



# American College of Veterinary Radiology and European College of Veterinary Diagnostic Imaging consensus statement on imaging report foundations

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## Abstract

Imaging reports are official medicolegal documents, detailing the conduct and interpretation of imaging studies in patient care. They serve as the primary means of communication for radiologists and significantly influence clinical decisions. This consensus statement, produced by a panel of the American College of Veterinary Radiology and European College of Veterinary Diagnostic Imaging board-certified veterinary radiologists through a modified Delphi method, addressed three key competency domains: basic patient care documentation, crafting meaningful reports, and ethical practice within legal boundaries. Meaningful reports move beyond documenting findings and providing impressions having qualities that foster effective communication for the betterment of patient care.

## KEYWORDS

dictation, electronic health records, narrative reporting, radiology workflow, structured reporting, templates

## 1 | INTRODUCTION

Consensus Statements of the American College of Veterinary Radiology (ACVR) and European College of Veterinary Diagnostic Imaging (ECVDI) establish position statements and other communications related to the practice of diagnostic imaging and radiation oncology. Best practices for medical physics, DICOM standards, and related equipment guidelines may also be communicated in the form of consensus statements. Consensus statement topics provide veterinarians with imaging guidelines, appropriate use criteria, selection, acquisition, and documentation of diagnostic imaging studies, interventional imaging procedures, and radiation therapy for veterinary patients. The ACVR supports collaboration with other veterinary specialties for

the formation of consensus statements to improve the overall delivery of care for veterinary patients. Evidence-based medicine is the foundation of Consensus Statements and Communications. If the evidence is conflicting or lacking beyond the scope of current information available in the veterinary literature, the ACVR recommendations are based upon the experience and best judgment of leaders in the field. Consensus Statement Communications are intended as a guideline toward establishing a standard of care with respect to the use of imaging modalities and the practice of radiation oncology. Consensus statements are not intended as a substitute for clinical judgment.

Imaging reports are official medical documents, summarizing the conduct and interpretation of imaging studies: they hold legal significance as evidence of patient care.<sup>1-3</sup> The key reasons for creating

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these reports are to document patient care and effectively communicate pertinent information to healthcare providers and clients. For radiologists, reports are the main or sole method of communication. This consensus statement aimed to describe areas of agreement and disagreement about report writing in veterinary imaging, informed by expert opinions and available literature. The statement was created knowing that it needed to satisfy diverse likings and practice styles worldwide and be adaptable to evolving writer preferences and information technologies. This statement lays the groundwork for future consensus statements that may establish standardized report templates for imaging studies, enhancing communication and meeting the content requirements of groups requesting these studies. Notably, report standardization was not the aim of this effort. Instead, the aims were to help report writers work ethically and within the boundaries of applicable laws, suitably document the patient care that was provided, close communication loops, and create reports that have a useful quality or purpose beyond accuracy and thoroughness.

## 2 | METHODS

This consensus statement was crafted by a panel of six board-certified veterinary radiologists (ACVR, ECVDI, or both) using a modified Delphi method.<sup>4-6</sup> The ACVR Consensus Statement Oversight Committee (CSOC) selected the Subcommittee Chair, who then invited five practicing veterinary radiologists with diverse clinical backgrounds to form the subcommittee. They began by defining the project's scope, naming three main domains, and establishing a glossary. Competencies were outlined for each domain, followed by literature reviews and statement drafting. Members independently, anonymously, and subjectively scored the statements in a survey. Survey results were discussed, and a second survey was not conducted due to high initial agreement. Each subcommittee member then supplied key points to the Chair, who synthesized the information and created a draft manuscript for subcommittee review. A revised manuscript was created. To address word limit constraints, the language models ChatGPT (OpenAI, 2022) and ChatGPT (OpenAI, 2024), based on GPT-3.5 and GPT-4 architectures, were used to perform concise rephrasing while preserving critical content. The authors identified sections for condensation and performed rigorous manual oversight of the condensed content and its integration. The resulting document was circulated among the CSOC, ACVR members, and ECVDI members for input, then revised and recirculated. The document underwent further revision and review by the CSOC and was submitted for publication. This entire process took place from May 2022 to November 2024.

### 2.1 | Glossary

#### 2.1.1 | Basic terms

**Finding**—Synonyms: sign, pattern, abnormality, lesion, biomarker. An observation signaling the likely presence of a disease or condition made

while evaluating medical images. May be qualitative or quantitative. Adding descriptors creates novel terms for nuanced discussions:

- **Pertinent abnormal finding**—Anomalous observation related to the reason for the study.
- **Pertinent normal finding**—Normal observation related to the reason for the study.
- **Other normal finding**—Normal observation unrelated to the reason for the study.
- **Presumed normal finding**—Observation interpreted as normal due to ordinary anatomic, physiologic, or technical variation, or variably interpreted as normal or abnormal depending on the clinical context. For example, age-related and breed-related findings are “normal” when not associated with clinical signs, and are expected, typical, or desirable characteristics for the patient's age or breed.
- **Incidental finding**—Anomalous observation unrelated or loosely associated with the reason for the study. Findings from technical complications (artifacts) are incidental to the study. Incidental findings may have minor, unknown, or major importance.

#### 2.1.2 | Report content<sup>7-10</sup>

**Header**—Patient identification information, study purpose, and study type.

- **Required (minimum)**—Client name, patient name (or other indicator), study type, study date (and time if study repeated during the day), study location, report requester (e.g., attending veterinarian), report status (preliminary or final), and relevant historical and clinical details, including specific clinical queries.
- **Necessary (when known)**—Patient's birthdate (or age), sex, breed, species, and purpose (dressage, military working dog).
- **Encouraged**—Dictation and transcription dates/times.

**Body**—Information obtained while performing the imaging study, evaluating images, or both.

- **Procedure**—Details of actions taken (sequences acquired, contrast agent used, guided centesis), along with any significant patient reactions or complications.
- **Comparison**—If applicable, notable similarities or changes since prior studies, reports, or both.
- **Limitations**—If applicable, a nondisparaging statement about potential shortcomings that may influence the impression, particularly technical issues affecting image quality or related to the procedure.
- **Findings**—Synonym: description. A synopsis of all abnormal and pertinent normal findings.
- **Impression**—Synonyms: assessment, discussion, interpretation, conclusion. A thoughtful synthesis of the findings, considering all available patient information, supplying an answer to the clinical question, or saying it is unanswered. May include recommenda-

tions, a high-level summary, or both to aid patient management and organize essential information.

**Signature**—Report verification date; author's name and credentials; author's signature or electronic authentication.

**Addendum**—An optional section having supplemental information added to a previously approved report to correct errors, expand the original statement, or document how consequential changes were communicated.<sup>11</sup> An addendum does not alter the original report.<sup>11</sup>

### 2.1.3 | Report types—process based

**Preliminary report**—Synonym: “wet read”.<sup>12</sup> Informal communication issued before the final report, may be time sensitive, written or verbal, may not include all reportable findings, and should be promptly archived as clinical decisions could have been based on this information.<sup>7</sup>

**Final report**—The definitive means of communicating results of an imaging study; typically written.

**Curbside consult**—Informal and nonroutine communication like a review of an outside study, a professional opinion given at a conference, or direct communication needed quickly due to urgent, divergent, substantial, or unexpected findings.<sup>7,13</sup> While invaluable, these consults often omit some reportable findings or miss essential clinical information. They are frequently conducted extemporaneously or in distracting environments and, unlike preliminary reports, are often not archived or followed by a final report despite recommendations.<sup>13</sup>

### 2.1.4 | Report types—content-based

**Diagnostic report**—Documents an imaging study conducted to decide the presence or absence of disease, encompassing descriptions of all abnormal and pertinent normal findings, along with an interpretation supplying a definitive diagnosis, prioritized differential diagnosis, or a statement that the clinical question is unanswered.

**Treatment planning report**—Documents an imaging study conducted to guide treatment after a condition or diagnosis has been made. It should detail abnormal and pertinent normal findings, along with an interpretation that addresses clinical questions, such as operability or extent of disease spread.

