JOURNAL OF ZOO AND WILDLIFE MEDICINE
EDITORIAL POLICY AND PROCESS

December, 2022

The Mission of the Journal of Zoo and Wildlife Medicine (JZWM) is to disseminate knowledge and increase the understanding of captive and free-ranging wildlife health. Toward this goal, the Journal will publish manuscripts that serve to improve the husbandry, medical care and study of all zoo and wildlife species.

The Journal of Zoo and Wildlife Medicine is the official publication of the American Association of Zoo Veterinarians (AAZV), the European Association of Zoo and Wildlife Veterinarians (EAZWV), and the American College of Zoological Medicine (ACZM); and it is supported by the European Zoo and Aquarium Association (EAZA). The Journal is considered one of the major sources of information on the veterinary aspects of zoological species and wildlife. Areas of interest include clinical medicine, surgery, anatomy, diagnostic imaging, physiology, reproduction, nutrition, parasitology, microbiology, immunology, pathology (including infectious diseases and clinical pathology), toxicology, pharmacology, anaesthesiology, and epidemiology. The Editorial Board and its Operations Committee establish editorial policies. The Journal is published quarterly, is peer reviewed, indexed by the major abstracting services, and is international in scope and distribution.

ETHICAL CONSIDERATIONS

Animal use in research

The AAZV supports the humane care and treatment of all animals. Any experimentation in which animals are subjected to painful or harmful conditions must be justified, and a statement as to an Animal Care and Use Committee’s approval (including license number if applicable) should be included in the manuscript. The Editor reserves the right to reject for publication any manuscript for which ethical concerns are deemed unacceptable. Authors must be aware of and adhere to all laws, treaties and regulations applying to their work.

Authorship

Individuals should be listed as authors only if they:

1) made a substantial contribution to the conception and design of the study/work, the acquisition of the data used in the study/work, or the analysis and interpretation of that data.

2) were involved in drafting or revising the manuscript critically for intellectual content.

3) will have an opportunity to approve subsequent revisions of the manuscript, including the version to be published.

All three conditions stated above must be met and each individual listed as an author must have participated sufficiently to take public responsibility for the work. For multi-institutional papers, the individual who headed the study should be listed as an author, along with individuals who provided substantial assistance (e.g., with pathological evaluations or statistical analyses) and any other individual who had a substantial impact on the study design or made a unique contribution to the paper.

All funding sources should be identified in the manuscript and provided in the Acknowledgment section. Authors should disclose to the Editor any potential conflict of interest, such as a consulting or financial interest in a company that is represented in the manuscript, and state such relationship in the Acknowledgment section. Authors must ensure that no contractual relations or proprietary considerations exist that would affect the publication of information in a submitted manuscript.

PUBLISHING AND EDITORIAL PROTOCOLS

- The Journal of Zoo and Wildlife Medicine provides options for publishing a manuscript as either Closed Access or Gold Open Access. The fees for each type can be found at https://www.aazv.org/store/. For articles published as Closed Access, the American Association of Zoo Veterinarians holds the copyrights to all material published in the Journal of Zoo and Wildlife Medicine. Prior to publication the corresponding author of the manuscript must submit to the Editor a signed copyright waiver. Persons who wish to reproduce information that has been published in the Journal must request written permission from the
Editor. For articles published as Gold Open Access, once the final version of the manuscript has been published, the author can freely share it on any public access site or institutional repository. The Journal does not provide an option for sharing an article in a pre-print repository such as arXiv or BioRxiv.

- The Journal will not accept manuscripts that have been previously published in a refereed scientific journal or proceedings. Oral presentation, use of data in in-house reports, or publication of an abstract of less than 250 words will not preclude the publication of such data in the Journal; however, note that tables and figures previously published in conference proceedings cannot be used directly.

- If any copyrighted material is used in a manuscript, a release of copyright must be provided by the Corresponding Author from the Individual/Organization holding the copyrighted material to the AAZV before such materials can be published.

- Research reported in the Journal must be testable and repeatable by other scientists who are knowledgeable in the field. In addition, there must be due reference to previous work upon which the research depends.

