

Viewpoint

Towards a scholarship of primary health care

For too long, in contrast to human medicine, the veterinary profession has failed to celebrate the achievements of first opinion practice and those responsible for its delivery. **Stephen May** believes it is time to put that right.

THE traditional model of delivery of clinical veterinary education, through university-owned teaching hospitals, has much to commend it, not least its ability to directly balance commercial service demands with the learning needs of students, quality assure assessments, expose students to cutting edge diagnostic techniques and therapies, and develop academic clinicians and researchers of the future. However, increasingly, regulatory bodies and veterinary educators themselves, in turning their attention to the employability of the modern graduate, have become concerned about a deficiency in the exposure of students to primary health care (Halliwell 2006, Stone and others 2012). Primary health care education is important, in terms of meeting the needs of society for graduates who are familiar with the types of case they will encounter on a day-to-day basis (Greenfield and others 2004), the needs and demands of students for practical knowledge and skills relevant to their chosen career (Rhind and others 2011), and the requirements of regulatory bodies that veterinary schools should demonstrate that all graduates are in possession of a full set of 'day one competences' (NAVMEC 2011, RCVS 2014).

In the UK, in addition to the Royal College of Veterinary Surgeons' (RCVS) requirement for 'extramural studies' (see online Supplementary Data, Box 1), the RCVS has emphasised that universities are responsible for introducing primary care knowledge and skills through their 'intramural rotations', which they choose to deliver variously, through owning their own first-opinion practices alongside their large referral hospitals, partnerships with various private general practices, and working

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collaboratively with clinics attached to animal charities. In the USA, the American Veterinary Medical Association (AVMA) has encouraged similar developments. This has led to creative solutions, with universities in different states working with

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community-based, subsidised practices (Stone and others 2012), animal charities (Spindel and others 2008) and even prisons (Cima 2013) to gain access to primary health care-focused caseloads, to the benefit of both student education and their local communities.

However, although much has been written about collaborative arrangements

and how to provide facilities for primary health care education, little attention has been paid to what I am going to call the 'scholarship of primary health care' and the factors that ensure that a high quality service is provided, at an economic rate, that assures animal welfare, and fulfils the expectations of animal owners and society. It is important that this oversight is addressed because, as I hope to demonstrate in this article, a comparison of primary health care and second opinion practice reveals that there are differences in the way that the systems operate and the expertise of those who deliver the services (Halliwell 2006). Therefore, education of students in the culture and systems of specialist practice, either in the teaching hospital or private practice environment, is unlikely to be the best preparation for a career in primary health care, potentially creating dissonance as students move into their first jobs, with a loss of confidence in their ability and a lack of satisfaction in their work, even though, for many, this is the career that they have always sought.

The aim of this article is to initiate a discussion on the scholarship of primary health care by looking at six key aspects: the context and nature of the animal-client encounter, the conceptual frameworks that underpin effective service provision, communication in primary health care, the 'expert generalist', the strengths of a primary health care approach and culture, and the implications for veterinary curricula when it comes to ensuring that students understand the principles that underpin all types of professional practice.

Context of the animal-client encounter

Second opinion, university teaching hospitals differ from first opinion practice in two main ways. The patients they deal with fall (on the whole) into two categories, each requiring action, and the hospital is

fully equipped and staffed to deal with every eventuality. Either patients will be suffering from acute severe conditions, such as recent trauma, or they will be suffering from chronic problems that have been unresponsive to previous therapies. In both cases, owners expect appropriate investigations to be conducted, accurate diagnoses to be made and rational therapies matched to the individual problems of their animals.

In contrast, alongside a group of animals presenting for preventive medicine, such as vaccinations, most of the animals presented by owners as having problems to the primary care practitioner have conditions

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which are much less well-defined. In human medicine, the patients presenting to a general practitioner (family physician) have been described as one of four types: those which are not sick, those which are not yet sick, those which are inexplicably sick (see online Supplementary Data, Box 2) and those which have definite disease of the type seen in the specialist clinic and described in textbooks (Murdoch 1997).

