues when faced with an ECS. Such reassurance may not be available in small teams or for professionals working in sole-charge settings. More than one quarter each of respondents desired additional help in mediating between conflicting points of view (26.1%, $n = 141$), and advice about potential alternative courses of action (25.7%, $n = 139$).

Despite these barriers, respondents reported overall a high degree of autonomy in making ethical decisions, with 70.4% ($n = 380$) reporting that they were free to make and act on ethical decisions always or most of the time. Autonomy is job resource associated with increased motivation and engagement, and consequently increased performance (51). Job demands may give rise to moral stress if veterinary team members

feel constrained and unable to do what they believe is right. Because low decision latitude has been correlated with mental ill-health, increasing employee participation in decision making has been proposed as an organizational-level approach to improve psychological well-being in employees (52). According to Wallace, a feeling that one has a sense of discretion or control over these difficult situations may ameliorate moral stress (53). However, decision making autonomy is a double-edged sword. Job control may increase stress if, as we have seen in the context of a global pandemic, veterinary team members struggle with an overwhelming workload or demanding clients – situations which may be beyond their control (53). Perceived autonomy levels also differ among veterinary team members (54). The degree to which autonomy varied among different cohorts of respondents to the current survey will be discussed in a subsequent paper.

Our findings suggest that increased or better quality training of veterinary team members in navigating ECS may increase the strategies and resources available to them. Most respondents (54.3%, $n = 293$) had had some form of ethics training in obtaining their primary qualification, while 29.8% ($n = 161$) reported that they had none and 15.9% ($n = 86$) did not recall. This is consistent with a survey of 484 veterinarians in the US, which found that 51% of veterinarians reported having any ethics training during their veterinary degree (3). Of these, 39% agreed that it helped them navigate ECS, 38% were neutral, and 23% disagreed. In the same survey, 83.9% of respondents overall agreed with a need for veterinary school curricula to include training in ethical theories, and tools for coping with ECS. This compares favorably with an earlier study of 58 veterinarians in the UK, in which 78% reported inadequate training in ethics during their veterinary degree (4).

None of the above studies, including the current study, investigated the amount and quality of ethics training, nor its impact on the subsequent perception of frequency or stressfulness of ECS in veterinary team members. A survey of the American Veterinary Medical Association Council of Education (COE)-accredited institutions found that 18 of 30 offered a formal course in animal ethics (55). In a survey spanning 57 veterinary schools in 25 European countries, 72% of respondents reported that time spent teaching animal welfare ethics had increased or increased substantially (56). However, while the majority covered or exceeded requirements for animal welfare ethics (AWE) teaching, 37% of European veterinary education establishments only partially met or did not meet recommended Day-1 competencies for AWE. An online portal of shared resources in animal welfare and ethics was developed for veterinary students in Australia and New Zealand, but the extent to which its contents have been incorporated into curricula of regional veterinary schools is unknown (57). The effectiveness of ethics teaching may be impacted by the hidden curriculum – defined as unintentionally imparted and tacitly conveyed information about the culture of veterinary practice which may contradict overtly taught content (58). An example might be a curriculum that explicitly teaches shared decision-making, while being undermined by clinician teachers who are impatient or dismissive when talking to clients. When faced with this pedagogical mismatch, students

are more likely to internalize values conveyed by the hidden curriculum (58, 59).

Most (51.7%, $n = 279$) of the current respondents reported undertaking some form of post-qualification ethics training, with continuing professional development the most common format (33.0%, $n = 178$). This suggests that there may be opportunities for veterinary team members who received little or no training in ethics in their formal curriculum to redress this deficiency by providing focused CPD. Furthermore, with 48.3% ($n = 261$) of respondents not having undertaken any post-qualification training or education in ethics, there is scope to expand this. We plan to explore whether post-qualification ethics training better equips veterinary team members in navigating ECS in a subsequent report on this study.

In the current study, very few respondents (4.6%, $n = 25$) reported an ideal resolution to an ECS, suggesting that such an ideal – while possible – is relatively uncommon. Crane and colleagues found that veterinarians who encountered morally significant stressors on their work tended to experience greater negative emotions if they were high in trait perfectionism (2). According to the authors of that study, veterinarians with perfectionistic or rigid standards are more likely to consider ECS as being “black and white” or clear cut, and are more vulnerable to reduced well-being due to ECS. In contrast, veterinarians lower in trait perfectionism were less likely to see only one resolution as right, and more likely to see a number of potential acceptable resolutions. If a less optimal resolution is achieved, these veterinarians were less likely to find the resolution unacceptable, and less likely to experience moral stress. When it comes to ECS, the authors concluded that “the goal of perfection throughout one’s working life is for many veterinary practitioners likely to be impossible and largely impractical” (2).

Despite concerns raised in the current study, 82.0% ($n = 443$) veterinary team members overall reported that they were confident or reasonably confident that they could manage ECS in their workplace.

It is argued that moral distress or moral injury arising from ECS are indicators of problems with healthcare systems rather than individual team members working within them (60). In veterinary contexts, pandemic associated ECS (for example, conflict between personal well-being and professional role) must be addressed beyond the level of the individual. Given the likelihood of transboundary threats such as climate change, large-scale immigration, water and food shortages and cyber terrorism in the future (6), as well as local crises, it is important to understand and learn from the ECS encountered in the COVID-19 pandemic, and develop appropriate resources to equip veterinary team members to successfully manage these challenges.

What Can Veterinary Teams Do to Prepare for Ethical Challenges?

Client financial limitations, already the most common ECS faced by veterinary team members, occur commonly in veterinary settings, but are exacerbated in the context of a pandemic. We therefore recommend that veterinary team members, veterinary

facilities, professional organizations, Governments and non-government organizations prepare to accommodate clients with financial limitations, and take steps to increase access to veterinary care. This requires a multifactorial approach, combining strategies from animal health insurance and third-party credit to low-cost clinics, access to emergency funds for veterinary care and preventative programs, including disease surveillance, and continuing education of policy makers and the public about the importance of animal health and welfare. The Access to Veterinary Care Coalition have already outlined a number of potential strategies to expand access to veterinary care for companion animals (61). These should be explored as a matter of urgency, along with strategies to ensure continuity of veterinary care for large animals, zoo and wildlife animals, laboratory animals and other animals dependent on humans.

In the context of the pandemic, veterinary team members were faced with the dilemma of balancing their personal well-being – and the well-being of their family or household members – against their professional obligations. This is not a new dilemma. Veterinary team members are at potential risk of exposure to zoonoses. However, the focus of training is typically prevention of animal to human disease transmission. In the authors’ experience, the COVID-19 pandemic is the first time there has been widespread awareness of the risks presented to veterinary team members from each other and clients. The dilemma of whether to prioritize personal safety over professional role can never be entirely eliminated. However, evidence-based, appropriately implemented biosecurity protocols can reduce risks associated with providing veterinary services. Such protocols must be clear, able to be adopted by all veterinary team members, and incorporated into training programs and continuing professional development. Additionally, veterinary clientele need to be informed about such protocols and educated regarding their rationale.

To be effective, biosecurity protocols should incorporate strategies to reduce sickness presenteeism. This will require significant cultural change. A global survey on sickness presenteeism comparing the self-reported behavior of health care workers and non-healthcare workers with influenza like illness found that the majority of both groups would continue to work, despite health care workers knowing the risks of transmitting influenza-like illness to vulnerable patients (62). Possible reasons for sickness presenteeism included understaffing, a sense of obligation to colleagues, and economic reasons such as lack of sick leave – all of which exist in veterinary settings. While some veterinary team members may see it as a moral obligation not to let their team members down through their absence due to mild signs of illness, the COVID-19 pandemic has highlighted the potential negative consequences of sickness presenteeism, including exposure of employers to complaints and liability for failing to prevent exposure of employees to infection (63). The taking of sick leave to undergo testing or isolation for COVID-19 or indeed any other infectious disease must be accepted as an important means of protecting staff, colleagues and clients, and in some cases the viability of a veterinary service itself. However, to facilitate this cultural shift and avoid pressure on those with symptoms, veterinary facilities must

develop contingency plans for staff absence due to illness. Where possible, paid sick leave should be made available to remove economic barriers to sickness absenteeism. As paid sick leave will not address sickness presenteeism arising from a sense of obligation to the veterinary team, it is important that practices proactively develop contingencies for staff taking leave, including employing additional team members, which may also assist with the workload, training staff to undertake a broader range of duties within their scope of practice, or contacting locum agencies or developing relationships with trained casual/ temporary staff to be on standby (64).

Conflicts between the interests of animals and their owners were commonly reported by veterinary team members in this and previous surveys. Further information is required to understand the nature of such conflicts, for example, whether these emerge from different beliefs about the moral status of animals, differences of opinion between owners and veterinary team members regarding the level of suffering an intervention or lack of intervention may cause, conflicts resulting from insufficient information or evidence, differences in values between veterinary team members and clients and so forth. Understanding the bases of these conflicts is an critical in communicating about and potentially resolving them (65). For example, a veterinary team member may perceive a client's request to euthanase an animal with a treatable condition as a conflict between the interests of the owner and the animal. But that request may stem from a genuine concern, on the part of the owner, about the quality of life of the animal once treatment is commenced. In this case, understanding the basis of the client's objections to treatment may be the first step in reassuring the client that the treatment would in fact improve the animal's quality of life. Meaningful communication requires time to explore values and to find common ground between veterinary team members and clients. Communication skills can be taught and, like all skills, be constantly honed and developed by veterinary team members (36).

Many respondents reported that they referred to their professional oath or code of conduct in resolving ECS. We recommend that professional organizations and registration bodies consult with their stakeholders about how these documents help or hinder resolution of ECS in the context of the COVID-19 pandemic. For example, it may be that in some cases, these documents provide clarity or confusion around the primary obligation of veterinary team members, the types of services considered essential or the role of veterinary team members in an emergency. This information should be compiled and used to refine oaths and codes, to ensure that these resources are as helpful as possible for those navigating ECS. Individual veterinary team members may wish to review their oath and code of professional conduct in the light of the challenges they faced, and provide feedback proactively to their respective regulators and boards.

Pressure from an employer or client was viewed as a major barrier to resolution of ECS by respondents in this survey. To overcome pressure from employers, those studying moral injury in the human healthcare field recommend bringing the "employers" (administrators) and "employees" (clinicians) together, to understand each other's respective roles and

responsibilities. It has even been recommended that individuals from each of these groups "shadow" their counterparts (60). The rationale is to appreciate the unique stressors and challenges faced by each group, and to establish common ground from which compromises may be found. Such an approach could be encouraged and supported by professional organizations.

While most respondents had had some form of ethics training, few employed ethical frameworks to aid in decision making. There is scope for veterinary educators to develop curricula and continuing professional development allowing attendees to work through ECS that may be encountered in the context of a pandemic, such as those outlined in this paper, in a psychological safe environment, without time pressure.

Veterinary teams can establish structures to provide advice about alternative courses of action, help in mediating conflicting perspectives and (where appropriate) professional assurance that the best, least worst or right course of action was taken. Discussion of active ECS with an ethics committee may address these needs, though there are practical and resource constraints to consider (66, 67). However, it may be possible to meet at least the first need in ethics rounds, or indeed in morbidity and mortality (M&M) rounds (68, 69). If a decision was inappropriate, questionable or incorrect, sensitive, non-judgmental debriefing in M&M or ethics rounds may be helpful. There may be important contextual and practical reasons why a particular decision was made. Exploration of these factors may be used to refine future decision making, including policies and protocols, as occurs in root cause analysis of medical errors (70, 71). All veterinary team members have a role in steering away from a culture of blame – which acts as a barrier to reporting and appropriate debriefing, and promoting a culture of learning from errors (72). Ethics rounds have been shown to improve moral reasoning and may improve ethical awareness or ethical sensitivity among medical students (73, 74), but their impact in veterinary settings remains to be explored.

We believe that it is important for veterinary team members to appreciate that the primary resource utilized in navigating ECS was discussion with colleagues, relied upon by almost two-thirds of respondents. Discussion of ECS with colleagues may be a means of identifying all stakeholders, identifying alternative approaches or options, or simply as a means of being reassured that one has not overlooked an obvious stakeholder or option, and made the best possible decision in the circumstances. It may also be a means of learning that a different approach might have been better, and could be a vital learning opportunity. However, as has been previously recognized (44), negative judgement from colleagues may act as a barrier to discussion. Training in communication, including reflective listening, provision of constructive feedback and conflict management may facilitate improved discussion between colleagues. In addition to training, veterinary team members need time and space to talk to colleagues. Where physical distancing precludes face-to-face discussion, it may be possible to set up online one-on-one and team meetings for this purpose.

The COVID-19 pandemic, like previous pandemics, has highlighted the problematic nature of human-animal interactions, with human behaviors such as incursion into

wildlife habitat, habitat destruction, unnatural human-animal contact, the consumption of wildlife, overcrowding of animals, live animal markets and transport of animals being identified as risk factors for the spread of zoonotic disease (75, 76). However, our findings suggest that, during a time of crisis, veterinary team members are preoccupied with proximate concerns and may not have time to address these “wicked” problems. The need to plan and prepare veterinary services in advance of crises such as pandemics, and to provide coordinated, appropriate management in response to such crises has been discussed previously (77, 78), but such a need competes with economic reality and inertia. Given the impact of the COVID-19 pandemic on the veterinary team members, the animals and communities we serve, veterinary professionals should take steps to address the underlying causes, at the level of facilities, communities and organizations.

Limitations

A major limitation of this study is its inability to characterize the source population from which respondents were sampled. The exact populations of veterinarians, animal health technicians and veterinary nurses globally are unknown, so a response rate could not be calculated.

Where possible, we asked veterinary, nursing and animal health technicians organizations to distribute the link to our survey to their members via electronic mailing lists (see **Supplementary Table 2**). This non-random, *ad-hoc* sampling method may have biased selection to respondents who were more interested in ethics or ECS, or biased selection toward certain cohorts. For example, most of the organizations that agreed to distribute the link were veterinary boards or organizations, which may have biased selection toward veterinarians rather than veterinary nurses and animal health technicians. The offer of an incentive may have increased participation.

Unrestricted, open surveys introduce the risk that respondents may not be who they say they are, that respondents may complete the survey multiple times to create a “ballot box stuffing” effect, or that web robots may be used to generate spam data (17). In this case, every response was carefully reviewed, and all responses contained unique, detailed information indicating that, on balance, the data are likely to be legitimate. A disadvantage of anonymity is that we could not provide support to individuals who expressed strong negativity, other than providing very general information about support services at the conclusion of the survey (79).

Questionnaire design may have influenced respondents. For example, a respondent may not previously have considered a potential ECS before reading this option in this question. However, the first two questions in the survey asked respondents to describe the most common and most frequent ECS they encountered in their own words before proceeding to the next section. This encouraged respondents to consider the ECS they had encountered before suggesting any particular types of ECS.

The open-ended questions provided space for participants to describe situations that they encountered, but the anonymity of

responses meant that further clarification was not possible. Thus, it is possible we might have misunderstood certain responses, leading to inappropriate categorization in the thematic analysis.

The length of the survey may have discouraged potential respondents. Indeed, many who did take the time to complete the survey indicated that they were time-poor and overworked, and the pandemic has been associated with increased rates of burnout among veterinary team members in some contexts (48). A shorter survey may have captured a greater breadth of responses.

Finally, this survey can only provide a cross-sectional snapshot of ECS faced by veterinary team members during a brief time period (May to July 2020). At the time of publication, many countries and regions are experiencing subsequent waves of the pandemic. The COVID-19 pandemic has been described as a “creeping crisis,” with undefined end-points, no clear path to exit from restrictions, and potential to “change shape along the way” (6), causing challenges that are much harder to manage than those generated by acute crises that are more sharply delineated in time. It is likely, therefore, that veterinary team members may experience different and perhaps even totally unique ECS, associated with varying degrees of stress, at different time-points in the pandemic.

DATA AVAILABILITY STATEMENT

The datasets generated for this article are not readily available because we have approval to disseminate aggregated data, but not individual data. Requests to access the datasets should be directed to anne.quain@sydney.edu.au.

ETHICS STATEMENT

The studies involving human participants were reviewed and approved by The University of Sydney Human Research Ethics Committee approval number 2020/291. The patients/participants provided their written informed consent to participate in this study.

AUTHOR CONTRIBUTIONS

AQ: literature review, study design, survey building and piloting, ethics application, data analysis, writing, editing, and submission. SM: study design, survey refinement, ethics application, data analysis, editing, and supervision. PM: study design, survey refinement, ethics application, editing, and supervision. MW: data analysis, editing, and supervision. All authors contributed to the article and approved the submitted version.

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SUPPLEMENTARY MATERIAL

The Supplementary Material for this article can be found online at: <https://www.frontiersin.org/articles/10.3389/fvets.2021.647108/full#supplementary-material>

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Conflict of Interest: The authors declare that the research was conducted in the absence of any commercial or financial relationships that could be construed as a potential conflict of interest.

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5.3 Further discussion

At the time of publication, this was the largest global survey regarding ECS encountered by veterinary team members – and the first undertaken during a global pandemic. This study was conducted during the early months of the COVID-19 pandemic, during a period of uncertainty about the nature and transmission of SARS-CoV-2, prior to the availability of vaccinations, and when a large proportion of the global population were in ‘lockdown’ (Kogan et al., 2021).

While the pandemic exposed a lack of preparation for major crises in general, it also confirmed a lack of preparation for ECS. Our study found that the median frequency of ECS increased from several times per month to several times per week. This study confirmed that ECS were a source of stress for veterinary team members during the pandemic. These findings suggest that preparedness for crises should include consideration of the impact of ECS on veterinary team members, and strategies to navigate these situations.

This study revealed a lack of consensus among veterinary team members about their primary obligation. The stakeholders whose interests were considered in relation to ECS were many and varied. As noted, it is possible that the primary obligation of veterinary team members varies with context. However, according to One Health/One Welfare approaches, veterinary team members do not have a single primary obligation (Coghlan et al., 2021). Rather, they must consider the interests of animals, humans and the environment.

In the media, great attention was paid to ‘frontline workers’ – first responders and healthcare professionals providing essential services to protect the health and wellbeing of their communities. It was recognised that these individuals, in fulfilling their professional roles, were risking their own wellbeing as well as that of those around them, due to their increased risk of exposure to SARS-CoV-2 (Billings et al., 2021, De Kock et al., 2021). Veterinary professionals, like health care professionals, must provide an appropriate standard of care to their patients, despite the risk of transmission of SARS-CoV-2 from clients and colleagues to both themselves, and potentially their household members during the COVID-19 pandemic. They must therefore balance their needs and those of their loved ones with those of their patients and clients (Donkers et al., 2021). Indeed, my survey found that the second

most common and fifth most stressful ECS confronted during the pandemic was conflict between personal wellbeing and professional role. The interests of veterinary team members and loved ones were potentially in direct conflict with the interests of other stakeholders, including but not limited to animal patients, clients, employers, professional organisations and consumers of animal products. This finding underscores the critical relationship between the wellbeing of veterinary team members and the sustainability of veterinary services, particularly in the context of a crisis. Protection and care of these team members, including equipping them to tend to self-care, becomes a moral imperative, as has been recognised in human healthcare settings (World Medical Association, 2017, Parsa-Parsi, 2017).

Talking with colleagues can be a source of validation, emotional relief, ideas, strategies and even a catalyst for change. We found that almost two thirds of veterinary team members, when faced with an ECS, discussed the matter with their colleagues. However, talking to others doesn't always help, particularly if veterinary team members feel negatively judged by close colleagues (Richards et al., 2020). There is also a danger of talking in an echo-chamber as we tend to seek advice from people with similar views and values to ourselves. Talking about ECS with colleagues requires time on behalf of all parties – a scarce resource, particularly in a pandemic. It also requires that we don't negatively judge others.

Our finding that only 15% of respondents explicitly applied an ethical framework suggests scope for opportunities for veterinary team members to learn about and apply ethical frameworks. Therefore, it may be beneficial to provide a more structured form of clinical ethics support services (CESS) for veterinary team members. This will be explored in Chapter 8.

As mentioned in the article, the pandemic is an unfolding crisis. This research was undertaken during the 'first wave' of the pandemic. Subsequent developments, including emerging viral variants, rolling lockdowns, varying public health orders, subsequent waves, and the availability of vaccination – to name a few – have led to the emergence of other ECS (for example, should COVID vaccination of veterinary team members be mandated?).

The first step in mitigating ECS and associated moral distress is to recognise the types of ECS that may occur. But to target strategies appropriately, it is helpful to

identify and understand which groups are more at risk of experiencing ECS. I explore this in Chapter 6.

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Chapter 6: Risk factors associated with increased ethically challenging situations encountered by veterinary team members during the COVID-19 pandemic

6.1 Background

Not all individuals experience the same set of situations as ethically challenging (Kipperman et al., 2018, Morgan, 2009), and not all veterinary team members have equal exposure to ECS. Understanding risk factors for experiencing ECS may be beneficial for targeting future research, designing curricula for prospective and existing veterinary team members, prioritising mitigation strategies and allocating limited resources.

I utilised data from my study on the frequency, stressfulness and types of ECS encountered by veterinary team members to explore potential risk factors for experiencing an increase in ECS during the early months of the COVID-19 pandemic.

6.2 Main article

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For supplementary material, see Appendix C.



Risk Factors Associated With Increased Ethically Challenging Situations Encountered by Veterinary Team Members During the COVID-19 Pandemic

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Ethically challenging situations (ECS) are commonly encountered in veterinary settings. The number of ECS encountered by some veterinary team members may increase during a crisis, such as the COVID-19 pandemic. This study aimed to determine the risk factors for experiencing an increase in the frequency of ECS in the months following the beginning of the COVID-19 pandemic, utilizing data from a global survey of veterinarians, veterinary nurses and animal health technicians collected from May to July 2020. In this study, descriptive analyses were performed to characterize veterinary team members who responded to the survey ($n = 540$). Binomial logistic regression analyses were performed to determine factors associated with an increase in ECS encountered since the beginning of the COVID-19 pandemic. Being a veterinary nurse or animal health technician, working with companion animals, working in the USA or Canada, and being not confident or underconfident in dealing with ECS in the workplace were factors associated with an increase in ECS encountered since the beginning of the COVID-19 pandemic. Results suggest a need to explore the ECS encountered by veterinary team members, particularly veterinary nurses and animal health technicians working in companion animal practice, in depth. Identification of risk factors may facilitate better preparation of veterinary team members for managing ECS, and minimizing the negative impact of ECS on the well-being of those who care for animals.

Keywords: COVID-19, veterinary ethics, moral stress, veterinary nurse, animal health technician, veterinary technician, veterinarian

INTRODUCTION

Ethically challenging situations (ECS) are commonly encountered by veterinary team members, and can lead to moral stress and moral distress (1–6).

During the COVID-19 pandemic, declared by the World Health Organization on 11 March 2020 (7), veterinarians, animal health technicians, veterinary nurses, and other health professionals (“veterinary team members”) encountered ECS not documented in previous surveys. A global survey of 540 veterinary team members, found that such ECS included conflict between personal well-being and professional role, and deciding what constitutes an essential veterinary service (8).

They also encountered well-documented ECS, such as dealing with clients with financial limitations, and conflicts between the interests of the animal and those of the client. Of those experiencing an increase in ECS since the beginning of the COVID-19 pandemic, the median frequency of ECS encountered by respondents increased from several times per month to several times per week (Spearman rank correlation 0.619, $p < 0.0001$) (8).

Veterinary professionals, like health care professionals, must provide an appropriate standard of care to their patients, despite the risk of transmission of SARS-CoV-2 from clients and colleagues to both themselves, and potentially their household members during the global pandemic. They must therefore balance the needs of themselves and their loved ones with those of their patients and clients (9). During the early months of the pandemic in particular, risk management was complicated by uncertainty around the nature and transmissibility of SARS-CoV-2, as well as uncertainty around what veterinary services were “essential” and which could be delayed (8, 10).

While client financial constraints represent a common ethical challenge to veterinary team members (1, 3, 6, 11, 12), the frequency and extent of financial limitations were likely exacerbated due to the economic consequences of COVID-19. These include widespread business closures, trade and supply chain disruption, absenteeism due to sickness, reduced productivity, altered consumer spending habits, and COVID-19 associated deaths (13). Financial constraints may also exacerbate conflicts between the interests of clients and the interests of their animals, another well-documented ethical challenge encountered by veterinary team members (2, 14).

Moral stress associated with ethical challenges may negatively impact the well-being of veterinary team members, contributing to overall mental health morbidity and even mortality (15–17).

Determining risk factors associated with an increased frequency of ECS encountered may be helpful in targeting interventions to better prepare veterinary team members for dealing with ECS in a crisis situation.

The objective of this study was to determine the risk factors for an increase in ECS encountered after the beginning of the COVID-19 pandemic.

MATERIALS AND METHODS

Study Design

This study was conducted as part of a larger research project examining ECS encountered by veterinary team members since the beginning of the COVID-19 pandemic. Detailed information regarding the study design has been published elsewhere (8).

Briefly, the study entailed a survey administered to veterinarians, animal health technicians and veterinary nurses (veterinary team members) globally over a 2 month period (13 May to 14 July 2020). Veterinary team members were recruited primarily *via* social media, newsletters of veterinary organizations, industry contacts and word of mouth. Those wishing to participate could access the survey through an “open” link which could be shared with others. Participation was voluntary. No incentives were offered. Participants were

provided with a Participant Information Statement and were only able to submit a response if they consented to participate. To meet the inclusion criteria, respondents were required to be a veterinarian, animal health technician, or veterinary nurse over the age of 18 years. The study was approved by the University of Sydney Human Research Ethics Committee (project 2020/291).

The mixed methods survey consisted of 29 questions across three sections. In the first section, participants were asked how frequently they experienced ECS prior to the advent of the COVID-19 pandemic. They were asked to describe the most common and the most stressful ECS that they had encountered since then. Additionally, they were asked to rate the frequency they encountered a list of different ECS. In the second section, participants were asked specific questions about the most recent ECS they had encountered. In the third section, participants were asked nine demographic questions, including their professional role, country of work, year of graduation, year of birth, gender, caseload, hours worked per week in their current role, whether they were taught ethics as part of the training toward their qualification, and whether they had undertaken any ethics training after gaining their qualification. They were also asked to rate their confidence in dealing with ECS in their workplace, and their autonomy in making and acting on ethical decisions in their workplace. The questionnaire has been published previously (8).

The survey platform utilized was Research Electronic Data Capture (REDCap), a secure web application designed for building and managing surveys, as well as data storage and export, hosted by the University of Sydney.

The current study utilized quantitative data from the first and second questions in the first section of the survey, and demographic data from the third section of the survey, to determine risk factors for experiencing an increase in the frequency of ECS with the beginning of the pandemic.

Data Cleaning

Survey data from REDCap were downloaded into Microsoft[®] Excel[®] for Microsoft 365 MSO (16.0.13328.20262). Where respondents had selected “other” from the drop-down menu and subsequently specified a response already represented by an option in the drop-down menu, the response was recategorized as such. Only responses not reflected in the drop-down menu were retained in the “other” category. Data were checked for logical values.

The spreadsheet was imported into IBM[®] SPSS[®] Statistics Version 26 (release 26.0.0.0).

Outcome and Explanatory Variables

The difference between the frequency of ECS encountered following the advent of the COVID-19 pandemic and prior to the pandemic was calculated, and recoded into the new binary variable “increase vs. no increase.” The variable “age” was calculated by subtracting the year of birth from 2020. The variable “experience” was calculated by subtracting the year of graduation or qualification from 2020.

A total of 11 explanatory variables were considered for regression analyses: role, gender, age, years of experience, region,

hours worked, caseload, ethics training for qualification, post-qualification ethics training, confidence in resolving ECS, and autonomy in resolving ECS. All explanatory variables were used as categorical (nominal or ordinal) variables, except for two continuous variables: age and years of experience.

To facilitate statistical analysis, some variables were recoded into new variables (see **Supplementary Table 1**).

Descriptive Analyses

Descriptive analyses were performed by assessing the distribution of categorical variables with frequency tables. Continuous variables were described using summary statistics and boxplots.

Contingency tables were used to describe the association between categorical variables and the binary outcome variable “increase vs. no increase.” The distribution of continuous variables by each category of the outcome variable was described with summary statistics [median, interquartile range (IQR)].

Univariable Analyses

Univariable binary logistic regression analyses were performed to assess the association between the explanatory variables and the outcome variable. The continuous variables “age” and “years of experience” were tested for collinearity, and the assumption of linearity of log odds was assessed graphically by categorizing these variables (quartile values) and plotting the log odds.

Variables were checked for missing values. In both cases of variables with missing values (gender, $n = 4$ and age, $n = 12$), <10% of values were missing so these variables were retained for inclusion in the analysis.

Multivariable Analyses

A forward selection approach was used to build the multivariable model. All variables with a p -value of <0.25 on univariable analysis were eligible for inclusion in the multivariable model. Interaction terms between variables were not considered. The best model was identified based on likelihood ratio tests and was evaluated using a Hosmer-Lemeshow goodness-of-fit statistic and Nagelkerke R^2 statistic. Outliers were identified based on residual values (>2 standard deviations). Variables included in the model selected were interpreted using estimated odds ratios and 95% confidence intervals.

All statistical analyses were conducted using IBM SPSS Statistics® Version 26 (release 26, ©IBM Corporation).

RESULTS

In total, 551 veterinary team members submitted a response to the survey, of which two were test responses and nine did not contain answers to individual questions. Therefore, a total of 540 responses were analyzed.

The distribution of categorical demographic variables is described in **Table 1**, and continuous variables are described in **Table 2**. Briefly, the majority of respondents were female ($n = 434$, 80.4%) veterinarians ($n = 423$, 78.3%) working in companion animal practice ($n = 367$, 68.0%). The age of respondents ranged from 20 to 94 years, with a median of 40 (IQR

18). The years since qualification or graduation ranged from 0 to 62 years, with a median of 13 (IQR 17).

Just under half worked more than 41 h per week ($n = 238$, 44.1%) while around one third worked 31–40 h per week ($n = 186$, 34.4%). More than half of the respondents were based in Australia or New Zealand ($n = 328$, 60.7%). Just over half ($n = 293$, 54.3%) had some form of ethics education as part of their qualification or degree, and slightly fewer ($n = 280$, 51.9%) had undertaken some form of ethics education after qualifying or graduating. The majority were confident that they could resolve ECS, with 42.8% ($n = 231$) reporting that they were confident enough to get by, while 42.6% ($n = 230$) reported they were either reasonably confident or couldn't be more confident in dealing with ECS in their workplace. The majority ($n = 380$, 70.4%) reported that they were free to make and act on ethical decisions in their workplace most of the time or always.

Factors Associated With Increased Ethically Challenging Situations Encountered Since the Advent of the COVID-19 Pandemic

Of the participating veterinary team members, almost half ($n = 256$, 47.4%) encountered an increase in ECS since the beginning of the COVID-19 pandemic.

Eleven variables were included in the univariable analysis, of which nine were associated ($p < 0.25$) with an increase in ECS encountered: age, experience, role, gender, region, hours worked, caseload, confidence in resolving ECS, and autonomy in decision making (**Tables 2, 3**). No variables were excluded due to missing values. The variables “age” and “experience” were highly correlated ($r = 0.93$). “Experience” was included in the final model because it was more strongly associated with the outcome ($p < 0.001$). As age increased, participants were less likely to experience an increase in ECS. In the univariable model, for each 1 year increase in age, the odds of an increased ECS decreased by 2.4% (95% CI: 0.1–3.9%). As experience increased, participants were less likely to experience an increase in ECS. For each 1 year increase in experience, the odds of an increased ECS decreased by 2.7% (95% CI: 1.2–4.2).

The final multivariable logistic regression model for the increase in ECS in veterinary team members is presented in **Table 4**. Respondents who were not veterinarians (OR 2.2, 95% CI 1.4–3.4), those who worked in companion animal practice (OR 3.2, 95% CI 1.7–5.8), those working in the USA or Canada (OR 2.4, 95% CI 1.6–3.7) and those who were not confident at all or underconfident in resolving ECS (OR 2.4, 95% CI 1.4–4.2) were more likely to experience an increase in the frequency of ECS at the beginning of a global pandemic, compared to respondents who were veterinarians, who worked in non-clinical practice, who worked in Australia and New Zealand and who were reasonably confident or couldn't be more confident in managing ECS, respectively. Hosmer-Lemeshow goodness-of-fit Chi-squared p -value ($p = 0.310$) indicated adequate model fit. Nagelkerke R^2 was 0.151. Examination of model residuals (using Studentized residuals >2.0) did not reveal any systemic lack of

TABLE 1 | Frequency table for the re-categorized demographic information on respondents to a mixed methods survey on ethically challenging situations encountered by veterinary team members globally in the early stages of the COVID-19 pandemic ($n = 540$).

Variable	Category	Number	Percentage %
Gender	Female	434	80.4
	Male	102	18.9
	Other	4	0.7
Role	Veterinarian	423	78.3
	Other	117	21.7
Hours worked	0–30	116	21.5
	31–40	186	34.4
	41–>50	238	44.1
Caseload	Companion animal clinical practice	367	68.0
	Other clinical practice	103	19.0
	Non-clinical role	70	13.0
Ethics education undertaken as part of qualification/degree	Yes	293	54.3
	No	161	29.8
	Don't recall	86	15.9
Ethics education or training to any degree following qualification/degree	Yes	280	51.9
	No	260	48.1
Region/group of countries	Australia and New Zealand	328	60.7
	USA and Canada	151	28.0
	Other: EU, Asia, Caribbean, Africa	61	11.3
Confidence in resolving ECS	Not confident at all/underconfident	79	14.6
	Confident enough that I can get by	231	42.8
	Reasonably confident/couldn't be more confident	230	42.6
Autonomy	Never/rarely	50	9.3
	Sometimes	110	20.4
	Most of the time/always	380	70.4

TABLE 2 | Descriptive information for continuous explanatory variables classified by the outcome variable increase vs. no increase in ethically challenging situations encountered by veterinary team members in the early months of the COVID-19 pandemic ($n = 540$).