**Interventional report**—Documents performance of an imaging-related procedure (radiotherapy, coil embolization, intralesional injection).

**Image acquisition report**—Documents image acquisition for patient care, teaching, or research without interpretation, or with interpretation to be provided by a third party. If the study details are not otherwise logged or included in the medical record, they may be documented in a report with a statement affirming the study was solely for image acquisition. If applicable, specify what ensued (images sent to who and when for interpretation).

### 2.1.5 | Report styles—process-based

**Narrative report**—Traditional, free-form commentary, allowing for creativity and customization reflecting the radiologist's thoughts. While this style may effectively convey important factual and interpretative information, it can be highly variable, user-dependent, and omit data.<sup>14</sup>

**Structured report**—Rooted in information technology, this commentary relies on structured templates and defined vocabularies or listed responses for consistency and searchability of information: may feature advanced functions like embedding hyperlinks or enabling measurement comparisons.<sup>15,16</sup> This style reduces ambiguous language, encourages shorter descriptions through controlled responses, provides a clearer distinction between findings and impressions, promotes adherence to guidelines, and facilitates data mining. However, crucial data may be omitted if templates ignore unexpected findings.

**Hybrid report**—This style combines both narrative and structured elements, offering predictable content while allowing free-form commentary (Figure 1).

**Standardized report**—Synonym: contextual report. Commentary tailored to specific studies or conditions, ensuring that consistent information and terminology are provided, usually templated, and often endorsed by local (hospitals, teleradiology companies, and colleges) or broader (ACVR and ECVDI) agencies.<sup>15-17</sup>

### 2.1.6 | Report styles—audience focused

**Veterinarian-oriented reports**—Reports written using structure and language suitable for attending veterinarians, who are most adept at interpreting reports, synthesizing all clinical information, and offering proper recommendations to clients.

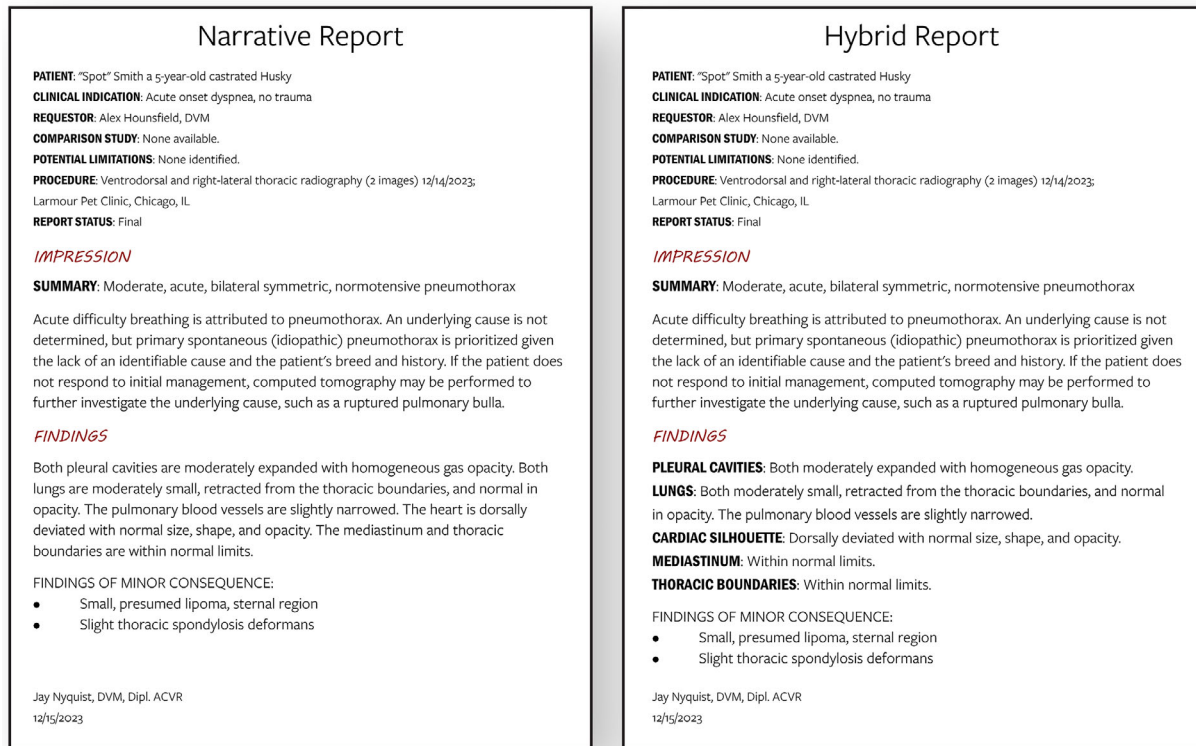
**Client-oriented reports**—Reports written using structure and language suitable for clients, who decide the course of action for their animals, have legal entitlement to reports, and increasingly have easier direct access to reports through patient portals.

**Forensic reports**—Reports supplied during an investigation to inform judges or juries, guiding them to reach a suitable conclusion based on the available evidence.

### 2.1.7 | Roles

**Veterinarian**—An individual with a D.V.M. or equivalent degree, duly licensed to practice veterinary medicine, or exempted under the area's practice act.

**Attending (supervising) veterinarian**—The veterinarian taking primary responsibility for a patient's care and maintaining the veterinary-client-patient relationship (VCPR), independently or as part of a group.<sup>18,19</sup> For patients referred for advanced or invasive imaging, a new VCPR is established with the veterinary radiologist or referring group.<sup>18</sup> This VCPR may revert to the original veterinarian following the procedure.<sup>18</sup>



**FIGURE 1** These reports offer identical content, showing distinctive styles. Both provide required content, prioritize addressing clinical questions using understandable language, and comprehensively presenting findings using concise, standardized, and technical language. Observe how consequential or potentially consequential findings can be summarized in the impression and how findings of minor consequence can be documented in the findings. The subcommittee did not advocate a specific report layout because preferences evolve and vary. In this example, the order of the findings and impression was flipped to draw the reader's attention to the most clinically relevant information. Reader-centric layouts might not mirror a radiologist's interpretive process.

**Consulting veterinarian**—The veterinarian advising the attending veterinarian, government, or industry on a patient or other issues.<sup>18</sup> While the consulting veterinarian has a duty to provide patient care, the attending veterinarian keeps primary responsibility for the case and upholds the VCPR.<sup>18,19</sup>

**Patient**—Either an animal or group of animals receiving veterinary care; alive or deceased.<sup>19</sup>

**Client**—The individual seeking veterinary medical services for the patient, in person or by any means of communication.<sup>19</sup> The person is usually the animal owner or their legal or personal representative. Under some circumstances (prepurchase examination), someone else (potential buyer) or an agency (court, government body, academic institution) may lawfully request veterinary services.

### 3 | OUTCOME AND DISCUSSION

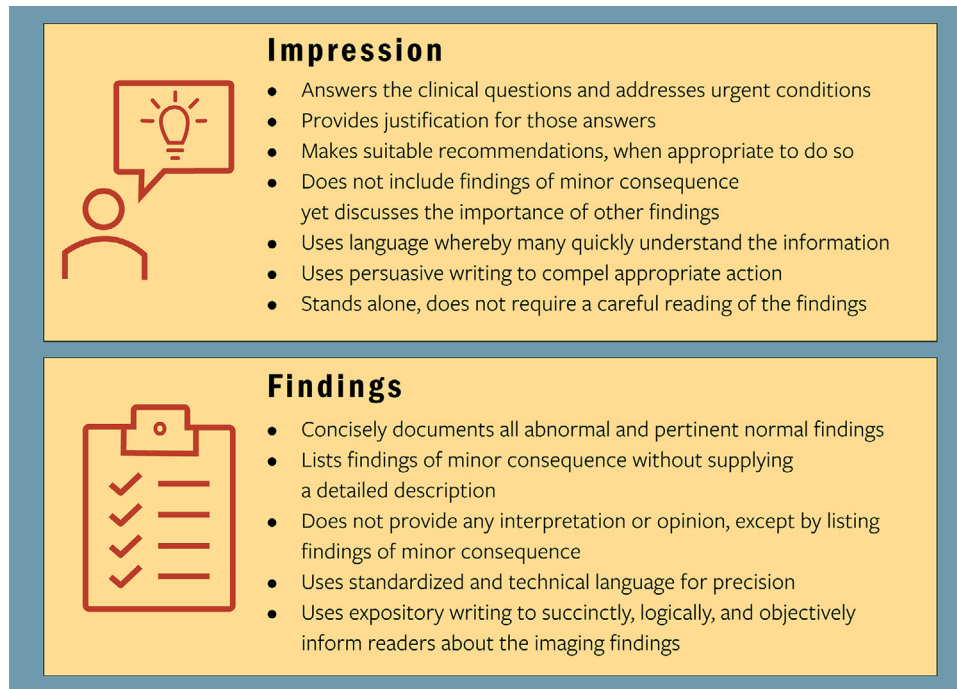
#### 3.1 | Basic practical details

##### 3.1.1 | Report content

This information complements Section 2.1. Most imaging reports encompass both factual and interpretive elements.<sup>20</sup> This entails pre-