This situation is probably very similar in general veterinary practice. Again, as in human medicine (Thomas 1974, Thomas 1987, Schmalstieg and Goldman 2010), many of the cases presented to a primary health care clinic have self-limiting conditions that will resolve without (or in some cases despite) veterinary intervention. The prevalence of disease is low but the presence of owner-recognised signs is high (Dixon 1986). Whereas the reason for the encounter in referral practice is explicitly around a veterinary diagnosis and treatment, in the primary care context the animal/owner complaint may not be the same as any underlying veterinary problem, even if it overlaps with it (see online Supplementary Data, Box 3), and it is important that the complaint is incorporated into the individualised response (Olde Hartman and others 2011). For the referred owner, referring practitioner and the specialist, the diagnosis has become a necessary stage in resolution of the problem, as initial (often symptomatic) therapy has not led to a solution (Rosser 1996). In primary care, the clinician and owner are focused on resolution rather than the specific diagnosis. At this stage in the disease course, animals may be helped by symptomatic

(or, technically, sign-oriented) therapy, and owners reassured that their animal is not going to die or is unlikely to develop a longstanding problem. This means that detailed investigation is often inappropriate, and a precise diagnosis may never be reached.

Conceptual framework of primary health care

In a situation where the prevalence of any particular condition is low, perhaps less than 1 per cent in primary health care practice (Rosser 1996), without a clinical means of narrowing the number of possibilities, diagnostic testing is largely a screening process and likely to yield a large number of false positive results (see online Supplementary Data, Box 4). Under these circumstances, the primary care clinician needs to consider treating conditions symptomatically until more definite signs of established disease emerge, rather than running the risk of being misled by tests, worrying an owner about the presence of (absent) disease, and treating an animal inappropriately. Even when the clinical signs suggest that a particular organ system is involved, the precise diagnosis may be left uncertain, with the clinician treating an animal based on prevalence and the probability of a particular condition in their unique clinical caseload. Although it should not be abused (Schmalstieg and Goldman 2010), response to treatment in the face of uncertainty becomes a critical part of the clinical reasoning process (Wilson and Holt 2001, Vandeweerd and others 2012), in contrast to the referral situation where therapy will more often have been based on a diagnosis. The expert primary care clinician is confident about actions required in the face of uncertainty. However, the new graduate, familiar as a student with referral patient-based reasoning, may exhibit 'paralysis by analysis' in the absence of a precise diagnosis (Gladwell 2006, Croskerry and others 2014).

Therefore, the role of the veterinarian faced with a long series of short consultations in a busy clinic is one of triaging: on the one hand, recognising that many patients fall into the 'not sick' and 'not yet sick' categories, and, on the other hand, where possible, identifying at the first consultation those with more sinister signs of disease that merit further tests and even hospitalisation at the outset. Of course, in the absence of lengthier consultations and more in-depth investigations of every patient, it is likely that some conditions that will ultimately require intervention will be missed. This should not be seen as 'clinical negligence'. At some stage in the development of primary health care, the two or three-day follow-up consultation became routine, providing a safety net for those cases that merit further attention. If, at that stage,

the clinical signs are not resolving, and are even getting worse, action can be taken at the follow-up without undue loss of time.

The 'discovery' of the importance of the follow-up consultation in association with primary health care triaging was fundamental to the development of good practice in this area. It is likely that alongside much of the 'ritual of practice' that we have inherited from our forebears in a relatively unreflective way, such as the precise nature of the physical examination (Jones 2008), process-focused empiricism and keen observation has meant that elements in our systems have an evidence base. However, much of this is implicit, and would benefit from exposure as part of a scholarship of primary health care.

Communication in primary health care

Much has been written on the importance of communication for the veterinarian and how these skills are best taught (Radford and others 2003, 2006, Gray and others 2006, Latham and Morris 2007, Cornell and Kopcha 2007). History-taking from owners is an essential part of the diagnostic process, but, particularly in primary health care, both verbal and non-verbal clues highlight a client's complaint and their biggest worries (Carson 2007). As already discussed, a failure to recognise the divergence between

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the client's description and the veterinary problem is a key source of dissatisfaction for animal owners, and more so in the first opinion than the referral environment.