	ECS	Minimum	25th percentile	Median	75th percentile	Maximum	p -value
Age	Increase	20	30.00	37.00	48.00	94	0.001
	No change	22	33.00	41.00	50.00	86	
	Total	20	31.00	40.00	49.00	94	
Experience	Increase	0	5.00	10.00	20.75	50	<0.001
	No change	0	7.00	15.00	24.00	62	
	Total	0	6.00	13.00	23.00	62	

model fit. No confounding by age or gender was found in the final model selected.

DISCUSSION

This study explored factors associated with a reported increase in ethically challenging situations encountered by veterinary team members during the early months of the COVID-19 pandemic (May to July) in 2020. Demographic factors associated with a higher frequency of ECS were being a veterinary nurse or animal health technician; working in companion animal practice;

working in the USA or Canada; and degree of confidence in dealing with ECS.

Being a Veterinary Nurse or Animal Health Technician

Veterinary nurses and animal health technicians were 2.2 times more likely to experience an increase in ECS than veterinarians early in the COVID-19 pandemic. Most surveys on ECS in the veterinary literature focus on the experiences of veterinarians (1, 2, 5, 6). Lehnus et al. included anesthesia nurses or technicians in their survey of veterinary anesthetists (6.0%), but did not

TABLE 3 | Contingency tables and univariable logistic regression results for demographic variables associated with an increase in ethically challenging situations encountered since the beginning of the COVID-19 pandemic, in a global survey of veterinary team members (n = 540).

Variable category	Increased ECS		B	SE(b)	Odds ratio	95% CI	p-value
	Increased (row %)	No change or decreased (row %)					
Role							
Veterinarian	181 (42.8)	242 (57.2)	-0.87	0.22	0.4	0.3; 0.6	<0.001
Nurse/Technician/other	75 (64.1)	42 (35.9)	0	-	1	-	-
Gender							
Female	216 (49.8)	218 (50.2)	0.55	0.23	1.7	1.1;2.8	0.015
Male	37 (36.3)	65 (63.7)	0	-	1	-	-
Missing: 4							
Region/group of countries							
Australia and NZ	135 (41.2)	193 (58.8)	0	-	1	-	0.001
USA and Canada	89 (58.9)	62 (41.1)	0.72	0.20	2.1	1.4;3.0	-
Other: EU, Asia, Caribbean, Africa	32 (52.5)	29 (47.5)	-0.46	0.28	1.6	0.9; 2.7	-
Hours worked							
0-30 h/week	46 (39.7)	70 (60.3)	-0.30	0.23	0.7	0.5;1.2	0.088
31-40 h/week	98 (52.7)	88 (47.3)	0.23	0.20	1.3	0.9; 1.8	-
41-50 h/week	112 (47.1)	126 (52.9)	0	-	1	-	-
Caseload							
Companion animal practice	197 (53.7)	170 (46.3)	1.06	0.29	2.9	1.7;5.0	<0.001
Clinical practice (non-companion animal)	39 (37.9)	64 (62.1)	0.42	0.33	1.5	0.8; 2.9	-
Other	20 (28.6)	50 (71.4)	0	-	1	-	-
Ethics training for qualification							
Yes	138 (47.1)	155 (52.9)	-0.07	0.25	0.9	0.6; 1.5	0.959
No	76 (47.2)	85 (52.8)	-0.66	0.27	0.9	0.6;1.6	-
Don't recall	42 (48.8)	44 (51.2)	0	-	1	-	-
Post-qualification ethics training							
Yes	127 (48.8)	133 (51.2)	0.11	0.17	1.1	0.8; 1.6	0.519
No	129 (46.1)	151 (53.9)	0	-	1	-	-
Confidence in resolving ECS							
Not confident at all/underconfident	48 (60.8%)	31 (39.2%)	0.92	0.27	2.5	1.5; 4.2	0.001
Confident enough that I can get by	120 (51.9%)	111 (48.1%)	0.56	0.19	1.7	1.2; 2.5	-
Reasonably confident/couldn't be more confident	88 (38.3%)	142 (61.7%)	0	-	1	-	-
Autonomy in decision making							
Never/Rarely	33 (66.0)	17 (34.0)	0	-	1	-	0.001

(Continued)

TABLE 3 | Continued

Variable category	Increased ECS		B	SE(b)	Odds ratio	95% CI	p-value
	Increased (row %)	No change or decreased (row %)					
Sometimes	62 (56.4)	48 (43.6)	-0.41	0.36	0.7	0.3; 1.3	-
Mostly/always	161 (42.4)	219 (57.6)	-0.97	0.32	0.4	0.2; 0.7	-

TABLE 4 | Final binary multivariable logistic regression model of risk factors for an increase in ethically challenging situations encountered, in a global survey of veterinary team members at the advent of the COVID-19 pandemic (May-July 2020) (n = 540).

Variable category	B	SE(b)	Adjusted odds ratios	95% CI	p-value
Role					<0.001
Veterinarian	0.00	-	1.0	-	-
Non-veterinarian	0.78	0.23	2.2	1.4-3.4	-
Caseload					<0.001
Non-clinical	0.00	-	1.0	-	-
Companion animal practice	1.15	0.31	3.2	1.7-5.8	-
Other clinical practice	0.58	0.36	1.8	0.9-3.5	-
Region/group of countries					<0.001
Australia and New Zealand	0.00	-	1.0	-	-
USA and Canada	0.88	0.22	2.4	1.6-3.7	-
Other: EU, Asia, Caribbean, Africa	0.61	0.30	1.8	1.0-3.3	-
Confidence					0.001
Not confident/underconfident	0.88	0.28	2.4	1.4-4.2	-
Confident enough that I can get by	0.58	0.20	1.8	1.2-2.6	-
Reasonably confident/couldn't be more confident	0.00	-	1.0	-	-

differentiate responses based on professional role (4). Moses et al. found that cases where a veterinarian felt they could not do the “right thing” caused some degree of distress to 97.7% of staff, and “inappropriate” requests for euthanasia caused some degree of distress in 96.1% of staff, where staff may have included veterinarians, animal health technicians, veterinary nurses and other veterinary team members (3). In the same study, while 64.7% of respondents never or rarely had disagreements with non-veterinarian staff about how to proceed with a clinical case, 32.3% sometimes disagreed, and 2.9% often or always disagreed. These findings suggest that ECS are a concern for all veterinary team members, not just veterinarians. A survey of equine veterinarians, veterinary nurses, and veterinary students undertaken in June 2020 in the UK (n = 451) reported lower levels of mental well-being among veterinary nurses than veterinarians (18). The authors do not speculate on the reasons for this difference, but suggest that they point to a need for support strategies to target this cohort. Our findings confirm and strengthen the need for strategies to support veterinary nurses, animal health technicians and non-veterinarian team members in managing ECS.

In a study of Canadian veterinarians (n = 537) and animal health technicians (n = 453), autonomy was effective in reducing co-worker strain, but was less common in female animal health technicians, the lowest status team members (19). We speculated that low autonomy would be associated with an increase in

ECS encountered, however this was not supported in our final multivariable model.

A study of veterinary technicians (n = 256) across four veterinary teaching hospitals in the USA and Canada undertaken prior to the pandemic found higher rates of burnout than in a comparable group of trauma nurses (20). Burnout was associated with feelings of fear or anxiety regarding supervisor communications, a perception that the caseload was too high to permit excellent patient care, and a perception of lack of assistance during sudden workload increases, all of which may lead to moral distress. These conditions were also present during the pandemic. For example, the overall caseload for emergency clinics in the USA increased by >10%, while 44% of hospitals reported caseload increases of >25% (21). Despite these increases, the majority of hospitals did not increase staff levels, and many suffered staff shortages due to potentially COVID-19 exposed staff isolating, sickness absenteeism and other COVID-19 related absences including childcare, home-schooling and being unwilling to work (21, 22). With the majority of practices changing operations to minimize contact with clients (23), it is likely that many veterinary nurses and animal health technicians had more interaction with clients than veterinarians, which may account for an increase in ECS. It is also possible that, due to staff shortages, veterinary nurses and animal health technicians found themselves performing duties they

may not have previously performed, such as ensuring clients followed biosecurity protocols, triaging patients, and undertaking extensive deep cleaning of the workplace environment. These issues were reflected in the free text responses to our survey questions (8).

While a lack of ethics training was not significantly associated with an increase in ECS encountered, this study could not differentiate the impact of the quality or quantity of ethics training. It is still possible that targeted training may assist veterinary nurses and animal health technicians in navigating ECS.

Working in Companion Animal Practice

Veterinary team members working in companion animal practice were 3.2 times more likely to experience ECS than those working in non-clinical roles, and 1.4 times more likely to experience ECS than those in other clinical practice (for example large animal, mixed, or zoological). This may be because the onset of the pandemic was followed by an increase in companion animal adoptions (24, 25). Because people increasingly share their home with companion animals, they may have been more attentive to health problems when following stay at home orders. These factors, combined with staff shortages, may have contributed to the increased caseloads of facilities providing care to companion animals (21, 22). We did not ask respondents to specify their location, nor whether they worked in a metropolitan or regional area. It is possible that companion animal practices were more likely to be located in metropolitan areas, where social distancing was more difficult.

Ethical challenges may be encountered more commonly in companion animal practice, as companion animals are increasingly treated like family members, yet in most jurisdictions remain the legal property of the owner. They are both moral subjects and objects, and therefore occupy a unique place in veterinary ethics (26). Unlike livestock and laboratory animal practice, for example, companion animal practice is “patient-centered,” with a focus on the “best interests of the patient” rather than the benefit of the users or consumers of animals (27). Thus, there is more potential for conflict between the interests of the patient and the interests of the client. Furthermore, due to increased specialization and the availability of advanced veterinary care, costs of companion animal care have increased at a greater rate than those of production animals, where operations are increasingly streamlined to reduce costs (28). These trends generate ethical challenges, including whether to perform an advanced and potentially costly procedure (27). In addition, companion animal euthanasia has been documented as a source of moral distress among veterinary team members (2, 3, 16). It is possible that economic consequences of the pandemic (for example, increased unemployment) may have contributed to increased rates of “economic euthanasia” (29). Concerns about a perceived increase in economic euthanasia were raised by a number of respondents [see (8), **Supplementary Material**].

While pet insurance may protect against economic euthanasia (30, 31), many veterinary patients are uninsured. It is possible that in times of economic hardship, clients who have pet

insurance may not be able to afford to pay for continued cover. There may be scope for pet insurance providers to enable policy holders to temporarily reduce their cover, or to defer payments for a limited period due to economic hardship, but such measures must be sustainable. Third-party credit is often contingent on employment status, making this option unavailable to clients unemployed due to COVID-19, or indeed other factors. Veterinary practices may not have been able to offer clients credit due to their own cash shortfalls. In April 2020 in the USA, more than 60% of practices applied for Small Business Administration loan programs, nearly 60% of practice owners forewent their own salaries, and around 60% withdrew from cash reserves (23). In such circumstances, the availability of low-interest, long-term loans to companion animal owners may help reduce economic euthanasia. Such a scheme could be funded *via* donations or a small levy paid by pet owners with the means to do so, and administered by veterinary professional organizations.

In times of widespread economic disruption and hardship, it is important for veterinary teams to be able to offer clients options along a spectrum of care (32). To this end, it is important that veterinary teams are trained and equipped to offer a spectrum of veterinary care (33).

Working in the USA or Canada

Early in the pandemic, veterinary team members in the regions or groups of countries “USA and Canada,” and “Other: EU, Asia, Caribbean, Africa,” were 2.4 and 1.8 times more likely, respectively, to encounter an increase in ECS compared to those in “Australia and New Zealand.”

Differences in the intensity of the impact of COVID-19 between regions or groups of countries may be due to different case numbers as well as the timing and nature of policy responses, the duration and severity of lockdown and mobility restrictions and economic factors, including social security (34). In the period since the pandemic began until 31 July 2020, the USA recorded 4,388,566 cases with 150,054 deaths, and Canada recorded 115,470 cases with 8,917 deaths (35). During the same period, Australia reported only 16,905 cases with 196 deaths (36), and New Zealand 1,518 cases and six deaths (37).

However, factors specific to different regions or groups of countries may contribute to differences in risk of an increase in the frequency of ECS between different regions or groups of countries. For example, between 26 May—the day immediately following George Floyd’s death—and 22 August, there were more than 7,750 demonstrations linked to the Black Lives Matter movement across over 2,440 locations in the USA alone (38). These demonstrations were associated with widespread social disruption. While it is possible that these had impacts on veterinary team members living and working in areas the demonstrations took place, the extent of the impact on frequency and type of ECS encountered by veterinary team members is not known.

It is possible that during the survey period (May to July 2020), practices in North America were busier than in other regions or groups of countries, which may have impacted the

frequency of ECS encountered. An online survey of 4,105 dog owners found that while 22.3% reported that their dog had needed veterinary care in the early months of the COVID-19 pandemic, and 79.8% of those had been presented for veterinary care, the percentage was higher in some countries (for example, 24% in the US) compared with others (for example, 13% in the UK) (10). An online survey of 956 cat owners found that 17% reported that their cat needed veterinary care in the early months of the COVID-19 pandemic, and 70.9% presented their cat to a veterinarian (39). The main reasons for seeking veterinary attention at this time were monitoring an illness or disease (26.7%), wellness exams (22.3%), and vaccinations (19.6%). According to surveys performed by the AVMA in April and July 2020, while practices experienced a decrease in client traffic in April, by July, almost half of practices surveyed saw an increase of 10–30% client traffic when compared to the previous year (23). In contrast, data from the UK's Small Animal Veterinary Surveillance Network (SAVSNET) based on electronic health records from 500 veterinary sites and 10 veterinary diagnostic laboratories in the United Kingdom (representing 15 and 50% of available data, respectively) initially recorded an 80–90% reduction in use of veterinary services compared to the same time in 2019 (40). The usage of veterinary services increased subsequently, but remained at around 45–50% by July (41–43).

Level of Confidence

Respondents who reported that they were not confident at all or underconfident in managing ECS were 2.4 times as likely to encounter an increase in ECS than those who were reasonably confident or couldn't be more confident. This suggests that increasing confidence in managing ECS would benefit veterinary team members. Again, while prior ethics training was not significantly associated with an increase in ECS in this study, we did not evaluate the quality or quantity of ethics training. A small study comparing the moral reasoning of qualified veterinarians ($n = 65$) with members of the public ($n = 33$) in the UK identified a large variation in the moral reasoning of veterinarians (44). Practicing veterinarians ($n = 38$) had moral reasoning abilities that were no better than those of the general public, and did not improve with years of experience, suggesting that veterinary training itself may not be sufficient in guiding veterinarians to manage ECS. In a survey of veterinarians in the USA ($n = 484$), 51% had received ethics training (11). Of these, only 39% agreed that this prepared them to manage ECS, 38% were neutral and 23% disagreed. Respondents to the current study had similar rates of ethics training, with 54.3% of respondents undertaking ethics training as part of their qualification, and 51.9% undertaking some form of ethics education following their qualification, for example, as part of continuing professional development. Improving the quality and quantity of ethics training available to veterinary team members, both pre and post-qualification or certification, may help veterinary team members better manage ECS and associated moral stress.

The most common resource utilized by veterinary team members facing ECS was discussion with colleagues ($n = 341$, 63.1%), followed by workplace policies ($n = 174$, 32.2%) (8). A qualitative study of Australian small animal veterinarians

revealed that veterinarians valued and relied on their peers for ethical discussions and support in the face of ethical challenges (45). However, some participants feared being negatively judged by their peers, and as such colleagues could act as both a source of support as well as a source of stress or anxiety for veterinary team members. Discussions about ethically challenging situations require a high degree of trust, and a facilitator who is both knowledgeable and sensitive (45). Structured ethical debriefing, or "ethics rounds," has the potential to increase confidence in managing ECS by improving ethical awareness, moral reasoning skills, ethical climate, and communication around what can be contentious issues in a psychologically safe space (46–48). It is possible that ECS disclose systemic issues that need to be addressed. For example, veterinary team members repeatedly faced with ECS regarding how to proceed when clients have financial limitations may benefit from clear workplace policies (49). Similarly, ECS such as conflict between personal well-being and professional role and whether to perform non-contact consultations may be reduced by clear workplaces policies and guidelines regarding biosecurity, together with team and client education and consistent messaging.

While it seems intuitive that those who are underconfident may encounter ECS more frequently, it is also possible that for some respondents, that a low confidence rating may reflect recall bias secondary to a negative encounter with an ECS.

Factors That Were Not Associated With an Increased Risk of Encountering ECS

Our multivariable logistic regression model did not support gender, hours worked, experience, or autonomy as risk factors for encountering increased ECS since the beginning of the global pandemic. Previous studies suggest a complex relationship between gender and ECS. While a significant gender difference was detected in stress ratings of two ethical challenges, with female veterinarians in the UK rating these more stressful than their male counterparts, there was no effect of gender on the number of ECS reported (44). Similarly, while gender did not predict reports of more frequent ECS, female veterinarians in the USA were over three times as likely as their male counterparts to consider ECS a leading source of stress in their work (2). These trends require exploration with further qualitative studies.

We anticipated that an increase in hours worked would be correlated with an increase in the frequency of ECS encountered by veterinary team members at the onset of the pandemic, because veterinary team members working longer hours may be exposed to more ECS. This was not supported in our final model. However, this study did not capture changes in working hours associated with the pandemic. Many veterinary services reduced operating hours, for example in the USA and UK (21–23, 40–43, 50), and a reduction in working hours may have reduced the risk of an increase in ECS encountered.

The role of experience in the frequency and stressfulness of ECS encountered by veterinary team members remains unclear. Our findings align with a study of UK veterinarians, which found was no statistically significant relationship between years in practice and stress associated with ECS (6). In

contrast, a study of veterinarians in the USA, veterinarians with under 15 years experience were almost 2.5 times more likely to report frequent ethical dilemmas than their more experienced counterparts (2). While a UK study found that moral reasoning among veterinarians did not improve with experience (44), further studies are required to determine whether this precludes improved recognition and management of ECS. In addition, further studies are required to determine whether experience mitigates the risk with regards to some ECS, and not others.

As discussed, we anticipated that low autonomy would be associated with an increase in the frequency of ECS encountered by veterinary team members, based on previous reports of low autonomy associated with occupational stress in veterinary settings (19). In addition, the likelihood of reporting frequent ECS was over 1.8 times greater in associates, a lower autonomy position, than practice owners (2). However, it is possible that low autonomy was associated with an increase in stress associated with ECS, however we did not examine this outcome.

CONCLUSION

Being a veterinary nurse or animal health technician, working with companion animals, working in the USA or Canada, and being not confident or underconfident in dealing with ECS in the workplace were factors associated with experiencing an increase in ECS encountered since the beginning of the COVID-19 pandemic.

Further studies are required to assess the impact of interventions such as ethics debriefing, policies and guidelines on the ability of veterinary team members to manage ECS.

STRENGTHS AND LIMITATIONS

This study is the largest global survey of ECS encountered by veterinary teams to date, and the first global survey to document ECS encountered by veterinary teams during a pandemic. It was conducted during the initial months of the COVID-19 pandemic, when the majority of people from respondent's countries were subject to public health restrictions impacting all aspects of their lives.

This sample does not represent a random sample and, as an online survey, is biased toward internet and social media users willing to complete surveys. The survey link was seen by an unknown number of individuals, precluding denominator data to calculate a response rate. The non-random, convenience sampling method may have biased selection toward respondents who had strong views or experiences relating to ECS, or biased selection toward particular groups. For example, the majority of organizations who agreed to share the survey link were organizations regulating or representing veterinarians, as opposed to veterinary nurses and animal health technicians [see (8) for a complete list of these organizations]. The convenience sampling method and number of responses from the majority of countries, particularly low and middle-income countries, was

too small to permit direct comparisons between countries, which could have provided valuable insights.

While we attempted to group countries according to region, those in the category "other" (EU, Asian, Caribbean, Africa) were grouped to facilitate statistical analysis, and are not necessarily in the same geographic region. Therefore, comparisons between "other" and the regions need to be interpreted with caution.

A handful of countries were overrepresented, while the majority of countries were not represented at all. The results are biased toward wealthy, Western countries, where the majority of veterinarians work with companion animals. Therefore, this study may have failed to capture the types and frequency of ECS encountered in other contexts. For example, a study of the impact of COVID-19 on the Working Equid Community found that equid owners reported decreased equid workload, decreased equid derived income and decreased household income, in the context of unchanged or increasing costs of equid related services, and in 15% of cases, reduced availability of these services (51). Any or all of these factors may have been associated with changes in the frequency of ECS encountered by veterinary team members.

Open surveys are associated with the risk that respondents may misrepresent themselves or complete the survey multiple times, or that web robots may generate responses (52). All responses were reviewed, and all included responses contained unique, detailed information suggesting that the data are legitimate.

The survey was anonymous to maximize protection of respondent's privacy. A major disadvantage of anonymity is the inability to clarify responses, or follow up. Additionally, we were unable to support individuals expressing strong negativity, other than providing very general information about support services at the conclusion of the survey (53). While our respondents were able to expand on their answers to some extent in the free-text comments, it would have been ideal to interview respondents in order to achieve a more comprehensive understanding of factors leading to an increase in ECS encountered at the beginning of the pandemic. However, by ensuring anonymity we believe that responses were frank and reflected the reality of respondent experience.

The survey was extended, and administered at a time when respondents were time-poor and potentially burnt out (21). A briefer survey may have captured a greater number and therefore breadth of responses.

Nonetheless, while drawn from a non-representative sample of participants, the wide representation of veterinary team members and representativeness among demographics including age, experience and case load indicates a meaningful range of responses.

Finally, these results provide a snapshot of ECS encountered by veterinary team members during a limited period (May to July 2020). This was a time when many countries were experiencing the first wave of the pandemic, public health measures such as social distancing, mask wearing and lockdowns were unprecedented, variants had not yet been identified, and vaccines were not yet available (54). Longitudinal studies would be required to document changes in the frequency, type and

stressfulness of ECS encountered by veterinary team members through the course of an extended global pandemic.

DATA AVAILABILITY STATEMENT

The datasets presented in this article are not readily available because we have approval to disseminate aggregated data, but not individual data. Requests to access the datasets should be directed to anne.quain@sydney.edu.au.

ETHICS STATEMENT

The studies involving human participants were reviewed and approved by the University of Sydney Human Research and Ethics Committee (approval number 2020/291). Participants provided their written informed consent to participate in this study.

AUTHOR CONTRIBUTIONS

AQ: literature review, study design, survey building and piloting, ethics application, data analysis, writing, and editing submission.

SM: study design, survey refinement, ethics application, editing, and supervision. MW: data analysis, editing, and supervision. All authors contributed to the article and approved the submitted version.

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SUPPLEMENTARY MATERIAL

The Supplementary Material for this article can be found online at: <https://www.frontiersin.org/articles/10.3389/fvets.2021.752388/full#supplementary-material>

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6.3 Further discussion

The finding that non-veterinarian veterinary team members were at higher risk of experiencing an increase in ECS at the beginning of the pandemic suggests a need to better equip these team members in managing ECS. This aligns with the findings in Chapter 3. A large US based study involving 2,495 veterinarians and 446 veterinary technicians reported increased stress levels among veterinary team members, particularly veterinary technicians, during the pandemic (Burns, 2022). The authors did not set out to measure moral distress, thus it is difficult to appreciate the degree to which moral distress associated with ECS contributed to these findings, or indeed whether moral distress experienced by veterinary team members during the pandemic was exacerbated by increased overall stress. A US survey of 1,132 veterinary technicians found that 51% of respondents reported that it was more difficult to balance animal welfare and financial constraints of the owner during the pandemic (Rowe et al., 2022). These findings confirm and strengthen the need for strategies to support veterinary nurses, animal health technicians and non-veterinarian veterinary team members in managing ECS.

The finding that those working in companion animal practice were at an increased risk of experiencing an increase in ECS may reflect the fact that they are more likely to deal with individual animals and higher case numbers than veterinary team members whose ECS may relate to herds, groups or large populations of animals. This exposure to additional cases may provide increased opportunities for ECS. For example, the question of what to do with 'surplus' animal populations in the event of slaughter plant disruption due to COVID-19-related absenteeism of staff may represent a single ECS for a consultant veterinarian, even if it involves hundreds of animals. A survey of USA-based swine veterinarians (n = 134), comparing those involved in mass depopulation events associated with COVID-19 to those not involved in mass depopulation events, found that depopulation was correlated with burnout, and that the method(s) used were significantly associated with distress, burnout and distress about the unfavourable perceptions of other stakeholders (public, colleagues, family and friends) (Baysinger and Kogan, 2022). This suggests that mass depopulation of swine was a source of moral distress for swine veterinarians, one that indicates a need to investigate more appropriate methods, not

just for the sake of swine veterinarians (as stressed in the article) but for the animals themselves.

As this manuscript was being finalised for submission, an outbreak of the Delta strain of COVID-19 in Australia plunged numerous states and territories into extended lockdowns (Butterworth et al., 2022, Griffiths et al., 2022). The qualitative data gathered in our survey provided a rich source of information about specific ECS encountered. I felt that exploration of this data may be of practical use to veterinary team members. For example, a number of respondents reported communication challenges associated with low and no-contact consultations. These, and potential mitigation strategies, are explored in Chapter 7.

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Chapter 7: Exploring ethically challenging situations associated with the pandemic

7.1 Background

The aim of understanding the types of ECS encountered by veterinary team members is to improve the way such ECS are managed, thereby avoiding or mitigating moral distress. We can also anticipate and address factors that may lead to or exacerbate ECS. As discussed in Chapters 5 and 6, the COVID-19 pandemic presented a range of ECS, with some veterinary team members at greater risk than others of experiencing an increase in the frequency of ECS encountered during the pandemic.

This chapter contains two articles, based on analysis of subsets of data from the survey undertaken in 2020 (see Chapter 5). The first explores communication challenges associated with the pandemic in general. The second explores challenges associated with low and no-contact euthanasia. Both papers were published during COVID-19 associated lockdowns in Australia. They were written to alert veterinary team members to challenges they might continue to encounter, as identified by the data I collected, and suggest potential strategies to mitigate ECS.

7.2 Published articles

Quain, A., Mullan, S. & Ward, M. P. (2021). Communication challenges experienced by veterinary professionals during the COVID-19 pandemic. *Australian Veterinary Journal*, 100(1-2):79-81. <https://doi.org/10.1111/avj.13125>

Quain, A., Mullan, S. & Ward, M. P. (2022). Low and No-Contact Euthanasia: Associated Ethical Challenges Experienced by Veterinary Team Members during the Early Months of the COVID-19 Pandemic. *Animals*, 12, 560. <https://doi.org/10.3390/ani12050560>



SHORT CONTRIBUTION

Communication challenges experienced by veterinary professionals during the COVID-19 pandemic

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The COVID-19 pandemic and associated restrictions have caused major changes in veterinary practice. Utilising a subset of qualitative data from a global survey of 540 veterinarians, veterinary nurses and animal health technicians, we highlight the impact of these changes on communication in veterinary clinical practice. Communication challenges experienced by veterinary team members included lack of face-to-face contact with clients; increased difficulty in communicating in general; inability to demonstrate physical examination, diagnostic findings or treatment information to clients; difficulty in communicating while wearing personal protective equipment; increased 'miscommunication' and challenges in convincing clients of the importance of pandemic-associated protocols. These findings suggest a need for veterinary teams to modify and adapt their communication strategies to facilitate effective communication where social distancing and noncontact consultations are required.

Keywords challenges; COVID-19; pandemics; veterinary

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The COVID-19 pandemic has resulted in major changes in veterinary practice, including the use of personal protective equipment (PPE), particularly masks and noncontact consultations to facilitate social distancing to minimise transmission of SARS-CoV-2. Here we describe the adverse impact on effective communication.

While restrictions in different areas have been lifted in response to reduced case numbers, subsequent COVID-19 waves can lead to reinstatement of further restrictions.¹ These restrictions impact many aspects of personal and professional life, including the way veterinary practices operate.

We studied the nature and frequency of ethically challenging situations (ECS) encountered by veterinarians, animal health technicians and veterinary nurses ('veterinary team members') at the beginning of the pandemic in 2020. The experiences of veterinary team members early in the pandemic may be useful to identify gaps in knowledge and areas for potential improvement.

We administered a worldwide online, mixed methods survey to veterinary team members over the age of 18, via the secure web application Research Electronic Data Capture (REDCap). The survey

consisted of 29 questions and was open from 13 May to 14 July 2020. Free-text responses were screened to rule out identifying information, then uploaded onto NVivo® 12 Plus Software (QSR International). Thematic analysis was performed utilising the approach of Braun and Clarke.² A detailed account of the methodology has been published previously.³ The study was approved by the University of Sydney Human Research Ethics Committee (project 2020/291).

There were 540 responses included in the analysis. The majority of respondents were female (n = 434, 80.4%) veterinarians (n = 423, 78.3%) working in companion animal practice (n = 367, 68.0%). The mean year of graduation was 2004 (SD 11.5, median 2007) and the mean year of birth was 1979 (SD 11.9, median 1980). The majority of respondents (n = 504; 93.3%) worked in Australia, the USA, Canada, the UK or New Zealand. For those reporting an increase in ECS (n = 256, 47.4%), the median frequency increased from several times per month to several times per week (Spearman Rank Correlation 0.62, P < 0.0001). Complete results are published elsewhere,³ but a key finding germane to this discussion is that 25.4% (n = 137) respondents reported that difficulty in communicating with clients was a barrier to resolving ECS and 16.7% (n = 90) reported that difficulty in communicating with colleagues was a barrier to resolving ECS.

Thematic analysis of free-text responses revealed five major themes: biosecurity, client financial limitations, animal welfare, working conditions and client relations. A subtheme around communication emerged under the theme of client relations, in which there were 26 comments submitted by 22 respondents. We believe that the information collected may be useful to veterinarians working under restrictions.

Respondents reported communication challenges, including lack of face-to-face contact with clients; increased difficulty in communicating in general; inability to demonstrate physical examination, diagnostic findings or treatment information to clients; difficulty in communicating while wearing PPE such as masks; an increase in 'miscommunication'; challenges in convincing clients of the importance of pandemic-associated protocols and a recognition that communication is central to the work of veterinary teams (see Table 1 for examples).

Effective communication in veterinary settings leads to improved clinical outcomes, including adherence to recommendations and client satisfaction.⁴ In contrast, failure to communicate effectively may result in animal welfare, work health and safety and legal repercussions for veterinary team members.⁴ Factors that compromise or complicate communication can increase the risk of these negative outcomes.

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Table 1. Comments regarding communication

Theme	Example
Lack of face-to-face contact with clients	‘Uncertainty regarding obtaining a full history when due to [OWNER] not being present or having to social distance’. ‘...lack of ability for me to visualise nonverbal signals of owners understanding/confusion of the disease process – all of which lead to frustrated owners, reduced treatment outcomes and complaints’.
Increased difficulty in communicating in general	‘A little harder to involve owners in decision making’. ‘Communication has become increasingly difficult. People agitated more easily’.
Inability to demonstrate findings or plans to clients	‘Communication with clients has been more difficult as I cannot show them what I’m seeing to justify the treatment options’. ‘Lack of ability for owners to see what you have done (thoroughness of physical exam, proof of physical exam findings e.g. pain)’.
Personal protective equipment (PPE) e.g. masks	‘The ability to communicate with owner under stress while wearing PPE, namely masks. Difficulty understanding technicians and owners while masked, wasting time during intake of a critical animal’. ‘...an owner brought in a dying animal, owner and technician had a misunderstanding about resuscitation due to mask’.
Increased miscommunication	‘Since COVID, 2nd most common [ethically challenging situation] is miscommunications with the owner’. ‘Miscommunications with clients causing stress’.
Communicating importance of pandemic protocols/biosecurity	‘...the lack of scientific education in the general population has been challenging because we cannot always make them understand the policies we are taking to help keep people safe, and disinformation is rampant’. ‘Communication regarding euthanasias and presence or absence of family members in accordance with social distancing rules’.
Communication is important	‘The biggest issue in the veterinary industry is that people, for example, clients are a huge factor that most vets and nurses are never taught about. The tough conversations about finances. The chats with people who have had limited education, mental health and the old people who do not have family and friends’. ‘Good communication is key’.

Clinical consultation skills include building trust and rapport through the consultation.⁵ In healthcare settings, including veterinary practices, ineffective communication is a well-documented contributing factor to clinical errors, which can result in animal harm or even mortality.⁶

We found that communication challenges were experienced by veterinary team members, and in some cases led to or exacerbated ethical challenges. This is consistent with literature emerging from human healthcare, which found that communication challenges were common and were exacerbated by PPE, the need for social distancing and the cognitive load of both health care staff and clients.⁷⁻⁹

Our findings highlight potential negative impacts of a lack of face-to-face contact with clients. Published studies on veterinary communication emphasise the importance of nonverbal cues, including kinesics (facial expressions and body language), proxemics (the shaping of space between the client-patient-veterinarian) and paralanguage (pitch, tone and volume of voice).⁴ Nonverbal cues can be particularly helpful in detecting clients’ negative emotions, which may indicate reservations or unaddressed concerns.⁵ Nonverbal communication is important. The findings of this study suggest a need to explore alternative modalities that facilitate sharing of nonverbal communication, such as video communication.

Veterinary team members need to appreciate that clients and colleagues might find communication more challenging due to pandemic-related

restrictions. Ensuring that time is taken to establish rapport with clients is particularly important, as it helps to build trust.⁵

Respondents highlighted the inability to physically demonstrate findings to clients as a communication challenge, suggesting the need for alternatives, such as the use of images or video, or the use of visual aids, for example, electronic information can be emailed or links to online resources such as video or animation. An example is directing the client to an existing resource such as iCatCare’s inhaler training videos <https://icatcare.org/inhaler-training/> demonstrating the use of a spacer to facilitate delivery of medications via the airway.