- Based on the input from expert reviewers, the Editor and Associate Editors judge the suitability of papers for publication in the Journal. Associate Editors, within a given field of specialization, are chosen on the basis of demonstrated expertise and high editorial competence.

Manuscript Submission and Fees

- All manuscripts should be submitted via the on-line submission process. Go to www.aazv.org and click on “JZWM Manuscript submission” link.

- A one-time processing fee must be paid before the manuscript is considered for peer review. The processing fee schedule can be found in the submission link. This fee is required regardless of whether the manuscript goes to peer review or is accepted for publication.

- Current processing fees can be found at https://www.aazv.org/page/962

- Published manuscripts will incur a per-page charge of $10 for AAZV or EAZWV members and $25 for non-members. Membership status pertains to the First Author and the Corresponding Author only.

- Companion papers or papers in a numbered series should be submitted together and be clearly designated as such.

- The author will be notified by email of the receipt of a paper, the manuscript number for the paper, and the Associate Editor to whom it was assigned.

- To minimize delays during the pre-review, review and editing processes, authors are encouraged to submit manuscripts that satisfy the parameters of formatting, style and content set forth within these guidelines.

- All manuscript submissions must include a cover letter stating the importance and relevance of the work.

THE PEER REVIEW PROCESS

The Editor receives manuscript submissions and checks them for appropriateness of fit for JZWM, proper formatting and style, and quality of English usage. The author may be asked to make corrections before peer review begins. A manuscript may be rejected without peer review at this point. This decision is based on an assessment by the Editorial Board of the quality of the manuscript and its fit for JZWM. When the manuscript is deemed ready for peer review, the Editor then assigns responsibility for peer review to an Associate Editor (AE) with expertise appropriate to the manuscript. The AE selects expert reviewers (usually two) to whom the paper is sent. Once the reviewers return comments, the AE considers the reviewers’ comments, assesses the manuscript in light of the comments, and sends a decision recommendation to the Editor. The Editor then reviews the final manuscript and accompanying documents and informs the corresponding author of the final decision. Reviewers remain anonymous, unless an individual reviewer indicates otherwise.

The Associate Editor returns almost all papers to the author for revision at least once, sometimes even before reviewers are assigned. Common reasons for revision include questions of fact or theory; poor organization and flow; lack of evidence to support conclusions, etc. Revisions must be returned to the assigned Associate Editor within 60 days.

Manuscript Decision Definitions

- ACCEPT—the manuscript is suitable for publication. Peer review is complete. The authors may be asked to make some minor final corrections.
MINOR REVISIONS—The manuscript is scientifically sound. There are minor edits that can improve the flow, presentation and clarity of the work. If the revisions are made to the satisfaction of the editorial team, the manuscript is likely to be accepted for publication.

MAJOR REVISIONS—The manuscript has scientific flaws or significant challenges with the presentation that, if left uncorrected, will result in rejection for publication. The manuscript has a chance to be successful in peer review, but only if the significant flaws can be addressed satisfactorily. The manuscript may ultimately be rejected.

REJECT—the manuscript has been deemed unsuitable/improper fit for the Journal, or the manuscript has fatal flaws that cannot be corrected. It has been rejected for publication. Peer review ceases.

Authors who strongly contest the decision of "Reject" have the option to submit an appeal. This can be done through the Peertrack system. The appeal request will be evaluated by the Editor, the Operations Committee and the Associate Editor. A decision to deny the appeal or continue with peer review will be communicated to the author.

The duration of the peer review process is quite variable, affected by factors such as the number of revisions needed, the availability of reviewers, the timeliness of the reviews, and the duration of revisions. Things the author can do to shorten the process include: ensuring all formatting guidelines are met; ensuring the English usage is publication quality at first submission; providing suggestions for reviewers who are experts in the field of your manuscript topic; turning around revisions in a timely manner; forming a good communication channel with your Associate Editor and checking in regularly.