senting a précis of the findings and a separate analysis contextualized within clinical considerations—a process referred to as describing what your eyes see and your brain thinks (Figure 2).<sup>21,22</sup> While both are crucial for patient care, it is acceptable to merge sections in brief reports or uncomplicated studies addressing only specific queries (puppy count).

**History and clinical information**—Clinical information improves interpretation accuracy.<sup>23,24,33</sup> The requesting veterinarian should provide relevant clinical details such as signalment, history, working diagnosis, clinical signs, and lab results.<sup>25</sup> This information is also essential in localities that mandate justification for radiological procedures as a fundamental aspect of radiation protection.<sup>26</sup> Additionally, third-party payers may require this data before reimbursement.<sup>1</sup> Requesting veterinarians should also include specific clinical questions with their initial request to expedite turnaround time and minimize follow-up inquiries. The complexity of required information varies with clinical situations. While some information may be reasonably inferred or derived from the request, radiologists should confirm enough information is supplied for study selection, interpretation, or both.<sup>1</sup> If the requestor fails to provide pertinent information and it cannot be easily obtained or deduced, the radiologist should seek it, provide the best possible interpretation, or decline service. Both requestors and radiologists share responsibility for ensuring adequate clinical context is known.<sup>27</sup>



**FIGURE 2** The impression and findings should hold complementary information that is nonrepetitive. Answering clinical questions is essential, context-specific, and goes beyond merely summarizing findings. In a diagnostic report, the answer is often a diagnosis, a prioritized differential diagnosis, or a statement that the cause is unknown. Interventional or treatment planning reports typically address different questions, such as those related to complications or the spread of disease. Requestors may also have unique questions related to the study.

**Technical details**—Reports should supply sufficient technical information so another radiologist can assess the impact on interpretation and potentially repeat the study. For routine studies, the study name (dorsoventral and right-lateral thoracic radiography) often sufficiently describes the procedure.<sup>1</sup> If standard protocols exist, more complex studies may also be summarized by the study name (brain MRI, full abdominal ultrasonography). Record the number of images assessed as images can be added to archives independent of report verification. Discourage removing images from archives after final report verification. For real-time transient images (videofluoroscopy and ultrasonography), document if images were not archived because of circumstances (urgency, technical issue). This supplies clarity when comparisons to these studies are tried. If used to generate novel information, specify artificial intelligence type, purpose (lesion detection, report writing), and any human oversight.

**Comparisons**—When evaluating a study, compare it with pertinent prior images and reports whenever possible.<sup>28,29,77</sup> Specify what was compared (study type, date, location) and outcome (resolved pneumonia). If applicable, state unavailability of prior images or reports.<sup>10,30</sup> For previously unreported abnormal findings that are present in prior images, or for different interpretations, document current information without pejorative comments.<sup>28,31–33</sup> Inform the original reporting radiologist of significant discrepancies when practical.<sup>34</sup>

**Limitations**—Reports should document conditions that hinder addressing clinical questions and how that affected interpretation while refraining from pejorative comments about the choice of study or image quality.<sup>2,31</sup> If limitations preclude answering clinical questions,

the situation is urgent, and limitations can be reasonably corrected (acquire additional image), promptly pursue those solutions.<sup>35</sup> In cases where examinations are limited for medical reasons, consider recommending a repeat study when the patient's clinical condition allows.<sup>35</sup>

**Findings**—This section comprises factual observations foundational for forming the impression.<sup>1,36</sup> Radiologists should document all findings, even if clinically irrelevant.<sup>37</sup> This section should be a synopsis of all abnormal observations (both pertinent abnormal findings and incidental findings) and all pertinent normal findings. Avoid excessive descriptions, especially reporting multiple signs that do not add novel information or only add negligible information. Effective communication relies on standardized and technical language for precision (anechoic, border effacement, osteolysis).<sup>20,36</sup> It is important to differentiate abnormalities from normal anatomic, physiologic, or technical variations. If a finding is not reported, it is inferred to be within normal limits.<sup>1</sup> However, readers may interpret no documentation as not evaluated. Other normal findings, presumed normal findings, and artifacts, should be reported if they change clinical understanding, the omission could lead to confusion, management or follow-up is needed, or the report follows an itemized checklist format.

The findings are a summary of the veterinarian's observations, featuring brief informative facts, and do not include interpretations of the meaning of findings—except when listing findings of minor consequence.<sup>36</sup> Radiologists also should report incidental findings, even though reporting incidental findings might prompt unnecessary follow-up.<sup>37</sup> However, these findings cannot be simply characterized as unexpected or unimportant. Therefore, radiologists should report

incidental findings along with their interpreted value: consequential, unknown importance, and inconsequential.<sup>28,37,38</sup> “Incidental findings of minor or no consequence” should be listed in the findings without detailed descriptions and omitted from the impression.<sup>36</sup> These findings, along with other clinically insignificant or benign ones, have been described as “buried findings” because they are included in the report but not in the impression.<sup>36</sup> These findings generally do not require action or follow-up, but some could have future importance. Incidental findings of “consequence” or “unknown importance” should be described in the findings and their importance discussed in the impression.<sup>36</sup>

**Impression**—This section comprises the thoughtful and clinically contextualized synthesis of the findings, supplying answers to clinical or legal questions, and management recommendations when proper.<sup>2,36</sup> It directly addresses the clinical questions, urgent conditions, or states if questions remain unanswered.<sup>36</sup> The types of answers vary with the clinical context, including whether the study was for diagnosis, treatment planning, or intervention. Justification for the responses should follow, and possibly recommendations.<sup>36</sup> Use clear, unambiguous, and actionable language. In contrast to the findings that may include technical language, the impression should use common language and be self-sufficient for most readers.<sup>36</sup> Importantly, avoid unnecessary repetition or description of findings.<sup>36</sup> The impression should emphasize the critical aspects of a study and explain their relevance within the clinical context.<sup>36,39,40</sup>

Consider providing a list of imaging diagnoses (see “Summary of key features”) to enhance clarity and comprehension of consequential or potentially consequential findings. In some diagnostic reports, the imaging diagnosis is definitive and requires no further explanation (panosteitis). However, other situations require elaboration. For example, simply concluding “cranioventral lung consolidation” is insufficient. When possible, offer either a definitive or well-supported diagnosis (aspiration pneumonia given the history of vomiting, fever, and leukocytosis) or a prioritized differential diagnosis (aspiration pneumonia, bronchopneumonia, pulmonary neoplasm, pulmonary hemorrhage). If a specific infectious agent, neoplasm, or cause of hemorrhage is likely, this should also be stated, though further testing is often necessary to confirm this level of specificity. For normal studies, address any specific clinical question that is known or reasonably inferred. For example, instead of merely noting that the study is normal, it may be appropriate to state “no metastasis” or “negative for congestive heart failure.”