We found that PPE, in particular masks, complicated communication. In healthcare settings, PPE reduced speech clarity, and eliminated lip reading and many nonverbal cues, observations associated with an increased risk of miscommunication.¹⁰ In experimental settings using simulated background noise, understanding improved if those wearing PPE raised their voices, but investigators noted that prolonged voice-raising can lead to vocal strain, as well as frustration or miscommunication.⁸ There are currently no published studies that indicate the extent to which different types of PPE may impact communication in veterinary settings. Adjusting communication to improve speech clarity, or communicating via video or even in writing may reduce miscommunication that may otherwise occur. The use of clear, plastic visors, where appropriate, may facilitate lip-reading while enhancing nonverbal communication.

Protocols to facilitate social distancing and protect both clients and veterinary team members are important. They can be communicated clearly and patiently to clients, for example, at the time of making an appointment, on practice websites and social media accounts and through signage in and outside of the practice. It is important that such protocols are communicated with sensitivity. Major risk factors for post-intensive care unit (ICU) syndrome, a post-traumatic stress-like syndrome described in human healthcare, include poor communication with the ICU team and having a loved one close to death.⁷ Family members who are not able to say goodbye to relatives are at higher risk of developing complicated grief. It is possible that the impact of noncontact consultations around the end of life of a companion animal may be similar for veterinary clients.

Due to COVID-19 restrictions, Doctor of Veterinary Medicine (DVM) students transitioned to online learning, including simulated clinical consultations. Online clinical consultation workshops were found to be an effective complement to clinical training with findings generalisable for training in teaching hospitals, and may better prepare future veterinarians for noncontact consultations.¹¹

There is scope to collaborate with human health care providers to develop best practice pandemic clinical communication guidelines. Veterinary team members may benefit from communication skills training and guidelines that provide best practice strategies for communicating with clients when physical or even visual contact is not possible, or where PPE is required. For example, where possible, use of clear visors, combined with good eye contact, appropriate lighting, the use of verbal empathy and the use of visual aids such as white boards can be helpful in some settings.¹²

Effective communication is critical in allowing veterinary team members to provide safe, sympathetic and effective animal care, to ensure the concerns of clients are addressed and to prevent complaints. Our findings suggests that veterinary teams need to modify their communication techniques to optimise communication in times of pandemic restrictions.

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Article

Low and No-Contact Euthanasia: Associated Ethical Challenges Experienced by Veterinary Team Members during the Early Months of the COVID-19 Pandemic

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Simple Summary: During the COVID-19 pandemic, many veterinary practices have been required to move to a low or no-contact consultation model to minimise the risk of SARS-CoV-2. Utilising data from a global survey, we explored the experiences of veterinary team members performing low and no-contact euthanasia during the early months of the COVID-19 pandemic. We found that low and no-contact euthanasia were encountered as common and/or stressful ethical challenges in the pandemic. In order to minimise the potential negative impacts of low and no-contact euthanasia on veterinary team members, clients and animal patients, there is a need for a toolkit of protocols to assist veterinary team members in provision of low-contact euthanasia, and avoidance of no-contact euthanasia wherever possible.

Abstract: Background: During the ongoing COVID-19 pandemic, many veterinary practices around the world have shifted to a low or no-contact consultation model to ensure the safety of their team members and clients, and comply with public health orders, while continuing to provide veterinary care. Methods: We performed reflexive thematic analysis on a subset of data collected using a mixed-methods survey of veterinary team members globally. Results: There were 540 valid responses available for analysis. Low and no-contact euthanasia were raised as a common and/or stressful ethical challenge for 22.8% of respondents. We identified five key themes: no-contact euthanasia as a unique ethical challenge; balancing veterinary team safety with the emotional needs of clients; low and no-contact protocols may cause or exacerbate fear, anxiety and distress in veterinary patients; physical distancing was more challenging during euthanasia consultations; and biosecurity measures complicated communication around euthanasia and end-of-life decision making. Recommendations: In light of concerns highlighted by respondents, we recommend the development of a toolkit of protocols that will assist veterinary team members in performing low-contact euthanasia in a range of circumstances, in alignment with their values and professional ethical codes. Professional bodies may be involved in developing, updating and disseminating this information, and ensuring a continuous supply chain of PPE.

Keywords: euthanasia; pandemic; COVID-19; SARS-CoV-2; physical distancing; human-animal bond; ethics; moral distress; fear-free; low stress; PPE



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1. Introduction

The World Health Organisation (WHO) declared a global pandemic on 11 March 2020 [1]. The COVID-19 pandemic led to major changes in veterinary practice to minimise the risk of transmission of SARS-CoV-2 in veterinary settings and in some instances comply with public health orders, including the increased use of personal protective equipment (PPE), and low and no-contact consultations to facilitate physical distancing.

For the purposes of this discussion, “low-contact” refers to strategies aimed at minimising physical contact with clients, such as minimising the number of clients in the consultation room, physical distancing, and requesting that clients wear PPE during the consultation. “No-contact” refers to strategies aimed at eliminating physical contact with clients. In such instances, clients may have had verbal contact with veterinary team members, for example via telephone or internet, to communicate their concerns, provide a patient history or give consent, but were required to remain outside of the premises at all times, for example in the case of “drop-off” or “curbside” consultations, or telemedicine.

Due to a surge in demand, disruption of global supply chains, shortage of raw materials for production, competition between countries for PPE and in some cases interception of PPE imports, there was a global shortage of PPE [2]. In particular, masks, goggles, face shields, gowns and N95 respirators were in very short supply [3]. Shortages of PPE in human healthcare settings left those caring for patients with COVID-19 extremely vulnerable to COVID-19-associated morbidity and mortality [4,5]. Healthcare workers were also deemed an important source of SARS-CoV-2 transmission [5]. These factors made protection of healthcare workers from infection a priority for disease control. Vaccinations were not approved for use until December 2020 in the UK, and in many countries not until much later [6,7]. With no approved vaccinations or effective treatment, physical distancing, PPE, and minimising the duration of proximity to others where physical distancing was not possible, were key elements of prevention.

For this reason, veterinary professional organisations and associations such as the American Veterinary Medical Association, promoted conserving PPE by postponing elective procedures, extending the use of disposable PPE or even reusing disposable PPE in some circumstances [8].

To minimise the risk of transmission of SARS-CoV-2 between clients and veterinary team members in veterinary clinical settings, most amended their practice to align with local public health orders or recommendations; to limit service provision only to “essential” services; to reduce the number of veterinary team members on site at any one time, and minimise client contact by limiting the number of clients entering veterinary premises, or to exclude clients from veterinary premises entirely [9–11].

In 2020 we surveyed veterinary team members around the world about the types of ethically challenging situations they had faced since the beginning of the pandemic. The results are published elsewhere [12,13]. We identified “no-contact consultations” in general, particularly “no-contact euthanasia consultations”, as distinct, novel types of ethically challenging situations faced by veterinary team members.

Euthanasia is commonly performed in veterinary contexts [14–20]. Derived from the Greek “eu” for good and “thanatos”, pertaining to death, “euthanasia” describes the killing of an animal in such a way that minimises pain and distress to the animal patient, and emotional distress of those present, including animal owners [19]. While historically it was commonplace to separate animals from clients at the time of euthanasia, best practice is now keeping bonded humans and animals together, or at least providing that option for clients [21].

Previous surveys have identified euthanasia of animals as a source of moral stress and moral distress for veterinarians in particular [22–25]. Whether veterinary team members experience euthanasia as an ethical challenge may depend on the indication or reasons for a euthanasia request [26]. In preventing veterinary team members from keeping bonded humans and animals together, low and no-contact euthanasia may violate their expectations/values/beliefs around what constitutes a good death.

In order to better prepare current and prospective veterinary team members working in the context of this and future pandemics, we sought to better understand the ethical challenges posed by low and no-contact euthanasia during the early months of the COVID-19 pandemic.

2. Materials and Methods

The methodology for this project has been described in detail elsewhere [12]. Briefly, we developed and administered an online, mixed-methods survey to explore the frequency and stressfulness of ethically challenging situations encountered in the early months of the COVID-19 pandemic. The anonymous survey, hosted on the secure web application Research Electronic Data Capture (REDCap), consisted of 29 questions across three sections. Participants were invited to provide free-text responses to three questions: “Since the advent of COVID-19, describe the most COMMON ethically challenging situation you have encountered as a veterinary team member?”; “Since the advent of COVID-19, describe the most STRESSFUL ethically challenging situation you have encountered as a veterinary team member? (If the response is the same as above, enter “same”)”; and “Is there anything else you would like to add about your experience with ethically challenging situations since the advent of COVID-19?” For the first two questions, participants were instructed that the ethically challenging situation identified did not have to be specific to the COVID-19 pandemic. For all questions participants were advised not to include potential identifying information such as names of individuals or workplaces in their responses. In this study, we pooled and analysed the free-text responses to these three questions.

De-identified data were downloaded into Microsoft[®] Excel for Microsoft Office 365 MSO (16.0.13328.20262). Responses were sorted into categories for the purposes of descriptive statistics. Summary statistics were calculated for the demographic variables using IBM SPSS version 24.

Responses were screened to exclude identifying information, then uploaded onto NVivo[®] 12 Plus software (QSR International) to facilitate thematic analysis. For this paper, free-text responses referring to the practice of low- and no-contact consultations relating to critically ill patients, or where euthanasia was discussed or performed, were compiled in order to perform a reflexive thematic analysis on this subset of data. Where respondents had written “same” in response to the second free-text question, to indicate that the most common ethically challenging situation was also the most stressful, this second comment was excluded from analysis.

When performed rigorously, qualitative research is explicitly acknowledged to be “context-bound, positioned and situated” [27], with analysis of data reliant on interpretation of the situated researcher. Researcher subjectivity is recognised as a resource rather than a barrier to knowledge production [27]. Thematic analysis is “an *interpretive* activity undertaken by a researcher who is situated in various ways, and who reads data through the lenses of their particular social, cultural, historical, disciplinary, political and ideological positionings” (original emphasis) [28]. It is therefore considered best practice for those performing reflexive thematic analysis to describe their own perspectives, including their “personal and social standpoint, and positioning” [28].

The first author is a companion animal veterinarian, practicing as a primary accession veterinarian and a lecturer in the Sydney School of Veterinary Science. She is also a lifelong companion animal owner. She has been a practicing veterinarian since 2005, well before the COVID-19 pandemic was declared, and has continued to practice since then, modifying her practices in line with public health orders and protocols at practices where she works. Therefore, during the study period, she performed low and no-contact consultations, as well as low-contact euthanasia consultations. The second author is a veterinarian, researcher and lecturer in animal welfare and veterinary ethics at University College, Dublin. She has a long-standing interest in animal welfare science, ethics and law, starting as a student and continuing through practice and into teaching. The third author is a veterinarian, lecturer in epidemiology and public health, and a researcher in the Sydney School of Veterinary Science. His veterinary clinical experience is derived exclusively from government practice as a field veterinarian. He has a strong interest in infectious and transboundary diseases and has conducted original research on the COVID-19 pandemic. Since the declaration of the global pandemic, all authors have engaged either wholly or mostly, in virtual (no-contact) teaching of DVM students.

Data analysis involved six stages. Firstly, the first author read all comments at least three times. Secondly, initial codes were generated. Each comment was coded inductively for semantic themes, employing a realist approach without a pre-existing theoretical framework. An iterative approach was used. A single comment could be coded multiple times. Where a comment could not be assigned an existing code, a new code was generated. Thirdly, initial themes were generated. Codes were examined to identify clusters of codes and complex codes which were grouped together as themes thought to best represent the data. Themes were reviewed for both internal coherence and distinctiveness from other themes. This involved regularly re-reading all coded extracts from each theme. Where extracts did not fit a theme, these were either reallocated to a more appropriate theme or allocated to a new theme. The fourth and fifth stages—refining themes and developing a thematic map, and defining and naming themes, were performed concurrently, and involved further discussion between all authors. The sixth and final stage involved selection of examples illustrative of each theme.

3. Results

There was a total of 540 valid responses. There were 141 comments, provided by 123 respondents (22.8%). Key demographic frequencies of both the overall respondent population, and the subset who commented on low or no-contact euthanasia in the free-text comments, are summarized in Tables 1 and 2. Overall, the demographic features of the subset were similar to the overall study population. Briefly, the majority of respondents in this subset were female ($n = 110$; 89.4%) veterinarians ($n = 98$; 79.7%), working in companion animal practice ($n = 92$; 74.8%), and working in Australia ($n = 69$; 56.1%), the USA ($n = 24$, 19.5%), Canada ($n = 11$; 8.9%) and the UK ($n = 7$; 5.7%). Year of birth ranged from 1956–1998, with a mean of 1980 (standard deviation 11.3) and a median of 1982. Year of graduation ranged from 1958–2020, with a mean of 2005 (standard deviation 11.1) and a mean of 2007.

We identified five major themes relating to euthanasia: no-contact euthanasia as a unique ethical challenge; balancing veterinary team safety with the emotional needs of clients; low and no-contact protocols may cause or exacerbate fear, anxiety and distress in veterinary patients; physical distancing is more challenging during euthanasia consultations; and biosecurity measures complicated communication around euthanasia and end-of-life decision making (Figure 1).

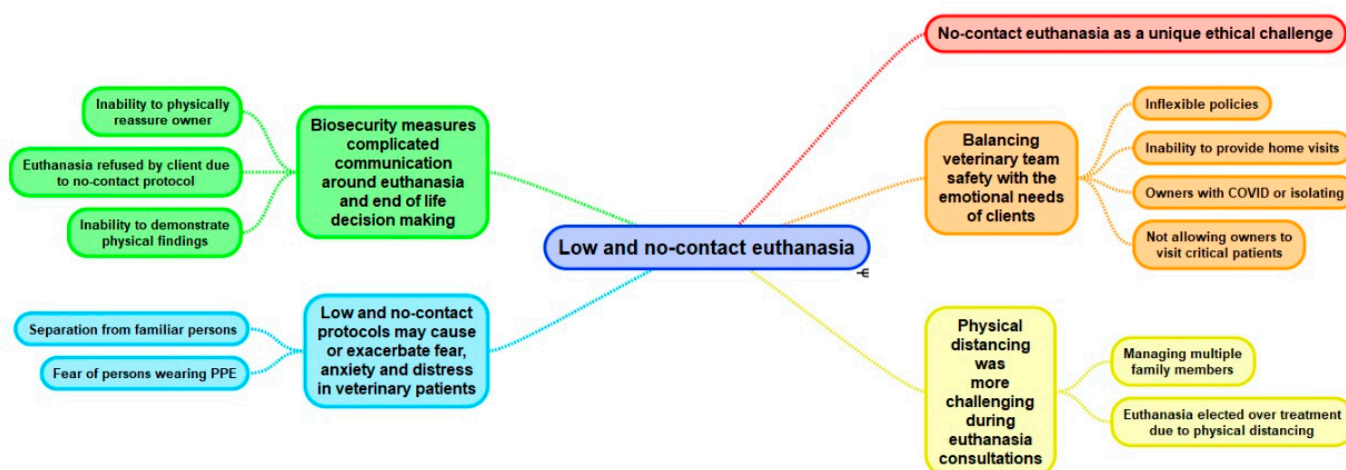


Figure 1. Thematic map depicting themes and subthemes constructed through reflexive thematic analysis.

3.1. No-Contact Euthanasia as a Unique Ethical Challenge

A number of respondents raised no-contact euthanasia as the most common, the most stressful or both the most common and most stressful ethically challenging situation encountered since the beginning of the pandemic, due largely to the absolute exclusion of owners:

“Disallowing witnessing euthanasia”—veterinarian. Since owners

Table 1. Frequency table providing key demographic information for total number of respondents ($n = 540$) and a subset of respondents who made commented on low and no-contact euthanasia ($n = 123$) in a mixed methods survey on ethically challenging situations encountered by veterinarians, animal health technicians and veterinary nurses globally during the early months of the COVID-19 pandemic in 2020.

Demographic Parameter	Category	Number (Overall Responses, $n = 540$)	Number (Subset of Responses, $n = 123$)	Percentage (% Overall Responses)	Percentage (% Subset of Responses)
Gender	Female	434	110	80.4	89.4
	Male	102	12	18.9	9.8
	Other	4	1	0.7	0.8
Role	Veterinarian	423	98	78.3	79.7
	Veterinary nurse	97	21	18.0	17.1
	Animal health technician	11	2	2.0	1.6
	Other animal health professional	9	2	1.7	1.6
	Companion animal practice clinical	367	92	68.0	74.8
	Mixed animal practice clinical	38	10	7.0	8.1
Caseload	Academia/teaching	34	7	6.3	5.7
	Zoo and/or wildlife practice clinical	27	5	5.0	4.1
	Equine practice clinical	13	3	2.4	2.4
	Exotic/unusual pet practice clinical	12	3	2.2	2.4
	Practice management	13	2	2.4	1.6
	Non-government organisation	10	0	1.9	0
	Scientific research/laboratory animals	8	0	1.5	0
	Government	8	0	1.5	0
	Other	5	0	0.9	0
	Industry (e.g., pharmaceutical companies, food companies)	4	1	0.7	0.8
	No longer working as a veterinarian	1	0	0.2	0
	Australia	316	69	59.1	56.1
	Country	United States of America	125	24	23.1
Canada		26	11	4.8	8.9
United Kingdom		25	7	4.6	5.7
New Zealand		12	6	2.2	4.9
Singapore		10	2	1.9	1.6
Germany		6	3	1.1	2.4
China		4	0	0.7	0
Netherlands		3	1	0.6	0.8
Other *		13	0	2.4	0

* Other included one respondent (0.2%) from each of the following countries: Austria, Belarus, Cambodia, Denmark, France, Hong Kong, Republic of Ireland, Jamaica, Lithuania, Mexico, Spain, Thailand, Zimbabwe. Percentages may not add to 100 due to rounding to one decimal place.

Table 2. Descriptive information for continuous exploratory variables (year of birth, year of graduation) for total number of respondents ($n = 540$) and a subset of respondents who made commented on low and no-contact euthanasia ($n = 123$) in a mixed methods survey on ethically challenging situations encountered by veterinarians, animal health technicians and veterinary nurses globally during the early months of the COVID-19 pandemic in 2020.

Variable	Range	Mean	Median	Standard Deviation
Year of birth for total number of respondents ($n = 528$)	1926–2000	1979	1980	11.9
Year of birth for subset of respondents ($n = 120$)	1956–1998	1980	1982	11.3
Year of graduation for total number of respondents ($n = 540$)	1958–2020	2004	2007	11.9
Year of graduation for subset of respondents ($n = 123$)	1956–1998	2005	2007	11.1

3.1. No-Contact Euthanasia as a Unique Ethical Challenge

A number of respondents raised no-contact euthanasia as the most common, the most stressful or both the most common and most stressful ethically challenging situation (ECS) encountered since the beginning of the pandemic, due largely to the absolute exclusion of owners:

“Disallowing witnessing euthanasia” veterinarian, Singapore

“Putting animals to sleep without owners allowed to be present” veterinary nurse, UK

“Having to make owners stay outside while we take their pet inside” veterinary nurse, Australia

The third comment in particular suggests externally imposed rules or protocols followed by veterinary team members that disallow owner presence.

3.2. Balancing Veterinary Team Safety with the Emotional Needs of Clients

Some respondents described the challenge of managing the conflict between ensuring the safety of the veterinary team, through strict physical distancing, while meeting the needs of clients to be present during euthanasia of an animal. A veterinary nurse from the USA described the difficulty in weighing up the costs (to the veterinary team) of allowing clients to be present, against the emotional costs (to the client) of not allowing them to be present during euthanasia:

“Being forced to choose between allowing clients into the facility for a euthanasia or maintain “no client access” policies instituted to reduce potential exposure and allow for social distancing. By allowing clients to be present during a euthanasia there is a risk of exposure to both our staff members and the clients in question. It uses scarce and valuable PPE and adds further stress to the team in an already emotionally taxing situation. However, denying clients the opportunity to be present during the euthanasia compounds the grief and loss of an already deeply traumatic situation and denies them a sense of closure and control.” Veterinary nurse, USA

Other respondents confidently prioritised the safety of the veterinary team, justifying it as “... the ethical decision to protect our staff.” (Veterinarian, USA).

Some were prepared to take a calculated risk in breaching workplace protocols excluding owners from attending euthanasia consultations:

“Not being allowed to have owners present or even visit their pet again prior to euthanasia. I found it to be excessive and unnecessary. While I am worried about COVID just as much as the next person and I want to take precautions, I don’t see why we can’t offer the client to be present outside the building on a bench with masks and long extension set etc. I was reprimanded by management for doing just that.” Veterinarian, Canada

No-contact euthanasia was experienced for some respondents as an ethical challenge even when the owner was self-isolating or diagnosed with COVID-19. An Australian veterinarian described the most stressful ECS they encountered as “... inability of owner to be present for euthanasia when known COVID positive,” underscoring the view that the costs to the owner of not being present were significant, even in the face of high likelihood of exposure of the veterinary team member(s) to the virus in such situations.

Some respondents mentioned not being able to provide a home euthanasia service, due to factors such as reduced staff numbers and increased workplace biosecurity restrictions, as a source of distress, despite justifying such measures as a means of protecting both veterinary team members and clients:

“... having to decline house calls for elderly clients for both our, and their, protection.” Veterinarian, Australia

For clients such as the elderly, persons living with disabilities and those without transport, house call consultations may have been their only means of accessing veterinary care. For these clients, loss of the house call service may have equated to loss of access to veterinary care altogether.

Some respondents found that not allowing owners into the clinic or hospital to visit critically unwell or dying patients, or even leave a familiar-scented item to comfort an animal due to concerns about fomite transmission of SARS-CoV-2, particularly challenging:

“It is difficult to receive a patient, specifically one that is critical or in pain, and tell the owner they have to wait in their car and/or are not allowed to come in with their pet. Similarly, when owners want their hospitalized pet to have a blanket or shirt with them, it is hard to tell them no.” Veterinary nurse, USA

For others, not allowing owners to visit critical or dying animals transgressed their values about acceptable care of animals and their owners:

“Not being able to provide clients contact with their seriously ill hospitalized pet... it is not what I would consider acceptable for my own pets.” Veterinary nurse, Australia

One respondent referred to a client-free hospital as the “ideal”, but described weighing up the needs of both the veterinary team and the client, suggesting a possibly flexible approach:

“Balancing the needs of clients to see/visit their critically ill pet with the needs of our staff/hospital to maintain a socially distant and ideally client free hospital.” Veterinarian, Australia

3.3. Low and No-Contact Protocols May Cause or Exacerbate Fear, Anxiety and Distress in Veterinary Patients

A number of respondents felt that no-contact euthanasia in particular not only negatively impacted clients, but animal patients themselves, with the key stressor identified as separation from their owner in an unfamiliar environment:

“Many dogs are stressed away from their owner. Also, in the case of very sick animals/emergencies/euthanasias owners are distressed about not being able to be with their animal. Do you cave and let them be there knowing that if you get covid19[sic] the entire clinic team and possibly other clients could get infected, or stick to the policy knowing you are causing emotional distress to the owner and animal?” Veterinarian, Australia

“Anxious animals being away from their owners creating a more negative environment for the animal to be in.” Veterinary nurse, Australia

“... distress of pets and owners when separated from [each] other to allow social distancing during exam.” Veterinarian, Australia

One respondent described being able to implement work-arounds to avoid separation of owners and animals, though did not elaborate on the nature of these:

“People want to be with their animals, and some need to be . . . sometimes the dog or cat needs them. We finds[sic] ways to accommodate that.” Veterinarian, Canada

There were concerns that persons wearing PPE may add to fear, anxiety or distress in veterinary patients:

“I thought it was very over the top that in Australia some clinics were either not allowing clients to be present for euthanasia of their pet or required the client to be gowned up in a hazmat suit to be present (and scaring the poor dog with the outfit).” Veterinarian, Australia

3.4. *Physical Distancing Is More Challenging during Euthanasia Consultations*

Where low-contact euthanasia was performed, respondents described different strategies to maintain physical distancing, including minimising the time in which owners and veterinary team members were in close proximity, performing euthanasia outdoors, the use of intravenous catheters and lines to allow remote injection, and/or minimising the number of people present. One respondent described these extra measures as presenting the most stressful ECS during the pandemic, highlighting the need to separate the client from the animal during the process of euthanasia:

“Not being able to allow clients to be present the whole euthanasia procedure i.e., taking the animal off them in the car park, placing IVC [intravenous catheter], then bringing clients around the back to outside where they must remain for the procedure, never allowing them in the clinic.” Veterinary nurse, Australia

Some respondents noted concerns about potential increased risk for COVID-19 transmission in euthanasia consultations:

“Being in close proximity to grieving owners (with increased secretions) is stressful on the staff.” Animal health technician, USA

“Owners crying without masks during euthanasia.” Veterinarian, USA

Restricting the number of persons present in the euthanasia consultation was the most stressful ECS for some team members, due to concerns about the impact on clients excluded from the procedure:

“ . . . only allowing 1 person to be present when saying goodbye to their pet. It causes moral conflict because it feels wrong asking other family members to leave in a hard time when they are also grieving and would like closure.” Veterinary nurse, Australia

Some respondents were concerned about the impact of excluding others on individuals forced to attend euthanasia without the support of others:

“Family’s [sic] not allowed to be present during euthanasia. Only one family member outside the building. Seeing the sadness/distress of the one family member shouldering the burden alone.” Veterinary nurse, Australia

One respondent described physical distancing requirements as a deterrent to work-up of cases for some clients, perhaps leading to premature euthanasia decisions:

“Clients are quicker to elect euthanasia as apposed [sic] to diagnostics as it’s more difficult to bring them into the practice.” Veterinarian, Canada

3.5. *Biosecurity Measures Complicated Communication around Euthanasia and End-of-Life Decision Making*

Physical distancing complicated communication around euthanasia and end-of-life-decision making. Respondents described the challenge of being unable to demonstrate the clinical status of an animal to the client as they may have done previously:

“Trying to convince an owner that it’s the right time to euthanise their pet when the owner is unable to see their pet’s clinical status and what is happening in the hospital.” Veterinarian, Canada

In some instances, the prospect of no-contact euthanasia impacted end-of-life decision making. Some respondents reported that the most stressful ECS they encountered was client refusal to euthanise an animal if they could not be present:

“Euthanasia being refused by clients as they cannot be present with their animal.” Veterinarian, UK

“Clients not wanting to put their pets to sleep as they are unable to attend euthanasia.” Veterinary nurse, UK

Some respondents noted the lack of contact between themselves and grieving owners as a common or stressful ECS, due to inability to express compassion in a way they were accustomed to:

“It has been difficult to have to refrain from any human touch or closeness during such a personal procedure which requires empathy.” Veterinary nurse, Australia

“... not hugging the client or spending time with them which we normally do.” Veterinarian, Australia

4. Discussion

Low and no-contact euthanasia of veterinary patients were experienced as stressful by veterinary team members during the COVID-19 pandemic. Traditionally, the veterinary ethical literature has focused on the client, the animal and the veterinarian as key stakeholders [29]. Comments from respondents suggest that veterinary team members were conscious of the needs of a much broader range of stakeholders. Because of the infectious nature of SARS-CoV-2, decisions around whether and how to perform low or no-contact euthanasia also had the potential to impact household members and contacts of clients and veterinary team members, as well as the wider community [12], all with varying risks of viral exposure. Additional stakeholders mentioned included human healthcare workers and the human healthcare system, due to scarcity of resources such as PPE, as well as professional associations, registration boards, charities and non-Government organisations [12]. In addition to complying with professional codes of conduct, veterinary professionals in many jurisdictions were required to comply with public health orders.

The focus of our survey was the frequency and type of ECS encountered during the pandemic and did not attempt to discern the predominant ethical framework(s) utilised by veterinary team members, or whether the ethical approach of veterinary team members shifted with the advent of the COVID-19 pandemic. Nonetheless, responses tended to be most aligned with deontological, utilitarian or virtue ethics approaches. Deontology holds that an action is good or right if it conforms to a rule or a moral norm, and prioritises the intentions of the decision-maker [30]. The theme “*No-contact euthanasia as a unique ethical challenge*” comprised comments about following rules, for example, “disallowing” clients from being present during euthanasia, as well as comments indicating distress about the inflexibility of such rules, and the consequences, particularly for grieving clients. The emphasis on disallowing owners, or “having to” exclude them from the process, suggests that these veterinary team members were following protocols, or felt compelled by circumstances to act, in conflict with their values. While it may be unavoidable due to workplace policies or public health orders, acting in a way that transgresses one’s deeply held moral beliefs causes moral distress [31]. This can impact the welfare of veterinary team members [32].

In human healthcare, bans on visitors of hospitalised patients, particularly those in ICU and those dying from COVID-19, were instituted around the world [33,34]. These caused distress not just to family members of those patients, but also to healthcare workers [35,36]. The idea of dying alone contravenes beliefs about what is considered a “good death” in

many cultures [37]. Selman and others note that “a key clinical debate is whether, and how, to facilitate family members and close friends to be present when someone dies in hospital, hospice or care home during a pandemic” [37]. Family members who are not able to visit dying relatives to say goodbye are at higher risk of developing complicated grief and post-traumatic stress-like disorders [35]. Being unable to see a family member right before, during or immediately after death made it hard for some to accept that the person had died [38]. Given the attachment that many owners have to their animals, it is likely that veterinary clients who were unable to be present during euthanasia may be susceptible to similar negative sequelae.

In our study, many respondents appeared to take a utilitarian approach to decision making around owner presence at the time of euthanasia. Broadly speaking, utilitarians seek to achieve the greatest positive consequences (or the least worst) for the greatest number of stakeholders [30]. This is captured in the theme “*Balancing veterinary team safety with the emotional needs of clients*”. Consider the respondent who posed the question about whether one allows a client to be present “knowing that if you get covid19 [sic] the entire clinic team and possibly other clients could get infected”, vs. not allowing the client to be present, leading to distress for both the animal and the client. However, weighing costs and harms did not necessarily yield a satisfactory approach. Utilitarians evaluate decisions according to their consequences—but the respondent could not have predicted with certainty whether they *would* acquire COVID-19, infect other team members and clients, or indeed how severe such infections would be. Nor could they measure with any certainty the degree of harm to the client or the animal. According to a utilitarian framework, steps taken to mitigate or eliminate the risk of harm are ultimately evaluated according to their consequences, which cannot be known until after those steps are taken. In the context of a pandemic, uncertainty is increased. Interestingly, some commentators attributed moral distress among healthcare workers during periods of extreme resource constraint during the pandemic to a shift in the predominant medical ethic toward utilitarianism [36,39]. Some human healthcare workers (such as veterinarians) breached no-contact protocols in order to “minimise the negative psychological effects caused by not being able to say goodbye and possible ongoing complications of mourning” [38].

Increasingly, the professional identity of veterinary team members has come to be centered around primary concern for animal welfare. Indeed, “protecting and promoting animal welfare” is described as the veterinarian’s “raison d’être” [40], and is embedded in codes of professional conduct for veterinarians, animal health technicians and veterinary nurses [41–46]. This focus on animal welfare has been accompanied by a recognition of the potential iatrogenic harms of veterinary care [47], and concerted efforts to minimise fear, anxiety and distress in veterinary patients [48–52]. For example, the European Veterinary Code of Conduct states that “euthanasia must be practiced with as little pain, distress and fear as possible” (1.2, Recommendation 4) [44]. Yet the theme “*Low- and no-contact protocols may cause or exacerbate fear, anxiety and distress in veterinary patients*” suggests that public health considerations (also embedded in professional codes of conduct), came into conflict with this iatrogenic harm minimisation ethos.

A randomized crossover trial of 44 client-owned dogs examined in the consultation room in the presence of their owner, and the common treatment area (“out the back”) without the owner present, reported higher levels of fear, anxiety and stress in more dogs examined in the common treatment area, without their owners [53]. Similarly, a randomized crossover trial of 21 client-owned cats found that separation from owners and examination in the common treatment area were associated with clinically significant increases in perceived stress in cats [54]. These findings suggest that, where possible, examinations and minor procedures should be performed in the consultation room, with the owner present [49]. At the time of euthanasia in particular, it is recommended to keep the client and patient together throughout the euthanasia appointment “to reduce anxiety for both” [21].

While implemented for the safety of veterinary team members and clients, a potential unintended consequence of no-contact consultations is an increased risk of injury. Some respondents highlighted concerns around safety associated with separation of animals from their owners. Anxious and fearful animals are more likely to scratch, bite or otherwise injure veterinary team members, and may be more refractory to sedation [49,50].

Another common approach to ethics is virtue ethics, which prioritises cultivation of morally relevant, persistent character traits such as compassion, honesty, trustworthiness, integrity and discernment [30]. Virtues are linked to one's role(s), which may vary. For example, a respondent may have roles as a veterinary team member, a parent, a carer, and a community member. Low and no-contact euthanasia may have led to moral distress for veterinary team members because they were unable to perform their role in alignment with their core values (for example, compassion), or because their professional role as a veterinary team member caring for animals and clients came into conflict with their other roles (for example as a family member or carer seeking to protect those they live with). Indeed, we found conflict between the wellbeing of family/household members and professional role was reported to be among the most common (reported by 46.3% of respondents) and most stressful (33.6%) ethically challenging situations encountered by veterinary team members during the early months of the pandemic [12].

One challenge with virtue ethics is how to manage conflict between different virtues. The finding that, for at least some respondents, *physical distancing was more challenging during euthanasia consultations*, may reflect a conflict between the expectation for veterinary team members to be discerning, to follow reasonable public health orders and to minimise biosecurity risk, and the expectation that veterinary team members are compassionate in the face of the grief of clients and their family members. It can be difficult to navigate conflict between different roles and virtues [30].