MANUSCRIPT PREPARATION INSTRUCTIONS

The following guidelines must be followed in preparing a manuscript for submission to the Journal of Zoo and Wildlife Medicine; manuscripts that are not in the appropriate style or format will be returned to the Author. The primary source of information for this document is the Council of Science Editors, Style Manual Subcommittee. 2014. Scientific style and format: the CSE manual for authors, editors, and publishers. 8th ed. Chicago (IL): Council of Science Editors. 722 p.

General Format

- 12-point, Times New Roman font with double-spaced lines.
- 8.5 x 11" page size with standard 1" margins
- Left-justified text except section headings (centered).
- Continuous line numbering (every 5 lines) throughout the manuscript.
- Direct formatting of italics.
- Italicize scientific names (always provide scientific name at first usage of common name of all species in both the abstract and the manuscript).
- The first time any named drug or product is mentioned, it must be followed by parentheses including the manufacturer name, and address (city, state and zip code/country
### Language and usage

- The English usage must be of publication quality prior to a manuscript going for peer review. For authors who are not primary English speakers, the manuscript should be edited by a primary English-speaking scientist prior to submission.
- Use the American form of English for spelling, grammar and numeric punctuation.
- When referring to a specific animal, do not use human pronouns such as "he/his" and "she/her".
- Numbers beginning a sentence are spelled out.
- Numbers from one to nine should be spelled, except when placed before a unit and before and after the mathematic signs (e.g., 2 mg/kg, P < 0.01, n = 2). A space is needed between the number and the unit/mathematical symbol, except for percentages (e.g., 34%).
- A list of accepted abbreviations can be found at the end of this document. Outside of those listed, all acronyms should be spelled out at first use in both the abstract and again in the main manuscript.

### Reporting Drug Dosing

See table at the end of this document for how to note routes and frequency of drug administration.

### Guidance for Specific Manuscript Types

#### Normal values, non-blood

Authors are encouraged to generate substantive manuscripts that present data on multiple vari-

<table>
<thead>
<tr>
<th>Description</th>
<th>Review Article</th>
<th>Article</th>
<th>Research Briefs</th>
<th>Case Series</th>
<th>Clinical Briefs</th>
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<tbody>
<tr>
<td>Literature review of a topic</td>
<td>Hypothesis-based research studies; Comprehensive topic coverage</td>
<td>Limited scope studies</td>
<td>Three or more cases of a disease, treatment or technique</td>
<td>Single case reports; New techniques</td>
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<td>May be unsolicited or invited by the Editorial Board</td>
<td>Smaller in scope but not in quality than a full article</td>
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<td>See guidelines for N=1 case reports before submitting your manuscript</td>
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<td>Others as appropriate</td>
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<td>Materials and Methods</td>
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<td>Results</td>
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postal code, and country). Examples: detomidine (Orion, 02200 Espoo, Finland; 9 mg/kg IM), terbinafine hydrochloride (250 mg tablets, Harris Pharmaceutical, Inc., Fort Myers, Florida 33908, USA; 40 mg/kg PO, q24h for 30d). When another drug or product produced by the same manufacturer is mentioned, the address of the manufacturer is omitted.
ables. For example, a manuscript that reports normal intraocular pressure in species x is not likely to enter peer review. However, a manuscript that reports normal intraocular pressure, tear production and retinal anatomy would be welcome in peer review. A manuscript that reports normal cardiac size in species x would not enter peer review. However, a manuscript that reports cardiac size, normal cardiac ultrasonography indices and normal ECG would be welcome.

**Pathology review for species/taxa**

Retrospective pathology studies for a species should be presented as “Disease processes identified in...”. Do not submit manuscripts that only report cause of death, as these will not go to peer review. Submit disease reviews, which summarize all pathology identified for a species/population over a period of time. Cause of death can be reported within this larger dataset.

**Clinical pathology methods comparisons**

Authors seeking to compare one clinical pathology technique to another (in-house vs reference laboratory, for example) should follow the guidelines established by the American Society for Veterinary Clinical Pathology. These can be found in their 2015 publication: https://onlinelibrary.wiley.com/doi/abs/10.1111/vcp.12299. Compliance with this guidance should be stated and evident in the Materials and Methods section of the manuscript.