While many diagnoses can be made without qualification (gastric dilatation-volvulus), it can be beneficial to add the likelihood of a diagnosis (questionable, probable, presumed, or definite) and the reason for it. However, these terms may be interpreted differently by readers.<sup>38,41</sup> In one study, “diagnostic of” was the only phrase with high agreement between radiologists and nonradiologists.<sup>41</sup> Therefore, avoid words that increase ambiguity or delay or prevent proper patient management by improperly lulling readers into inaction.<sup>21,36</sup> If such terms are used, provide further clarification, explaining why something is questionable or probable and suggest subsequent actions, like recommending a biopsy. Also, refrain from using phrases like “clinical correlation” to shift responsibility to others.<sup>20,21,33</sup> The radi-

ologist’s duty encompasses not only documenting findings but also making clinical connections. If a precise interpretation is hindered by insufficient information, reasonably strive to obtain the necessary details. Alternatively, clearly state when the results are inconclusive and discuss how to further address the clinical question. For example, specify what additional information is needed and how it would affect the impression.

The impression is highly dependent on clinical context, as the same imaging finding can lead to different interpretations across patients. Radiologists often lack complete patient information or ideal images, so their impressions are based on the available data. For example, the most clear and explicit impression for “slight diffuse hepatomegaly” in a dog with incomplete clinical information might be: “The cause and clinical importance of this finding are unknown.” Stating that clinical correlation is needed is unnecessary, as reasonable and ordinary veterinarians already understand that correlating imaging findings with the patient’s overall health, medical history, and clinical signs is part of their role. However, the radiologist can occasionally help guide the process. When the differential diagnosis is broad, explicitly noting that the imaging findings are nonspecific can be helpful. Additionally, specifying that both benign and malignant conditions are possible, indicating that normal variation is likely, or highlighting potential pathological processes (e.g., endocrinopathy, inflammation, neoplasm), can be useful if enough information is available. In some cases, highlighting the most relevant aspects of the clinical correlation is also beneficial. For example, the impression might include: “Endocrinopathies affecting the liver often present with concurrent serum biochemistry abnormalities.”

**Recommendations**—Radiologists cannot fully grasp the importance of every finding due to several factors (limited literature evidence, diverse clinical experiences, technical issues, artifacts). In such instances, the impression should explicitly say that the cause and clinical relevance of these findings are uncertain or that the clinical questions cannot be answered. Recommendations may be included to address uncertainties and highlight the most crucial aspects of the impression. For example, genuine concerns about malignancy might be underscored by recommending a biopsy. While recommendations are typically integrated into the impression, a separate section could ensure a comprehensive communication loop, particularly for addressing incidental findings of uncertain importance<sup>42</sup>; however, it may also inadvertently overemphasize specific issues.<sup>36</sup> Presenting recommendations firmly and without conditional phrases like “if clinically indicated or warranted” increases the likelihood of follow-up actions.<sup>43,44</sup> Communicating directly with the requestor, and without including specific timeframes for when to follow up, also increases the likelihood of earlier follow-up.<sup>43</sup> Language suggesting doubt (cannot rule out, is possible, unlikely) does not affect the timeliness of follow-up.<sup>45</sup>

Radiologists should make recommendations only after weighing the potential effects on patient care, the client, and other healthcare professionals: actively following up on cases is crucial for honing this skill.<sup>36</sup> Recommendations should not be made when there is insufficient information about the patient and client to support them, or when

the information is unnecessary (reasonable and ordinary veterinarians understand appropriate treatments). Supplying improper recommendations can be as detrimental as misdiagnosis and may place requesting veterinarians in uncomfortable positions. Tailoring responses to the requestor's level of training is advisable, as specialists often prefer fewer recommendations compared with general practitioners.<sup>2,3</sup>

The subcommittee disagreed about making recommendations. Some believed recommendations should be limited to follow-up studies, other evaluations, or treatments involving imaging technologies. Others felt broader recommendations for lab tests, surgery, or other treatments were proper, but only in urgent situations. Some considered these suggestions too restrictive, especially for radiologists with other capabilities or when dealing with general practitioners. Some believed that recommendations should include how to improve imaging techniques. Some thought that recommendations should always include explicit comments (breeding recommendations, infectious disease testing recommendations) for diseases or conditions that have a potential of future transmissible harm to animals or people, including zoonotic diseases, reportable diseases, and known heritable conditions.

The subcommittee agreed that recommendations are discretionary and should be clear, specific, and aimed at providing proper patient care. Recommendations should not be used to avoid answering clinical questions and should never exceed one's scope of practice. For example, the American Association of Equine Practitioners advises veterinarians to document all abnormal findings and offer a qualified opinion on their functional impact without opining on the horse's suitability for its intended purpose.<sup>46</sup> This decision lies with the buyer, who must consider more than just a veterinarian's prepurchase examination. The subcommittee also agreed that radiologists should consult other specialists when practicable to offer more specific and clinically relevant recommendations.<sup>36</sup> When recommending additional studies, specify how it is expected to contribute actionable information or which aspect would be most helpful.<sup>10,36</sup>

**Signature**—Signers should proofread reports for errors and review images when there is concern for error.<sup>47</sup> Signatories, typically authors, confirm the report's alignment with their intentions. While most reports have a single signer, contributions should be documented if decisions or recommendations are based on them. In postgraduate training, supervising radiologists often co-sign reports.

**Addendum**—Discrepancy documentation should be distinct from the original report, either as independent statement or an edited copy of the original report.<sup>10</sup> Addenda can rectify minor typographical mistakes or major errors, with changes being signed, dated, and accessible alongside the original report.<sup>11</sup> When an addendum is generated due to re-review of the study, make it clear that it supersedes an earlier report (provide date of prior report).<sup>48</sup> Using the term "re-review" effectively communicates why an addendum is issued, typically without raising concerns or inviting criticism that might come from explicitly stating an error was made.<sup>49</sup>

**Disclaimer**—Reports may include expressions of study limits, but disclaimers do not fully absolve radiologists of legal responsibility and may be problematic.<sup>50</sup> If used, disclaimers should be simple, short, and

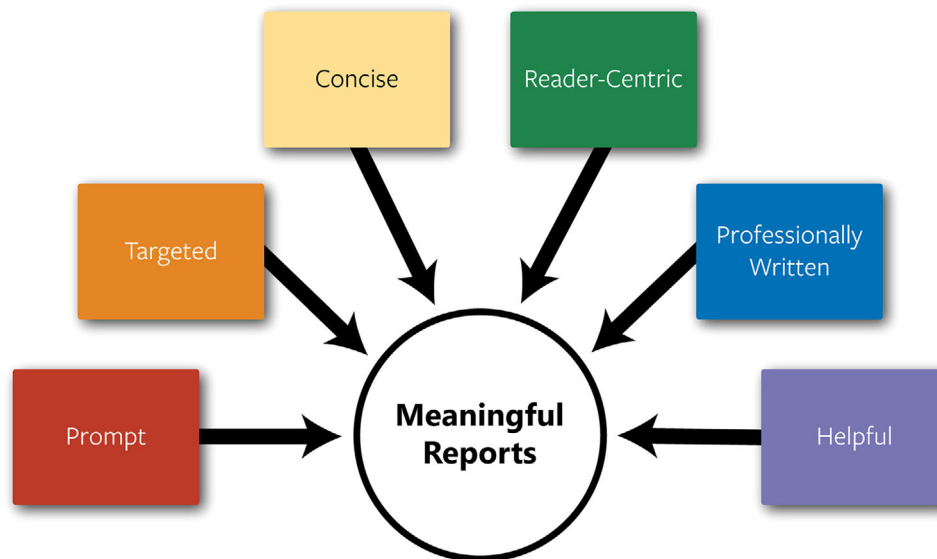
nonspecific.<sup>51</sup> Disclaimers not improving patient outcomes or helping requesters are unnecessary.