Euthanasia, in particular, presents a challenge when physical distancing, as it is a time when veterinary team members must be in close physical proximity to an animal to prepare for and perform euthanasia. It is also commonly a time when owners wish to be close to the animal, bringing them into close proximity with veterinary team members. Prior to the pandemic, the presence of multiple family members, friends, support persons and even other animals prior to, during and after euthanasia of animals was common. Extended appointments for euthanasia were routine, and it was common for multiple persons to attend. This may reflect the reality that "euthanasia appointments are as close to a funeral as some clients will have for their pets" [21]. But extended appointments conflicted with advice to minimise duration of client contact. As stated by several respondents, it is not uncommon for clients, and sometimes veterinary team members, to cry during euthanasia consultations. Tears, along with respiratory droplets, are a potential source of SARS-CoV-2 infection [55], as alluded to by some of the respondents.

Few published protocols for low-contact euthanasia were available at the time. In the experience of the first author (AQ), most veterinary teams in Australia developed their own approaches to low-contact euthanasia on an ad hoc basis, or, where possible, referred clients to home euthanasia services. Indeed, the USA-based Companion Animal Euthanasia Training Academy (CAETA) reported an increase in referrals to home euthanasia services during the pandemic, as well as an increased number of outdoor euthanasias [56], as some hospitals sought to avoid admitting clients onto the premises.

Available guidelines focused on minimising contact time between veterinary team members and clients and reducing the risk of fomite transmission. For example, an early edition of "COVID-19: A guide to reopening veterinary medicine in Ontario" recommended the following:

"Euthanasia appointments should be structured so that time in close proximity to the client is minimized. For example, contactless or quick transfer of the patient, distanced escort of an owner to a room, insertion of a catheter in a separate room, keeping personnel distant from the owner until the time of injection, having the owner stand distant or, if they will hold the animal, have personnel wear

PPE to protect themselves (mask and eye protection); Documentation of verbal consent rather than requiring signatures; Using contactless electronic payment wherever possible” [57]

Some continuing education providers shared strategies for performing low-contact euthanasia. For example, CAETA recommended that house call veterinary team members reduce their exposure by reducing overall appointment volume and minimising the number of people present at euthanasia, screening clients ahead of the appointment for signs of illness, explaining the procedure and collect payment over the phone; dispensing pre-visit pharmaceuticals that clients could administer to animals prior to the appointment to promote sedation and anxiolysis, wearing PPE, requesting that clients present wear PPE, ceasing physical contact with clients (avoid handshakes, hugs), encouraging virtual presence at euthanasia, performing euthanasia outdoors where possible, minimising potential fomite transmission by documenting verbal or electronic instead of written consent, reducing handling of animal bodies and using disposable pads rather than towels beneath animals [58,59].

Euthanasia protocols for anxious or aggressive animals are designed to minimise contact between veterinary team members and the conscious patient, often incorporating oral premedication or sedation [60]. Anecdotally, some teams began using these protocols routinely during the pandemic to minimise contact between veterinary team members and clients. For example, where it was safe to do so, some veterinarians utilized a three-step euthanasia process in canine patients involving (a) oral transmucosal application of detomidine hydrochloride gel (an oral transmucosal preparation typically used to sedate and restrain equine patients, but known to cause reversible sedation in dogs [61,62]) by the owner under the direct supervision of the veterinarian; (b) subcutaneous or intramuscular injection of a sedative agent, and (c) placement of an intravenous catheter in a hindlimb, attached to a long extension set to facilitate pentobarbitone sodium injection at a distance from the patient and clients, or intrahepatic injection of pentobarbitone sodium (J. Campbell, personal communication, December 2021). Non-veterinary team members present would be asked to step away from the dog while injections were given or intravenous catheters placed in steps (b) and (c) but could resume physical contact with the animal once veterinary team members moved away from the patient.

Biosecurity Measures Complicated Communication around Euthanasia and End-of-Life Decision Making

Biosecurity measures, including low- and no-contact consultations, and the use of PPE—in particular, masks—complicated communication between veterinary team members and clients in general [63], so it is not unexpected that they also complicated communication and end-of-life decision making. Communication that might normally occur in the consultation room may have occurred over the phone or via telemedicine, reducing the ability of both veterinary team members and clients to read non-verbal cues [63]. According to Ware and colleagues, briefer appointments and those where the client is separated from the animal can complicate decision making around treatments, monitoring of outcomes and establishing humane endpoints [64].

In human healthcare settings, virtual communication presented a challenge for family members of some patients, including difficulty hearing and unreliable WiFi-connection [65], and could be a source of stress for some family members if not managed appropriately [66]. Video calls could be a source of comfort to some family members [66–68], though some bereaved family members and friends displayed an ambivalent attitude to the use of devices to facilitate virtual farewells [37]. Telephone communication was associated with a perceived decrease in communication quality, information and support [69]. Masks reduced the ability to read facial expressions, eliminated lip-reading, and may have reduced audibility of verbal communication [65,70,71].

Veterinary team members typically play an important role in supporting pet owners during end-of-life discussions, euthanasia and the immediate aftercare of the animal’s

body [72–74]. In a study of 2043 dog and cat owners in the USA, more than half reported that the veterinarian was their primary support in relation to pet dying and death [74]. A systematic review of 19 qualitative papers from 17 studies found that when clients reported positive interactions and high levels of support from veterinarians, they were better able to trust and collaborate, felt more reassured, felt better able to grieve and experienced reduced trauma [75]. Discussions around euthanasia, including the sharing of bad news, quality of life assessment, end-of-life decision making, and comforting grieving clients take time [76–78], yet the predominant advice given to veterinary team members was to reduce direct contact time with clients. Due to the circumstances of the pandemic, clients may have wished for more time with veterinary team members. It is possible that the human-animal bond intensified due to changes brought about by the pandemic, including spending more time with companion animals due to working from home, or loss of employment [79]. Isolation may have intensified grief over loss of an animal, particularly owners for whom that animal was their only source of comfort or companionship [79].

Respondents reported that, in some cases, the prospect of no-contact euthanasia was a reason for clients to refuse euthanasia. This may have led to situations where euthanasia was delayed, or animals suffered a bad death (dysthanasia). Where veterinary team members had no alternative to no-contact euthanasia (for example, the ability to perform low-contact euthanasia or refer to a service provider who could do so), this likely caused moral distress. It is possible that in such situations, veterinarians continued to treat animals despite poor welfare, or what they felt was futility of treatment. Previous studies have reported that situations in which a client wished to continue treatment despite a patient's poor quality of life are experienced as ethically challenging by veterinarians [22,24].

5. Strengths and Limitations

Limitations of the larger study from which the data discussed in this paper have been discussed at length elsewhere [12,13]. For the purposes of the current discussion, a key limitation was the anonymity of the survey, precluding the opportunity to clarify responses, and explore the social, cultural and contextual factors influencing whether respondents experienced low and/or no-contact euthanasia as ethically challenging. Of the subset of respondents who did report experiencing low and/or no-contact euthanasia as an ethical challenge in the early months of the pandemic, we did not have the opportunity to interview them regarding their experiences, what might have helped them in navigating low and/or no-contact euthanasia, and what they learned from the experience. The focus of our study was ethically challenging situations in general, not specifically low and no-contact euthanasia, which may have limited the extent to which respondents elaborated on this particular topic. However, anonymity may have facilitated more open, honest responses, removing social desirability bias.

The voluntary nature of the survey predisposes it to self-selection bias, whereby those with stronger views on ethically challenging situations may have been more likely to respond. It is possible that those who had more negative views about or experiences with low and no-contact euthanasia were more likely to respond to the survey. Alternatively, those distressed by their experiences may have avoided responding due to concerns about recalling distressing ethical challenges.

While every effort was made to distribute the survey globally, responses came from veterinary team members based in 22 countries. Results are biased towards wealthy, Western countries where the majority of veterinary teams work with companion animals [80–84]. This study may not reflect the experiences of veterinary team members working in other countries.

Nonetheless, this study captures the experiences of veterinary team members from multiple countries during the early months of the global pandemic. It provides a snapshot of ethical challenges around low and no-contact euthanasia at a unique time in history. By its design, it does not document the evolution of ethical challenges faced by veterinary team members during the pandemic. Data were collected in the context of a shortage of

PPE, prior to the identification of variants including Delta and Omicron, the availability of vaccinations, and the availability of rapid antigen tests, any and all of which have the potential to modify the likelihood of infection and therefore impact the way veterinary team members and clients behave and interact, including in euthanasia consultations.

This study did not capture the experiences of veterinary clients. While our study provides evidence that low and no-contact euthanasia was a source of stress for veterinary team members, other studies show that low and no-contact veterinary consultations in general were anticipated to be or experienced as stressful by animal guardians/owners. In a study of low-income pet guardian's experiences at private veterinary clinics and hospitals during the pandemic, interviewees highlighted their inability to accompany the animal during the visit as a stressor both for themselves and for the animal [85]. Interviewees also reported challenges communicating with veterinary team members over the phone.

A survey of 2254 pet owners in the US in a similar time period to this study (April to July 2020) reported that 13% of owners had concerns about accessing veterinary care during the pandemic [79]. Such concerns included protocols that precluded pet owners from accompanying animals during appointments, particularly euthanasia appointments.

A qualitative study of Canadian pet owners with (dis)abilities found that for some, their (dis)ability (e.g., sensory, cognitive or motor) posed a barrier to virtual or telephone consultations or commuting to veterinary clinics during the pandemic [86]. A number reported that the inability to accompany their animals into the veterinary hospital led to distress, and reduced their willingness to access veterinary care [86].

Prior to the pandemic, viral posts on social media platforms Twitter and Facebook implored owners to stay in the room when their companion animals were euthanised, otherwise their pet's final moments may entail "frantically looking around for their owners" [87]. These posts assume that owners have a choice as to whether to be present during euthanasia but may serve to exacerbate owner distress in situations where this choice is removed, such as in a pandemic.

In light of negative experiences and profound psychological harms suffered by bereaved family members, numerous authors emphatically recommend development of protocols, policies and guidelines to preserve of the ability of family members to visit dying loved ones in healthcare settings and/or be present at the time of death during this and future pandemics [33,37,38,65,66,69].

6. Recommendations

Our study highlights a strong need to prepare veterinary team members to navigate ethical challenges presented by low and no-contact euthanasia. As the way euthanasia was discussed and ultimately performed was the main source of concern, we believe that providing further information and training on low-contact euthanasia may help veterinary team members preserve the ability of clients to accompany animals during euthanasia should they wish to do so. This would, in turn, enable veterinary team members to perform euthanasia in alignment with their values, thereby reducing moral distress.

Specific guidelines as to how to assess risk, communicate about and perform low- and no-contact euthanasia in different circumstances, including for example pre-visit pharmaceutical and sedation protocols and checklists for preparing clients, could be included in future editions of guidelines such as the American Veterinary Medical Association's Guidelines for the Euthanasia of Animals [19], and/or updated biosecurity guidelines distributed by veterinary professional organisations [88].

At various stages in the pandemic, and in some cases throughout the pandemic, veterinary teams have been understaffed and under-resourced, with little time to digest and implement extensive guidelines [12,89,90]. Information contained in biosecurity guidelines and protocols needs to be as accessible as possible. There is an opportunity for professional organisations and continuing professional development providers to train veterinary team members in implementing such guidelines. This includes undertaking risk management with regard to euthanasia consultations, and communication and euthanasia techniques

for situations where contact with clients must be minimised or eliminated. Low and no-contact euthanasia guidelines and risk assessment tools should be incorporated in hospital emergency plans.

It would be beneficial if accessible information for clients, for example around the wearing of PPE in the euthanasia consultation, could be developed alongside guidelines and protocols for low and no-contact euthanasia. This information may help reduce miscommunication around practical matters, such as instructing clients how to wear PPE during a consultation and explaining expectations around physical distancing. It may also enable clients to better prepare for euthanasia, particularly if shared ahead of the consultation where possible.

Additionally, customisable templates providing contact details of local support services could be made available to veterinary teams to provide to their clients, ensuring that these details are consistently and accurately communicated.

Veterinary team members performing or assisting in low-contact euthanasia will require a reliable supply of PPE for themselves, and potentially any clients present. Veterinary professional organisations may have a role in helping to secure a continuous supply chain of appropriate PPE.

7. Conclusions

The identification of low and no-contact euthanasia as ethical challenges by over one fifth of respondents underscores that it isn't just the indications for euthanasia, but the practical aspects of how it is performed, that may be ethically challenging and potentially lead to moral distress for veterinary team members. Wherever possible, no-contact euthanasia should be avoided. Veterinary team members should be better prepared and equipped to perform low-contact euthanasia in the context of this and future pandemics.

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7.3 Further discussion

Our findings align with those reported in several contemporaneous studies. A survey of US based veterinary technicians (n = 1132) found that 30% strongly agreed and 45% agreed that communication was more difficult during the pandemic (Rowe et al., 2022), and 16% nominated this as the greatest challenge they experienced during the pandemic. While 67% of veterinary technicians felt work was easier due to the owner not being present during animal care, 34% strongly agreed or agreed that animals were more difficult to handle and 45% agreed that PPE appeared to frighten animals. Furthermore, 65% experienced difficulty ensuring personal safety during euthanasia, with 4% of respondents nominating this as the greatest challenge they experienced. This underscores the need for all veterinary team members to be trained in communication skills in a variety of situations, and in handling animals to minimise their fear, anxiety and distress and promote positive affective states in the context of low and no-contact consultations.

A survey of US veterinarians (n = 550) regarding the use of synchronous video telemedicine (where neither the client nor animal were physically at the clinic) reported that many veterinarians found it more difficult to foster relationships and convey information to clients (Bishop et al., 2021). Other concerns included not being able to perform a physical examination of the animal and worries about legal implications of telemedicine. Overall, telemedicine appointments took less time, but generated less revenue, than in-person consultations. This was a concern noted by many respondents. These findings underscore a need for discussion within the profession, including regulatory and professional bodies, about appropriate platforms for telemedicine, and what constitutes a veterinarian-client-patient relationship where social distancing and movement restrictions are required. In jurisdictions where telemedicine is legal, veterinary professional bodies can help veterinary service providers promote the value of this service to clients and normalise payment for advice where it is not provided in person.

Interviews with equine veterinarians (n = 5) as part of a larger group (n = 26) of UK-based equine industry stakeholders found that digital and telephone communication were used increasingly to triage cases and determine whether in-person attention was required (Ward et al., 2021). However, there were concerns among respondents that of some clients were manipulating veterinarians into property visits by utilising

trigger words. Deciding which cases could be managed via telemedicine and which required a visit was a source of anxiety for some, as I found (Quain et al., 2021). In some cases, some veterinarians perceived that low-contact consultations – for example, treating a potentially dangerous horse while socially distancing from the handler(s) – presented a greater safety risk than COVID-19 itself. Future emergency planning should ensure the supply of PPE for all persons assisting veterinary team members, to facilitate safe and appropriate animal handling.

A mixed-methods analysis of two sequential owner surveys of dog owners in the UK and Republic of Ireland in May (n = 5,063) and October 2020 (n = 2,582) respectively reported communication challenges associated with no-contact consultations (Owczarczak-Garstecka et al., 2022). Dog owners reported concerns that not being present in the consultation with the dog 'led to missed diagnoses or further health complications' (Owczarczak-Garstecka et al., 2022). Owner concerns were heightened dogs were reluctant to enter a veterinary clinic or hospital without being accompanied by their owner. Respondents also reported that no-contact consultations were particularly stressful where the owner was considering euthanasia, while others raised concerns about a lack of privacy, particularly where animals were euthanased in clinic car parks (Owczarczak-Garstecka et al., 2022). Some reported delaying euthanasia until they could be present with the animal. The authors recommend implementing measures to improve communication in situations where no-contact consultations may be required, with a focus on involving animal owners in the diagnostic process, and post-consultation follow-up to clarify any outstanding concerns. They add that the veterinary profession should work to minimise or eliminate technical barriers that may prevent some owners (for example, those unfamiliar with technologies of those living with disabilities) from accessing telemedicine. Finally, they add that socialising companion animals to veterinary environments and handling by veterinary team members may encourage them to present the animals earlier in situations where contact consultations are not possible (Owczarczak-Garstecka et al., 2022). Facilitating positive affective states (for example, providing positive reinforcement) while exposing animals to veterinary team members wearing PPE may improve the veterinary patient experience in subsequent emergencies.

Understanding the types of ECS that veterinary team members may encounter, or factors that may exacerbate ECS, allows veterinary team members and organisations to anticipate and prepare for these challenges. The use of PPE or euthanasia protocols that facilitate social distancing without compromising animal, client, or veterinary team member wellbeing may eliminate or mitigate the impact of ECS. The implication of the studies presented in this chapter is that simply relying on improvements to ethics training of veterinary team members might not be enough. Importantly, access to resources and practical measures – such as technology to facilitate telemedicine, and protocols to facilitate low-contact euthanasia – may minimise or prevent ECS. In the following chapter, I explore how participating in ethics rounds, a form of clinical ethics support, may impact veterinary team members.

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Chapter 8: Ethics rounds for veterinary team members

8.1 Background

The work of empirical veterinary ethics aims to identify and characterise the ECS faced by veterinary team members. In addition, it seeks to evaluate strategies to mitigate moral distress.

Among healthcare workers, moral distress arising from ECS has been identified to impact patients, through reduced quality of care, patient safety and treatment efficacy. The healthcare team is affected via high staff turnover and career attrition (Lamiani et al., 2017, Whittaker et al., 2018, Kherbache et al., 2021, Pauly et al., 2012, Hyatt, 2017). Ethics rounds is one form of clinical ethics support services (CESS), widely adopted in human healthcare, that might benefit veterinary team members. The following study sought to determine the impact of ethics rounds on veterinary team members.

8.2 Published article

Quain, A., Mullan, S. & Ward, M. P. 2022. "There was a sense that our load had been lightened": a pilot study of virtual ethics rounds for veterinary team members. *Frontiers in Veterinary Science*. (Accepted for publication 20 June, 2022).



“There Was a Sense That Our Load Had Been Lightened”: Evaluating Outcomes of Virtual Ethics Rounds for Veterinary Team Members

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Clinical ethics support services (CESS) are employed in healthcare to improve patient care and help team members develop skills to recognize and navigate ethically challenging situations (ECS). The objective of this study was to evaluate the impact of ethics rounds, one form of CESS, on veterinary team members. An anonymous, online mixed-methods survey incorporating a 15-item instrument designed to assess the outcomes of moral case deliberation originally developed for human healthcare workers (the Euro-MCD 2.0), was developed. The survey was administered to veterinary team members prior to and following participation in a 90-min virtual ethics rounds session. A total of 23 sessions of virtual ethics rounds were held. In total, 213 individuals participated, and 89 completed both surveys (response rate 41.8%). Most respondents were female ($n = 70$, 81%). Most were veterinarians ($n = 51$, 59%), followed by other veterinary team members (practice manager, animal attendant) ($n = 18$, 21%), veterinary nurses or animal health technicians ($n = 10$, 12%) and veterinary students ($n = 8$, 9%). Age ranged from 20 to 73 (median 41, IQR 32–52, $n = 87$). While there was no statistically significant difference between overall modified Euro-MCD 2.0 scores between T1 and T2, there were statistically significant changes in 7 out of 15 Euro-MCD 2.0 items in the domains of moral competence and moral teamwork. Reflexive thematic analysis of free-text responses identified themes including the types, impact and barriers to resolving ECS, the impacts of ethics rounds on veterinary team members and constraints preventing veterinary team members from speaking up in the face of ECS. While participants largely described the impact of ethics rounds as beneficial (for example, by facilitating clarification of thinking about ECS, allowing participants to see ECS from the perspective of others and providing a safe space for discussion), reflecting on ECS could be stressful for participants. Active participation in ethics rounds may be inhibited in the context of power imbalance, or in settings where bullying occurs. Overall, carefully facilitated ethics rounds has the potential to improve the ability of veterinary team members to identify and navigate ECS, and potentially mitigate moral distress.

Keywords: ethics rounds, moral case deliberation, clinical ethics support services, moral distress, ethical challenge, veterinary ethics

INTRODUCTION

Veterinary team members commonly encounter ethically challenging situations (ECS), a potential source of moral distress which may negatively impact wellbeing, in their daily work (1–8). Moral distress is defined as “the experience of psychological distress that results from engaging in, or failing to prevent, decisions or behaviors that transgress, or come to transgress, personally held moral or ethical beliefs” (9). Among healthcare workers, moral distress has been correlated with low psychological empowerment and autonomy, low workplace satisfaction and engagement, poor ethical climate and collaboration, high turnover and career attrition (10–12). Moral distress among healthcare workers is also correlated with reduced quality of care, including reduced patient safety and reduced treatment efficacy (12–14). Where clinicians are distressed and/or inadequately supported, their capacity to provide care in a timely, competent and compassionate manner is diminished (15). Similarly, moral distress among veterinary team members may be associated with job turnover and career attrition (16), and may negatively impact the quality of care provided, thus having a detrimental effect on animal welfare. In a report on veterinary practice team wellbeing, Strand argues that emotional labor and moral distress can cause veterinary team members to have “short fuses” and escalate team conflict, which in turn negatively impacts team morale and patient care (17).

It is argued that the primary goal in addressing moral distress is to address the moral or ethical issues that cause the distress (18). In the healthcare sector, ethics training has been shown to help reduce moral distress (12). In the veterinary sector, understanding and application of ethics is identified as a key day-1 competency by the World Organisation for Animal Health (OIE) (19), and accrediting bodies including the Royal College of Veterinary Surgeons (UK) (20), the European Association of Establishments for Veterinary Education (Europe) (21), and the North American Veterinary Medical Education Consortium (22). Yet veterinarians do not feel that their training adequately equips them to navigate ECS successfully (1, 3, 4). Furthermore, the moral reasoning of practicing veterinarians was found to be no greater than the general public with regard to animal ethics, regardless of years of experience (23). These findings have prompted calls for better training of prospective veterinary team members in ethics (3–5, 23, 24). While a survey of veterinary undergraduate curricula in Europe documented improvements in the teaching of animal welfare science, ethics and law overall in the period from 2013 to 2020, 37% of institutions still only partially met, or did not meet, Day-1 ethics competencies (25), indicating scope for further improvement in undergraduate curricula, and flagging the potential need for opportunities to develop ethics competencies after graduation.

Additionally, Millar argued that “beyond early career training, there is also an increasing need to support the development of a broader set of ethical reflection skills within the veterinary profession that goes beyond just raising awareness and knowledge acquisition” (26). Organizational support is critical in facilitating positive coping strategies (12). Organizational support includes creating a culture of ethical reflection and

discussion, stimulating open dialogue among colleagues and with patients, and investing in medical ethics education for staff. Clinical ethics support services (CESS), the provision of formal and informal advice and support on ethical issues arising from clinical practice and patient care, is a key form of organizational support utilized in human healthcare settings since the 1970s (27, 28). Key factors driving the establishment of CESS in human healthcare included advances in intensive and critical care, organ transplantation, and prominent North American court cases concerned around end-of-life decision making and management (29, 30). Similar trends have been documented in the veterinary sector (31–33). Strand recommends that practices “hold a weekly 1-h moral de-stress meeting” to counter the impacts of moral distress and emotional labor (17).

Types of Clinical Ethics Support

Fournier divides CESS into two broad approaches, both of which ultimately aim to improve patient care and improve awareness of ECS: clinical ethics consultations (CEC) and moral case deliberation (MCD) (34). The former is focused on resolving an ECS associated with a clinical case as it unfolds in real time. In general, CECs are a “top down” approach, involving an individual or committee that provides expert advice or recommendations regarding a specific patient or case (27, 28). The committee is required to have the collective knowledge and skills to ultimately provide effective recommendations (35). This approach has been utilized in large veterinary teaching hospitals managing complex cases. For example, a clinical ethics committee at North Carolina State University Veterinary Hospital was established to provide clinical consultative services, as well as play an advisory role in policy review and development (36). The committee is comprised of four veterinary faculty members, a social worker, three veterinary technicians, and at the time its work was published, was in the process of recruiting one or two community representatives (35). This CEC adopted the CASES approach, which involves clarifying the ethical challenge, assembling appropriate information including data and opinions, synthesizing ethically appropriate actions, explaining recommendations, offering support, and soliciting feedback to improve subsequent deliberations (35). In this model, veterinary team members seeking CEC are given a written summary, detailing “morally acceptable options,” with reference to factors considered (36). Such approaches may reduce moral distress by providing a consensus view or distributing moral responsibility (35). In some cases, CECs are perceived to have formal authority to advise on case management (27). According to Tapper, the ethics consultation was borne out of dual fears of providing futile care, and concerns about physicians having to address increasing complex ECS (and any medicolegal consequences) alone (30). Yet evidence supporting the efficacy of CECs of addressing these concerns is scarce.

Critics of “top down” approaches argue that they may discourage ethical thinking by delegating responsibility to “experts” (27, 37). There is a concern that ethical expertise, when applied by “outsiders” to a unique situation, may overlook key experiences and insights of clinicians and critical contextual factors (38). Furthermore, CECs may not alleviate moral distress

if the consultant's recommendation(s) are in conflict with the moral or ethical beliefs of veterinary team members, if they are perceived to be imposed (37), or if they are perceived to be ignored by clinical decision makers (39). The involvement of "experts" may be resisted by veterinary team members "who do not want treatment decisions taken out of their hands" (37). It is possible that veterinary teams may be more likely to accept solutions developed by themselves than an external party (40). Moses, who has offered CEC services in veterinary teaching hospitals, reported difficulties in providing CECs in real time, as few patients were under care "long enough for someone to notice the ethical nature of a conflict, ask for a consultation, and have it done in the time frame during which decisions must be made" (41). Indeed, in a cross-sectional survey of healthcare workers at a large tertiary academic medical centre, barriers to accessing CECs included concerns that it may slow decision making down, lack of awareness of the existence of a CEC, prior experience of a poor quality consultation, or lack of specific guidance from the CEC (39). Moses observed that a key barrier to the use of CECs was a general lack of ethical literacy within the veterinary profession, such that ECS and associated distress were often not identified as ethical in nature (41). If an ECS is not recognized as such, a request for a CEC may not be triggered. Another limitation of CECs is that they require a number of expert members, which may not be feasible in a small workplace (26).

For the above reasons, "bottom-up" approaches, including MCD, ethics rounds, clinical ethics review, ethics discussion groups, and ethics reflection groups (15, 27), may be more helpful in veterinary settings. Rather than relying on the deliberation of experts, bottom-up approaches utilize facilitator-led, structured discussions of one or more ethical challenges specific to a particular setting (42), aiming to support participants in managing ECS (43). These approaches draw on the experiences and insights of the participants (for example, healthcare workers) themselves (38). The facilitator does not have authority (27), but may assist in clarifying the ethical question or source of moral distress, and introduce existing ethical theories or concepts, as well as normative frameworks such as laws, codes and policies that may support or constrain particular decisions (38). The facilitator plays a role in balancing normative and restorative elements, that is, elements of MCD that may restore team member wellbeing such as learning that one is not alone (42). Their role is to help overcome misunderstandings or conflict by highlighting common values, or views, and fostering respect and tolerance about different ethical positions (44). Typically, the topic is chosen by participants (15, 27). Bottom-up approaches enable participants to formulate ethical questions, review facts, norms, values, decision points leading to a particular outcome, opportunities and constraints for decision makers, and alternatives at each decision point, establish common ground between different stakeholders, and gain new insights into an ECS or type of ECS (15, 27, 45). They may help team members to clarify their ethical values, identify and navigate ECS, and may also help mitigate negative impacts of ECS, including moral distress and burnout (27, 43, 44, 46, 47). Participation in these discussions may play a restorative role in helping participants process their thoughts and feelings about ECS they

have encountered (27, 42). Through this process, participants may shift from a feeling of moral distress or unresolved moral conflict, toward increased clarity about what might have or should have been done in the circumstances (15).

Sessions typically run for 45–90 min, and involve groups of 5–12 participants (46). The facilitator utilizes specific techniques such as Socratic dialogue or the hermeneutic method to draw participants on their values, or provide language and conceptual tools like ethical frameworks to clarify the moral dimensions of healthcare or veterinary work (15, 34, 44). This approach has been trialed with veterinarians at the Division of Small Animal Internal Medicine at the University of Veterinary medicine in Vienna (40). Additionally, Springer et al. (28) described an Equine Hospital Ethics Working Group, established at the University of Veterinary Medicine in Vienna in 2015, that largely followed the clinical ethics consultation model, but transitioned to a bottom-up approach, as the discussion lead to reflection on general ethical issues. Hobson-West and Millar developed small group facilitated discussions for final year veterinary students to discuss ECS they had encountered (48), consistent with a bottom-up approach.

Potential benefits of bottom-up CESS are described in relation to the patient, the healthcare team and the organization, and outlined in **Table 1**.

While both top-down and bottom-up CESS are utilized to improve patient care, it is argued that the central focus of CEC is on decisions impacting the patient, while the focus of bottom-up approaches like ethics rounds and MCD is the ethical awareness and competence of the healthcare team (27, 28). Empirical evidence regarding CESS is scarce (52). To the authors' knowledge, the impact of CESS, specifically ethics rounds, on veterinary team members has not been evaluated. We sought to conduct a study to determine whether ethics rounds may be beneficial for veterinary team members.

METHODS

In this study, veterinary team members were asked to complete an initial survey, participate in ethics rounds, and complete a second survey. Below we outline methods for each step in this process.

Recruitment and Consent

Participants were recruited *via* two means. The first was through veterinary organizations contacted by the researchers, who agreed to act as an intermediary between participants and researchers, suggesting session times and emailing links to the survey to participants. The second was direct, where participants could respond to an advertisement posted on the Sydney School of Veterinary Science facebook and twitter accounts. Participants could be within or outside of Australia. Participants recruited *via* veterinary organizations participated in ethics rounds with colleagues, while those who responded to the advertisement were grouped according to which date was most convenient for them to participate. This grouping was based on convenience. Respondents (individual or organizational) were emailed possible dates and times of sessions. Once they

TABLE 1 | Potential benefits of bottom-up clinical ethics support services at the level of the patient, healthcare team and organization.

Level	Potential benefit	References
Patient	<ul style="list-style-type: none"> Improved patient care Improved interaction with patients and family members 	(27) (49)
Healthcare team	<ul style="list-style-type: none"> Increased ethical awareness/ability to identify and articulate ethical challenges Improved awareness of own behavior and thinking, improved ability to post-pone moral judgements, listen critically and sincerely Improved skills in navigating ethical conflict Improved understanding of the perspectives of others Improved multidisciplinary cooperation Provision of a safe space for disagreement Emotional relief and validation A reminder that individuals do not have to navigate complex ECS alone Insight into moral responsibility, allow team members to feel heard, facilitate acceptance of moral discomfort Strengthened confidence to act in the face of ECS 	(50) (38) (44) (50) (28) (50, 51) (15, 51) (15) (15) (51)
Organization	<ul style="list-style-type: none"> Facilitate improved understanding across and between disciplines, underscore the need for some team members to be explicit about their ethical decision making, foster inclusion of all team members in ethical deliberations, allow participants to recognize where ECS emerge due to organizational shortcomings that may be subsequently addressed Promote good governance, and improve institutional culture Establishment of “paradigm cases” which This may improve efficiency in navigating ECS, and may prevent escalation of ECS. 	(51) (28) (28, 40)

confirmed availability for a certain date and time, a link for the survey was sent either direct to participants or to their organization ~48–72 h prior to the session. Following the session, a link was sent direct to participants or to their organization, for the follow up survey, 48–72 h following the session. A final reminder was sent to participants or their organization 48 h after that. No further emails were sent.

To meet inclusion criteria, respondents were required to be a veterinarian, veterinary team member or veterinary student over the age of 18. Participation was open from September 1 to December 31 2021. The landing page of the survey was a participant information statement providing detailed information about the purpose of the study, estimated time required (2 × 5–7 min to complete online surveys, in addition to the 90-min virtual ethics rounds session), information about data storage, the process for providing feedback or making complaints, and assurance regarding confidentiality and anonymity of responses. Participants were advised that clicking the “submit response” button after completing the surveys indicated consent to participate. The study was approved by the University of Sydney Human Research Ethics Committee (project 2021/550).

Surveys Before and After Virtual Ethics Rounds

We developed a survey comprising 21 questions (see **Supplementary Table 1**). Participants who had not taken the survey before were asked general demographic information, including gender, role and age. The survey incorporated the European Moral Case Deliberation Outcomes (Euro-MCD) Instrument 2.0, modified for veterinary team members. The Euro-MCD, a rigorously-developed, 26-item instrument, was originally developed in 2014 to measure outcomes of moral case deliberation across six domains (enhanced emotional support, enhanced collaboration, improved moral reflexivity,

improved moral attitude, improvement on organizational level and concrete results) (43). The Euro-MCD was developed in a multi-national context, and has been utilized in a variety of healthcare settings. The Euro-MCD 2.0, developed in 2020, consists of 15 items across three domains [moral competence (items 1–6), moral teamwork (items 7–11), and moral action (items 12–15)] (43). Minor adjustments were made to the items. Notably, as there is variation between veterinary team members regarding whether something is experienced as an ethical challenge or not (3), we replaced the term “ethically difficult situations” with “ethically challenging situations.” Additionally, as veterinary teams refer to animals as patients and owners or guardians as clients, we replaced the word “families” in the last two items with “clients.” Participants who had taken the survey before and participated in ethics rounds were asked whether they had anything to add about ECS they encountered in their work, and whether they had anything they wished to add about ethics rounds.