**Methods validation**

JZWM welcomes manuscripts that seek to validate a diagnostic assay for use in a non-domestic species. These manuscripts should contain several principles which are thoroughly discussed in the 2006 review article by Jensen and Kjelgaard-Hansen which should be reviewed prior to submission:


They must be performed in compliance with the Standards for Reporting of Diagnostic Accuracy (http://www.equator-network.org/reporting-guidelines/stard).

**The establishment of reference intervals**

Please note the distinct difference between establishing reference intervals (RI) and reporting descriptive values. The establishment of reference intervals for a species mandates a specific methodology with several quality assurance steps. These guidelines, established by American Society for Veterinary Clinical Pathology Quality Assurance and Laboratory Standards (QALS) were updated in 2020 and can be found at: https://onlinelibrary.wiley.com/page/journal/1939165x/homepage/Qals

- It is difficult to establish true reference intervals for N < 120, though criteria have been set for datasets where N is in the 20-120 range. Reference intervals can never be established if N < 20.
- The ASVCP link above includes links to three documents that will facilitate meeting the requirements for presenting your reference interval or descriptive values data. The first is a checklist that should be completed during the creation of your manuscript. The second is an Excel spreadsheet template that provides automatic formatting of your reference interval tables for datasets with N > 20 and for descriptive values for datasets where N < 20. The third is an Excel spreadsheet template for the automatic formatting of reference intervals for datasets where N > 120. Note that at the top of each table you will find notes explaining which statistical methods are recommended for each dataset.
- Authors are required to utilize the checklist, attempting to get as close as possible to meeting the requirements, and providing full transparency when recommended procedures could not be completed. It is common that not every item can be achieved. The Materials and Methods section of the manuscript must verify that the ASVCP QALS guidelines were followed. Utilization of the Excel table templates is not required, but is recommended.

**DETAILED DESCRIPTION OF MANUSCRIPT DIVISIONS**

**TITLE PAGE**

All manuscripts should begin with a title page with the following format, in this order, on consecutive lines:

- No headers.
- Brief running title no more than 45 characters, including spaces, in all capital letters.
• Manuscript title in all capital letters with no abbreviations. The title should be as brief as possible, should state the principal finding, and should include the species involved (with scientific name in italicized capitals), when applicable.
• Authors’ full names and credentials in the following format:
  ○ Robert H. Smith, DVM, PhD, DACZM
• Author names are separated by commas; “and” is placed before the name of the last author.
• Institutional affiliations and addresses should be in one continuous paragraph in the following format:
  ○ From the Fort Kenard Zoo, 241 Adams Road, Poughkeepsie, NY, 76183 USA (Jones, Radcliff); The Kettle Park Zoo, 377 Conrad Blvd, Clearlake, NV 56108, USA (Smith).
• Author affiliations should be for the institution where they worked when the work was performed.
• If an author’s present address differs from the original institutional address, it should be listed at the end of the section as “Present address (name):...”
• Finish the title page with the following: Corresponding author: name, email address. Note that the the corresponding author for peer review can be different than the corresponding author for future communication.

Abstract
• See chart for maximum word allowance.
• Single paragraph format.
• The word “Abstract:” should be indented 5 spaces. The text of the abstract should begin immediately after the word, on the same line.
• Appears at the beginning of the manuscript on its own page following the title page.
• Must be completely self-explanatory and generally should include the following: reason for doing the work, including rationale or justification for the research; objectives and topics covered; a brief description of methods used, including number of subjects; results; and conclusions. The abstract also should call attention to new items, observations and numerical data. Abstracts should be informative. Expressions such as “is discussed” and “is described” should not be included.
• Do not include bibliographic, figure, or table references.
• Do not include equations, formulas, obscure abbreviations or acronyms.

Keywords: These are no longer part of JZWM manuscripts. DO NOT include keywords in your manuscript.