### 3.1.2 | Chronology

Reports should offer contemporaneous accounts of patient care unless requested later for a second opinion or forensic analysis. The subcommittee debated how to address potential discrepancies between the image acquisition and report dates. Some advocated for the report to focus exclusively on the imaging study and the information available at the time of image acquisition, emphasizing the crucial role of preserving the original assessment's integrity as a permanent record of the patient's condition at that specific moment. Others supported the integration of information reasonably available at the time of report writing. They emphasized that interpretation incorporates clinical information, that patient care decisions and interpretations evolve over time, and that the final report represents just one viewpoint in a series of evaluations. Because the date of the final report establishes its place in the medical record's chronology, postponing finalization without reasonably considering new information could potentially lead to confusion and misinterpretation for someone reviewing the medical record. In such cases, it may appear that the final report suggests diagnoses already disproven or recommends studies already conducted. However, in adopting this approach, reports also must be forthright about prior assessments, particularly when patient care decisions are based on them. If the final report substantially deviates from earlier assessments, it should include the original assessment, the alteration made, and the rationale behind it. This practice ensures that the original information is documented without introducing discrepancies into the timeline or perpetuating misinformation. Additionally, using the present tense shows that reports reflect current assessments.<sup>20,52</sup> Disagreements about whether reports should reflect information available only at the time of image acquisition versus the time of report writing could be avoided by reducing report turnaround time.

### 3.1.3 | Partial evaluations

Regardless of potential fatigue or workflow pressures, radiologists have a duty to review all images.<sup>53</sup> This practice helps prevent challenges in justifying the exclusion of any image, as observed when radiologists in human medicine faced lawsuits for overlooking abnormalities in scout images.<sup>28,54–58</sup> If a client benefit exists (cost savings), the requestor might be justified in sending only relevant images for interpretation. However, if a major issue is found outside the area of interest, legal assessment may be needed to decide if care standards were met. Even when asked about a particular issue, radiologists must assess the entire study before finishing a report. Partial evaluations are common in curbside consultations. If the offered advice is specialized and relied upon by the requesting clinician, the radiologist could incur liability, which underscores why such discussions should be written down.<sup>28</sup> One solution to workflow pressures is advocating more



**FIGURE 3** Meaningful reports go beyond thoroughness and accuracy. They facilitate effective communication between radiologists and healthcare providers to enhance patient care. Delivered promptly, these reports integrate clinical information to prioritize and interpret study results, address clinical queries, assist reader comprehension, and spur appropriate actions.

evidence-based targeted examinations that address specific questions. Documentation complexity also can vary. For instance, it is reasonable to generalize some incidental findings like “widespread periodontal disease” rather than detailing each tooth. However, the clinical significance must be clear, potentially recommending consultation with a dentist. For a dental study, this approach would be inappropriate.

### 3.2 | Meaningful content and structure

The radiologist’s foremost responsibility is patient care.<sup>59</sup> Therefore, decisions about report writing practices should prioritize patient interests while balancing technological constraints and workflow issues.<sup>10</sup> Radiologists should deliver meaningful reports, which have more qualities than thoroughness and accuracy (Figure 3)<sup>3,21</sup>:

- Prompt—conveys information to the proper person at a time that can effectively influence patient care.
- Targeted—explicitly addresses the clinical questions or reasons for the study, which differ for diagnostic, treatment planning, and interventional reports.
- Concise—exemplifies qualities of clarity, brevity, and pertinence.
- Organized for the reader—reduces reader effort to understand the information, its significance, and necessary actions.
- Professionally written—avoids grammatical and punctuation errors, poor word choices, slang, jargon, acronyms, and abbreviations.
- Helpful—is memorable, informative, and practical; induces proper actions; addresses clinical questions and significant unexpected findings; and proactively answers relevant unasked questions. It considers factors related to the spectrum of care, offering a range of care options based on costs, outcome goals, and accessibility to medical diagnostics and treatments, including imaging modalities.<sup>60</sup>

#### 3.2.1 | Communication

Patient care is enhanced by closing communication loops between the radiologist, requesting veterinarian, and client, ensuring all have the necessary information to make informed decisions. In human medicine, both requesting physicians and radiologists share responsibility for accurate, timely information exchange.<sup>61</sup> Requesting physicians have an absolute responsibility to obtain the results of each lab test, study, and consultation they request, and radiologists have an equal responsibility to call with urgent findings, especially when unexpected.<sup>59,62</sup> Therefore, regardless of the requestor’s role, radiologists have both legal and ethical duties to ensure crucial information is communicated promptly. Requesting physicians are also obliged to read and comprehend reports, while radiologists must produce reports that are easily comprehended and induce appropriate action.<sup>1,21,24,28,63</sup> In veterinary medicine, requestors and radiologists also share responsibility for ensuring messages are received and comprehended by all involved in a patient’s care. Furthermore, document efforts to close communication loops outside of the report, including the date and time of attempts, discussed details, and reasons for any unsuccessful communication (e.g., office closure).

**Audience**—When composing reports, writers should consider the intended reader, forecast how that person will experience what is written, and be aware of reader preferences.<sup>3,25</sup> In human medicine, reports are accessible to a broad audience, including patients, because of new technology; a development that radiologists must address.<sup>36,38,63,64</sup> Similarly, subcommittee members were concerned about technologies giving clients direct access to reports but had varying opinions on producing client-oriented reports. Some argued against them, citing potential gaps in client understanding.<sup>65</sup> Others believed that a report clear to a client would also be clear to healthcare providers.<sup>1</sup> There also were differing interpretations of what consti-



Examples of Hedging Language	Terms of Visual Perception
consistent with	perceived
appears	visualized
unremarkable	observed
grossly or relatively normal	noted
no substantial abnormality	seen
no overt	there is
no evidence of	there are
cannot rule out	demonstrated
clinical correlation recommended	

**FIGURE 4** Expressing confidence in reports amidst uncertainty is challenging and often leads to hedging language. While this can ensure technical accuracy, it may also deter readers from taking appropriate action. For example, stating “no overt sign of metastasis” or “no evidence of metastasis” instead of “no metastasis” might prompt the reader to question whether subtle signs were missed. Similarly, terms related to visual perception often add unnecessary words without adding value, reducing clarity and impact. Furthermore, overusing phrases like “There is...” can make writing monotonous and less engaging. Removing these terms makes reports more direct and effective. Compare “There are multiple soft tissue nodules in the lungs” or “Multiple soft tissue nodules are seen in the lungs” with “The lungs contain multiple soft tissue nodules.” While conveying the same information, the latter is concise and uses a simple sentence structure that establishes anatomic context (lungs) before introducing new details (nodules). Greater conciseness can also be achieved using headers such as “LUNGS: multiple soft tissue nodules.” Although hedging language and terms of visual perception are grammatically correct, avoiding them enhances communication effectiveness.

tutes client-oriented reports, ranging from reports prepared exclusively for clients to veterinarian-oriented reports with client-friendly summaries. The central issue was the established workflow whereby the attending veterinarian serves as the intermediary between the consultant and the client. Advocates for veterinarian-oriented reports emphasized this process, while supporters of client-oriented reports aimed for clarity and clinical relevance regardless of audience. The subcommittee agreed that reports have a diverse readership, including attending veterinarians, other healthcare professionals, clients, and courts. Therefore, reports should be generally understandable, even when tailored to specific audiences like attending veterinarians.

Be direct—Hedging or qualifying the message can mitigate legal risk, especially when confidence is lacking.<sup>36,66,67</sup> However, a challenging experience in report writing is expressing confidence where there is slight doubt. Hedging language is often used in these instances (Figure 4).<sup>3</sup> However, this approach can make sentences technically correct while failing to promote appropriate action. Authors might also hedge by offering an unnecessary differential diagnosis or by recommending unnecessary additional testing, such as obtaining additional views for completeness when the available images already provide reasonable confidence. A radiologist’s report represents an educated opinion based on available information, not incontrovertible truth.<sup>3,68</sup> Uncertainty is inherent, and the key is whether the impression compels appropriate action and aligns with what ordinary radiologists find sensible. If reasonably confident, state it assertively without qualification. Only hedge when the risk of mismanagement is significant.