We utilized the Research Electronic Data Capture (RedCAP) survey platform, a secure web application hosted by the University of Sydney, to build and manage the survey. The survey was piloted by clinical veterinarians (four) and veterinary academics (three). All feedback that improved clarity of the questions was incorporated into the final survey. To ensure that surveys prior to and after participant in virtual ethics rounds could be compared for each respondent, after consultation with the Sydney University Research Data Consultant, respondents were asked to enter a unique code consisting of their mother’s initials, year of birth of their mother, and their father’s initials. These were concatenated in RedCAP. On responding to the second survey, respondents were asked to enter this same information. This facilitated pairing of responses. Once responses were paired by matching these details, each participant was given a participant number (1–89), and the unique identifier was removed. Data were stored on the physically and electronically

secure, restricted-access University of Sydney server, which is routinely backed up and accessible only to the authors.

Virtual Ethics Rounds

The term “ethics rounds” has previously been utilized in the veterinary literature, albeit briefly and infrequently, and largely limited to educational settings, to describe group ethical discussions. In 1983, Graber described “ethics grand rounds” involving a case review, identification of ethical value issues associated with the case, and discussion of the central ethical issue culminating in a decision explicitly justified by a group leader, or a group voting on a decision (51). At this time, participants were encouraged to seek the “right” answer. The authors provide 24 case studies with leading questions, suggesting a “top down” approach to what constitutes an ECS. Erde and Pollock described an elective ethics summer school, arguing that it would be “optimal” for the teaching of veterinary ethics throughout the degree, such that “these periodic discussions would culminate in the fourth year in which one afternoon of each rotation would be devoted to “ethical rounds” and in which a resident ethicist would participate in hospital grand rounds and other case discussions” (52). The focus in these approaches is on helping veterinary students make difficult decisions, but no mention is made of moral distress, nor is there explicit emphasis on students nominating ECS to discuss. We utilized the term “ethics rounds” rather than “moral case deliberation,” as we found that veterinary team members we engaged with were more likely to understand the former as designating a reflective, multi-disciplinary group discussion, and most were unfamiliar with the latter. Thus for the purposes of this discussion, “ethics rounds” is used interchangeably with “moral case deliberation.”

The structure of ethics rounds was adapted from small-group facilitated sessions for final year veterinary students at the University of Nottingham, described by Hobson-West and Millar (48). A schedule of the session is outlined in **Supplementary Table 2**. While we had initially anticipated holding sessions in person in both Australia and the United Kingdom, the imposition of movement restrictions and physical distancing due to the COVID-19 pandemic prohibited such gatherings, with no clear endpoint for such restrictions. Furthermore, travel outside of Australia for the purposes of research was not permitted. Thus the decision was made to host rounds virtually, utilizing Zoom (Zoom Video Communications, Inc), a cloud based video-conferencing platform. All sessions were facilitated by the first author (AQ), a female veterinarian with 16 years experience in veterinary clinical practice, and 10 years experience in teaching at academic institutions. In addition to veterinary and higher education qualifications, the facilitator had completed a Bachelor of Arts degree majoring in philosophy, co-authored a textbook of veterinary ethics (53) and run numerous workshops on managing ECS in veterinary clinical contexts, with veterinary students and clinicians. She is trained in psychological first-aid.

The first part of the session involved the facilitator introducing the concepts of moral stress, moral distress and moral injury in relation to ECS, followed by a brief discussion of the potential risks and benefits of ethics rounds. The rules of the

session were outlined as follows: the content of the session was confidential, though the facilitator/researcher would make handwritten notes of general themes discussed, and write down key observations about running of the session; participation was voluntary and participants could leave at any time, and participants were encouraged to leave seniority and rank behind and avoid assigning blame. Participants were also informed that no video or audio recordings of the sessions would be made, in order to insure their privacy.

After the introduction of rules, participants were asked to suggest any additional parameters or rules around the discussion. For the purposes of discussion, an ECS was defined as “a situation where we are required to manage competing choices, or where there may be conflict between the interests of different stakeholders or parties who may be impacted by a decision.”

The second part consisted of a general discussion of the types of ECS that participants had encountered. Participants could either state these out loud, or write them named or into the Zoom chat, either to all participants, or directly to the facilitator to remain anonymous to other participants. One of these was selected for discussion by a vote or consensus of the participants, after which a 5-min comfort break was provided. Participants were asked to mute their microphone and turn off the camera during the break. The third part consisted of discussion of at least two courses of action, in light of relevant laws or codes of practice, professional responsibilities and key ethical theories. Participants were asked to select and justify a course of action. In the fourth part, the facilitator provided a brief overview of the types of ECS described in contemporary veterinary ethics literature, and encouraged participants to reflect on their learnings from the session, and how they may manage ECS going forward. The facilitator made a final request for participant’s comments or questions. At the close of the session, participants were reminded to contact their Employee Assistance Program (EAP), or one of several listed counseling hotlines or webchat resources designed for veterinary professionals (for example, their professional association’s counseling service) if they experienced distress. They were reminded to complete the survey following ethics rounds. The timing of each part of the session was variable, to ensure that the facilitator could respond to the flow of the discussion.

Quantitative Data

Survey data were downloaded from RedCAP onto Microsoft Excel[®] for Microsoft 365 MSO Version 2112 (Build 14729.20254). Responses were organized according to the unique identifier code. Only those responses with a matching response code were included in the final analysis. If a respondent had completed the survey more than twice, for example twice before (T1) and once after participating in ethics rounds (T2), the most complete or earliest response was retained, with the less complete or later response excluded from analysis. For each respondent, the total Euro-MCD score was calculated for both T1 and T2, in addition to the change in the modified Euro-MCD 2.0 score (T2-T1, “Euro-MCD change score”). Worksheets were imported into IBM[®] Statistical Package for Social Sciences [SPSS[®] Statistics Version 26 (Release 26.0.0.0)].

Descriptive analyses were performed by assessing the distribution of categorical variables with frequency tables. The single continuous variable, age, was described using summary statistics. Contingency tables were used to describe the association between categorical variables and the binary outcome variable “increased MCD score vs. not increased MCD score.” The distribution of continuous outcome variables by each category of the outcome variable was described with summary statistics and boxplots. Univariable binary logistic regression analyses were performed to investigate the association of explanatory variables with the outcome variable. For each of the 15 statements on the Euro-MCD, paired *t*-tests were performed to calculate the mean difference (T2-T1) for each item. A *P*-value of ≤ 0.05 was considered statistically significant.

Qualitative Data

Responses were screened to exclude identifying information prior to being uploaded onto NVivo12 Plus Software (QSR International) to facilitate thematic analysis. For the types of ECS discussed in sessions, as recorded by the facilitator, a codebook analysis was utilized. We used codes developed in a previous thematic analysis of ECS depicted in published vignettes (54). Each ECS was coded once, and coding frequencies recorded. For free-text responses to survey questions, responses were uploaded into separate files to facilitate reflexive thematic analysis of responses to each question. According to best practice, reflexive thematic analysis, as an interpretive activity, should explicitly recognize the researcher’s role in the construction of themes (55, 56). The first author’s background is described in 2.3. The second author is the Chair in Animal Welfare and Veterinary Ethics at University College, Dublin. She initially worked in mixed then companion animal practice before transitioning from clinical work to focus on research and teaching in the area of animal welfare science, ethics and law. The third author is the Chair of Veterinary Public Health and Food Safety in the Sydney School of Veterinary Science. His veterinary clinical experience is derived exclusively from government practice as a field veterinarian.

Reflexive thematic analysis involved six stages. First, the first author read all comments three times. Second, initial codes were generated. Each comment was coded inductively for semantic themes, employing a realist approach without a pre-existing theoretical framework. An iterative approach was used. Each comment could be coded multiple times. Where a response, or part of a response, could not be assigned to an existing code, a new code was generated. Third, initial themes were generated by identifying clusters of codes, which were grouped together as themes to best represent the data. As part of this stage, themes were reviewed for internal coherence and distinctiveness from other themes. If responses or partial responses did not fit a theme, these were reallocated to a more suitable theme, or to a new theme. The fourth and fifth stages—refining themes, developing thematic maps, and naming themes—were performed concurrently. The sixth and final stage involved selecting illustrative examples for each theme.

TABLE 2 | Frequency table describing the number of sources of participants in virtual ethics rounds sessions for veterinary team members (*n* = 23 sessions).

Source of participants	Number of sessions	Percentage (%)*
Participants from different organizations/workplaces	7	30.4
Animal shelter/animal welfare organization	5	21.7
Government/regulatory veterinary bodies	4	17.4
Veterinary school	4	17.4
Corporate veterinary practice (companion animal)	2	8.7
Private veterinary practice (companion animal)	1	4.3
Total	23	99.9

*Column percentages may not add to 100 due to rounding.

RESULTS

Quantitative Data

A total of 23 sessions of virtual ethics rounds were run between 14 September and 12 December, 2021. In total, 213 individuals participated in virtual ethics rounds. Group sizes ranged from 2 to 50, with a mean of 9.3 and median of 5.0 (standard deviation 10.7). When outliers were removed, the mean group size was 5.2 with a median of 4 (standard deviation 2.1). The source of participants is described in **Table 2**. In total, 147 veterinary team members completed the first survey, and 95 completed the second survey. Of these, paired responses were identified for 89 respondents. Therefore, paired surveys from a total of 89 respondents were analyzed, representing a response rate of 41.8% (*n* = 89/213).

The distribution of categorical demographic variables is described in **Table 3**. The majority of participants were female (*n* = 70, 81%), and most were veterinarians (*n* = 51, 59%), followed by other veterinary team members (practice manager, animal attendant) (*n* = 18, 21%), veterinary nurses or animal health technicians (*n* = 10, 12%), and veterinary students (*n* = 8, 9%). Age in years ranged from 20 to 73, with a median of 41 and an interquartile range of 32–52 (*n* = 87).

The distribution of responses to items from the modified Euro-MCD instrument 2.0 for respondents prior to the participating in ethics rounds, and following participation in ethics rounds, are described in **Table 4**. Summary statistics for the outcome Euro-MCD change score overall and by categories of the categorical predictor variables are described in **Table 5**. There was a significant (*P* < 0.0001) low negative Pearson correlation co-efficient (*r* = −0.14) between age and the Euro-MCD change score. There was a significant (*P* < 0.0001) moderate negative Pearson correlation co-efficient (*r* = −0.63) between the Euro-MCD score at time one, and the Euro-MCD change score overall. All univariable residuals were checked and distribution was approximately normal. All univariable regression analyses were not significant at *P* ≤ 0.05 (see **Supplementary Table 3**),

TABLE 3 | Frequency table for the demographic information on respondents to surveys both prior to and following participation in virtual ethics rounds ($n = 89$).

Demographic parameter	Category	Number	Percentage (%)
Gender ($n = 87$)	Female	70	80.5
	Male	17	19.5
	Total	87	100
Role ($n = 87$)	Veterinarian	51	58.6
	Veterinary nurse or animal health technician	10	11.5
	Other e.g., practice manager, animal attendant	18	20.7
	Veterinary student	8	9.2
	Total	87	100

suggesting no statistically significant change between total scores at T2 when compared with T1.

There were statistically significant changes in 7 out of 15 Euro-MCD 2.0 items, specifically “I recognize a situation as being ethically challenging”; “I can identify the different values at stake in challenging situations”; “I can formulate arguments in favor of and against different courses of action in ethically challenging situations”; “I listen with an open mind to others when discussing an ethically challenging situation”; “we openly express our viewpoints in ethically challenging situations”; “we all have opportunities to express our viewpoints when discussing ethically challenging situations”; and “we respect different viewpoints when discussing ethically challenging situations” (see **Table 6**). Of the domains, there were statistically significant changes in 4/6 items in the domain of moral competence, 3/5 items in the domain of moral teamwork and 0/3 in the domain of moral action. In the domain of moral competence, there was no statistically significant change in the subdomain of supportive relationships (items 10 and 11).

Qualitative Data

In total, there were 143 types of ECS recorded by the facilitator during the sessions. These were coded into 25 out of 29 existing categories. Examples of types of ECS in each category, together with coding frequencies, are included in **Supplementary Table 4**. The most common ECS fell into the categories of how to manage a client who refuses a recommendation or does not adhere to advice; euthanasia of companion animals; clients with limited finances; and collegial relations and wellbeing of veterinary team members.

In total, there were 48 responses to the question “Is there anything you wish to add about ECS you have encountered in the course of your work?” comprising 1,896 words. We identified eight key themes: types of ECS encountered by veterinary team members, ECS impact veterinary team members, there are barriers to resolving ECS, veterinary team members have a variable degree of autonomy of in making ethical decisions, underlying factors may increase the risk of encountering ECS, there is a need for ethics training for veterinary team members, there are factors that help veterinary team members navigate ECS, and concerns about the survey or terminology

used (for examples, see **Table 7**; for thematic map, see **Supplementary Figure 1**).

In total, there were 44 responses to the question “Is there anything you wish to add about ethics rounds?” comprising 1,615 words. We identified five key themes: the benefits of ethics rounds, ethics rounds can have potentially negative impacts on participants, there are constraints preventing veterinary team members from speaking up in the face of ECS, ethics rounds could be improved, and limitations of the Euro-MCD as it pertained to the experience of participants (for examples, see **Table 8**) (for the thematic map, see **Supplementary Figure 2**). The benefits of ethics rounds comprised six subthemes: (1) ethics rounds helps clarify thinking, (2) ethics rounds allows participants to see ethical challenges from the point of view of others, (3) ethics rounds provided a safe, supportive forum, (4) ethics rounds can help veterinary team members identify and deal with moral distress, (5) it was validating to discuss ECS, and (6) ethics rounds increased confidence to speak up in the face of ECS.

General Observations

There was marked variation in group size, due largely to last minute withdrawal of participants, some of whom were required to attend to patients, and the inclusion of four large groups of veterinary students from one institution (comprising groups of 18, 25, 21, and 50, respectively). Not all participants had stable internet connections, which caused minor glitches (not being able to see/hear participants clearly at all times, and occasionally participants not being able to see/hear the facilitator). Aside from the rules suggested by the facilitator, none of the groups suggested any additional rules, nor were any rules objected to. Participants expected the facilitator to have detailed clinical knowledge and be able to point them to resources, notably published data or legislation, which may assist in decision making. Some participants emailed the facilitator following the session seeking publications relevant to ECS they had encountered. It was notable that a number of non-veterinarians felt compelled to clarify that they were not a veterinarian during the discussion. Participants struggled most with identifying alternative courses of action.

TABLE 4 | Frequency table for responses to statements adapted from the Euro-MCD instrument (2.0) from respondents prior to (T1) and following (T2) participation in virtual ethics rounds ($n = 89$).

Statements adapted from the Euro-MCD instrument 2.0 (50)	Time	Strongly agree number (%*)	Slightly agree number (%*)	Slightly disagree number (%*)	Strongly disagree number (%*)	Don't know/not applicable number (%*)
I recognize a situation as being ethically challenging	T1	57 (64)	29 (33)	1 (1)	0 (0)	2 (2)
	T2	83 (93)	6 (7)	0 (0)	0 (0)	0 (0)
I am aware of others' perspectives in ethically challenging situations	T1	47 (53)	40 (45)	2 (2)	0 (0)	0 (0)
	T2	56 (63)	33 (37)	0 (0)	0 (0)	0 (0)
I can identify the different values at stake in ethically challenging situations	T1	36 (40)	44 (49)	7 (8)	1 (1)	1 (1)
	T2	65 (73)	23 (26)	1 (1)	0 (0)	0 (0)
I can formulate arguments in favor of and against different courses of action in ethically challenging situations	T1	37 (42)	44 (49)	6 (7)	0 (0)	2 (2)
	T2	58 (65)	31 (35)	0 (0)	0 (0)	0 (0)
I listen with an open mind to others when discussing an ethically challenging situation	T1	34 (38)	47 (53)	6 (7)	0 (0)	2 (2)
	T2	58 (65)	30 (34)	1 (1)	0 (0)	0 (0)
I speak up in ethically challenging situations	T1	33 (37)	35 (39)	19 (21)	1 (1)	1 (1)
	T2	39 (44)	41 (46)	9 (10)	0 (0)	0 (0)
We openly express our viewpoints in ethically challenging situations	T1	18 (20)	44 (49)	22 (25)	4 (5)	1 (1)
	T2	31 (35)	48 (54)	10 (11)	0 (0)	0 (0)
We all have opportunities to express our viewpoints when discussing ethically challenging situations	T1	15 (17)	41 (46)	26 (29)	4 (5)	3 (3)
	T2	31 (35)	40 (45)	14 (16)	2 (2)	2 (2)
We respect different viewpoints when discussing ethically challenging situations	T1	20 (23)	46 (52)	15 (17)	4 (5)	4 (5)
	T2	49 (55)	31 (35)	8 (9)	0 (0)	1 (1)
We feel secure to share emotions in ethically challenging situations	T1	14 (16)	32 (36)	28 (32)	11 (12)	4 (5)
	T2	28 (32)	48 (54)	8 (9)	3 (3)	2 (2)
We support each other when dealing with ethically challenging situations	T1	27 (30)	52 (58)	7 (8)	2 (2)	1 (1)
	T2	47 (53)	33 (37)	6 (7)	1 (1)	2 (2)
We made decisions on how to act in ethically challenging situations	T1	18 (20)	51 (57)	7 (8)	5 (6)	8 (9)
	T2	40 (45)	38 (43)	10 (11)	0 (0)	1 (1)
We base our decisions on moral considerations in ethically challenging situations	T1	32 (36)	32 (36)	19 (21)	2 (2)	4 (5)
	T2	49 (55)	30 (34)	6 (7)	0 (0)	4 (5)
We are responsive to the values and needs of patients and clients in ethically challenging situations	T1	34 (38)	42 (47)	8 (9)	0 (0)	5 (6)
	T2	49 (55)	35 (39)	2 (2)	1 (1)	2 (2)
We are able to explain and justify our care toward patients and clients	T1	42 (47)	33 (37)	7 (8)	0 (0)	7 (8)
	T2	57 (64)	26 (29)	2 (2)	0 (0)	4 (5)

*Row percentages may not add to 100 due to rounding.

DISCUSSION

To the authors' knowledge, this is the first study seeking to measure the impact of a type of CESS on veterinary team members. Our response rate of 41.8% was good, given response rates to online surveys reported in the order of 25–30% (57). It falls within reported response rates to surveys incorporating the Euro-MCD 1.0, from 23 to 85% (46). The demographic of respondents was similar to that of a previous global survey we conducted of veterinary team members, the majority of whom were female (80.4%), veterinarians (78.3%), with a mean age of 40 (8). The gender balance reflects an overall greater proportion of females in the veterinary workforce (58–62).

While there were no statistically significant changes in the overall Euro-MCD 2.0 score before and after participation in ethics rounds, participants only had a single opportunity to participate in ethics rounds. Additionally, whilst overall there was no significant difference, the relationship is masked by those with higher baseline scores (T1) whose scores were similar at T2. Those with lower baseline scores had more to gain, which is not unexpected. It is possible that those with little experience or training in managing ECS have most to gain from participation in ethics rounds. Our survey did not specifically ask respondents about their previous training or experience, but this can be addressed in future studies.

Ideally, ethics rounds would be held at regular intervals. Clinical ethics support involves both implicit and explicit

TABLE 5 | Summary statistics for the outcome Euro-MCD change score overall and by categories of the categorical predictor variables.

Predictor	Minimum	25th percentile	Mean	Standard deviation	Median	75th percentile	Maximum
Gender							
Female	-7	1	6	7	5	10	26
Male	-6	3	6	7	5	9	18
Role							
Veterinarian	-7	0	5	7	4	9	23
Veterinary nurse or animal health technician	-4	0	6	8	5	8	26
Other e.g., practice manager, animal attendant	0	2	7	6	6	10	21
Veterinary student	4	4	8	7	10	13	18
Total	-7	1.5	5.8	6.6	5.0	10.5	26

TABLE 6 | Mean difference between item-specific scores on Euro-MCD 2.0 from before and after participation in virtual ethics rounds (*n* = 89).

Statements adapted from the Euro-MCD instrument 2.0 (50)	Mean difference (T2-T1)	95% confidence interval	P-value
I recognize a situation as being ethically challenging	0.6	0.1–1.1	0.013
I am aware of others' perspectives in ethically challenging situations	0.3	-0.1–0.8	0.137
I can identify the different values at stake in ethically challenging situations	0.7	0.2–1.1	0.005
I can formulate arguments in favor of and against different courses of action in ethically challenging situations	0.6	0.1–1.1	0.013
I listen with an open mind to others when discussing an ethically challenging situation	0.6	0.2–1.1	0.010
I speak up in ethically challenging situations	0.5	-0.0–0.9	0.055
We openly express our viewpoints in ethically challenging situations	0.6	0.1–1.1	0.011
We all have opportunities to express our viewpoints when discussing ethically challenging situations	0.6	0.1–1.1	0.013
We respect different viewpoints when discussing ethically challenging situations	0.8	0.3–1.3	0.001
We feel secure to share emotions in ethically challenging situations	2.8	-1.6–7.3	0.203
We support each other when dealing with ethically challenging situations	2.4	-2.0–6.9	0.274
We made decisions on how to act in ethically challenging situations	2.8	-1.6–7.2	0.214
We base our decisions on moral considerations in ethically challenging situations	2.6	-1.8–7.0	0.245
We are responsive to the values and needs of patients and clients in ethically challenging situations	2.5	-1.9–6.9	0.257
We are able to explain and justify our care toward patients and clients	2.5	-1.9–7.0	0.255

values (44), which may take time to become apparent. It may take participants several sessions before they are comfortable with the facilitator, utilizing ethical frameworks, or indeed identifying ECS as such. All sessions were held virtually to facilitate social distancing, however it is possible that face-to-face sessions may have facilitated better communication and further enhanced outcomes.

Participants recorded statistically significant improvements in the domains of moral competence and moral teamwork, suggesting that ethics rounds is a promising tool to improve the ethical skills of veterinary team members. Further studies are required to determine if such changes are sustained over time. Interestingly, there was no statistically significant change in any items in the domain of moral action. Additionally, in the domain of moral competence, there was no statistically significant change in the subdomain of supportive relationships. It may be that participants needed to attend more than one session of virtual ethics rounds before impact on moral action was seen. Or it is possible that we surveyed participants too soon after ethics rounds. A longer gap between the intervention and the second survey may have enabled respondents to have encountered more

ECS and thus enact ethical decisions. Alternatively, the results may indicate that virtual ethics rounds may not be as effective across certain domains. For example, it may be that in addition to ethics rounds, organizational changes are required to support moral action. Such changes are likely to take time to implement.

A comprehensive discussion of the types of ECS identified by participants is beyond the scope of this paper, however we note that these were consistent with ECS identified in the veterinary ethics literature (1–5, 7, 32, 54). Consistent with published literature, respondents confirmed that ECS had a negative and sometimes long-lasting impact on them (63), that there are numerous barriers to resolving ECS (64), and that there are some factors—such as the legal status of animals as property in most jurisdictions—which increase the risk of encountering ECS (65). Respondents highlighted the need for more training of veterinary team members in identifying and resolving ECS. Surveys of veterinarians and veterinary team members have highlighted concerns about lack of training in navigating ECS, and associated skills such as conflict management (1, 3, 4). According to both individual item modified Euro-MCD 2.0 scores, and thematic analysis, ethics

TABLE 7 | Themes constructed through reflexive thematic analysis of free-text responses to the question “Is there anything you wish to add about ethically challenging situations you have encountered in the course of your work?” in a survey of veterinary team members following participation in virtual ethics rounds ($n = 89$).

Theme	Example(s)
Types of ethically challenging situations encountered by veterinary team members	<p>“The usual dichotomy of finances and the need to make money.”</p> <p>“The conflict between animal welfare and human welfare is also a significant challenge.”</p> <p>“...in a professional life, personal morals and ethics have to co-exist alongside regulation. For example, just because I don't like “x”, if it is regulated and permitted for it may happen. perhaps a role of the official veterinary service in this scenario is to be the champion of rigorous adherence to regulation and to keep an open mind to the possibility of improvements and changes in standards and ensure that they lobby for these to be included in the regulations”</p>
Ethically challenging situations impact veterinary team members	<p>“Some situations and events weigh on my mind post-event.”</p> <p>“The personal emotional effect that these situations present can be exhausting.”</p>
There are barriers to resolving ethically challenging situations	<p>“...we often believe that our fundamental beliefs are the right ones and everyone else is somehow not as legitimate a viewpoint as our own.”</p> <p>“I sometimes find it challenging knowing that there will be compromise in either animal needs, owner needs or my professional needs when dealing with ethically challenging situations.”</p> <p>“In the past power has tended to dictate which view wins which is both frustrating and demoralising.”</p> <p>“It's difficult because in some positions it is considered inappropriate to speak up in an ethically challenging situation.”</p> <p>“The “we” as a team does not always include the practice owners. Their viewpoints can be clouded with financial considerations.”</p>
Veterinary team members have a variable degree of autonomy of in making ethical decisions	<p>“Discussion of ethical scenarios within a practice is appropriate. However, if colleagues each have a solid moral compass, then each has the right to decide how to respond to ethical situations which arise.”</p> <p>“As a government employee, at times, I feel that I am not in a position always to question and or deal with ethically challenging situations which are already known to senior personnel.”</p>
Underlying factors that may increase the risk of encountering ethically challenging situations	<p>“Animals are still regarded as chattels despite the closer attachment to the family compared with previous years and also finances play an important part in the decision making for the owners.”</p> <p>“I actually think the profession itself is highly conflicted and has inadequately thought through animal welfare, business interests etc.”</p>
There is a need for ethics training for veterinary team members	<p>“I think we have opinions but may not be skilled to discuss it from ethical points of view, or be aware of how to describe our underlying ethical opinion.”</p> <p>“We are not trained in ethics at uni”</p> <p>“The vet I worked for was very old school so he had a bit of a black and white concept of ethics and didn't really train his workers in this concept. He was less compassionate to those who had to follow through with his instructions.”</p>
There are factors that help veterinary team members navigate ethically challenging situations	<p>“Legislative changes in this area have helped support people who would have refused on ethical grounds.”</p> <p>“We need to recognise how we are viewing the situation and what framework we are using to assess the situation.”</p> <p>“Each situation has to be handled as its own entity, having different context and considerations that need to go into the decision making process.”</p>
Concerns about the survey or terminology used	<p>“Ethically challenging maybe a bit ambiguous as one who feels they have a strong ethical compass may find most situations not at all challenging.”</p> <p>“I found the questions above that referred to “we” [in the MCD instrument] difficult to answer. It's difficult to generalise in a meaningful way about how ethically challenging situations are handled with colleagues due to the wide variety of ethically challenging situations and which colleagues or combinations of colleagues might be involved in dealing with them.”</p>

rounds helped veterinary team members identify and approach ECS. Further studies are required to determine if ethics rounds helps veterinary team members to resolve ECS in alignment with their values.

Analysis of free-text comments suggests that organizational changes may be required to ensure veterinary team members feel free to fully engage with ethics rounds. Of concern, some respondents spontaneously reported “bullying” “intimidation” and feeling “scared.” Bullying behavior has been documented in veterinary workplaces. In a survey of New Zealand veterinarians ($n = 197$), bullying was reported by 16.2% of respondents (66). Mean scores were significantly higher for female compared to male respondents, and non-managers compared to managers. Perceived organizational support moderated the relationship between workplace bullying and strain if bullying scores were low, but had no impact when bullying scores were high. It is possible that the supportive environment of ethics rounds is therefore not sufficient to overcome high levels of bullying. Similarly, veterinary team members may be less likely to engage with ethics rounds in “toxic” veterinary workplaces. According

to focus group discussions among Canadian veterinarians ($n = 23$) and registered veterinary technicians ($n = 26$), “toxicity” may manifest as team members being disrespectful, resistant to change, seeking to avoid conflict, lacking in motivation, and experiencing broken communication and tension between staff members (67).

Even where bullying and toxicity are not issues, veterinary team members may be inhibited from speaking up by workplace hierarchies. There may also be perceived or real conflicts between the priorities of employers/managers and employees. In healthcare settings, it has been recognized that the presence of managers may stifle discussion, particularly where the discussion is critical of organizational factors. However, it may be useful for managers to be present, as it can help promote open communication across professional boundaries, and promote mutual respect and understanding. It may also be critical for effecting change at an organizational level. One possible solution is to include managers in a proportion of the meetings, as has been reported in healthcare settings (46).

TABLE 8 | Themes constructed through reflexive thematic analysis of free-text responses to the question “Is there anything you wish to add about ethics rounds?” in a survey of veterinary team members following participation in virtual ethics rounds ($n = 89$).

Theme	Subtheme	Example(s)
Benefits of ethics rounds	Ethics rounds helps clarify thinking	“While I probably thought like this, it was helpful to formally break down a ethically challenging situation with respect to stakeholders—their impact on the situation, the impact of the situation on them.” “I found that learning about the different frameworks for thinking about ethical challenges useful for ordering my thoughts and talking about tis with clients/colleagues. Like all the bits and pieces were there before but now I can articulate them better.”
	Ethics rounds allows participants to see ethical challenges from the point of view of others	“In particular I can see a real benefit of it to allow people to discuss ethically challenging situations with work colleagues...irrespective of rank. I think an opportunity to air concerns in an open and frank manner is invaluable for each others state of mind. Even if no specific “answer” is arrived at, it is soothing to know that other colleagues have similar concerns and we can learn from each other’s strategies to cope.” “This really helped me understand different viewpoints and how to address them.”
	Ethics rounds provided a safe, supportive forum	“Free and open sharing of ethical issues encountered was facilitated by an excellent facilitator, and colleagues were supportive of one-another.” “They provide a safe space for unpacking and engaging ethically challenging situations.”
	Ethics rounds can help veterinary team members identify and deal with moral distress	“It is such an important area to be aware of. I think many vets and nurses experience moral injury without knowing that is what it is as this is a topic most of us have never heard of. For me personally it has been an absolute revelation that a concept like moral injury exists and it has helped me explain my reactions in so many situations across my career but also privately. I think this has huge potential for helping many vets and associated staff.” “There was a sense that our load had been lightened.”
	It was validating to discuss ethically challenging situations	“Surprisingly helpful in validating team member’s stress and concern about the ethical decisions they have to make.”
Ethics rounds can have potentially negative impacts on participants	Ethics rounds increased confidence to speak up in the face of ethically challenging situations	“Discussing topics with peers was extremely rewarding and made me more confident to speak up in the workplace.”
	There are constraints preventing veterinary team members from speaking up in the face of ethically challenging situations	“While I found the overall experience to be positive, reliving some distressing situations which I had encountered caused me some upset. Distressing situations which I encountered in practice changed the course of my career at different points, and so the impact of those challenging situations was significant.” “Whilst it is pleasant to consider all colleagues working harmoniously, there are differences in opinions which should be respected, but any bullying behavior impacts significantly on one’s confidence in self-expression. “Gaslighting” continues to be an industry problem.” “There is a strong level of unspoken intimidation in most clinics where I have worked. The more forceful (usually male) voices dominate and are disparaging toward other, less strong, more timid voices, often subduing these into silence, leaving them longing for the security of darkness and anonymity. There is a far greater issue at stake than just the question of ethics here. As with all things, it appears to be about power.” “I think in future perhaps just team members and no managers should participate. I felt that the team were scared to truly voice some opinions with the managers there.”
Ethics rounds could be improved		“More discussion of what could be done in each of the ethically difficult situations.” “...it was more like a webinar than a rounds session, we talked about ethical situations in general terms but without any specifics which made it hard to come to any conclusions on how we might be able to do things differently in future.” “I think if ethics rounds were more frequent and timely (in relation to a particular event), on-going stress and distress might be less of an issue.”
Limitations of the Euro-MCD as it pertained to the experience of participants		“The challenge in this survey is that there are other considerations not included here, which have an impact upon the decision-making.” “Regarding the comment above about support... I am not sure we know enough about support as a community to support each other with ethically challenging situations. We can mentor, and share opinions... but I’m not sure thats the same as support.”

As noted previously, clinical ethics review or ethics rounds is not an inevitably benign intervention (15, 18). While relief may stem from clarifying the source of emotions that accompany ECS, including frustration, anger, shame and guilt (44), recalling events that gave rise to these emotions may intensify moral distress. While we did not measure moral distress, it was noted that discussing ECS could be distressing. To avoid unintended harms, it is recommended that facilitators have the specific skillset to create a psychologically safe environment

for discussion, and explain the nature, scope, safe application and limits of ethics rounds to participants before and after proceeding (15). In some cases, other forms of support, including psychological first aid, counseling or critical-incident stress debriefing may be more suitable (15, 42). While it has been recommended that practices hold regular meetings to discuss situations that lead to moral distress (17), we would encourage the engagement of a facilitator with an appropriate skill set to minimize risks to participants. Delany et al. (15) recommend

that critical-incident stress debriefing be provided 1–2 weeks after a challenging event, to allow those involved time to process emotional aspects of the event. While there is currently no evidence to support or challenge such a guideline regarding ethics rounds, given the emotional salience of ECS, a precautionary approach might be to limit discussion of ECS discussed in ethics rounds to those that have occurred 1–2 weeks ago.

Thematic analysis revealed that participants experienced many benefits associated with participating in ethics rounds, as have been noted in published literature. Clarification of thinking about ECS, seeing ECS from the perspective of others, and providing a safe space to discuss ECS are all important steps in helping veterinary team members resolve ECS that they may encounter. Overall, ethics rounds as a form of CESS is a tool that has the potential to equip veterinary team members with the skills to identify and navigate ECS, and potentially mitigate moral distress.

Limitations

Participation in this study was voluntary. Research based on subject self-selection is particularly prone to sample bias. Additionally, the voluntary nature of the surveys may have increased non-response bias, leading to underrepresentation of some cohorts and over-representation of others (68).

As noted previously, virtual delivery may have inhibited discussion. However, given the ongoing COVID-19 pandemic and the potential for future pandemics, it is possible that many workplace meetings will continue to be held virtually. The virtual format minimized logistic considerations such as finding a suitable venue, facilitated participation of veterinary team members from different and sometimes distant locations, and minimized financial and environmental costs associated with requiring participants to attend in-person.