INTRODUCTION
• The purpose of the introduction is to explain the relevance of the work to the the existing body of knowledge on this subject. For research manuscripts, indicate the justification for doing the research and the hypothesis to be tested. For Case Series and Clinical Briefs, explain the importance of the clinical information to the management of the species presented.
• Cite references as needed in the introduction to justify the manuscript, but cite the majority of relevant literature in the discussion of the results.
• The scientific name of a species must be included in parentheses and italics when the common name is first mentioned even if it was also done in the abstract.

MATERIALS AND METHODS
• Methodology should be given in sufficient detail to permit others to reproduce, and/or title the study. A clear description of original references is required for all biological, chemical, and statistical procedures. Diets, animals (species, sex, and age), surgical techniques, statistical models, etc., should be described. Commonly used statistical methods need not be described in detail, but adequate references should be provided.

RESULTS
• Results should be a concise account of the important findings.
• Data should be summarized in tables and figures where appropriate. The text should be used to highlight important contents of tables and figures in such a way as to allow the reader to interpret the results of the experiment. Do not use the results section to duplicate table and figure data in narrative form.
• The results of statistical analysis should be consistent with and justify the interpretations and conclusions. The most common acceptable level of probability (alpha values) is \( P < 0.05 \), although \( P < 0.10 \), \( P < 0.01 \), and \( P < \)
0.001 may be used, if justified. Alternatively, actual alpha values may be used.

- Give only meaningful digits. A practical rule is to round so that the change caused by rounding is less than one-tenth of the standard error.

**DISCUSSION**

The discussion should interpret (and not just restate) the results in the context of other published (and cited) research. It should clearly discuss the limitations of the study as well as its significance or implications of the findings.

**CONCLUSIONS**

In most papers, the conclusion is incorporated within the discussion. However, significant conclusions that relate to the objectives and that concisely highlight the most important findings from longer papers may be placed in a separate Conclusions section.

**Acknowledgment(s):**
- Follows the discussion/conclusion and precedes the Literature Cited.
- Contributors and funding sources can be listed.
- All acronyms should be spelled out.
- Acknowledgments should list the people and institutions being thanked. It should NOT include the contributions they made. In the interest of brevity, this information will be edited out prior to publication.

**LITERATURE CITED**

- Only the most relevant and up-to-date references should be used.
- Literature citations should be identified in the text and tables by a superscript number (that follows any commas, periods or semi-colons).

**Do not cite papers or studies in the text by the author’s name.** This format follows the CSE guidelines’ Citation-Name system.
- When a series of consecutive references (such as 3,4,5,6) are being cited as a group in one place in the text, these should be presented with hyphenated superscripts.⁴⁺⁻
- The literature list must be formatted according to the CSE Style guide https://writing.wisc.edu/Handbook/DocCSE.html.
- Citations should be listed in alphabetical order by first author’s surname. When there is more than one paper by authors whose names appear in the same order in each paper, the papers are listed in chronological order.
- Papers with multiple authors but the same lead author are arranged together, alphabetically by second, and then by third author, and each subsequent author.
- All citations must have at least one author. In some cases, that author may be the institution that published the work. “Anonymous” cannot be listed as an author.
- All authors of a cited paper must be listed in the Literature Cited section. **Do not use et al.**
- For the journal name in a reference, follow the abbreviations of journals used in the National Library for Medicine, which can be found at: https://www.ncbi.nlm.nih.gov/books/NBK7282/box/A33351/?report=objectonly.
- Citations of unpublished work, personal communications, and product inserts are discouraged. If inclusion is deemed necessary, the information should be listed in parentheses in the text and do not appear with the Literature Cited. Example: Very few elephants are able to fly (Fowler, pers. comm.). Unpublished data should be cited as (Fowler, unpubl. data).
- Product inserts and user manuals should not be listed in the references cited section. A website can be included in the text in ( ) if needed.
- Articles that have been accepted for publication but have not yet been published should be listed in the Literature Cited section with the designation “(In press)” in place of the volume/issue/page.
- Articles that have been submitted but not yet accepted by a journal cannot be listed as a reference. It can be added later if accepted during peer review.
- All journal citations must include both volume AND issue number.
- Every reference must be cited in the manuscript.
- For journal references, provide the volume/issue/page OR the doi number. Do not provide both.