Writers must distinguish between unclear terminology and genuine uncertainty. Instead of using vague terms that sound important but do not contribute telling information (“possible lung opacity”) be explicit about what is unknown. Genuine uncertainty should be expressed

clearly and confidently. For example, say the results are indeterminate for small-bowel obstruction or the cause and clinical importance of a finding is unknown. Although imaging may not offer a definitive diagnosis like histology, culture, or genetic testing, explicit diagnoses should be included in reports when there is reasonable confidence or concern based on available information. For example, mentioning “hemangiosarcoma” when reporting a splenic tumor in a geriatric German shepherd dog. In confirmed cases, avoid describing abnormalities as if you are oblivious to prior information. In this context, it is proper to say something like, “The oral melanoma forms a large mass-like tumor that arises from the vestibular gingiva next to the left lower third incisor.”

In standard English, avoid vague expressions and double negatives like “cannot rule out.” To eliminate double negatives, provide a prioritized differential diagnosis or use direct statements like “is possible.” For example, after a normal brain MRI in a dog with suspected meningoencephalitis, one might state, “Inflammatory disease is possible” rather than “Inflammatory disease cannot be excluded.” Additionally, avoid anthropomorphizing, state that “The liver is enlarged” instead of “The liver exhibits enlargement” or “Right kidney length is 4 cm” rather than “The right kidney measures 4 cm in length.” In reports organized by anatomic parts, complete sentences (subject and predicate) are unnecessary as the assumed sentence structure suffices.<sup>36</sup> For example, “LIVER: diffusely enlarged and hyperechoic with round margins.” Terms of perception (Figure 4) should be used sparingly, primarily for stylistic reasons, as they rarely add substantive information.<sup>36</sup> Avoid ambiguous phrases like “no opaque foreign body.” This phrase is unclear because it questions the possibility of a lucent foreign body. Simply make factual statements like “no foreign body.” Avoid using “radiographic evidence,” which is understood when evaluating radio-

graphs. For example, instead of hedging (“no radiographic evidence of foreign body”) say “no foreign body.” If worried a result is false, explicitly express your concern and why: An undetected foreign body is possible because the dog swallowed a ball.

**Standardized terminology**—Using a standardized medical lexicon is crucial for precise communication. It helps prevent misunderstandings, ensures adherence to care standards, aids in research, and provides structured education for trainees.<sup>3,10,14,36</sup> Standardized terms exist for certain topics like radiographic projections and anatomic nomenclature.<sup>69,70</sup> These terms should be used routinely, but acceptable synonyms are available in specialized fields. It may be necessary to define terms for clarity. Future standardized report templates are likely to incorporate a consistent vocabulary. Using official anatomic terms (“gingiva,” “iliopsoas”) is always suitable for reports, but conventional translations (“gums,” “jaw,” “hip,” and “fetlock”) are acceptable.<sup>70</sup> Unless reporting to targeted audiences, avoid overly complex scientific terms, esoteric terms, in-house jargon, abbreviations, or slang. Also, maintain professionalism by avoiding overly casual or inappropriate language.<sup>3</sup> Grading systems, which may be general or specific, can enhance communication when categories are unequivocal. Adding comparable quantitative data immediately after its qualitative descriptor can improve clarity: “The lung tumor is small (3 × 5 cm), round, circumscribed, and has a homogeneous soft-tissue attenuation (34 HU).”

### 3.2.2 | Assisted reader comprehension

If report structure is poor, then readers spend too much effort figuring out the organization versus concentrating on the message.<sup>71</sup> Authors often begin by organizing their thoughts, which may not provide the logical progression of information that readers need. Reader-centric reports help readers navigate and understand reports.

**Organize the reader’s thoughts**—Unless following a structured template, reports should lead with the most crucial information as that is what readers seek.<sup>39,40,71</sup> Also, first establish a familiar context before introducing new information.<sup>71</sup> For documenting findings in diagnostic reports, starting with the abnormality’s anatomic location is an excellent way to provide a familiar context. For treatment planning reports, starting with the diagnosis may supply the proper context (see “oral melanoma” example). These steps orient readers and set the stage for the detailed findings that follow. Readers tend to absorb new information best when it is placed at the end of a sentence or paragraph.<sup>71</sup>

When guiding readers to an anatomic location, organize the reader’s thoughts by being as precise as possible. For instance, terms like “caudodorsal thorax,” “caudodorsal lung field,” and “left caudal lung lobe” may describe the same abnormality, but each bears distinct implications for the differential diagnosis. If the abnormality is unequivocally in the lung, there is no need to consider nonpulmonary abnormalities. Describing an abnormality in the caudodorsal thorax would entail a broader differential diagnosis.

When abnormalities are difficult to find or see, authors might begin by guiding readers to specific images. Sometimes, images are integrated into reports as key images through interactive multimedia reporting, which enables the incorporation of images, labels, and hyperlinks.<sup>72</sup> However, it is crucial to provide context, as these elements can be misleading or distracting if overused for aesthetic purposes. Key images should complement, not replace, text.<sup>73</sup> Incorporating lists and tables is also valuable for organizing complex information, especially when serially comparing measurements.<sup>36,71</sup>

**Summary of key features**—Synonym: imaging diagnosis. Summarizing information to the highest possible certainty drawn from an imaging study can enhance reader comprehension about diagnoses with varying degrees of clinical importance. Each summary item may be a final or qualified diagnosis or a series of highly valuable facts, such as anatomical site, distribution, time course, severity, and underlying pathological process. Patients may have none, one, or multiple imaging diagnoses. Examples include:

- Severe, acute gastric dilatation-volvulus
- Moderate, acute erosive polyarthropathy
- Small, focal, right adrenal nodule, new since last year
- Moderate, diffuse, chronic microhepatia, unchanged in 6 months
- Acute, traumatic, open, nondisplaced, diaphyseal, left tibial spiral fracture

Imaging diagnoses may be included in the findings, the impression, or both, depending on the study. In the findings, summarize “findings of minor consequence” as an imaging diagnosis rather than providing detailed descriptions. This can be achieved by including them under the relevant header in a structured report or by listing them separately. In the impression, consider summarizing “consequential and potentially consequential findings” detailed in the findings as a prioritized list of imaging diagnoses. Alternatively, indicate study normalcy:

- Abdominal ultrasound: normal study
- Abdominal ultrasound: normal study with minor findings

**Simplify content without diminishing content**—Avoid redundancy and demanding sentence structures, opting for brevity and concise language. For instance, reporting an imaging pattern (“lung consolidation”) is often enough without listing component signs (“border effacement,” “air bronchogram”). While these signs are crucial for the radiologist’s analysis and student learning, their inclusion in a report may be unnecessary. The report—especially the findings—should be a summary of the radiologist’s evaluation, not a step-by-step commentary.

**Avoid a long differential diagnosis and logic gaps**—Experienced radiologists will employ conscious reasoning methods, like the “gamut” approach, for complex studies.<sup>74</sup> This entails a comprehensive image evaluation to construct a complete differential diagnosis (a gamut), culminating in identifying the most likely diagnosis based on various sources: patient signalment, history, and relevant clinical and lab data.<sup>75</sup> While this process is logical and accurate, it can be time-intensive and not reflective of common practice.<sup>74</sup> Seasoned radiolo-

gists often opt for a heuristic approach, famously known as the “Aunt Minnie” approach, which relies on swift visual recognition of signs, akin to everyday visual recognition of people or objects.<sup>76</sup> This expedites diagnosis and is crucial for managing high caseloads, although prone to biases and mistakes.<sup>74</sup> Sometimes called fast and slow thinking,<sup>77</sup> both approaches are used in report writing. While the first is invaluable for naming uncommon conditions, teaching systematic interpretation, and organizing interpreter thoughts, some gamuts are unhelpfully long. When the differential diagnosis is extensive, it may be better to prioritize pathogenic mechanisms (neoplasia vs. inflammation) and supply recommendations for the next steps. Heuristic approaches, while efficient, can lead to leaps in logic that confuse readers. Thus, it is essential to offer enough steps for readers to follow the radiologist’s thought process, ensuring clarity and comprehension of the report.