Once a primary health care veterinarian has established how they might act, a key consideration is the discussion of preferred courses of action, particularly in the absence of a specific diagnosis. Over the years, clinicians have developed various approaches, from vague descriptions such as 'there is a lot of it about' to terms that imply some sort of causal agent, such as 'a bug', which fall short of a definitive diagnosis (Dixon 1986, Wood 1991). Provisional diagnostic descriptions need to be handled carefully, as they will have meanings for owners that are coloured by their experience

of illnesses, in people and other animals, much more than by an understanding of the implied pathology. Such 'parking diagnoses', acting as punctuation marks for actions, must therefore be used with care. Clients may be worried unnecessarily by possibilities that are extremely unlikely, and a failure of the animal to respond to treatment may result in changes in course later that seem to contradict implied causal mechanisms. Mistaken beliefs over aetiology can also lead to unnecessary client guilt, which it is useful to expose, as it is in no-one's interest to leave clients feeling that they have caused the problem. Often, communicating uncertainty and admitting that you do not know, but that you want to help the client, is the best course of action (Wood 1991), and the one that clients would prefer (Mellanby and others 2007), but this can appear to contradict the 'black and white' approaches to established disease that students feel they have learned during extended periods in university teaching hospitals.

Advice on how to communicate in the face of uncertainty is the 'one lesson' on consultation skills that I remember receiving in a lecture during my veterinary degree programme. A key consideration for all veterinarians is the management of client expectations. Prognoses must always be based on firm foundations. Suggesting to an owner, before a diagnosis, that an animal would be cured, was considered a rash approach. It would always be a gamble, and, in a proportion of cases, lead to failure. In contrast, suggesting to an owner that their animal was 'a cripple', but you might be able to assist with advice on care, was a much more realistic pronouncement on the actual situation (John Hickman 1979, personal communication).

The expert generalist

Medicine and veterinary medicine are science-based professions, and much progress has been made through the development of specialist clinicians applying evidence-based approaches (Rosenberg 2002, McWhinney 2003). A difficulty in understanding primary health care expertise arises from the way in which the terms 'expert' and 'specialist' have become synonymous in the minds of many, with the implication that the generalist is not an expert. This misconception, one of a number that have grown up around primary care practice (Box a), deserves consideration both in relation to the knowledge base of the generalist and the reasoning processes of experts. There has been a suggestion that generalists lack 'depth' in their knowledge base, but this is to misunderstand the nature of depth when it comes to the role of generalist. There is a fundamental cultural distinction between the generalist and the specialist. For the generalist, all

Box a: Six misconceptions about the roles of the generalist and the specialist

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| (1) The generalist has to cover the whole field of medical knowledge | The generalist's knowledge is as selective as that of the specialist. The specialist knows more details related to their specific contribution to a case. The generalist, in retaining responsibility for overall management of the health of an animal, has a different form of selective knowledge base |
| (2) In any given field of medicine, the specialist always knows more than the generalist | Generalists are knowledgeable about common conditions, and become experts on their own caseloads. Specialists become knowledgeable about rarer variants of disease, precisely because their experience is concentrated by referrals from generalists |
| (3) By specialising, one can eliminate uncertainty | Arguably, the only way to eliminate uncertainty is by reducing problems into simpler elements and removing them from their context (classical scientific method). Any clinical endeavour that attempted this would have little value for its clients |
| (4) Only by specialising can one obtain depth of knowledge | This misconception confuses depth with detail. Depth relates to understanding relevant to the clinician's role, not information content |
| (5) As science advances, the information load increases | Good science leads to general statements that encompass bodies of information and explain them. Better understanding of concepts should help the management of information load, as much new information may be irrelevant to therapy and management of patients |
| (6) Error in medicine is usually caused by lack of information | Very little medical error is caused by veterinarians being ill-informed. Most errors are caused by carelessness, failure to listen and communicate, and systems failures. In fact, although more information leads to an increase in confidence in judgements, it does not necessarily lead to an increase in accuracy (Oskaup 1965) |

Summarised and adapted from McWhinney (1997) and Greenhalgh (2007)

animal presentations are seen as a part of their domain (McWhinney 1997). They feel responsible for supporting an owner in addressing the original complaint, even if a part of this role may be as a portal to specialist services. In contrast, the specialist only regards presentations in their restricted domain as relevant to them. Their initial triaging will focus on whether the animal has signs that relate to the main system on which they focus. If it does not, the animal ceases to be their responsibility. The inclusivity of the generalist approach means that the knowledge base of the generalist is broader. Its depth relates much more to problem presentations and patterns rather than details of disease entities. Therapies are strongly linked to empirical success around patterns, and a full understanding of an individual disease process is often not

necessary for the restoration of health or the satisfaction of the owner.