**Citation Examples:**

**Book — Single Author**


**Book chapter**
Murphy HW. Dangerous animal crisis management. In: Miller RE, Fowler ME (eds.). Zoo and

Book — Organization as Author

Institution as Author

Proceedings paper

Thesis

Journal Article
or

Journal Article, non-English

Electronic Journal Article

Web Site

Species360 (ZIMS) Expected Test Results

IUCN Red Lists
Cite the original reference that was used to create the red listing. For example:

SPECIFIC MANUSCRIPT TYPES:
The allotted word count includes the body of the manuscript from the introduction to the conclusions. It does not include the abstract, references, tables or figures.

REVIEW PAPERS
• These papers thoroughly review all published literature on a subject of interest to the JZWM readership.
• Reviews are often solicited by the Editorial Board, but may also be submitted spontaneously.
• Their format is the same as described for other manuscripts, except that section headings will vary depending on the subject.

FULL ARTICLES
• A research article will present a hypothesis-based prospective or retrospective research project of substantial consequence. A detailed Materials and Methods section and a robust reference list are required.
• Non-research full articles will cover robust non-research content such as imaging atlases, guidelines, and any non-research content that would be of strong interest to the JZWM readership.

RESEARCH BRIEFS
• Present concise, single-variable or observational studies
• Examples include population health surveys, single dose pharmacokinetic studies, population mortality investigations, etc.
• Articles will be placed in the Article vs Research Briefs category at the editor’s discretion. The decision is based primarily on the manuscript length and complexity.

CASE SERIES
• Differ from full manuscripts in that they report
new or unusual clinical or pathological findings in a group or series of animals (three or more)
• Case Series do not have an experimental format.
• Formatting is the same as described for Research manuscripts, except that a section titled “Case Reports” replaces the Materials and Methods and the Results sections.

CLINICAL BRIEFS
Clinical Briefs provide substantive clinical information. They are intended to expand the readerships’ knowledge of or challenge our understanding of a disease process or to introduce a new clinical technique.

*JZWM does not publish single case reports. Exceptions will be made only if the Editorial Board determines that peer review is justified based on the following criteria:
• The case presents a novel diagnostic approach or technique that significantly expands the clinical repertoire for the readership.
• The case presents a novel therapeutic approach, medication or technique that substantially expands the clinical repertoire for the readership.
• The manuscript presents a previously unreported disease process (novel virus, novel parasite, novel pathogenic bacteria, novel metabolic derangement, virus-induced neoplasia, etc.).
• The manuscript contributes significantly to an expanding body of knowledge of an emerging disease.
• The evidence presented in the manuscript challenges the reader to question the accepted understanding of a disease process. i.e., adds a dimension or raises doubt on existing tenets.
• The report presents clinical information on a taxon that is significantly under-represented in the literature.
• The clinical case presents an infectious disease that is being reported in an unexpected, novel taxon (West Nile virus in crocodiles, for example).

*ALL N = 1 and N = 2 case reports will be evaluated by the editorial board using the above criteria. The majority of these case reports will be rejected without peer review.*

Authors are encouraged to contact the Editor at jzwmeditor@gmail.com to inquire about n=1 criteria for their manuscript.

TABLES
• Refer to a recent issue of the Journal for examples of table construction.
• Tables must be editable by the typesetters. Use Word or Excel and be sure the file is editable.
• Whenever possible, tables should be organized to fit vertically on the page (similar to text), so that the page will not have to be turned sideways to read the table.
• Tables are numbered consecutively in Arabic numbers. The title, body, and footnotes should all be double spaced.
• Tables can be inserted in the main manuscript file, right after the Literature Cited. It is also acceptable to upload them as individual files, if preferred. Do not do both.
• Do not use vertical lines and be sure every column has a heading.
• Do not present the same data in tabular and graphic form.
• If an explanation is necessary, use an abbreviation in the body of the table (e.g., ND) and explain in a footnote what the abbreviation stands for (ND = not done, not determined, or not detectable).
• References to footnotes in a table are by consecutive superscript lowercase letters beginning with the letter “a” independently for each table.
• Standard errors of means or standard deviations (of observations) may be attached to the means by ± signs, although a separate column or row may be used. If mean separation procedures are used, the preferred statement in the footnotes is “Means in the same column (line) with different superscripts are significantly different (P < 0.05).”
• All tables must be called out in the body of the manuscript, e.g., “see Table 1”.