**Coherence**—Maintaining consistency within a report and among similar studies aids reader comprehension. For easier comparisons, use the same unit for similar measurements. Use the same terms throughout a report, even when synonyms exist. Templates, especially those with predetermined responses, are particularly helpful for consistency. Descriptors should be logical and aligned with visual sensation (“opaquer” and “enlarged”) versus other senses (“wet” and “heavy”). Descriptions should mirror confidence level: depending on one’s confidence that uteromegaly is present, one may describe an enlarged uterus or a large tubular structure. In serial studies, if earlier findings have been thoroughly documented, one can refer readers to prior reports and focus on new findings and pertinent static findings. However, do not simply copy and paste an old report without evaluating the new study.<sup>28</sup>

**Report structure**—Various report styles exist and the evidence that one is superior is inconclusive. Radiologists have ample autonomy to showcase their unique styles, but greater use of structured reports with standardized templates is likely the future norm.<sup>33,14,78</sup> Structured templates offer unique opportunities to enhance radiology reports by increasing clarity, ensuring comprehensive documentation, aiding in medical research, and promoting evidence-based medicine through clinical decision support tools based on consensus statements, practice guidelines, and published rules.<sup>14</sup> Well-designed templates follow a set order that aligns with reader expectations and ensures a cohesive disease description, even when templates promote dividing features into separate sections.<sup>36</sup> While generic templates are useful for basic studies, contextual templates tailored to specific diseases (portosystemic shunting, myxomatous mitral valve disease) or purposes (prepurchase examination, tumor burden assessment) may benefit special studies. Templates with structured choices also may reduce digital speech recognition errors.<sup>78,79</sup> Voice recognition software reduces turnaround time but increases mistakes.<sup>28,36,80,81</sup>

Structured templates also have potential downsides. Overreliance on predetermined lists might lead to inaccuracies.<sup>14</sup> The impact on resident training and reader response to formulaic reports is uncertain. Structured reporting employing checkboxes and drop-down menus may slow workflow by diverting the radiologist’s attention from images to the reporting monitor for template completion.<sup>14,64,79</sup> If structured reporting also relies on the use of a mouse and keyboard

instead of more efficient speech recognition devices, then workflow may be slowed further.<sup>64,79</sup> Advanced technologies, including artificial intelligence and related fields like natural language processing, hold enormous potential to overcome these workflow issues.<sup>79</sup>

**Proofread**—Radiologists should review and edit their reports, and trainee reports, to enhance accuracy, clarity, coherence, and overall quality.<sup>10</sup> Embrace revision as a vital step in creating meaningful reports.<sup>36</sup>

### 3.3 | Legal and ethical considerations

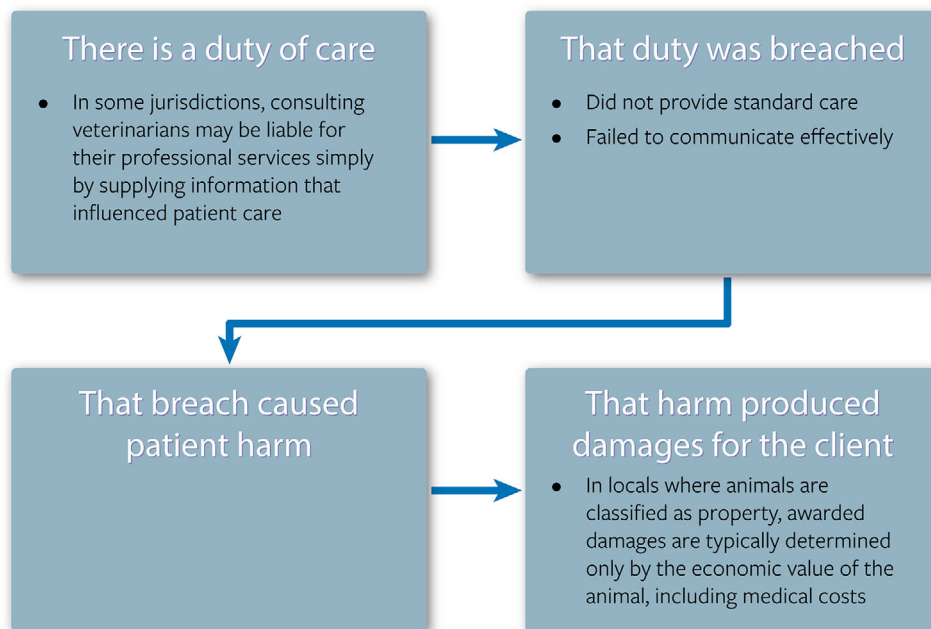
#### 3.3.1 | Who may write reports?

Any veterinarian may interpret and document an imaging study. Providing medical services usually requires a valid license, establishing a duty of care, and obtaining informed client consent. Specific requirements vary by location and can affect liability coverage. In some locations, generalists and specialists have distinct accountabilities, highlighting the need to inform the public about offered services.<sup>82</sup> Clear qualification disclosure is essential in these places to avoid misrepresentation claims. This may involve specifying if the veterinarian is a general practitioner, imaging resident, residency-trained practicing radiologist, board-certified practicing radiologist, or another board-certified specialist. Certain regions only allow representation as a veterinarian or either a veterinarian or veterinary specialist. Veterinarians are responsible for understanding how laws apply to their situation, which may hinge not only on the location of the veterinarian but also the patient.

**Postgraduate training**—resident members-in-training have special considerations due to mentor oversight, with mentors bearing liability for trainee actions.<sup>83</sup> In human medicine, as part of a supervised training program, residents may authenticate reports when confident in their interpretation and have access to consult with a board-certified radiologist.<sup>67,84</sup> In both human and veterinary medicine, however, accredited training programs and institutions may have superseding policies regarding report authentication and whether unsupervised verification, including moonlighting, is allowed or counts for caseload requirements. Trainees should be familiar with these policies and recognize that licensure and professional liability insurance coverage can vary depending on the training program. If moonlighting is allowed, residents should disclose their trainee status and refrain from implying their work is supervised or associated with the institution supplying their training. Similarly, residency-trained practicing radiologists without board certification should represent themselves appropriately and act within the boundaries of conscience.

#### 3.3.2 | Professional liability

Veterinarians should ensure they have adequate professional liability insurance coverage. Equine practices often have higher risk of significant settlements because, in locales where animals are classified as



**FIGURE 5** Veterinarians typically must be licensed, establish a duty of care, and obtain informed client consent to provide medical services. Within statutes of limitation, and depending on the locale, legal authorities (e.g., state boards) may discipline a veterinarian when acting unprofessionally or sue for damages when four criteria are met (white). Key issues about professional liability for veterinary radiologists are bulleted.

property, damages are for the economic value and medical costs of the patient.<sup>85</sup>

**Medical malpractice and negligence**—Veterinarians may face negligence or malpractice claims, which occur when medical providers breach the duty of care, leading to patient injury and subsequent damages to the client (Figure 5).<sup>86,87</sup> An act or omission is not malpractice if done without the intent to cause harm or the knowledge that harm might occur. In radiology, failure to fulfill the duty of care often involves damages, breach-of-contract issues, or both.<sup>1,3</sup> The first primarily pertains to failure to diagnose but can encompass injuries arising from performing procedures. The second concerns ineffective communication of study results.<sup>88</sup> For a claim to succeed, a legal duty of care must be proved. This duty is easily proven with a VCPR in place. However, VCPR recognition and regulations vary globally and within states (USA). Veterinarians offering imaging services might not hold a VCPR, contingent on their role as an attending or consulting veterinarian. Even without a VCPR, a veterinarian can be subject to legal action because there are other ways to prove legal duty exists. In human medicine, demonstrating duty arising from a physician-patient relationship can be as straightforward as providing information that influenced treatment decisions or responding to an unsolicited email with medical advice, such as a diagnosis or a recommendation for additional imaging studies.<sup>89,90</sup>

**Standard of care**—Once a duty of care is established, veterinarians are legally obligated to provide a standard of care regardless of payment. Simply, the care standard is met when they act reasonably given the circumstances.<sup>82,89</sup> Understanding the care standard sets the acceptable benchmark for imaging procedures and interpretations.