In this study, there was marked variation in group size, in part due to a high drop out rate and also due to the inclusion of four groups of students. Group size may impact the dynamic and thus the experience of ethics rounds. We concur with Silen et al. (46) that group size should be capped at 12.

Surveys were anonymous to maximize participant privacy, of critical importance given that the researcher was also the facilitator of all sessions. However, this prevented clarification of responses. The surveys were only available in English, and the facilitator does not fluently speak languages other than English, limiting participation to participants who can speak fluent English. This study design did not allow us to compare outcomes between participants from different countries, as cultural and contextual factors including geographic location can impact the types of ECS encountered, and associated moral distress. Future studies may facilitate comparison of results between respondents from different countries. As mentioned previously, in evaluating the impact of ethics rounds it may be useful in future studies to incorporate questions about the types, quantity and quality of previous ethics training that participants had been exposed to.

The study design does not permit follow-up to determine if changes in Euro-MCD 2.0 scores are sustained over time. Additionally, participants in this study only attended a single

session of ethics rounds. Ideally, ethics rounds are held on a regular basis (46). The results suggest that more sessions are needed to reliably measure meaningful change due to ethics rounds.

This study relies on self-assessment, which may be subject to social desirability bias. Socially desirable responding is characterized by providing answers that align with social norms, rather than truthful answers, and can result in underestimation of the prevalence of socially undesirable attributes, and overestimation of the prevalence of socially desirable attributes (69, 70). The Euro-MCD does not measure outcomes relating to sick leave, employee turnover or patient outcomes (43). We did not measure levels of moral distress in participants, and so we are not able to determine how, if at all, participation impacted moral distress. There is limited published research exploring the relationships between moral distress, modifying factors, psychological wellbeing, job satisfaction and career attrition in veterinary team members (63). There are a number of potential instruments that have been developed and utilized to measure moral distress in healthcare workers (71–74). These may be useful to explore in future studies of veterinary team members.

DATA AVAILABILITY STATEMENT

The datasets generated for this article are not readily available because we have approval to disseminate aggregated data, but not individual data. Requests to access the datasets should be directed to anne.quain@sydney.edu.au.

ETHICS STATEMENT

The studies involving human participants were reviewed and approved by Human Research and Ethics Committee, University of Sydney. The patients/participants provided their written informed consent to participate in this study.

AUTHOR CONTRIBUTIONS

AQ: literature review, study design, survey building and piloting, ethics application, ethics rounds coordination and correspondence, ethics rounds facilitation, data analysis, writing, editing, and submission. SM: study design, survey refinement, ethics application, ethics rounds coordination, data analysis, editing, and supervision. MW: study design, survey refinement, ethics application, data analysis, editing, and supervision. All authors contributed to the article and approved the submitted version.

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SUPPLEMENTARY MATERIAL

The Supplementary Material for this article can be found online at: <https://www.frontiersin.org/articles/10.3389/fvets.2022.922049/full#supplementary-material>

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8.3 Further discussion

The literature review in this thesis revealed an interesting difference between arguments supporting CESS in human healthcare contexts, and those supporting CESS in veterinary clinical contexts. Notably, the emphasis in the human healthcare literature – at least initially – was on patient safety and quality of care (Kherbache et al., 2021, Pauly et al., 2012, Hyatt, 2017), whereas the emphasis in the veterinary literature is on mitigating moral distress of clinicians (Crane et al., 2015, Kipperman et al., 2018, Moses et al., 2018, Brscic et al., 2021). This might be due to increased awareness of and sensitivity to mental health associated morbidity and mortality of veterinary team members, as discussed in Chapter 2. It might also be because it is challenging to measure the impact of individual veterinary team member moral distress on individual patient safety, clinical outcomes or animal welfare measures such as stress physiology, immune function, general health and condition, behaviour, affective states and productivity (Glanville et al., 2020). Indeed, I am not aware of any studies evaluating the impact of veterinary team member moral distress on patient safety, animal welfare or clinical outcomes. This would be a large undertaking, as a randomised controlled trial would be required to demonstrate a causal effect of the intervention on the outcome variables. It would be challenging to conduct such a trial ethically.

In Chapter 5, I found that the leading form of assistance desired by veterinary team members facing ECS was ‘professional reassurance that their decision was the correct one’. Ethics rounds may provide this validation, or at least assurance that the decision was the best (or the least worst) in the circumstances.

Initially, I had planned to run ethics rounds in a face-to-face format. The virtual format was necessitated by severe COVID-19 associated restrictions imposed by the Australian Government during the ‘second wave’ of the pandemic. The virtual format precluded informal conversations between participants, which may have impacted outcomes.

While it was easier to organise sessions with organisations who protected time for employees to participate, the majority of sessions were held out of business hours. Future studies demonstrating an impact of ethics rounds on the moral distress of

participants may provide evidence that organisations can use to justify protecting time so that employees can participate.

Finally, this paper identified a number of opportunities for further research, which are discussed in more detail in Chapter 9.

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Chapter 9: Discussion

9.1 Introduction

This research extends current understanding of the types of ethically challenging situations (ECS) encountered by veterinary team members, and strategies to enhance their moral competency. Progress in veterinary empirical ethics to date has predominantly focused on exploring ECS encountered by veterinarians. This work has largely been concerned with identifying ethical challenges rather than pursuing solutions. Additionally, veterinary empirical ethics has largely overlooked the experiences of non-veterinarian veterinary team members, including animal health technicians and veterinary nurses, as well as clients. This is despite a general shift away from a paternalistic model, and the reality that veterinary care is increasingly delivered by veterinary teams (as discussed in Chapter 2).

This thesis presents the first global investigation into ECS encountered by veterinary team members during a global pandemic. The emergence of SARS CoV-2 and the COVID-19 pandemic provided the opportunity to explore ECS encountered by veterinary team members during a transboundary mega-crisis. Ethically challenging situations are an important stressor of veterinary team members. This can lead to moral distress if team members are unable to resolve ECS in ways that align with their values. The research in this thesis confirms the need to prepare and support veterinary team members to successfully navigate ECS.

While ethics rounds have been used as a clinical ethics support service in limited veterinary contexts (Springer et al., 2018, Long et al., 2021, Hobson-West and Millar, 2021), this is the first to quantify the impact of structured ethics rounds on veterinary team members by utilising a validated instrument. This thesis provides unique data and insights that can inform education and training, which in turn may aid veterinary team members in addressing ECS and factors that exacerbate them. The global nature of this research gives the findings international significance.

9.2 Summary of key findings

9.2.1 Veterinarians are not the only veterinary team members who experience ethically challenging situations

The nature of veterinary work, including veterinary clinical practice, has evolved considerably since the mid-20th century (see Chapter 2). However, to date, research

in empirical veterinary ethics has almost exclusively focused on ECS encountered by veterinarians (Batchelor and McKeegan, 2012, Crane et al., 2015, Kipperman et al., 2018, Moses et al., 2018, Dürnberger, 2020, Springer et al., 2019, Springer et al., 2021). Analysis of published vignettes depicting ECS (see Chapter 3) revealed an overrepresentation of veterinarian protagonists when compared with non-veterinarian veterinary team members. However, non-veterinarian team members also encountered ECS (see Chapters 3, 5 and 8) and, at least in the context of a global pandemic, were at greater risk of encountering increased ECS than veterinarians (see Chapter 6). This may reflect differential exposure to ECS, less preparation for managing ECS than that of other team members, less support than that available for other team members, or a combination of these factors.

It is important that empirical veterinary ethics explores ECS encountered by non-veterinarian team members, and the experiences of these team members, for several reasons. First, failure to do so perpetuates the concept of the veterinarian as 'moral hero', which does not reflect the predominant model of team-based veterinary care. That can set the veterinarian up to receive 'too much credit' or 'too much blame' for ethical decisions and their consequences. Second, it may cause us to overlook potential harms of ECS, including moral distress, on non-veterinarian team members. In addition to negatively impacting these individuals, this could potentially negatively impact the whole team and the quality of care received by veterinary patients. Third, as risks of experiencing ECS may not be distributed uniformly across team members, understanding the risk factors can facilitate targeted interventions. Finally, the omission fails to leverage the diverse perspectives and experiences of non-veterinarian team members who may make valuable contributions to managing ECS (Reed, 2013). As veterinary team members value discussing ECS with colleagues (see Chapters 5 and 8), expanding the pool of potential colleagues with whom ECS may be discussed is likely to be positive. Conversely, exclusion of these members from discussions may limit the ability to effect systemic change to improve the moral climate of veterinary workplaces.

9.2.2 The veterinarian-client-patient triad excludes many stakeholders that are potentially impacted by ethical decisions

This research confirms that ECS encountered by veterinary team members can occur beyond the veterinarian-client-patient triad that has underpinned much

published literature in veterinary ethics. As discussed in Chapter 2 and confirmed in Chapter 5, this triad does not accurately portray the diversity of stakeholders impacted by ECS in veterinary settings, nor the many conflicting interests that veterinary team members are required to negotiate. Consideration of only three stakeholders narrows the focus of ethical discussion to conflicts between the interests of animal owners and veterinarians. This narrow focus ignores other, equally if not more challenging issues, such as employer/employee relations, and how veterinary team members balance their personal wellbeing with their professional obligations in a crisis. The triadic conception of veterinary ethics gives the impression that veterinary ECS are restricted to clinical practice and ignores the possibility that non-veterinarian team members experience ECS. It limits veterinary ethics to individualist animal and professional ethics, downplaying the critical importance of the One Health and One Welfare approaches, in which animal health and welfare, human health and welfare, and environmental health and sustainability are key concerns (Nieuwland and Meijboom, 2020, Garcia, 2017, Garcia Pinillos, 2018, Coghlan et al., 2021).

At least within the context of a pandemic, this research showed a lack of consensus among veterinary team members regarding their primary obligation (see Chapter 5). Some respondents to the survey in Chapter 5 identified multiple stakeholders to whom they had a primary obligation, while many listed stakeholders that were not included in the traditional triadic model. This invites reconsideration of the 'fundamental question of veterinary ethics' – does the veterinarian owe their primary obligation to the animal patient or their owner – and whether this question is adequately helpful in current veterinary contexts.

9.2.3 Veterinary empirical ethics surveys have not reflected the diversity of ethically challenging situations experienced by veterinary team members

The research presented in this thesis documents a range of different types of ECS that may be encountered by veterinary team members. This includes themes generated from analysis of published hypothetical ethical vignettes (see Chapter 3) or literature on advanced veterinary care (see Chapter 4), as well as ECS encountered during the COVID-19 pandemic (see Chapter 5) and those discussed in ethics rounds (see Chapter 8). These themes can be used to inform veterinary curricula, CPD and stakeholder education, develop policies, and focus discussion

within ethics rounds. They may also be useful in developing hypothetical vignettes from the perspective of veterinary nurses, veterinary technicians, other team members including practice managers and veterinary students, and even veterinary clients. Furthermore, there is scope to develop vignettes incorporating multiple perspectives. Because ECS are heavily impacted by contextual factors, in developing vignettes it may be useful to consider organisational and systemic factors that contribute to the development of ECS (for example, remuneration or training models that encourage non-beneficial treatment as discussed in Chapter 4), and factors that may mitigate or eliminate ECS and associated moral distress. As shown in Chapter 7, exploration of particular ECS can be useful to identify and address potential barriers to resolution, as well as solutions. Aside from publication of vignettes in journals, they could be discussed by panels of people representing different stakeholder groups during professional training, or in continuing professional development.

As knowledge, techniques and technology continue to develop, it is essential to be mindful of potential unintended consequences, especially those that cause or perpetuate animal suffering, as well as accessibility of veterinary care and caregiver burden (see Chapter 4). This research highlights the need for veterinary team members to be informed about these issues, to recognise and manage their own conflicts of interest, and to ensure that the interests of animals are considered and given appropriate weight.

An important potential benefit of identifying the types of ECS encountered by veterinary team members is the ability of professional associations to use these in instigating change. Professional associations may thus be equipped to lobby for legislative change, develop policies and guidelines, develop and promote educational resources (for both veterinary team members and clients), and optimise support for members who may encounter ECS. These ECS may also highlight opportunities to develop products or services to mitigate ECS. For example, analysis of published vignettes depicting ECS identified 'how to manage a client who refuses a recommendation or does not adhere to advice' as a common source of frustration among veterinary team members. Professional associations might respond by developing policies to guide members on how they manage these situations, for example if a client refuses to euthanase or treat an animal with deteriorating quality

of life. Professional organisations or CPD providers may provide targeted education on current legislation impacting veterinary practice, including reporting and complaint pathways. Pharmaceutical companies may develop products with improved ease of administration to maximise adherence. Alternatively, professional associations may lobby regulators to ensure that veterinary team members can use medications off-label, where appropriate, to increase adherence, or amend drug scheduling to increase or decrease accessibility of certain agents.

9.2.4 Veterinary team members encountered old and new ethically challenging situations associated with the COVID-19 pandemic

The emergence of SARS CoV-2 created ethical challenges for governments, communities and professional groups such as healthcare workers (Robert et al., 2020, Savulescu et al., 2020). This provided a unique opportunity to explore ECS encountered by veterinary team members during the COVID-19 pandemic. Chapter 5 describes the largest global survey investigating the frequency and stressfulness of ECS among veterinary team members, and is the first to document ECS encountered during a transboundary mega-crisis. This research found that the self-reported frequency of ECS increased for almost half of veterinary team members in the early stages of the COVID-19 pandemic. While previous studies had identified client financial limitations as a common ECS, the pandemic may have exacerbated these. This highlights the need for veterinary workplaces to factor client financial limitations into emergency planning. One of the most common and most stressful ECS encountered by veterinary team members during the early months of the pandemic was conflict between personal wellbeing and professional role, or the wellbeing of family/household members and professional role. This tension had not been explicitly considered in previous surveys. In many jurisdictions, veterinary service providers were restricted to providing 'essential services', challenging veterinary teams to consider what was an essential service, and in some cases consider alternative methods of service delivery (see also Chapter 7 regarding communication). Factors that exacerbated ECS included resource shortages, particularly PPE, changing restrictions and conflicting guidance on public health.

During the pandemic, there was confusion and conflict among veterinary team members regarding what constituted an essential service, or how to appropriately protect veterinary team members while continuing to provide treatment to animals

(see Chapter 5). This information can be used to refine biosecurity policies and guidelines, as well as developing appropriate messaging to both veterinary team members and members of the public about the need for and nature of biosecurity measures. Research included in Chapter 7 identified difficulty in communicating with clients as a factor exacerbating ECS. It also identified several ECS associated with low and no-contact euthanasia. Professional associations can play a critical role in developing evidence-based policies and guidelines that allow their members to address and navigate these concerns. They can also work to ensure members have access to appropriate equipment such as PPE to ensuring continuity of safe service provision.

Understanding the ECS encountered by veterinary team members during the ongoing pandemic is important so that we can optimise preparation for future emergencies. The research contained within this thesis (particularly in Chapters 5,6 and 7) can help contribute to this planning.

9.2.5 Ethics rounds may improve moral competence and moral teamwork among veterinary team members

Chapter 8, the final research chapter of this thesis, investigated the impact of ethics rounds on veterinary team members, as measured with a modified version of the Euro-MCD 2.0 instrument. Participants reported that ethics rounds provided numerous benefits. Participation in ethics rounds led to statistically significant improvements for items in the domains of moral competence and moral teamwork. These results suggest that ethics rounds are a useful form of CESS for veterinary teams, and encourage further research to confirm this finding.

This study also revealed that participation in ethics rounds may be inhibited in the context of workplace power imbalance or bullying, reenforcing calls to identify and address bullying in veterinary settings (Gardner and Rasmussen, 2018).

Furthermore, as can occur with ethics rounds in human healthcare settings, there is the potential for participants to 'relive' moral distress (Delany et al., 2021).

Consideration must be given to minimising these potential harms associated with ethics rounds, and ensure that facilitators are appropriately trained.

Previous surveys suggest that veterinarians did not feel that their ethics training adequately equipped them to manage ECS (Batchelor and McKeegan, 2012,

Kipperman et al., 2018, Moses et al., 2018). While there have been improvements in ethics training of veterinary students (De Bryne et al., 2020), such training is focused on hypothetical cases. Ethics rounds provides veterinary team members with additional opportunities to apply ethical reasoning and frameworks to cases with which they are familiar and potentially personally invested, with access to additional contextual information.

Overall, the research in this thesis has demonstrated that all veterinary team members encounter ECS in the course of their work, and that the frequency and types of ECS encountered may vary, for example in the case of a pandemic. It demonstrates that bottom-up CESS (notably ethics rounds) can be beneficial for veterinary team members.

9.3 Strengths and limitations of this research

A key strength of this research is the engagement with a range of veterinary team members in different veterinary settings, in different countries and cultural contexts (see Chapters 5, 6 and 8). This worldwide engagement is vital when seeking to understand common ECS and developing resources that will be useful to all veterinary team members despite working context.

An initial potential limitation of our research was the constraint of distribution of the survey to known networks at the time. A positive outcome of this course of research is the great expansion of networks and collegiate and research relationships. It is also important to note that that participation in this survey was limited to persons who could read, and in the case of ethics rounds speak, in English, and thus the findings may not apply to non-English speaking settings.

Recruitment of non-veterinarian veterinary team members was more difficult than recruitment of veterinarians for participation in the surveys. There are several possible explanations for this. In many jurisdictions, veterinarians are more comprehensively represented by professional associations and registration boards, through which survey links can be distributed, compared to animal health technicians and veterinary nurses. As highlighted in Chapter 3, the veterinary ethics literature portrays veterinarians as the key protagonists in vignettes depicting ECS. It is therefore possible that non-veterinarian veterinary team members may not have felt confident in expressing their opinions or may not have felt their role in navigating

ECS as valid. Additionally, our social media recruitment strategy may have introduced bias towards veterinarian respondents, as the initial accounts for sharing the links belonged to the Sydney School of Veterinary Science, an institution that trains Doctor of Veterinary Medicine students. We tried to address this bias by allowing participants to share the survey links with other team members.

While we did not require respondents to provide any information on their race or cultural background, a known limitation of social media is its bias toward white respondents (Whitaker et al., 2017, Topolovec-Vranic and Natarajan, 2016). The extent to which social media algorithms impacted the diversity of respondents is unknown. In future studies, such bias may be overcome through paid, targeted social media advertising. This allows advertisements to be shown to individuals whose online activity suggests alignment with a particular group (such as veterinary nurses) (Ali et al., 2020). In this situation, regular monitoring of responses is required, and may prompt supplemental advertising targeted to ensure adequate representation of particular groups. Nonetheless, social media is a particularly important recruitment strategy during rapidly evolving crises, when other recruitment methods are unsafe, impractical, economically unfeasible or (due to public health orders) illegal (Ali et al., 2020).

Research that depends on voluntary subject participation is vulnerable to non-response bias, due to differences between respondents and non-respondents. For example, voluntary services such as those described in this research may attract respondents with stronger views regarding the subject matter. While mandating participation reduces non-response bias (Cheung et al., 2017), this was not possible for this research, nor did we consider it ethical. In future studies, response rates could be increased by offering incentives (monetary or non-monetary, such as a donation to a charity), which may reduce non-response bias by increasing overall participation (Toepoel and Schonlau, 2017). There is also a risk that survey responses may be influenced by social desirability bias. The surveys developed for this research were anonymous, and collected minimal demographic information, to minimise the impact of social desirability bias (Ried et al., 2022). The majority of survey respondents in this research were female and worked in clinical veterinary practice. This is consistent with workforce surveys in countries and regions representing the majority of respondents (Australian Veterinary Association, 2019,

Kynetec Canada, 2020, Ouedraogo et al., 2019, Federation of Veterinarians of Europe, 2019, Robinson et al., 2020). Most respondents were based in Western countries. Purposive sampling may be required to obtain a more accurate picture of ECS encountered by veterinary team members in non-clinical areas of practice, and by those working in countries that were under- or un-represented in this research.

Inclusion of free-text, open-ended questions added depth to this analysis, and allowed respondents to discuss additional ECS that were not listed in the survey (for example, in Chapter 5). One of the key methodologies used to investigate these responses was reflexive thematic analysis, developed by Braun, Clarke and colleagues (Braun and Clarke, 2006, Terry et al., 2017). During the period over which this research was conducted, these authors further developed and clarified their methodology (Braun and Clarke, 2019, Braun and Clarke, 2021a), culminating in the publication of their textbook in late 2021 (Braun and Clarke, 2021b). For example, Braun and Clarke critiqued their early work in which they suggested that with careful digging (analysis), themes may 'emerge' (Braun and Clarke, 2006). I used this approach in earlier papers (Quain et al., 2021). They subsequently clarified that according to their approach to reflexive thematic analysis, themes are actively generated or constructed by the researcher(s) (Braun and Clarke, 2019). As a result of following these developments and the evolution of my own learning and increased comfort with reflexive thematic analysis, the approach to thematic analysis varies slightly between the published papers contained within this thesis. Nonetheless, reflexive thematic analysis deepened our understanding in areas where the existing evidence base was limited. Furthermore, the approach allowed us to consider the nature of ECS encountered by veterinary team members and ways these situations could be addressed.

The initial research plan had included in-person ethics rounds, but this became impossible due to social distancing requirements and movement restrictions (including unprecedented state and international border closures within Australia) associated with the COVID-19 pandemic. This precluded face-to-face communication and incidental interaction between participants, which may have impacted their experience and Euro-MCD 2.0 scores. Non-participants may have been put off by the online format, or may not have felt adept using video-conferencing technology. However, the pivot to virtual delivery did allow us to include

participants from a range of different countries and regions, and eliminated costs including travel, venue hire and catering. This also reduced the carbon footprint of this intervention, an ethical consideration in itself in an era in which there is increased emphasis on reducing the environmental impacts of the provision of veterinary care (Koytcheva et al., 2021).

9.4 Future directions and recommendations

In the final part of this discussion, I consider how the findings in this thesis can be used to advance the field of empirical veterinary ethics and improve the wellbeing of veterinary team members.

9.4.1 The need for veterinary empirical ethics research to include perspectives of non-veterinarian veterinary team members and clients

As this research has shown, all veterinary team members encounter ECS. It is therefore important that veterinary ethics research incorporates the perspectives of non-veterinarian stakeholders. This includes not just perspectives of non-veterinarian veterinary team members, but also clients. A major gap identified in the veterinary ethics literature is the absence of the perspective of clients. When moral distress is discussed, this is largely in relation to moral distress suffered by veterinary team members, particularly veterinarians, with no explicit consideration of the possibility that veterinary clients may experience moral distress. As the veterinary profession, like the medical professions, shifts from a paradigm of paternalism to shared decision-making, it is important to ensure that client perspectives are considered. For example, ethical challenges associated with advanced veterinary care have the potential to cause moral distress not just to veterinary team members, but also to clients (Ware, 2018). While the veterinary ethics literature has highlighted the ethical challenge of clients with financial limitations from the perspective of veterinarians, Desmond observed that animal owners often struggle to manage competing values and financial needs in what she described as 'a moral mathematics of care' (Desmond, 2022). Recognition of common ground can enhance trust among veterinary teams and between veterinary professionals and clients. In addition it may promote adherence to shared plans, reduce incivility and improve animal welfare (Adams and Kurtz, 2017, Gardner, 2022, Irwin et al., 2022). Those who use veterinary services may prove a helpful source of innovative solutions to ECS, solutions which may be more acceptable to the end-users of veterinary services.

This and other studies (Kipperman et al., 2018, Moses et al., 2018, Lehnus et al., 2019) have identified conflicts between the perceived interests of animals and their owners as common ECS in veterinary settings. Further studies are required to understand the nature of these conflicts, for example whether they emerge from differing beliefs about the moral status of animals, differences of opinion about the welfare needs or preferences of animals, conflicts emerging from insufficient or incomplete information, differing tolerance of uncertainty, or differences in values or priorities. This information could be used to train veterinary team members in communicating and resolving conflict, and leveraging the 'expertise' of client as animal caretaker.

9.4.2 The need to measure moral distress and its impacts among veterinary team members

There are large knowledge gaps in our understanding of the relationship between ECS and moral distress among veterinary team members. The first necessary step in addressing these is an instrument to measure moral distress among veterinary team members (Arbe Montoya et al., 2019). An instrument like this could be used to determine the efficacy of interventions including curricula and CESS on mitigating moral distress. It could also be used in conjunction with other instruments to determine the relative contribution of moral distress to negative wellbeing among veterinary team members. This may be helpful in promoting awareness about moral distress in veterinary team members, and in supporting requests for funding of interventions specifically targeted at mitigating moral distress.

We live in an era in which research funding is increasingly scarce and is usually awarded to projects that can demonstrate economic benefits or savings. It would be useful to provide an economic justification for interventions such as ethics rounds, particularly when participation may incur opportunity costs for veterinary team members who would otherwise provide billable services. Larger studies, which also measure ethical climate, absenteeism, presenteeism, burnout, staff turnover and client satisfaction, may make a more compelling business case for organisations to invest in training or hiring trained facilitators, and protecting time for staff to engage with CESS.

There is increased pressure on organisations to actively protect and promote the health and wellbeing of employees. This includes identifying and managing potential

psychosocial risks. The first global standard on managing psychosocial risk within an occupational health and safety framework was published in 2021 (International Organisation for Standardisation, 2021) (ISO45003:2021). The standard recognises the potential impacts of psychosocial risks including absenteeism, increased turnover, reduced service quality, challenges in recruitment and training, and workplace investigations and litigation. However, benefits of effective psychological risk management include improved employee engagement, enhanced productivity, increased innovation and organisational sustainability (International Organisation for Standardisation, 2021). The adoption of ethics rounds aligns with subclauses 8.1.2.2 f ('facilitating the development of competence') and 8.1.2.3 a, c, f and g ('increasing awareness of psychosocial risks...'; 'establishing support measures for workers...'; 'providing training to develop awareness and appropriate skills to identify psychosocial risks...' and 'provide access to, or information about, support services...' respectively) (International Organisation for Standardisation, 2021).

As animal welfare is a core value for veterinary team members, engaging in or failing to prevent decisions or behaviours that compromise animal welfare is likely to be a key source of moral distress among veterinary team members. As such, the moral distress of veterinary team members is an indicator of potential animal welfare issues and deserves attention not just for the sake of these stakeholders, but the animals in their care. While it is critical to address mental health morbidity and mortality of veterinary team members in and of itself, there is a sense that these concerns at times overshadow important discussion regarding the welfare of animals. We must explore the moral distress of veterinary team members for the sake of the animals they care for.

9.4.3 The need to challenge the 'triad' of veterinary ethical stakeholders

Our findings suggest that in different situations, veterinary team members must consider different stakeholders, and may need to navigate multiple competing interests. It may be unrealistic and even unsafe to prioritise the interests of a single type of stakeholder. We live in a world where human exceptionalism is the norm (Desmond, 2022). This is enshrined in legislation where animals are considered the property of their owners. Ultimately, except for cases of breach of animal welfare legislation, it is difficult for veterinary team members not to prioritise the interests of

owners. This prioritisation of human interests has served the greater human population well in the short term, allowing us to utilise animals and planetary resources. But this has been at the expense of animal welfare and environmental sustainability (Coghlan et al., 2021).

It may be more useful for veterinary team members faced with ECS to consider core values – these may be animal welfare, or indeed One Welfare. A hierarchical framework such as Fraser’s ‘practical’ ethic for animals provides four key principles against which ethical decisions may be evaluated (Fawcett et al., 2018).

Alternatively, decisions may be evaluated according to how they align with virtues such as honesty, conscientiousness, trustworthiness, discernment, integrity and compassion (Beauchamp and Childress, 2013, Lee et al., 2012). If veterinary team members are open to considering our obligations in all their complexity, we may find new sources of career satisfaction, and creative solutions to problems that we spend much time addressing at the level of the individual animal or discrete population of animals, and owner(s).

In recognising the influence of the triadic conception of veterinary ethics on our understanding of ECS, and understanding its limitations, veterinary team members will be able to recognise a broader range of ECS, and comprehensively identify stakeholders potentially impacted by ECS. According to Nieuwland and Meijboom, identification of these stakeholders can help veterinary team members become aware of the way their agency has been shaped over time and is embedded within a particular environment (Nieuwland and Meijboom, 2020). Appreciating the ‘myriad of diverging expectations’ may help veterinary team members develop a more robust moral agency (Nieuwland and Meijboom, 2020).

9.4.4 Further evaluation and development of (clinical) ethics support services and facilitator training

Ethics rounds improved moral competency and moral teamwork among participating veterinary team members after a single session. However, as the immediacy of ethics rounds recedes, habitual behaviour may resume. Therefore, it would be ideal to follow up sessions several weeks to several months later (Glanville et al., 2020). It would also be useful to compare the benefits of ethics rounds after participation in multiple sessions.

There is currently no formal training program specifically designed for veterinary team members prior to running ethics rounds. The development of such a program would ensure that facilitators are aware of potential adverse effects of ethics rounds and are appropriately skilled to advise participants of the risks, to create a safe environment for discussion, and to provide support or referral as required. As funding becomes available to support the wellbeing of veterinarians in particular, some of this could be directed towards the training of ethics rounds facilitators.

Ethics rounds is just one form of CESS and may not be helpful to those not comfortable engaging in group discussion. The designation 'clinical' may unwittingly exclude veterinary team members in non-clinical roles. Although CESS is clinical in origin, the term 'ethics support services' may be more appropriate considering the earlier discussion around the limited focus of veterinary ethics.

In addition to ethics rounds, it may be helpful to explore ethics support services that can support individuals. One potential model is an ethics hotline. For example, the Ethics Centre provides Ethical-Call, a free, independent, confidential decision-making helpline (The Ethics Centre, 2022). Some companies and industry associations promote this service to their members. While volunteers are trained in ethics, they are not necessarily familiar with veterinary settings and may not appreciate key or contextual elements of veterinary ECS. However, veterinary professional organisations do have the potential to recruit and train volunteers from various sectors of the profession (for example, clinical practice, research and academia, or veterinary public health) who are familiar with the different contexts in which veterinary team members work. Undertaking such training and volunteering may attract continuing professional development credit, which may be an incentive for veterinary team members to volunteer.

9.4.5 The need for regular surveillance of ECS

The research contained within this thesis confirms that different circumstances, and factors outside of the veterinary sector (such as a global pandemic) can impact the frequency and types of ECS encountered by veterinary team members (see Chapter 5). In addition, the types of ECS encountered may shift or change due to advances in veterinary science, including clinical sciences (see Chapter 4). It would therefore be useful to undertake regular surveillance of the ECS encountered by veterinary

team members, and provide this data to educators, professional associations, facilitators of ethics rounds, and veterinary team members themselves. This could be performed by way of surveys (available in a range of languages) distributed by professional organisations on a regular basis. Additionally, facilitators could contribute anonymised data about the types of ECS discussed in ethics rounds, to researchers who could aggregate and analyse this data to determine common and recurrent themes. Access to this data by educators would facilitate better preparation of veterinary team members for ECS they are likely to encounter, but may also enable development of strategies to mitigate these ECS. The provision of an ethics hotline service may also provide an opportunity to collect anonymised data about the types of ECS encountered by veterinary team members, barriers to resolving these and resources that are helpful in resolving them.

9.4.6 Preparing veterinary team members, clients, animals and other stakeholders for ethical challenges they may encounter in emergency situations

This research highlighted ECS encountered in an unprecedented, trans-boundary mega-crisis, i.e. the COVID-19 pandemic. Analysis of ECS encountered by veterinary team members revealed specific challenges that occur in the setting of a crisis, for which veterinary team members could be better prepared. For example, this research suggests a need for contingency planning for increased client financial limitations and supply chain disruption in the context of emergencies. Additionally, it may be useful ahead of time for professional associations to develop consensus-based traffic-light systems for rating essential services provided in different veterinary settings. In-depth analysis of challenges associated with communication and low and no-contact euthanasia (see Chapter 7) indicate scope for updating and disseminating biosecurity protocols (including to clients and other stakeholders), and developing protocols that can be utilised in the context of PPE shortages.

Additionally, it may be useful for veterinary team members to socialise veterinary patients to and prepare veterinary clients for the use of PPE and social distancing, so that if these are required they aren't novel.

Finally, while I have explored the impact of ECS and CESS on veterinary team members, other questions remain: What is the impact of ECS on veterinary patient safety and welfare? How might broader questions about animal use and human

animal relations be resolved? If animal welfare is a core value underpinning this sector, it is of vital importance to explore answers to these questions.

9.5 Conclusion

Ethically challenging situations are an important stressor of veterinary team members, yet many veterinary team members feel under-prepared to navigate ECS. Moral distress arising from ECS indicates areas of veterinary work conflict with the values of veterinary team members, and as such may not just indicate risks to wellbeing of team members, but also to patient welfare and safety, client wellbeing, and the interests of other stakeholders including the broader community and the environment. This work demonstrates that it is important that all veterinary team members – not just veterinarians - are trained to identify and manage ECS. This thesis provides information on the types of ECS that veterinary team members may encounter, and thus should prepare for, in a variety of contexts. It underscores the need for routine surveillance of the types of ECS encountered in a variety of veterinary settings.

This research is the first to document ECS encountered by veterinary teams during the COVID-19 pandemic, a trans-boundary mega-crisis, and suggests strategies to mitigate their impacts. All veterinary team members should be prepared and adequately resourced to respond to ECS in the context of crises, as well as in their routine work. Understanding these ECS enables veterinary team members, professional associations and regulatory bodies to anticipate ECS and to develop strategies, including policies and guidelines, to manage these. In identifying a diverse range of ECS and stakeholders, this thesis challenges the narrow conception of ethical conflict in veterinary practice as arising from the triadic relationship between veterinarian, patient and client. This model underplays the complexity of ECS that veterinary team members must navigate, and may itself act as a barrier to addressing ECS.

This is the first work to quantify the impact of a bottom-up form of CESS, ethics rounds, on veterinary team members. It showed that ethics rounds, involving all veterinary team members, improved moral competency and moral teamwork of participants. There is a need to train facilitators so that this intervention can be used safely in a range of veterinary settings, including clinical and non-clinical settings.