FIGURES and VIDEOS
• The on-line version of the manuscript can include nearly unlimited digital content. Therefore, authors are encouraged to enhance their manuscript with relevant videos or additional figures that add to the information being shared. A good example would be a video of a new surgical technique, a video of a clinical presentation, etc. Files can be uploaded as .mov or .mp4 file types. Each of the supplemental materials should be called out in the main manuscript file.
Figures should not appear in the main manuscript file, but the figure legends must appear in the manuscript file at the end, after the Literature Cited and Tables. This is because the figure and its legend are handled separately during the typesetting process.

- Each figure should be uploaded as a high-resolution jpeg, tiff or pdf file with a resolution of at least 300 dpi. Higher is preferred.
- Figure captions should be descriptive enough to be able to stand alone.
- Provide figures in the format and layout in which you want them to appear in print. Color images will be printed in color, B&W will be printed in B&W.

Figures with parts a, b, c, d should be labeled and arranged as desired and uploaded as a single image.

- Most figures (i.e., histopathology and electron microscopy photographs) should contain letters (a, b, etc.) and arrows denoting salient features. Letters should be placed about 1 cm from the edges of continuous tone figures.
- Photomicrographs should contain the magnification (or a bar scale) and stain.
- Symbols and abbreviations used in the figure should be defined in the figure caption (except for the accepted abbreviations listed below).
- All figures must be called out in the main text, e.g., “Figure 1”.

The following is a list of abbreviations that may be used without expansion in abstracts, main text, figures and figure legends, appendices, tables and table titles.