Failure to do so is a breach of duty or obligation and may lead to a lawsuit.<sup>86</sup> However, proving a breach (or defining what is reasonable) can be complex, varying by location, practice, and species.<sup>82</sup> Published standards, guidelines, consensus statements, regulations, and institutional rules do not establish a standard but can aid courts in deciding the obligation owed.<sup>28,89</sup> Veterinarians should be cautious when deviating from these sources, and contemporaneously document reasons for nonconformity. In contested cases, especially in radiology, expert witnesses with specialized knowledge relevant to the case frequently determine the care standard.<sup>82,86,89</sup> In human medicine, any physician interpreting radiologic examinations—whether a nonradiologist physician, a radiology resident, or a practicing radiologist board certified or not board certified—is held to the same standard.<sup>67</sup> This means an individual may be considered to possess equivalent capabilities and knowledge to a board-certified radiologist.<sup>67</sup> In veterinary medicine, in some locales, the status of an expert witness, whether a board-certified veterinary radiologist or a general practitioner, can influence how the care standard is defined and affect the outcomes of lawsuits or professional discipline cases.<sup>82,91</sup>

**Risk management**—For radiologists, managing risk primarily entails reducing diagnostic errors and enhancing communication for better patient care. Unless urgently needed, the release of written preliminary reports is not recommended.<sup>34</sup> When necessary, record recipients and time.<sup>7</sup> Ensuring a safe environment is also crucial when working with animals and medical equipment. Veterinarians must inform clients of significant risks before an imaging study, unless urgent care is compromised, and document the communication in the report or medical record. Safety concerns or procedural complications may need to

be communicated within or outside the report. Reports should only address issues related to a patient's safety and care, like adverse reactions to contrast material. Concerns unrelated to image interpretation or patient care, including regulatory matters like a person's occupational radiation exposure, should be conveyed outside the patient's medical record in an accompanying statement. This approach keeps the report's focus on patient care and preserves client confidentiality, obviating the need to subpoena client records for nonclinical legal matters like workers' compensation.

**Refusing service**—Veterinarians may choose who to serve, except when legal or ethical obligations compel service. Service should be refused when illegal, medically inappropriate, beyond one's scope of practice, or in response to abusive behavior (pressured to make a diagnosis or alter a report).

**Artificial intelligence**—Many electronic tools aid editing without creating original content. Emerging technologies increasingly can create original content and, when applied to report writing, will raise questions about the veterinarian's role and who holds liability for report content and accuracy.

### 3.3.3 | Modifying reports

Image interpretation is a multifaceted process that can lead to genuine differences of opinion or the possibility of not detecting an abnormality that is visible in retrospect.<sup>68</sup> This complexity arises from the fact that interpretation is not solely based on what is seen in the images but is heavily influenced by clinical circumstances, relevant history, prior images, and various biases, among other factors.<sup>68</sup> Additionally, opinions can evolve with new information or upon re-review, which means that reports offer a clinical viewpoint that may be subject to change or debate.<sup>68</sup> It is crucial, therefore, to distinguish between errors and discrepancies: differing interpretations do not necessarily imply a clear right and wrong.<sup>68,92</sup> Discrepancy refers to reasonable differences in opinion among radiologists, supported by scientific information.<sup>92</sup> Creating an environment where reasonable differing opinions are valued is worthwhile. Diagnostic error poses harm to the patient without acceptable cause and scientific justification that is vetted by experts in the field.<sup>92</sup> Common report writing errors include delayed communication, lack of clarity, perceptual errors (missed abnormalities), and cognitive errors (misunderstanding the importance of detecting/not detecting an abnormality).<sup>92,93</sup> On occasion, it may be necessary to amend a final report to rectify errors.

**Admitting error**—Acknowledge and document any error that could significantly affect patient care. Inform the veterinarian primarily responsible for the patient's care promptly, especially if the new information affects ongoing treatment. Consult legal professionals or professional liability representatives before disclosing errors to clients.<sup>28,94</sup> If a lawsuit has been initiated, discuss the matter only in consultation with your attorney.<sup>89</sup> Refrain from criticizing colleagues who made a mistake.

**Correcting errors**—Medical records should be contemporaneous, accurately reflecting events, and stored for a period. Altering medical

records can lead to imprisonment, fines, or loss of medical license.<sup>89</sup> Avoid altering reports, especially after a complaint, as it can have detrimental consequences.<sup>89</sup> If corrections or updates are necessary, use an addendum to preserve the original report, and ensure changes are properly dated and signed.<sup>11,95</sup> Radiologists must inform clinicians of changes, especially if patient care is affected.<sup>10,11,77</sup>

### 3.3.4 | Enforceable governmental rules

**Medical record ownership and retention**—The original report must be securely kept for a period typically defined by local regulations. Other factors may be relevant, including the statute of limitation upon which a complaint can be made.<sup>96</sup> Responsibility for keeping the record falls on the organization or individual acquiring the images, performing the interpretation, or both.

**Maintaining licensure and privacy**—Most places have laws that mandate licensure. While animals do not have privacy like humans, many jurisdictions have laws about client confidentiality.<sup>19</sup> These laws often impose how records are stored, who can or should have access to them, and how access is requested or granted.

**Animal abuse, neglect, and cruelty**—Because all US states and many countries criminalize animal cruelty, veterinarians may be asked to interpret images of abused animals for legal purposes. Veterinarians are ethically and, in some areas, legally obligated to report suspected animal abuse, with requirements varying by location, and some locales providing immunity for good faith reporting.

## 4 | Conclusion

Imaging reports should encompass factual documentation of findings and interpretive assessment of their contextual value for tailored patient care. While factual documentation is crucial, it supports the primary goal of addressing clinical queries. A meaningful report transcends completeness and accuracy. Meaningful reports are also professionally written, prompt, concise, pertinent, and structured for easy reader comprehension. Effective communication hinges not just on presenting information, but on ensuring its understanding for the betterment of patient care.<sup>71</sup> When documenting findings, it is common to refer to this section as the "description," suggesting the need for descriptive writing. While both descriptive and expository writing styles can be used to document findings, the latter is more suitable for medical records. It supplies facts logically, concisely, and without opinion. Hence, when composing a report, it is advisable to follow expository writing principles for the findings and to use persuasive writing for the impression. The latter entails taking a stance, presenting solid arguments, and compelling the reader to accept the interpretation and take proper action.

This consensus statement outlines points of harmony and divergence about report writing in veterinary imaging, drawing from expert opinions and available literature. An imaging report is a legal record of a patient's care. It should strictly pertain to the patient's care,

with other information conveyed through alternative means. Depending on the type of study, radiologists not only bear responsibility for documenting findings but also share responsibility for effectively communicating with those overseeing patient care, recognizing that information outside of the images may be needed to form a proper impression and that written reports alone might not suffice in urgent situations. Various approaches exist for crafting accurate, thorough, and meaningful reports. Assorted styles and types supply distinct considerations for writers. While future establishment of standardized reports is recommended for consistency and effective communication, report templates should be adaptable to specific circumstances and amenable to evolving preferences, technologies, and information.

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### Category 1

- (a) Conception and design: Scrivani, Watson, Joostens, Yanchik, Specchi, Skogmo
- (b) Acquisition of data: Scrivani, Watson, Joostens, Yanchik, Specchi, Skogmo
- (c) Analysis and interpretation of data: Scrivani, Watson, Joostens, Yanchik, Specchi, Skogmo

### Category 2

- (a) Drafting the article: Scrivani, Watson, Joostens, Yanchik, Specchi, Skogmo
- (b) Revising article for intellectual content: Scrivani, Watson, Joostens, Yanchik, Specchi, Skogmo

### Category 3

- (a) Final approval of the completed article: Scrivani, Watson, Joostens, Yanchik, Specchi, Skogmo

### Category 4

- (a) Agreement to be accountable for all aspects of the work in ensuring that questions related to the accuracy or integrity of any part of the work are appropriately investigated and resolved: Scrivani, Watson, Joostens, Yanchik, Specchi, Skogmo

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The data supporting this statement are available within the article.

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