The research presented in this thesis will facilitate evidence-based teaching in veterinary ethics. The information will also assist in the development of teaching scenarios that reflect the most common and most stressful ECS that veterinary team members may encounter, including in the context of a global pandemic. Further research is required to determine the extent to which strategies to mitigate moral distress reduce psychological morbidity and mortality among veterinary team members, as well as the safety and welfare of patients.

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Appendix A

University of Sydney Human Research Ethics Committee (HREC) letters of approval

Wednesday, 13 May 2020

Prof Paul McGreevy
Veterinary Science; Faculty of Science
Email: paul.mcgreevy@sydney.edu.au

Dear Paul,

The University of Sydney Human Research Ethics Committee (HREC) has considered your application. I am pleased to inform you that after consideration of your response, your project has been approved.

Details of the approval are as follows:

Project No.: 2020/291
Project Title: Ethical challenges experienced by veterinarians, animal health technicians and veterinary nurses during the Covid-19 pandemic
Authorised Personnel: McGreevy Paul; Fawcett (Quain) Anne; Mullan Siobhan;
Approval Period: 13 May 2020 to 13 May 2024
First Annual Report Due: 13 May 2021

Documents Approved:

Date Uploaded	Version Number	Document Name
11/05/2020	Version 1	Invitation to participate in study
05/05/2020	Version 2	Questionnaire (in RedCAP format)
05/05/2020	Version 2	Participant Information Statement v2
17/04/2020	Version 1	Permissions from organisations to share link
17/04/2020	Version 1	Blurb to accompany survey link

Special Condition/s of Approval

1. Please ensure PIS footers are updated on all pages. You do not need to submit a copy to the Ethics Office.
2. It will be a condition of approval that the revised PIS text is the landing page of the questionnaire.

Condition/s of Approval

- Research must be conducted according to the approved proposal.
- An annual progress report must be submitted to the Ethics Office on or before the anniversary of approval and on completion of the project.
- You must report as soon as practicable anything that might warrant review of ethical approval of the project including:
 - Serious or unexpected adverse events (which should be reported within 72 hours).
 - Unforeseen events that might affect continued ethical acceptability of the project.
- Any changes to the proposal must be approved prior to their implementation (except where an amendment is undertaken to eliminate *immediate* risk to participants).
- Personnel working on this project must be sufficiently qualified by education, training and experience for their role, or adequately supervised. Changes to personnel must be reported and approved.

- Personnel must disclose any actual or potential conflicts of interest, including any financial or other interest or affiliation, as relevant to this project.
- Data and primary materials must be retained and stored in accordance with the relevant legislation and University guidelines.
- Ethics approval is dependent upon ongoing compliance of the research with the *National Statement on Ethical Conduct in Human Research*, the *Australian Code for the Responsible Conduct of Research*, applicable legal requirements, and with University policies, procedures and governance requirements.
- The Ethics Office may conduct audits on approved projects.
- The Chief Investigator has ultimate responsibility for the conduct of the research and is responsible for ensuring all others involved will conduct the research in accordance with the above.

This letter constitutes ethical approval only.

Please contact the Ethics Office should you require further information or clarification.

Sincerely,

Associate Professor Helen Mitchell
Chair
Human Research Ethics Committee (HREC 1)

The University of Sydney of Sydney HRECs are constituted and operate in accordance with the National Health and Medical Research Council's (NHMRC) [National Statement on Ethical Conduct in Human Research \(2007\)](#) and the NHMRC's [Australian Code for the Responsible Conduct of Research \(2007\)](#)

Monday, 18 May 2020

Prof Paul McGreevy
Veterinary Science; Faculty of Science
Email: paul.mcgreevy@sydney.edu.au

Dear Paul,

Your request to modify this project, which was submitted on 15 May 2020, has been considered.

This project has been approved to proceed with the proposed amendments.

Protocol Number: 2020/291

Protocol Title: Ethical challenges experienced by veterinarians, animal health technicians and veterinary nurses during the Covid-19 pandemic

Please contact the ethics office should you require further information.

Sincerely,

Dr Clifton Chan
Chair
Modification Review Committee (MRC 1)

The University of Sydney of Sydney HRECs are constituted and operate in accordance with the National Health and Medical Research Council's (NHMRC) [National Statement on Ethical Conduct in Human Research \(2007\)](#) and the NHMRC's [Australian Code for the Responsible Conduct of Research \(2007\)](#)

Thursday, 26 August 2021

Prof Michael Patrick Ward
Veterinary Science; Faculty of Science
Email: michael.ward@sydney.edu.au

Dear Michael Patrick,

The University of Sydney Human Research Ethics Committee (HREC) has considered your application. I am pleased to inform you that after consideration of your response, your project has been approved.

Details of the approval are as follows:

Project No.: 2021/550
Project Title: Ethics rounds for veterinary teams
Authorised Personnel: Ward Michael Patrick; Quain Anne; Mullan Siobhan;
Approval Period: 26 August 2021 to 26 August 2025
First Annual Report Due: 26 August 2022

Documents Approved:

Date Uploaded	Version Number	Document Name
10/08/2021	Version 1	Correspondence
10/08/2021	Version 1	Blurb to be used within organisations
10/08/2021	Version 1	Blurb to be used for recruiting outside of organisations
10/08/2021	Version 3	Participant Information Statement clean copy
10/08/2021	Version 1	Email with Zoom details and survey link
10/08/2021	Version 1	Survey
22/06/2021	Version 1	ethics rounds evaluation v1
22/06/2021	Version 1	Ethics Rounds Facilitator Log
22/06/2021	Version 1	facilitator log v1

Condition/s of Approval

- Research must be conducted according to the approved proposal.
- An annual progress report must be submitted to the Ethics Office on or before the anniversary of approval and on completion of the project.
- You must report as soon as practicable anything that might warrant review of ethical approval of the project including:
 - Serious or unexpected adverse events (which should be reported within 72 hours).
 - Unforeseen events that might affect continued ethical acceptability of the project.
- Any changes to the proposal must be approved prior to their implementation (except where an amendment is undertaken to eliminate *immediate* risk to participants).
- Personnel working on this project must be sufficiently qualified by education, training and experience for their role, or adequately supervised. Changes to personnel must be reported and approved.
- Personnel must disclose any actual or potential conflicts of interest, including any financial or other interest or affiliation, as relevant to this project.
- Data and primary materials must be retained and stored in accordance with the relevant legislation and University guidelines.

- Ethics approval is dependent upon ongoing compliance of the research with the *National Statement on Ethical Conduct in Human Research*, the *Australian Code for the Responsible Conduct of Research*, applicable legal requirements, and with University policies, procedures and governance requirements.
- The Ethics Office may conduct audits on approved projects.
- The Chief Investigator has ultimate responsibility for the conduct of the research and is responsible for ensuring all others involved will conduct the research in accordance with the above.

This letter constitutes ethical approval only.

Please contact the Ethics Office should you require further information or clarification.

Sincerely,

Dr Haryana Dillon
Chair
Human Research Ethics Committee (HREC 3)

The University of Sydney of Sydney HRECs are constituted and operate in accordance with the National Health and Medical Research Council's (NHMRC) [National Statement on Ethical Conduct in Human Research \(2018\)](#) and the NHMRC's [Australian Code for the Responsible Conduct of Research \(2018\)](#)

Appendix B: Abstracts of additional papers

The following are abstracts of additional papers not included in this PhD. They were written during the candidature of the PhD.

FAWCETT (QUAIN), A., MULLAN, S. & MCGREEVY, P. 2018. Application of Fraser's 'Practical' Ethic in Veterinary Practice, and Its Compatibility with a 'One Welfare' Framework. *Animals*, 8(7), 109; <https://doi.org/10.3390/ani8070109>

Ethically challenging situations are common in veterinary practice, and they may be a source of moral stress, which may in turn impact the welfare of veterinarians. Despite recognition of the importance of ethical reasoning, some veterinary students may struggle to apply theoretical ethical frameworks. Fraser developed a "practical" ethic consisting of four principles that can be applied to ethically challenging situations. We apply Fraser's 'practical' ethic to three cases that veterinarians may encounter: animal hoarding, animal neglect, and treatment of wildlife. We argue that Fraser's 'practical' ethic is consistent with a One Welfare framework, and may have increasing currency for veterinarians in the light of the World Animal Health Organisation's Global Animal Welfare Strategy. Both Fraser's 'practical' ethic and a One Welfare framework require veterinarians to consider the impacts of animal ethics decisions on a broader scale than most other ethical frameworks have prepared them for. We discuss the strengths and limitations of Fraser's 'practical' ethic when applied in veterinary contexts and recommend additional support and training to enable veterinarians to effectively apply these frameworks in real-world settings.

FAWCETT (QUAIN), A., BARRS, V., AWAD, M., CHILD, G., BRUNEL, L., MOONEY, E., MARTINEZ-TABOADA, F., MCDONALD, B. & MCGREEVY, P. 2019. Consequences and Management of Canine Brachycephaly in Veterinary Practice: Perspectives from Australian Veterinarians and Veterinary Specialists. *Animals*, 9(1), 3; <https://doi.org/10.3390/ani9010003>

This article, written by veterinarians whose caseloads include brachycephalic dogs, argues that there is now widespread evidence documenting a link between extreme brachycephalic phenotypes and chronic disease, which compromises canine welfare. This paper is divided into nine sections exploring the breadth of the impact of brachycephaly on the incidence of disease, as indicated by pet insurance claims data from an Australian pet insurance provider, the stabilization of respiratory distress associated with brachycephalic obstructive airway syndrome (BOAS),

challenges associated with sedation and the anaesthesia of patients with BOAS, effects of brachycephaly on the brain and associated neurological conditions, dermatological conditions associated with brachycephalic breeds, and other conditions, including ophthalmic and orthopaedic conditions, and behavioural consequences of brachycephaly. In the light of this information, we discuss the ethical challenges that are associated with brachycephalic breeds, and the role of the veterinarian. In summary, dogs with BOAS do not enjoy freedom from discomfort, nor freedom from pain, injury, and disease, and they do not enjoy the freedom to express normal behaviour. According to both deontological and utilitarian ethical frameworks, the breeding of dogs with BOAS cannot be justified, and further, cannot be recommended, and indeed, should be discouraged by veterinarians.

HERNANDEZ, E., FAWCETT (QUAIN), A., BROUWER, E., RAU, J. & TURNER, V. P. 2018. Speaking Up: Veterinary Ethical Responsibilities and Animal Welfare Issues in Everyday Practice. *Animals*, 8(1), 15; <https://doi.org/10.3390/ani8010015>

Although expectations for appropriate animal care are present in most developed countries, significant animal welfare challenges continue to be seen on a regular basis in all areas of veterinary practice. Veterinary ethics is a relatively new area of educational focus but is thought to be critically important in helping veterinarians formulate their approach to clinical case management and in determining the overall acceptability of practices towards animals. An overview is provided of how veterinary ethics are taught and how common ethical frameworks and approaches are employed—along with legislation, guidelines and codes of professional conduct—to address animal welfare issues. Insufficiently mature ethical reasoning or a lack of veterinary ethical sensitivity can lead to an inability or difficulty in speaking up about concerns with clients and ultimately, failure in their duty of care to animals, leading to poor animal welfare outcomes. A number of examples are provided to illustrate this point. Ensuring that robust ethical frameworks are employed will ultimately help veterinarians to ‘speak up’ to address animal welfare concerns and prevent future harms.

FAWCETT, A. 2019. Is a One Welfare approach the key to addressing unintended harms and maximising benefits associated with animal shelters? *Journal of Applied Animal Ethics Research*, 1(2): 177-208 https://brill.com/view/journals/jaae/1/2/article-p177_2.xml

Animal shelters, pounds and rescue organisations have evolved over time. Today they serve three purposes: to reduce animal welfare harms, to reduce harms to the community associated with free-roaming, stray or unwanted companion animals, and to reduce their associated environmental harms. This discussion explores the evolution of animal shelters, and argues that they are justified on utilitarian grounds. It explores unintended harms of shelters on animal welfare, including humane killing for the purposes of population control and shelter population management, as well as risks associated with confinement including behavioural deterioration and infectious diseases. It also explores harms to non-human animals, including moral distress and compassion fatigue. Finally, it explores potential environmental harms of shelters. The One Welfare concept, utilised in the World Animal Health Organisation (OIE) Global Animal Welfare Strategy, acknowledges the interplay between animal welfare, human well-being and environmental sustainability. It is argued that the One Welfare framework is critical in minimising harms and maximising benefits associated with animal shelters.

Appendix C: Supplementary Material

Supplementary material related to the article: Quain, A., Ward, M. P. & Mullan, S. (2022). What Would You Do? Types of Ethical Challenging Situations Depicted in Vignettes Published in the Veterinary Literature from 1990 to 2020. *Veterinary Sciences*, 9, 2. <https://doi.org/10.3390/vetsci9010002>

Supplementary material: Reference list of vignettes analysed in our article.

The vignettes analysed in this article were extracted from the following sources: Web of Science (all databases: CAB Abstracts, Current Contents Connect, BIOSIS Previews and MEDLINE), PubMed, Google Scholar and the University of Sydney Library. Not all articles had a Digital Object Identifier (DOI), however where possible we manually added the DOI or alternate identifier (such as PubMed Central number (PMC); PubMed Central Identification (PMCID); PMID (PubMed Identification); Web of Science (WOS) number; or in the case of books an International Standard Book Number (ISBN).

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Supplementary Material

Supplementary Table 1. Survey on ethically challenging situations encountered by veterinarians, animal health technicians and veterinary nurses in the COVID-19 era available online from May to July 2020.

Please answer the following questions about ethically challenging situations. For the purposes of this survey, an ethically challenging situation is defined as a situation where we are required to manage competing choices, or where there may be conflict between the interests of different stakeholders or parties who may be impacted by a decision.

Prior to the advent of COVID-19, how often would you experience an ethically challenging situation? (Please choose one option)

- Less than once per month
- Several times per month
- Several times per week
- Daily
- Several times per day
- Never

Since the advent of COVID-19, how often would you experience an ethically challenging situation as veterinary team member? (Please choose one option)

- Less than once per month
- Several times per month
- Several times per week
- Daily
- Several times per day
- Never

Since the advent of COVID-19, describe the most COMMON ethically challenging situation you have encountered as a veterinary team member? (This does not have to be specific to COVID-19. Please be careful not to include potential identifying information such as the names of individuals or workplaces in your response).

Since the advent of COVID-19, describe the most STRESSFUL ethically challenging situation you have encountered as a veterinary team member? (If the response is the same as above, enter “same”. (This does not have to be specific to COVID-19. Please be careful not to include potential identifying information such as the names of individuals or workplaces in your response).

The following is a list of situations where decision may be ethically challenging. How often have you faced these?

1. Challenging decisions about distribution of personal protective equipment
2. Challenging decisions about distribution of other equipment such as ventilators
3. Challenging decisions due to a lack of resources
4. Challenging decisions about how to proceed when clients have limited finances
5. Conflict between the interests of clients and the interests of their animals
6. Conflict between the interests of colleagues and my own interests
7. Conflict between the interests of my employer and my own interests
8. Conflict between the interests of my employees and my own interests
9. Challenging decisions about what counts as an essential veterinary service
10. Challenging decisions about whether to perform non-contact veterinary visits
11. Conflict between personal wellbeing and professional role
12. Conflict between the wellbeing of family/household members and professional role
13. Challenging decisions about how to manage captive wildlife
14. Challenging decisions about how to manage free-ranging wildlife
15. Challenging decisions about how to manage feral or declared pest animals
16. Challenging decisions about management of laboratory animals
17. Challenging decisions regarding human resources during economic downturn
18. Challenging decisions about whether to use skills for animal health or human wellbeing
19. Challenging decisions about the provision of practical experience or training to veterinary/animal health technician/nursing students
20. Other (Please describe. Please be careful not to include potential identifying information such as the names of individuals or workplaces in your response).

For each item listed above:

- Monthly
- Several times per month
- Several times per week
- Daily
- Several times per day
- Never

How stressful did you find each of the following ethically challenging situations? (*i.e. those listed 1-20 above*) (select “not applicable” if you have not encountered this ethically challenging situation).

- Not stressful at all
- A little stressful
- Moderately stressful
- Very stressful
- Maximally stressful

- Not applicable

In answering the following questions, please consider the most recent situation where you felt significant difficulty deciding upon the ethically right thing to do. Please choose a situation that has run its course. The example can come from any aspect of patient care or any other kind of situation in your workplace. Please answer the following questions in relation to that situation.

What type of situation was this (please choose one option):

1. Challenging decisions about distribution of personal protective equipment
2. Challenging decisions about distribution of other equipment such as ventilators
3. Challenging decisions due to a lack of resources
4. Challenging decisions about how to proceed when clients have limited finances
5. Conflict between the interests of clients and the interests of their animals
6. Conflict between the interests of colleagues and my own interests
7. Conflict between the interests of my employer and my own interests
8. Conflict between the interests of my employees and my own interests
9. Challenging decisions about what counts as an essential veterinary service
10. Challenging decisions about whether to perform non-contact veterinary visits
11. Conflict between personal wellbeing and professional role
12. Conflict between the wellbeing of family/household members and professional role
13. Challenging decisions about how to manage captive wildlife
14. Challenging decisions about how to manage free-ranging wildlife
15. Challenging decisions about how to manage feral or declared pest animals
16. Challenging decisions about management of laboratory animals
17. Challenging decisions regarding human resources during economic downturn
18. Challenging decisions about whether to use skills for animal health or human wellbeing
19. Challenging decisions about the provision of practical experience or training to veterinary/animal health technician/nursing students
20. Other (Please describe. Please be careful not to include potential identifying information such as the names of individuals or workplaces in your response).

I considered that ultimately, my primary obligation was to: (please choose one option)

- Individual animal patients
- Individual clients
- My employer
- My colleagues
- Conservation of species
- The Government
- The community as a whole
- Other (please specify)

How stressful did you find this situation? (please choose one option)

- Not stressful at all
- A little stressful

- Moderately stressful
- Very stressful
- Maximally stressful
- Not applicable

Which of the following did you employ when faced with this ethically challenging situation?
(select all that apply)

- Use of an ethical decision-making framework (for example, an ethical matrix, a cost:benefit analysis, a utilitarian framework such as the 3Rs)
- Reference to a code of professional conduct and/or veterinary oath
- Workplace policies
- Consultation with an ethics committee
- Discussion with colleagues
- Referring the decision to a colleague
- Refer to the published literature specifically about ethics
- Consultation with a health care professional (e.g. psychologist, counsellor)
- Consultation with a community leader or priest
- Discussion with a spouse or partner
- None of the above
- Other (please specify)

How helpful were these strategies in enabling you to resolve this issue? (please choose one option)

- Not helpful at all
- Somewhat helpful
- Helpful
- Very helpful
- Maximally helpful
- Not applicable

How would you rate the acceptability of the eventual outcome? (please choose one option)

- Unacceptable
- Uncertain
- Acceptable, could be improved
- Good
- Ideal

What were the barriers to resolving ethical issues to your satisfaction? (Please select all that apply)

- Lack of time
- Financial limitations
- Difficulty in communicating with clients
- Difficulty in communicating with colleagues
- Pressure from an employer or client

- Differences in values between stakeholders
- Conflicts of interest (mine)
- Conflicts of interest (another stakeholder)
- Workplace policies
- Concerns about liability
- I am not aware of any barriers to resolving ethical issues to my satisfaction
- Other (please specify)

In reflecting back on this case, which of the following types of assistance or resources would you have found useful? (please select all that apply)

- Additional help in clarifying the ethical issues for yourself, your patient or your colleagues
- Additional help in obtaining more complete information from what you had available to you
- Additional help in mediating conflict among different points of view
- Alternative suggestions for ethically appropriate courses of action
- Professional reassurance that your decision was the correct one
- None of the above
- Other (please specify)

We are now going to ask you some demographic questions, as well as some questions about your training, experience and role.

I am a: (please choose one option)

- Veterinarian
- Animal health technician
- Veterinary nurse
- Other animal health professional

In which country do you work?

- Drop down menu listing all countries

In which year did you graduate?

- Drop down menu listing years 1940-2020

In which year were you born?

- Drop down menu listing years 1920-2003

What is your gender?

- Female
- Male

- Other

What constitutes the majority of your workload? (please choose one option)

- Companion animal practice clinical
- Mixed animal practice clinical
- Exotic/unusual pet practice clinical
- Zoo and/or wildlife practice clinical
- Equine practice clinical
- Practice management
- Academia/teaching
- Scientific research/laboratory animals
- Government
- Non-Government organisation
- Industry (e.g. pharmaceutical companies, food companies)
- No longer working as a veterinarian
- Other (please describe what constitutes the majority of your workload in words)

How many hours per week do you work in your role as a veterinarian, animal health technician or veterinary nurse? (select one option)

- 0-10
- 11-20
- 21-30
- 31-40
- 41-50
- 50+

In obtaining your qualification for your current role, where you taught specifically about ethics? (select one option)

- Yes
- No
- Don't recall

Have you undertaken any of the following since qualifying as a veterinarian/animal health technician or veterinary nurse? (please select all that apply)

- University coursework (diploma/degree) in ethics or bioethics
- Continuing professional development in ethics
- Sat on an institutional ethics committee
- Other (please specify)

How confident do you feel in dealing with ethically challenging situations in your workplace? (please choose one option)

- Not confident at all

- Underconfident
- Confident enough that I can get by
- Reasonably confident
- Couldn't be more confident

In my workplace, I feel that I am free to make and act on ethical decisions: (select the option that applies to you most of the time)

- Never
- Rarely
- Sometimes
- Most of the time
- Always

Is there anything else you would like to add about your experience with ethically challenging situations since the advent of COVID-19? (Please be careful not to include potential identifying information such as the names of individuals or workplaces in your response).

Supplementary Table 2. Professional organisations, professional bodies and special interest groups who shared the link to the survey on ethically challenging situations encountered by veterinarians, animal health technicians and veterinary nurses in the COVID-19 era available online from May to July 2020.

Parties sharing the research invitation on behalf of the study team	Mode of recruitment	Relevance to target population	Professional background targeted	Country targeted
World Veterinary Association	Facebook and Twitter accounts	Professional association	Veterinarians	International
Veterinary Surgeon's Board, Western Australia	Email newsletter	Professional Body	Veterinarians	Australia
Veterinary Board of Tasmania	Email	Professional body	Veterinarians	Australia
One Welfare World	Twitter account	Professional interest group	Veterinarians, animal health technicians, veterinary nurses	International

Cat Protection Society NSW	Facebook page	Animal welfare organisation	Veterinarians, veterinary nurses	Australia
British Veterinary Association	Email	Professional association	Veterinarians, veterinary nurses	UK
Commonwealth Veterinary Association	Email	Professional association	Veterinarians	International
Veterinary Public Health Institute, University of Bern, Switzerland	Email	University	Veterinarians	Switzerland
Federation of Asian Veterinary Associations	Website	Professional association	Veterinarians	Asia
European College of Animal Welfare and Behaviour Medicine	Facebook	Professional association	Veterinarians	Europe
Veterinary Practitioner's Board of NSW	Newsletter	Professional body	Veterinarians	Australia
COVID-19 Daily Digest for Animal Shelters	Newsletter	Multiple animal welfare organisations	Veterinarians, animal health technicians, veterinary nurses	North America
Veterinary Nurses Council of Australia	Facebook	Professional association	Veterinary nurses, animal health technicians	Australia
Australian and New Zealand College of Veterinary	College newsletter; animal welfare	Professional association	Veterinarians	International

Scientists (ANZCVS)	chapter newsletter			
Sydney School of Veterinary Science	Facebook; Twitter; staff newsletter	University	Veterinarians, animal health technicians, veterinary nurses	International
Australian Veterinary Association	Facebook; newsletter	Professional association	Veterinarians	Australia
Human Society Veterinary Medical Association	Facebook	Professional association	Veterinarians; animal health technicians; veterinary nurses	International
Getting 2 Zero	Facebook; newsletter	Animal welfare organisation	Veterinarians; animal health technicians; veterinary nurses	International
Vets Beyond Borders	Facebook; newsletter	Animal welfare organisation	Veterinarians; animal health technicians; veterinary nurses	International
Centre for Veterinary Education	Facebook; newsletter	Continuing Education provider	Veterinarians	International
Society for Veterinary Medical Ethics	Electronic mailing list	Professional association	Veterinarians; animal health technicians; veterinary nurses	International

Supplementary Table 3. Key themes identified in thematic analysis of free-text responses to online survey questions regarding the most common and most stressful ethically challenging situations (ECS) encountered by veterinarians, animal health technicians and veterinary nurses since the advent of the COVID-19 global pandemic (n=540).

Theme	Sub-theme	Examples
Biosecurity	Non-contact consultations (in general)	<p><i>“The balance between upholding social distancing in the clinic and being sympathetic to the emotional needs of clients who want to stay with their pets” (531, veterinarian, Australia).</i></p> <p><i>“Delivering bad news in a non-private situation (in the carpark, usually with other owners nearby)” (317, veterinarian, Australia).</i></p> <p><i>“Not allowing animal caretakers and managers into the zoo hospital during procedures and having to manage and mitigate the increased communication and education between veterinary team members and animal caretakers that is necessary as a result” (504, veterinarian, USA).</i></p> <p><i>“Keeping owners out of the consult has been wonderful, better than before. Owners more focussed and attentive to their pets” (342, veterinarian, Australia).</i></p>
	Non-contact consultations (euthanasia)	<p><i>“Not allowing people to visit or accompany their dying pets into emergency” (361, veterinary nurse, Australia).</i></p> <p><i>“Limiting number of clients present for euthanasia and not being able to provide physical reassurance or hugs” (318, veterinarian, Australia).</i></p> <p><i>“I was called out to an after-hours call on a collapsed dog. The dog died just minutes before arrival at the clinic. We tried to revive it to no avail. It was the middle of the night, freezing cold and pouring with rain and we were about to wrap the body up and take it away and the owners wanted some time with it to say goodbye. We couldn't let them inside so they had to say goodbye outside where they and the dog got absolutely saturated, cold, and couldn't even see the dog properly” (115, veterinary nurse, Australia).</i></p> <p><i>“in the case of very sick animals/emergencies/euthanasia's owners are distressed about not being able to be with their animal. Do you cave and let them be there knowing that if you get covid19 the entire clinic team and possibly other clients could get infected, or stick to the policy knowing you are causing emotional distress to the owner and animal?” (136, veterinarian, Australia).</i></p>

		<p><i>"Making the decision to allow owners into the clinic for euthanasia of their pet. I was happy to do this, but at the same time thought of a friend of mine who died and I was unable to attend his funeral"</i> (126, veterinarian, Australia).</p>
	<p>Impact of social distancing on animal welfare and safety of the veterinary team.</p>	<p><i>"Examining dogs (and cats) without the owner present has more frequently resulted in the dog being very anxious (often with risk of aggression towards myself and the vet nurse assisting me)"</i> (332, veterinarian, Australia).</p> <p><i>"Trying to get pets to come inside with me while wearing a mask, gloves and gown (which is super scary to them) while the owner stays in the car. They usually try to pull back towards their owner or won't move at all. (mostly only dogs since cats are in carriers) It makes it scary that I might lose them especially since we are on a busy road and near two busy train routes. We try to bring out two leashes to control them but they are slip leads and tend to choke them if they pull away hard"</i> (47, veterinarian, Australia).</p> <p><i>"The most stressful experiences involve traversing the need for social distance between humans with many of the animals' needs for their people to be present to comfort them during medical evaluation. I run a low-stress/fear-free hospital, so I see more than my share of anxious or aggressive patients. Treating them fairly is especially tricky right now"</i> (187, veterinarian, USA).</p>
	<p>Conflict between provision of veterinary services and public health</p>	<p><i>"Providing animal care but in so doing risking the health of my team, the clients and myself, and by staying open risking the spread of the pandemic"</i> (50, veterinarian, Australia).</p> <p><i>"I sit on a board for a veterinary charity and need to consider the risks and welfare of the people and animals who are involved in the charity, including volunteers/staff and also beneficiaries and their pets. This includes deciding to suspend services or continue to run services (both carry risks and benefits)"</i> (407, veterinarian, Australia).</p> <p><i>"If we were doing the right thing by humanity continuing performing routine procedures using up precious PPE and exposing ourselves to close interactions with team members and the public"</i> (465, veterinarian, Australia).</p> <p><i>"Choosing between animal health and welfare and the health and wellbeing of staff"</i> (524, veterinarian, USA).</p>
	<p>Conflict between personal role and</p>	<p><i>"high risk to myself for contacting [sic] disease or being a carrier and passing the disease on to my family"</i> (466, veterinarian, Australia).</p>

	personal wellbeing or family wellbeing	<p><i>"Should I personally stop work to shield my vulnerable son but this will leave my colleagues and patients under more stress" (910, veterinarian, China).</i></p> <p><i>"What exposure limit is acceptable?" (respondent 780).</i></p>
	What counts as an essential service	<p><i>"Having to decide if a case is considered "essential" or "non-essential". Sometimes it may seem like something that can be delayed, but it depends on the owner's ability to administer proper care. On a daily basis, we need weigh the potential for the condition to get worse against the public health and safety risk of having the client bring the pet in" (83, veterinarian, Singapore).</i></p> <p><i>"Decisions on delaying procedures eg neutering/vaccination that aren't considered essential now but overall I feel are essential for animal welfare" (108, veterinarian, United Kingdom).</i></p> <p><i>"My work focuses on equine (Thoroughbred) reproduction. The ethical challenge was whether this work could be classified as 'essential' during the lockdown period. Guidance from [identifier removed] was inadequate and confusing" (213, veterinarian, Republic of Ireland).</i></p> <p><i>"Trying to decide what is life threatening and what isn't. Dental disease-not immediately life threatening but potentially may cause life altering issues if not treated" (430, veterinary nurse, United Kingdom).</i></p>
	Conflict about essential service	<p><i>"Clients demanding to be seen as an emergency when it is patently not an emergency and already full to capacity" (476, veterinarian, UK).</i></p> <p><i>"Being asked to perform non-essential services by my employer" (227, veterinarian, USA).</i></p> <p><i>"As a parent - having two kids at home whilst being deemed an 'essential worker' and working outside the home for more hours than ever - felt like the worse [sic] parent ever. As a veterinarian in a corporately owned small animal clinic - agreeing with the corporate we are an essential service but surely only for essential things. Corporate argued essential for everything even a routine desexing surgery or a nail trim. Felt I was undermining the efforts in the human pandemic by allowing people to travel to their vet for a trivial nail trim" (465, veterinarian, Australia).</i></p> <p><i>"I am a regulatory vet and during the height of the pandemic in [identifier removed] the US was still importing</i></p>

		<p><i>and exporting horses, which are not an essential animal for food supply, etc. This put everyone from the vets, technicians, grooms, etc in contact with multiple people during each shipment, increasing everyone's risk of exposure to COVID, because we were considered "essential" personnel to keep the port open and facilitate trade" (244, veterinarian, USA).</i></p> <p><i>"The most stressful challenge has been the question around spay/neuter. It was deemed a "non-essential" service by our state and all of the national professional animal welfare organizations said spay/neuter should be halted at the beginning of the pandemic. However, I work in an area where there is significant overpopulation of cats in particular. 3 months of no spay/neuter has been very stressful at the height of kitten season" (85, veterinarian, USA).</i></p>
	Others failing to respect biosecurity	<p><i>"Clients challenging / complaining about the safety protocols we have put in place to both protect them and our team" (264, veterinarian, Australia).</i></p> <p><i>"Clients who refuse to accept rulings around a lack of visitation to hospitalised patients - not sure how ethically challenging it is but it's certainly challenging emotionally and also to not lose compassion when they make our job harder through emotional blackmail techniques" (209, veterinarian, Australia).</i></p> <p><i>"That some co-workers don't want to use facemask all the time, and sometimes we have to work very close, so we can either work alone, risk working with them or calling them to the administrations, knowing that they'll face problem, even send home (without pay), and we are already short staff because we are divided in shifts" (185, veterinarian, Mexico).</i></p> <p><i>"working close together with colleagues that do not wear protection like face masks and therefore increase my risk to get infected (and this being announced as acceptable by my boss)" (79, veterinarian, Germany).</i></p>
	Sickness presenteeism	<p><i>"Second-hand information of a colleague...with Covid-19 symptoms (not confirmed) who had reported for work and had not taken a COVID-19 test" (21, veterinarian, Australia).</i></p> <p><i>"A team member becomes ill, tests positive for COVID and fails to disclose it to co-workers" (451, veterinarian, USA).</i></p> <p><i>"Self-monitoring for symptoms and trying to make the decision of being on the safe side/staying home vs. coming</i></p>

		<p><i>into work as usual because you don't want to be an alarmist/create more work for peers by your absence" (35, veterinary nurse, USA).</i></p> <p><i>"Developing upper respiratory symptoms & being concerned about notifying employers due to risk of losing job sooner (as a result of Covid - job was terminated)" (300, veterinarian, Australia).</i></p>
Client financial limitations	Financial limitations impacting standard of care	<p><i>"Client cannot afford optimal treatment so a "lesser" approach is chosen. Eg dispensing antibiotics when a stitch up would be in the animal's best interest" (537, veterinarian, Australia).</i></p> <p><i>"Owners that are not able to pay for veterinary services due to loss of income and their pets are not able to obtain that standard of care that usually the owners are able to afford for them. Sometimes this means a patient receives suboptimal care (e.g. when hospitalization is recommended but owners are not able to afford during these times). This is tough as you know usually these clients would do anything for their pet yet as a practice there is a limit on how much credit u can extend to these clients" (58, veterinarian, Singapore).</i></p> <p><i>"The most common ethically challenging issue is the inability of clients to afford treatment for their pets. This results in substandard treatments being used which prolong animal pain/illness..." (409, veterinarian, Australia).</i></p>
	Euthanasia of animals with treatable conditions	<p><i>"Individuals who are unable to afford veterinary care due to losing their job during this pandemic - owners having to surrender their animals as they cannot afford care, or leaving medical issues for longer as they were unable to come in earlier..." (135, veterinarian, Australia).</i></p> <p><i>"Euthanasia due to lack of finances secondary to loss of employment" (490, veterinarian, Australia).</i></p> <p><i>"Increase in fixable cases being euth [sic]" (366, veterinary nurse, USA).</i></p>
Animal welfare	End of life decision making	<p><i>"Being in a zoo environment, end-of-life decisions are made by a group; ethically it is challenging when team members do not always agree on the best course of action" (446, veterinarian, USA).</i></p> <p><i>"End of life decisions" (158, veterinarian, Canada).</i></p>

		<p><i>"Deciding on the right time for end of life in terms of balancing the welfare needs of the patient with the emotional needs of the client. The clients are more vulnerable at this challenging time of COVID-19, particularly our elderly clients living on their own who are isolated from their family and friends"</i> (172, veterinarian, Australia).</p> <p><i>"Decisions on euthanasia in wildlife cases"</i> (492, veterinarian, USA).</p>
	Euthanasia for objectionable reasons	<p><i>"Euthanasia of an animal who still got a good chance with treatment but owners won't bother (not money-related)"</i> (399, veterinarian, France).</p> <p><i>"Euthanasias of convenience"</i> (310, veterinarian, USA).</p> <p><i>"Culling healthy animals"</i> (250, animal health technician, Australia).</p>
	Futile treatment or euthanasia refusal	<p><i>"Client wishes to continue treatment when I consider it not in the best interest of the animal"</i> (231, veterinarian, Australia).</p> <p><i>"Persuading an animal owner that euthanasia is the best for the animal. Not seeing the animal enough due to Covid19 as a chronic condition and owner wanting just more pain relief"</i> (536, veterinarian, Australia).</p> <p><i>"Working with a rescue group who wants to spend a large amount of their time and resources on an untreatable animal's condition despite the likelihood it will continue to have a poor quality of life and be unable to find a suitable home"</i> (312, veterinarian, Australia).</p> <p><i>"Someone needing to euthanase their dog (for medical reasons - 100% necessary and the kindest thing for the dog...) and being quite reluctant to do so because it is their only companion in isolation"</i> (160, veterinarian, Australia).</p>
Working conditions	Increased workload	<p><i>"EVERY DAY – The increase of phone calls, people demanding to see the vet, not having enough staff, managing the clients in the car park, keeping distancing managed, cleaning...long days, multi tasking -every day, no breaks"</i> (100, veterinary nurse, Australia).</p> <p><i>"Working at a ridiculous pace, to the extent of no breaks, 11-12 hour days & patient care compromised"</i> (367, veterinary nurse, Australia).</p> <p><i>"Insufficient resources to meet patient/client demands"</i> (249, veterinarian, UK).</p>

		<i>"With the increase in unemployment benefits and jobkeeper our clients have more money (and time) to access our services. The usual ethical issues are just as common. The new issue is that the significant increase in demand has exceeded our resources and animals are having to wait longer for treatment"</i> (383, veterinarian, Australia).
	Reduced staff and/or services	<i>"We have had to limit services provided which results in ethically challenging situations"</i> (431, veterinarian, USA). <i>"Staff being furloughed and replaced by higher paid administrative staff. These staff members then provided animal care, work in nutrition centre etc, often with no prior experience or having not performed this work in many cases over a decade"</i> (443, veterinarian, USA). <i>"Balancing the needs of the hospital to have a teams based roster to minimise risk should someone contract COVID (so only half the team needs to isolate) with the needs of our staff to work full time or work certain days to receive the same shift loadings they normally would..."</i> (515, veterinarian, Australia).
	Inability to provide appropriate level of care	<i>"Surge of clients wanting to be seen and vets taking on a much bigger daily workload. Mixed with less nurses working longer shifts leading to less individual care and attention time for each patient, higher chance of errors. Putting all patients at risk due to accepting nearly double the workload with half the staff"</i> (130, veterinary nurse, Australia). <i>"Being so busy in the ER that we can't properly take care of our patients while still charging clients a significant amount of money"</i> (293, veterinary nurse, Canada). <i>"Cutting staffing by half and working in 2 teams but having no reduction in workload means that the smaller teams are overworked and pushed beyond capacity leading to compromised patient care"</i> (75, veterinary nurse, Australia).
	Pressure to generate income	<i>"job threatened because I'm not producing enough revenue - told to charge more with no consideration to medical necessity"</i> (89, veterinarian, USA). <i>"Balancing seeing as many cases as possible to ensure business revenue stayed as high as possible during a period of financial uncertainty with managing a caseload which prioritised patient care etc"</i> (462, veterinarian, Australia).