This was brought sharply to my attention in my first small animal position, when one of the partners in the practice drew my attention to a distinction between my orientation to practice and his own. 'The trouble with you, Stephen, is that you are only content if you understand how your diagnosis and treatment have led to client satisfaction. I am happy if whatever I have done leads to client satisfaction whether I fully understand it or not.'

This affects the reasoning process with which the generalist is most familiar. Erant (2000) has distinguished between at least two modes of reasoning and decision-making on the part of the practitioner: the 'rapid, intuitive' and the 'deliberative, reflective' modes. The former is the

approach adopted in fast-moving, 'real-life' contexts, such as the classroom for a teacher or the consulting room for a clinician, and the latter the approach of the academic researcher and referral clinician where time is available for analysis of complicated problems. Both approaches, in the hands

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of skilled professionals, represent types of expertise where familiarity with caseload and methods results in a successful outcome. As Mylopoulos and Woods (2009) have indicated, a specialist may be an adaptive expert, modifying their approach according to the individual case, or an experienced non-expert, a sort of 'super-technician', applying the same methods without modification to every individual. Generalists must be adaptive experts in relation to their caseload, recognising familiar patterns, some of which may correspond to published literature, and others that are locally relevant, variants on themes, for which they may have shown empirically that standard or modifications of standard therapies are successful.

The generalist, much more than the specialist, must also be an expert in applying general rules and scientific abstractions to the particular case (McWhinney 1989, Greenhalgh 2002). This does not just apply to the clinical domain but also the ethical (May 2013). So whereas much of the specialist's work is predictable within a narrow domain, the generalist must understand the principles that underlie all aspects of their role so that an appropriate balance can be achieved for each case (Proctor and others 2011). The generalist also has much greater experience of drug use for sign-oriented therapies such as analgesics, antiemetics, antidiarrhoeals and antitussives. The specialist will be keen to identify disease and use specific disease-oriented agents to relieve both the cause and the signs. This is the ideal, but in the absence of a diagnosis, sign-oriented therapies play an important part in primary care (see online Supplementary Data, Box 5).

Strengths of a primary health care approach

In the absence of a scholarship of primary health care, little has written on the importance of the approach to the overall health and wellbeing of animals that are subject to veterinary care. However, parallels with human medicine show that, paradoxically, a well-equipped hospital staffed by every kind of specialist is not the

best place to go at the first development of signs of illness (Stange and Ferrer 2009). In the USA, states with higher ratios of clinicians-to-population focused on primary care have less obesity and lower smoking rates than states with lower ratios (Shi and others 1999). Where general practitioners have organised systems for recall, primary care management of diabetic patients yields better results than specialist hospitals, with better glucose level control and lower mortality (Griffin and Kinmonth 1998).

The same is true for patients who are ultimately referred. In a study in one US state, early detection of colorectal cancer was better in areas with more primary care practitioners (Roetzheim and others 1999). In Canada, outcomes were better for children referred by primary care practitioners for surgery for tonsillitis and otitis media than those referred by specialists (Roos 1979). Of course, there are differences in detail around health care delivery that mean such findings in human medicine may not be directly transferrable to veterinary health care. However, the observation in human medicine that primary care approaches tend to be more holistic and generic, focused on patient health status in general, than more individual disease-focused specialty practice (Starfield 2011) is likely to have the same resonance for a veterinary expert generalist as for their medical counterpart. Interestingly, for health care systems and the paying client, these benefits to overall health are also delivered at lower cost (Franks and Fiscella 1998).

Implications for veterinary education

Those of us with experience of running tutorials for final year students on topics such as 'survival skills for practice' or 'the primary health care consultation' know that, despite exposure to primary health care practice, many students have not grasped some of the important differences between primary and secondary health care outlined above. There is considerable anxiety about the 'lack of time to do a proper job', which may lead to mistakes (Mellanby and Herrtage 2004, Tomlin and others 2010), and pattern recognition being an inappropriate way to approach diagnosis and therapy (Tomlin and others 2008). Such students fail to acknowledge the supreme skill of many experienced primary health care veterinarians, and the robustness of their systems in delivering effective and affordable health care. This means that they are in danger of being handicapped by our focus on hospital medicine, applying principles of diagnosis and therapy inappropriately to their daily work. A clearer understanding of the scholarship of primary health care and more explicit teaching and discussion of its strengths and the approaches needed to balance the clinical, ethical and economic

factors that relate to each case would much better prepare students for the primary health care positions that they may enter immediately after graduation.

An area of particular confusion is 'the numbers game' around the usefulness of diagnostic tests. Both specialists and generalists can use these tests inappropriately but for quite different reasons that students often fail to grasp. As for the primary health care clinician, there are some circumstances in which specialists can over-interpret tests, particularly where these are not directly clinically indicated and thus used in 'screening mode'. This is when, in addition to requesting clinically-indicated tests, they extend this to a 'panel' of tests. This can reveal results that are outside the laboratory reference range despite no evidence of a linked clinical sign. In specialist medical practice, this has led to the emergence and treatment of 'proto-disease' (Rosenberg 2002), with patients being treated based on test results rather than obvious clinical problems. In situations where patients are not bothered by current symptoms, where death is likely from other causes, prognosis is good regardless of treatment, or the risks of treatment outweigh the benefits, such overtreatment may lead to harm (Fisher and Welch 1999).

The second or third clinician to see a case (specialist or not) is more likely to achieve a diagnosis than the first person to see the case because the prevalence of disease is increased in a referral-type population. As discussed previously, under these circumstances, tests become more useful (see online Supplementary Data, Box 4). However, there is a point at which the disease is so likely in an animal the test becomes pointless. Unfortunately, sometimes, specialist educators, wanting to impress owners and students with a positive result, will test the animal anyway. The likelihood is that they will get a positive result, but false negatives now become an embarrassment. When these occur, the students can be thoroughly confused when they discover that the animal is going to be treated despite the test, particularly if the test was actually an 'expensive indulgence' (see online Supplementary Data, Box 6). Even worse, on occasion, a false negative result may lead to a failure to take action when all the other indicators suggest that action is appropriate.

All of this has implications for curricula and for the selection and development of teachers involved in classes on clinical reasoning and decision-making, as well as those employed in university teaching hospitals. Recent graduates often acknowledge that they learned little about this area in their lengthy veterinary programmes (May and Kinnison, unpublished data), despite their clinical

teachers, in particular, believing that this is what they have been teaching. In part, this relates to a lack of explicit coverage of the topic, and in part to the fact that, without training in education, and a formal understanding of their skills, the experts in primary health care that the students encounter often struggle to explain the nature of their own expertise (Eraut 2000, Schon 1989).

Conclusions

For too long, in contrast to human medicine (Lakhani 2003), we have failed to celebrate the achievements of primary health care and those responsible for its delivery. Despite a failure of academia and the profession as a whole to develop 'the scholarship of primary health care', generations have empirically developed processes to meet the needs of their caseloads and been valued for this by their clients and the general public. We can speculate that the distinction between primary health care and hospital-based practice was less marked in the past, meaning that the lack of specific attention to the distinct processes of primary health care was less of an issue. It is the progress and achievements of hospital-based practice, which should also be celebrated, that have driven this divergence and emphasise this gap in many modern educational programmes. In the same way as population medicine is now seen as having a distinct knowledge and skill set, in comparison to individual animal medicine, albeit with some overlap (Larson 2004, Leighton 2004), the primary care approach needs to be seen as having a distinct skill set, separate from but complementary to the hospital-based approach. Some of this has been addressed in human medicine by the creation of professors of general practice and departments of primary care (Lionis and others 2004). Arguably, we are overdue such developments in veterinary education.