		<i>"The constant push by the manager to bring in patients and not providing appropriate time to ensure proper evaluation" (525, veterinary nurse, USA).</i>
	Team morale	<i>"Same as staff as per their comments I'm ruining their life as we put in restrictions if not allowing work gathering or food sharing or informing them to try not to socialise during the pandemic together" (237, other animal health professional, Australia).</i> <i>"team stress and insecurity about jobs" (221, veterinary nurse, Australia).</i> <i>"Having to tell the employees that my boss has decided that they have been laid off and will have no health insurance" (4, other animal health professional, USA).</i>
Client relations	Communication challenges	<i>"problems in communication (barriers, masks)" (143, veterinarian, Germany).</i> <i>"Communication with clients is more stressful and is creating more ethically challenging situations. I am no longer able to give as much detail and it is more difficult to check for client understanding" (7, veterinarian, Australia).</i> <i>"Lack of ability for owners to see what you have done (thoroughness of physical exam, proof of physical exam findings e.g. pain), lack of ability for me to visualise non-verbal signals of owners understanding/confusion of the disease process - all of which lead to frustrated owners, reduced treatment outcomes and complaints" (466, veterinarian, Australia).</i> <i>"communication breakdown with a client that if they had been permitted to enter the building to see their -pet would not have resulted in the verbal confrontation and one star google review it did" (228, veterinarian, Australia).</i>
	Mismatched expectations	<i>"Wishes and expectations of veterinarians versus clients" (324, veterinarian, Australia).</i> <i>"The same issues as before COVID19. The mismatch of client expectations of vets to the ability of vets to provide an expected level of service for a perceived financial undertaking. Along with the mismatch of employee perceived self-worth for salaries, yet imposter syndrome making them not bill correctly. This is eternal" (327, veterinarian, Australia).</i> <i>"Researchers who use animals demanded that animal supply was switched on immediately when the returned to work. This was demanded with no guarantee that all</i>

		<i>animals produced would be used. I had to engage in some very difficult conversations with researchers who are our customers” (461, veterinarian, Australia).</i>
	Upset/aggressive/abusive clients	<i>“Abusive clients have increased...” (319, veterinarian, Australia).</i> <i>“Public stress levels and explaining why they can’t be with their pet during a consult (emergency clinic)” (341, veterinary nurse, Australia).</i>

Supplementary Table 4. Key themes identified in thematic analysis of free-text responses to online survey question “is there anything else you would like to add about your experience with ECS since the advent of COVID-19). N=195.

Theme	Sub-theme	Examples
The pandemic heightening anxiety/stress	Among people in general	<i>“Challenging client interactions have increased - the public seem less rational” (534, veterinarian, Australia).</i> <i>“I feel the stress has provoked worse behaviour among a couple of my colleagues and employees and among my clients” (229, veterinarian, China).</i>
	In veterinary settings	<i>“It has increased the amount of emotional, physical and mental stress. This has a negative effect on clinical decision making and the ability to decide the best course of action when faced with these ethically challenging situations” (139, veterinarian, Australia).</i> <i>“COVID is a magnifying glass for all of the problems in the veterinary field... bad management, abusive owners, overwork, underpay, stress, burnout... all the problems are the same as before, they are just magnified” (225, veterinarian, Australia).</i>
The challenge of maintaining personal wellbeing	Difficulty accessing support networks	<i>“Balancing mental health away from work, without all the usual strategems available (personal interactions with friends/family; gym, dating)” (99, veterinarian, Australia).</i> <i>“I missed my partner and my own pets. Worked a lot of unpaid hours. Had minimal time awake at home” (475, veterinary nurse, New Zealand).</i> <i>“I’ve never felt so alone as in COVID 19” (28, veterinarian, Canada).</i>
	Pandemic leading to stressors that impact personal wellbeing	<i>“Personally COVID caused me to become very burnt out due to increased euthanasia, increased stressed and rude clients and increased people who cannot treat their pets” (269, veterinarian, Australia).</i>

<p>Veterinary teams and the veterinary professional strategies for managing in the pandemic situation</p>	<p>Teams navigated challenges well</p>	<p><i>"...If anything, I have seen people being kinder and more flexible since COVID-19. We work hard at communication and clarity, and we just ramped it up"</i> (113, veterinarian, Canada).</p> <p><i>"We found the best strategy was to listen to everyone's concerns from the most productive vet down to the newest hospital assistant. Open communication was key. The most difficult part was the time limitation, decisions had to be made very quickly and there were no guidelines on how to do it right. Leadership through our governing body would have been helpful but we didn't have time to wait so used our best ethical judgement to make a call for staff and clients"</i> (511, veterinarian, Canada).</p> <p><i>"COVID itself I feel has been generally well managed in the veterinary practice situation"</i> (407, veterinarian, Australia).</p>
	<p>Veterinary teams are well equipped to deal with pandemics</p>	<p><i>"I think a lot of veterinarians have had to fall upon their public health training to make decisions for how to practice during this time, both to protect the staff members they work with and their clients/ visitors. I think we are uniquely trained to be able to make informed decisions to minimize disease transfer among those people (+/- animals) and am proud to be able to help make those decisions. Many business-owners in other segments of the population don't have this background, so it may be even more stressful for them given their lack of training in epidemiology"</i> (446, veterinarian, USA).</p>

Supplementary material related to the article: Quain, A., Mullan, S. & Ward, M. P. 2021. Risk Factors Associated With Increased Ethically Challenging Situations Encountered by Veterinary Team Members During the COVID-19 Pandemic. *Frontiers in Veterinary Science*, 8. <https://doi.org/10.3389/fvets.2021.752388>

Supplementary Table 1. Key to variable transformation to facilitate statistical analysis.

Category	Original variable	Transformed variable
Role	Veterinarian	Veterinarian
	Animal health technician	Not veterinarian
	Veterinary nurse	Not veterinarian
	Other animal health professional	Not veterinarian
Gender	Female	Female
	Male	Male
	Other	Excluded from analysis due to small sample size.
Country	Australia	Australia and New Zealand
	New Zealand	Australia and New Zealand
	USA	USA and Canada
	Canada	USA and Canada
	Austria	Other
	Belarus	Other
	Cambodia	Other
	China	Other
	Denmark	Other
	France	Other
	Hong Kong	Other

	Jamaica	Other
	Lithuania	Other
	Mexico	Other
	Netherlands	Other
	Republic of Ireland	Other
	Singapore	Other
	Spain	Other
	Thailand	Other
	United Kingdom	Other
	Zimbabwe	Other
Hours worked	0-10	0-30
	11-20	0-30
	21-30	0-30
	31-40	31-40
	41-50	41->50
	50+	41->50
Caseload	Companion animal practice clinical	Companion animal clinical practice
	Mixed animal practice clinical	Other clinical practice
	Exotic/unusual animal practice clinical	Other clinical practice

	Zoo and/or wildlife practice clinical	Other clinical practice
	Equine practice clinical	Other clinical practice
	Practice management	Other clinical practice
	Academia/teaching	Non-clinical role
	Scientific research/laboratory animals	Non-clinical role
	Government	Non-clinical role
	Non-government organisation	Non-clinical role
	Industry (e.g. pharmaceutical companies, food companies)	Non-clinical role
	No longer a veterinarian	Non-clinical role
	Other	Non-clinical role
Post-qualification ethics training	Continuing professional development	Yes
	Sat on an institutional ethics committee	Yes
	University coursework in an ethics or bioethics degree	Yes
	Another form of ethics training	Yes
	None	No
	Not confident at all	Not confident at all/underconfident

Confidence in resolving ethically challenging situations	Underconfident	Not confident at all/underconfident
	Confident enough that I can get by	Confident enough that I can get by
	Reasonably confident	Reasonably confident/couldn't be more confident
	Couldn't be more confident	Reasonably confident/couldn't be more confident
Autonomy	Never	Never/rarely
	Rarely	Never/rarely
	Sometimes	Sometimes
	Most of the time	Most of the time/always
	Always	Most of the time/always

Supplementary material related to the article: Quain, A., Mullan, S. & Ward, M. P. (2022). "There was a sense that our load had been lightened": evaluating outcomes of virtual ethics rounds for veterinary team members. *Frontiers in Veterinary Science* <https://doi.org/10.3389/fvets.2022.922049>

Supplementary Material

1 Supplementary tables

Table 1. Ethics rounds session schedule adapted from [1].

Section	Approximate time allocation	Content
Part 1	10 minutes	<p>Facilitator introduction</p> <p>Introduction to concepts of moral stress/distress/injury, and ethics rounds as an intervention utilised in human healthcare, including potential risks and benefits of ethics rounds.</p> <p>Ground rules</p> <ul style="list-style-type: none"> - Confidentiality - Impartiality - Blameless - Dynamic (participants free to change their position)
Part 2	15 minutes	<p>Briefly describe a specific or type of ethically challenging situation you have witnessed.</p> <p>Select an example to work through</p>
	5 minutes	Comfort break
Part 3	20 minutes	<p>Identify at least two courses of action available.</p> <p>Justify each by reference to:</p> <ul style="list-style-type: none"> a) Any relevant laws/codes of practice b) Your professional responsibilities; c) Key ethical theories (utilitarianism, deontology, principlism, virtue ethics, Fraser's practical ethic) <p>Facilitator helps with a-c.</p>
	10 minutes	Decide on which course of action is the most justified and why. This may or may not be what was done at the time.
Part 4	20 minutes	<p>Reflect on what has been learned from this example</p> <ul style="list-style-type: none"> a) What are your feelings now about the ethically challenging situation? b) Are there wider implications?

		c) Have you learnt anything about yourself or others through the actual event or discussion today?
	5 minutes	How might you manage ethical challenges in light of today's discussion?
	5 minutes	Close – request for further comments or questions; reminder of confidentiality; review of support resources.

Supplementary Table 2. Survey of veterinary team members pre- and post- participation in ethics rounds.

Please rate the extent to which you agree to the following statements, when thinking about your daily practice. If you have participated in ethics rounds, answer these questions in light of the session you have participated in. Note "we" refers to the people with whom you work (i.e. colleagues).					
Statements adapted from the Euro-MCD instrument 2.0 [2]	Strongly agree	Slightly agree	Slightly disagree	Strongly disagree	Don't know/Not applicable
Moral competence <i>Subdomain: moral sensitivity</i>					
1. I recognise a situation as being ethically challenging	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
2. I am aware of others perspectives in ethically challenging situations	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
<i>Subdomain: Analytical Skills</i>					
3. I can identify the different values at stake in ethically challenging situations	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
4. I can formulate arguments in favour of and against different courses of action in ethically challenging situations	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
<i>Subdomain: Virtuous attitude</i>					
5. I listen with an open mind to others when discussing an ethically challenging situation	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
6. I speak up in ethically challenging situations	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Moral teamwork <i>Subdomain: Open dialogue</i>					

7.	We openly express our viewpoints in ethically challenging situations	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
8.	We all have opportunities to express our viewpoints when discussing ethically challenging situations	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
9.	We respect different viewpoints when discussing ethically challenging situations	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
<i>Subdomain: Supportive relationships</i>						
10.	We feel secure to share emotions in ethically challenging situations	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
11.	We support each other when dealing with ethically challenging situations	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Moral action <i>Subdomain: moral decision-making</i>						
12.	We made decisions on how to act in ethically challenging situations	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
13.	We base our decisions on moral considerations in ethically challenging situations	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
<i>Subdomain: responsible care</i>						
14.	We are responsive to the values and needs of patients and clients in ethically challenging situations	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
15.	We are able to explain and justify our care towards patients and clients	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
The following questions were only asked if the respondent indicated that they had already participated in ethics rounds.						
Gender?						
Drop down menu listing the following:						
<ul style="list-style-type: none"> • Female • Male • Other 						

Please choose one option that best describes your role (Drop down menu listing the following):

- Veterinarian
- Veterinary nurse or animal health technician
- Other (if other, please specify)

What is your age in years? (please enter a whole number) __

Is there anything you wish to add about ethics rounds? (Please be careful not to include potential identifying information such as the names of individuals or workplaces in your response).

(free text response)

Is there anything you wish to add about ethically challenging situations you have encountered in the course of your work? (Please be careful not to include potential identifying information such as the names of individuals or workplaces in your response).

(free text response)

Supplementary Table 3. Univariable linear regression analysis for Euro-MCD change score (for supplementary)

Predictor	Coefficient (B)	Standard error	95% confidence interval for B lower	95% confidence interval for B upper	P-value	R-squared
(Constant)	5.9	2.3	1.4	10.5	0.01	0.00
Gender	-0.2	1.8	-3.9	3.4	0.91	0.00
(Constant)	3.9	1.4	1.1	6.7	0.01	0.03
Role	1.0	0.7	-0.3	2.3	0.14	0.03
(Constant)	8.5	2.3	3.9	13.2	<.001	0.02
Age	-.07	0.05	-0.17	0.04	0.21	0.02

Supplementary Table 4. Types of ethically challenging situations raised by virtual ethics rounds participants, categorized using codebook analysis, in descending order of frequency, with examples.

Theme	Example(s)	Frequency
How to manage a client who refuses a recommendation or does not adhere to advice	Client refusal to euthanase an animal with poor/deteriorating welfare or pursue recommended treatment.	15

Euthanasia of companion animals	Client requests euthanasia for reasons that veterinary team member does not agree with/does not believe are in the interests of the animal.	14
Clients with limited finances	Clients elect euthanasia on economic grounds. Clients cannot afford recommended diagnostics or treatment.	14
Collegial relations and wellbeing of veterinary team members	How to manage conflict between veterinary team members, for example regarding case management. Pandemic specific challenges – should vaccination of veterinary team members be mandated? How to balance health and safety of the veterinary team with animal welfare/client interests.	14
Management of stray or unowned dogs and cats	How to assess animals appropriately when their behaviour may be negatively impacted by fear (particularly cats). How to distribute limited resources (staff time, financial investment, shelter) to stray or unowned animals in shelters.	10
What should veterinary team members do when clients breach welfare laws or regulations?	Under what circumstances should veterinary team members report clients for breaching animal welfare laws or regulations (for example, clients who own a banned breed or exotic species, clients who engage in animal hoarding)? How should veterinary team members respond to requests from clients to breach legislation/codes of practice? (e.g., requests to alter records to increase the chances of the client receiving an insurance pay out).	10
Working with or assisting other team members who are providing incompetent care	How to manage when another team member is not performing to standard, utilizing out of date techniques (e.g., inadequate analgesia). Working with senior team members/employers who are abusive, violent or cruel to humans or animals.	7
Shared decision making and informed consent	How to manage if the client is not available to provide consent to an urgently required intervention. Managing when multiple parties have an interest in an animal or animals and may not all consent. What to do when a colleague does not appear to obtain consent before proceeding with diagnostic or treatment plan.	7
Animal welfare (AW) governance	To what extent should animal welfare legislation and regulations be strictly enforced? What parameters should veterinary registration bodies take into account when investigating concerns that impact animal welfare? How can complaint investigation bodies ensure that individuals are not penalised when complaints arise due to systemic issues? (e.g., some	7

	registration bodies are limited to only being able to investigate the individual named in a complaint, and will hold them responsible, even if the practice culture is the problem).	
What forms of animal use are acceptable?	<p>Is it acceptable for veterinarians to support practices associated with poor welfare (e.g., live export of unweaned calves, non-stun slaughter)?</p> <p>Is it acceptable to facilitate animal use where its impacts on the environment are negative?</p> <p>Is it acceptable to treat “pest” species?</p>	6
Futile or non-beneficial treatment of animal patients	<p>Where do you draw the line on non-beneficial treatment?</p> <p>What constitutes over-treatment?</p> <p>Should some procedures be disallowed altogether in some species (e.g., wing amputation in birds)</p>	6
Conflict between the interests of animals and the interests of their owners	<p>How do you deal with concerns about animal welfare when the owner(s) have mental health issues?</p> <p>How do you manage situations where an owner’s lifestyle prevents them from meeting the needs of their animals?</p>	5
Slaughter and killing of farm animals	<p>Is culling of animals in a disease outbreak situation ethically justifiable?</p> <p>Is non-stun slaughter for religious reasons ethically justifiable?</p> <p>When should farm animals be treated vs slaughtered?</p> <p>What methods of stunning/euthanasia should be used?</p>	5
Breeding animals and selecting for particular traits	<p>How do veterinary team members provide care for breeds with conformation that negatively impacts welfare (e.g., brachycephalic obstructive airway syndrome in brachycephalic breeds), without promoting such breeds?</p> <p>Is it acceptable for veterinary team members to breed animals, especially where those breeds are known to have conformation which negatively impacts welfare?</p> <p>How should veterinary team members manage relationships with breeders to ensure they are not complicit in poor welfare?</p>	5
Management of errors and complications	<p>What should a veterinary team member do if they discover a colleague has made an error, but has not admitted this to the client? What if the colleague actively covered up the error?</p>	4
Scope of practice	<p>How should veterinary team members balance the need to gain experience with their responsibility of practicing within their scope of experience?</p>	3

	When is it acceptable to “have a go” at something you have not tried before?	
Treatment and management of wild and free roaming animals	How should decisions be made around whether to treat or euthanase wildlife? How should resources for wildlife care be distributed?	3
Conflict of interest (COI)	How should veterinary team members manage conflicts of interest? (e.g., volunteer ethics committee members are needed to make up a quorum but may have conflicts of interest).	1
How to balance animal productivity with animal welfare	Is it acceptable to keep an injured/unwell animal alive to maximise costs that can be salvaged by the farmer? (e.g., keeping a gravid, valuable breeding animal alive until she has given birth).	1
Labelling and use of pharmaceuticals including antimicrobials	To what extent should veterinary drug use be impacted by concerns about human health? (e.g., knowing that a particular veterinary agent used to alleviate suffering in animals has been used in suicide, should the profession lobby to restrict access to that agent?).	1
Standard of care (SOC)	Should veterinary team members perform and offer only “gold standard” care, or should they offer a spectrum of care?	1
Convenience surgeries and mutilations	Should veterinary team members perform or facilitate convenience surgeries and mutilations where these are widespread and expected (e.g., tail docking).	1
Competition between veterinarians and practices	How should you manage conflicts of interests created by competition between practices? (e.g., you are repeatedly asked for second opinions on the work of a local competing practice).	1
Remuneration and charging for veterinary services and product sales	Is it acceptable to charge high fees for advanced veterinary treatment which does not have a good outcome?	1
Assessment and measurement of animal welfare and quality of life	How do you determine humane end points? (e.g., for experimental animals with a disease that reduces their quality of life)	1

Supplementary Table 5. Themes constructed through reflexive thematic analysis of free-text responses to the question “Is there anything you wish to add about ethics rounds?” in a survey of veterinary team members following participation in virtual ethics rounds (n=89).

Theme	Subtheme	Example(s)
Benefits of ethics rounds	Ethics rounds helps clarify thinking	<p>“While I probably thought like this, it was helpful to formally break down a ethically challenging situation with respect to stakeholders - their impact on the situation, the impact of the situation on them.”</p> <p>“I found that learning about the different frameworks for thinking about ethical challenges useful for ordering my thoughts and talking about tis with clients/colleagues. Like all the bits and pieces were there before but now I can articulate them better.”</p>
	Ethics rounds allows participants to see ethical challenges from the point of view of others	<p>“In particular I can see a real benefit of it to allow people to discuss ethically challenging situations with work colleagues...irrespective of rank. I think an opportunity to air concerns in an open and frank manner is invaluable for each others state of mind. Even if no specific 'answer' is arrived at , it is soothing to know that other colleagues have similar concerns and we can learn from each other’s strategies to cope.”</p> <p>“This really helped me understand different viewpoints and how to address them.”</p>
	Ethics rounds provided a safe, supportive forum	<p>“Free and open sharing of ethical issues encountered was facilitated by an excellent facilitator, and colleagues were supportive of one-another.”</p> <p>“They provide a safe space for unpacking and engaging ethically challenging situations.”</p>
	Ethics rounds can help veterinary team members identify and deal with moral distress	<p>“It is such an important area to be aware of. I think many vets and nurses experience moral injury without knowing that is what it is as this is a topic most of us have never heard of. For me personally it has been an absolute revelation that a concept like moral injury exists and it has helped me explain my reactions in so many situations across my career but also privately. I think this has huge potential for helping many vets and associated staff.”</p> <p>“There was a sense that our load had been lightened.”</p>
	It was validating to discuss ethically challenging situations	<p>“surprisingly helpful in validating team member's stress and concern about the ethical decisions they have to make.”</p>

	Ethics rounds increased confidence to speak up in the face of ethically challenging situations	“Discussing topics with peers was extremely rewarding and made me more confident to speak up in the workplace.”
Ethics rounds could be improved		“More discussion of what could be done in each of the ethically difficult situations.” “...it was more like a webinar than a rounds session, we talked about ethical situations in general terms but without any specifics which made it hard to come to any conclusions on how we might be able to do things differently in future.” “I think if ethics rounds were more frequent and timely (in relation to a particular event), on-going stress and distress might be less of an issue.”
There are constraints preventing veterinary team members from speaking up in the face of ethically challenging situations		“Whilst it is pleasant to consider all colleagues working harmoniously, there are differences in opinions which should be respected, but any bullying behaviour impacts significantly on one's confidence in self-expression. 'Gaslighting' continues to be an industry problem.” “There is a strong level of unspoken intimidation in most clinics where I have worked. The more forceful (usually male) voices dominate and are disparaging towards other, less strong, more timid voices, often subduing these into silence, leaving them longing for the security of darkness and anonymity. There is a far greater issue at stake than just the question of ethics here. As with all things, it appears to be about power.” “I think in future perhaps just team members and no managers should participate. I felt that the team were scared to truly voice some opinions with the managers there.”
Ethics rounds can have potentially negative impacts on participants		“While I found the overall experience to be positive, reliving some distressing situations which I had encountered caused me some upset. Distressing situations which I encountered in practice changed the course of my career at different points, and so the impact of those challenging situations was significant.”
Limitations of the Euro-MCD as it pertained to the experience of participants		“The challenge in this survey is that there are other considerations not included here, which have an impact upon the decision-making.” “Regarding the comment above about support... I am not sure we know enough about support as a community to support each other with ethically challenging situations. We can mentor,

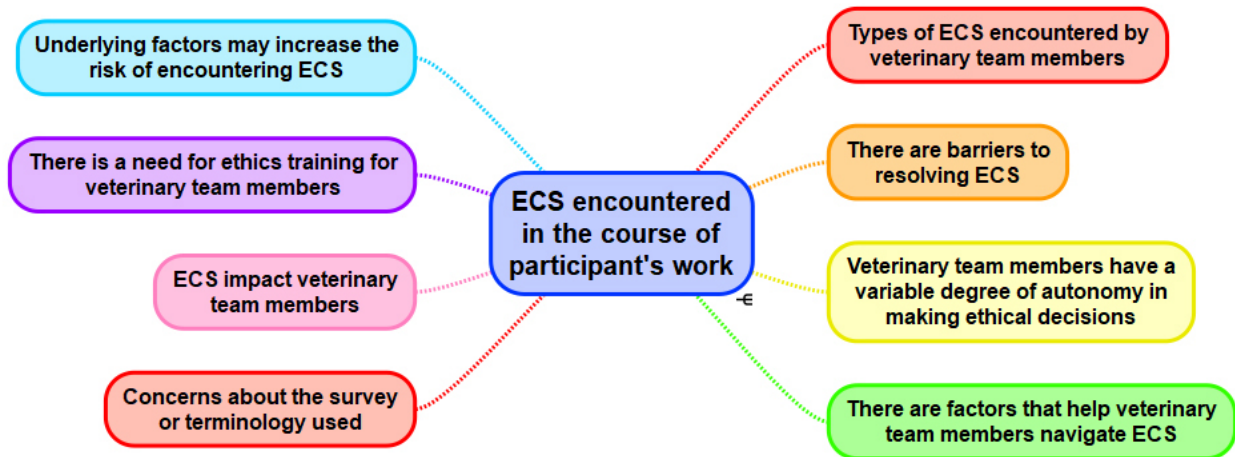
	and share opinions... but I'm not sure that's the same as support."
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Supplementary Table 6. Themes constructed through reflexive thematic analysis of free-text responses to the question "Is there anything you wish to add about ethically challenging situations you have encountered in the course of your work?" in a survey of veterinary team members following participation in virtual ethics rounds (n=89).

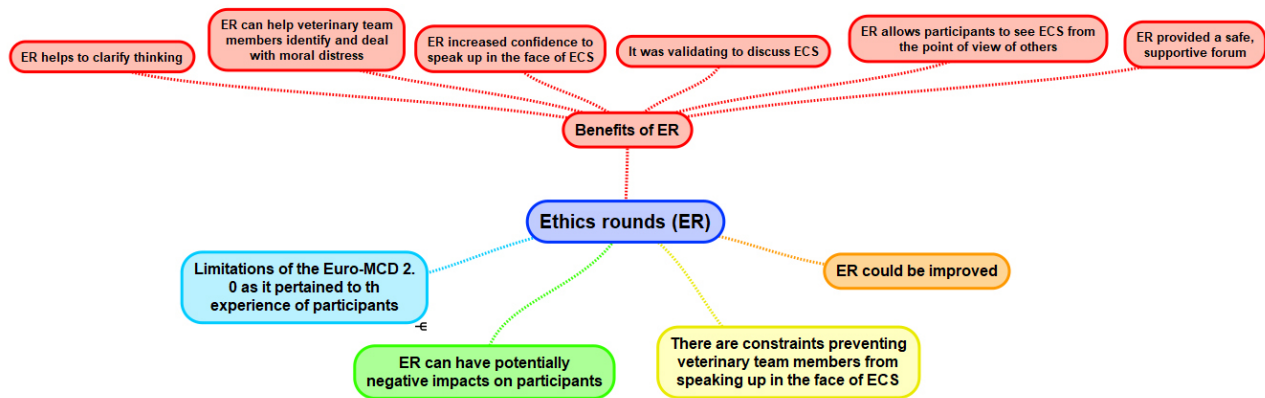
Theme	Example(s)
Types of ethically challenging situations encountered by veterinary team members	"The usual dichotomy of finances and the need to make money". "The conflict between animal welfare and human welfare is also a significant challenge." "...in a professional life, personal morals and ethics have to co-exist alongside regulation. For example, just because I don't like 'x', if it is regulated and permitted for it may happen. perhaps a role of the official veterinary service in this scenario is to be the champion of rigorous adherence to regulation and to keep an open mind to the possibility of improvements and changes in standards and ensure that they lobby for these to be included in the regulations"
There are barriers to resolving ethically challenging situations	"...we often believe that our fundamental beliefs are the right ones and everyone else is somehow not as legitimate a viewpoint as our own." "I sometimes find it challenging knowing that there will be compromise in either animal needs, owner needs or my professional needs when dealing with ethically challenging situations." "In the past power has tended to dictate which view wins which is both frustrating and demoralising." "It's difficult because in some positions it is considered inappropriate to speak up in an ethically challenging situation." "The 'we' as a team does not always include the practice owners. Their viewpoints can be clouded with financial considerations."
Veterinary team members have a variable degree of autonomy of in making ethical decisions	"Discussion of ethical scenarios within a practice is appropriate. However if colleagues each have a solid moral compass, then each has the right to decide how to respond to ethical situations which arise." "As a government employee, at times, I feel that I am not in a position always to question and or deal with ethically challenging situations which are already known to senior personnel."
There are factors that help veterinary team members navigate ethically challenging situations	"Legislative changes in this area have helped support people who would have refused on ethical grounds." "We need to recognise how we are viewing the situation and what framework we are using to assess the situation." "Each situation has to be handled as its own entity, having different context and considerations that need to go into the decision making process."
Underlying factors that may increase the risk of encountering ethically challenging situations	"Animals are still regarded as chattels despite the closer attachment to the family compared with previous years and also finances play an important part in the decision making for the owners." "I actually think the profession itself is highly conflicted and has inadequately thought through animal welfare, business interests etc."
There is a need for ethics training for	"I think we have opinions but may not be skilled to discuss it from ethical points of view, or be aware of how to describe our underlying ethical opinion." "We are not trained in ethics at uni"

veterinary team members	"The vet I worked for was very old school so he had a bit of a black and white concept of ethics and didn't really train his workers in this concept. He was less compassionate to those who had to follow through with his instructions."
Ethically challenging situations impact veterinary team members	"Some situations and events weigh on my mind post event." "The personal emotional effect that these situations present can be exhausting."
Concerns about the survey or terminology used	"Ethically challenging maybe a bit ambiguous as one who feels they have a strong ethical compass may find most situations not at all challenging." "I found the questions above that referred to 'we' [in the MCD instrument] difficult to answer. It's difficult to generalise in a meaningful way about how ethically challenging situations are handled with colleagues due to the wide variety of ethically challenging situations and which colleagues or combinations of colleagues might be involved in dealing with them."

Supplementary Figure 1. Thematic map of themes constructed through reflexive thematic analysis of free-text responses to the question "Is there anything you wish to add about ethically challenging situations you have encountered in the course of your work?" in a survey of veterinary team members following participation in virtual ethics rounds (n=89).



Supplementary Figure 2. Thematic map of themes constructed through reflexive thematic analysis of free-text responses to the question “Is there anything you wish to add about ethics rounds?” in a survey of veterinary team members following participation in virtual ethics rounds (n=89).



Reference

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