Boyer (1990) described four scholarships relevant to professional life: the scholarships of discovery, application, integration and teaching. The scholarship of application, building on the scholarship of discovery, is essential to evidence-based medicine and effective professional practice, but this cannot be the whole story. The competent veterinarian is not merely a 'super-technician', mindlessly replicating laboratory studies. As Sackett and Haynes (1996) pointed out: 'Evidence-based medicine requires the integration of individual clinical expertise with the best available external evidence from systematic research. Good doctors use both. Without the former, practice quickly becomes "evidence tyrannised"; without the latter, practice quickly becomes out of date.' Crucially, the reflective practitioner is an 'adaptive expert', modifying the best evidence according to the specific

needs of each patient (and owner), integrating knowledge from a variety of different domains, and incorporating local 'discoveries', relevant to the area in which they practise and the species with which they deal, to address the problems of the 'not sick', the 'not yet sick', and the 'inexplicably sick', in addition to those animals with textbook disease (Proctor and others 2011).

It has been said that 'progress in medicine will not be made through improved technology but rather through improved application of current knowledge and activity: in short, doing it better' (Gawande 2007). All entering primary health care practice must recognise that rules are 'relentlessly contextual' and that clinical decision-making involves 'selective application of general rules to particular individuals and contexts' (Hunter 1996, Greenhalgh 2002). A worrying trend in medicine has been the apparent devaluing of locally generated knowledge in the face of the evidence-based medicine campaign (Mylopoulos and Scardamalia 2008), but it is the primary health care processes of investigation and decision-making in relation to diagnosis, prognosis and treatment, that have given the profession its enviable reputation and, in the hands of expert generalists, result in high success.

The veterinary profession has a problem with work-related stress (Bartram and others 2009), and discontentment and loss of individuals from the profession after a period in practice (Buzzeo and others 2014). It has been suggested that this relates to our approaches to student selection and the possible use of methods that fail to identify the individuals best suited to the demands of our modern profession (Kogan and McConnell 2001, Lewis 2002). However, a powerful cause of stress is dissonance, where an individual recognises their expectations of themselves do not match the way in which circumstances seem to be driving them to act (Festinger 1997). Their 'espoused theory' does not conform to their 'action theory' (Argyris and Schon 1974). It is clear from discussions with recent graduates trying to gain internships and residencies after becoming disillusioned with practice that their 'espoused theories' of 'best professional practice' are those of the hospital-based, second opinion clinician that they have inherited from their teachers during their clinical degree programmes, and not theories relevant to primary health care outlined in this article. Practitioners working through this challenge in reflective essays, as part of the Professional Key Skills Module of the RCVS Certificate in Advanced Veterinary Practice, indicate that they are reassured that they 'can be an expert in first opinion practice' and their 'stress has diminished' from this realisation (May and Kinnison, unpublished data). These types

of postgraduate course are important in ensuring the future health of our profession, and the next generation of primary health care practitioners, but the finding of this issue in recent graduates emphasises the need for curricular improvement and teacher development. The danger is that those taken on as residents, particularly those without any professional experience of work in primary health care, have confirmed their espoused theory of hospital practice, subsequently transmitting the same theories to their students that were the handicap to them becoming successful primary health care practitioners.

Our 'social contract' means that we have a monopoly in undertaking acts of veterinary surgery that depends on us safeguarding the interests of our clients and our contribution to the public good (May 2013). This means veterinarians being fully prepared for all relevant professional activities, including hospital-based practice, food safety and security, public health, and primary health care (Blackwell 2001, Hird and others 2002, Radostits 2003, Larson 2004, Halliwell 2006). The majority of graduates enter first opinion private practice (Leighton 2004, Buzzeo and others 2014) and this is where most of the members of the public meet and form their views of veterinarians and our profession. Therefore, it is imperative that academia works closely with the primary health care side of our profession to develop the scholarship of primary health care. In particular, our schools need to fully prepare graduates for this practice environment, so that their espoused theories correspond to their theories of action, they see each animal as 'a whole' not 'a condition' (Herzog and others 1989), and they confidently deploy reasoning and decision-making approaches appropriate to their unique caseloads and contexts. All this will mean that high quality relevant services are delivered by those with a deep understanding of what they do, leading to well-treated animals, contented owners, and job satisfaction for those involved in the delivery.

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■ Supplementary Data accompanies this article and can be found online at veterinaryrecord.bmj.com/

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