<table>
<thead>
<tr>
<th>Abbreviation</th>
<th>Description</th>
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<tr>
<td>2D</td>
<td>2-dimensional or 2 dimensions</td>
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<tr>
<td>3D</td>
<td>3-dimensional or 3 dimensions</td>
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<td>ANOVA</td>
<td>Analysis of variance</td>
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<td>approx</td>
<td>Approximately</td>
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<td>bpm</td>
<td>Breaths per minute or beats per minute</td>
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<td>CBC</td>
<td>Complete blood cell count</td>
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<td>CFU</td>
<td>Colony-forming unit</td>
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<td>CI</td>
<td>Confidence interval</td>
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<td>CNS</td>
<td>Central nervous system</td>
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<td>CPR</td>
<td>Cardiopulmonary resuscitation</td>
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<td>CSF</td>
<td>Cerebrospinal fluid</td>
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<td>CT</td>
<td>Computed tomography or computed tomographic</td>
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<td>DICOM</td>
<td>Digital Imaging and Communications in Medicine</td>
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<tr>
<td>DNA</td>
<td>Deoxyribonucleic acid</td>
</tr>
<tr>
<td>ECG</td>
<td>Electrocardiogram or electrocardiographic</td>
</tr>
<tr>
<td>EDTA</td>
<td>Ethylenediaminetetraacetic acid</td>
</tr>
<tr>
<td>e.g.</td>
<td>Latin for “for example”; exempli gratia</td>
</tr>
<tr>
<td>ELISA</td>
<td>Enzyme-linked immunosorbent assay</td>
</tr>
<tr>
<td>ET CO2</td>
<td>End tidal carbon dioxide partial pressure</td>
</tr>
<tr>
<td>H&amp;E</td>
<td>Hematoxylin and eosin</td>
</tr>
<tr>
<td>Hct</td>
<td>Hematocrit</td>
</tr>
<tr>
<td>hpf</td>
<td>High-power field or high-power fields</td>
</tr>
<tr>
<td>HR</td>
<td>Heart rate</td>
</tr>
<tr>
<td>HU</td>
<td>Hounsfield unit or Hounsfield units</td>
</tr>
<tr>
<td>i.e.</td>
<td>Latin for “that is”; id est</td>
</tr>
<tr>
<td>kVp</td>
<td>Kilovolt peak, tube voltage</td>
</tr>
<tr>
<td>LD50</td>
<td>Median lethal dose</td>
</tr>
<tr>
<td>mAs</td>
<td>Milliamperes-seconds</td>
</tr>
<tr>
<td>MRI</td>
<td>Magnetic resonance imaging</td>
</tr>
<tr>
<td>N</td>
<td>Sample Size</td>
</tr>
<tr>
<td>NSAID</td>
<td>Nonsteroidal anti-inflammatory drug</td>
</tr>
<tr>
<td>PAGE</td>
<td>Polyacrylamide gel electrophoresis</td>
</tr>
<tr>
<td>pCO2</td>
<td>Partial pressure of carbon dioxide</td>
</tr>
<tr>
<td>pO2</td>
<td>Partial pressure of oxygen</td>
</tr>
<tr>
<td>PCR</td>
<td>Polymerase chain reaction</td>
</tr>
<tr>
<td>qPCR</td>
<td>Quantitative PCR</td>
</tr>
<tr>
<td>RT-PCR</td>
<td>Reverse transcriptase PCR</td>
</tr>
<tr>
<td>PCV</td>
<td>Packed cell volume</td>
</tr>
<tr>
<td>RBC</td>
<td>Red blood cell</td>
</tr>
<tr>
<td>RNA</td>
<td>Ribonucleic acid</td>
</tr>
<tr>
<td>mRNA</td>
<td>Messenger ribonucleic acid</td>
</tr>
<tr>
<td>rRNA</td>
<td>Ribosomal ribonucleic acid</td>
</tr>
<tr>
<td>tRNA</td>
<td>Transfer ribonucleic acid</td>
</tr>
<tr>
<td>RR</td>
<td>Respiratory Rate</td>
</tr>
<tr>
<td>SD</td>
<td>Standard deviation</td>
</tr>
<tr>
<td>SE</td>
<td>Standard error</td>
</tr>
<tr>
<td>SEM</td>
<td>Standard error of the mean</td>
</tr>
<tr>
<td>SPO2</td>
<td>Oxygen saturation</td>
</tr>
<tr>
<td>T</td>
<td>Temperature</td>
</tr>
<tr>
<td>T1/2</td>
<td>Half-life</td>
</tr>
<tr>
<td>UV</td>
<td>Ultraviolet</td>
</tr>
<tr>
<td>WBC</td>
<td>White blood cell count</td>
</tr>
</tbody>
</table>
**JZWM Journals Style Sheet—Standard Abbreviations**

**Routes of administration**

The following routes of administration can be abbreviated on first use in the abstract, main text, tables and figures:

<table>
<thead>
<tr>
<th>Abbreviation</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>ID</td>
<td>Intradermal</td>
</tr>
<tr>
<td>IM</td>
<td>Intramuscular</td>
</tr>
<tr>
<td>IP</td>
<td>Intraperitoneal</td>
</tr>
<tr>
<td>IV</td>
<td>Intravenous</td>
</tr>
<tr>
<td>PO</td>
<td>Per os, orally</td>
</tr>
<tr>
<td>SC</td>
<td>Subcutaneous</td>
</tr>
</tbody>
</table>

Intracardiac and Intracoelomic should be spelled out at first use.

**Notations of time**

Use the left column notations when reporting time:

<table>
<thead>
<tr>
<th>Abbreviation</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>ms</td>
<td>millisecond</td>
</tr>
<tr>
<td>sec</td>
<td>second</td>
</tr>
<tr>
<td>min</td>
<td>minute</td>
</tr>
<tr>
<td>hr</td>
<td>hour</td>
</tr>
<tr>
<td>d</td>
<td>day</td>
</tr>
<tr>
<td>wk</td>
<td>week</td>
</tr>
<tr>
<td>mon</td>
<td>month</td>
</tr>
<tr>
<td>yr</td>
<td>year</td>
</tr>
</tbody>
</table>

**Drug Dosing Intervals**

Use the left column notations when reporting drug dosing frequency in the abstract, main text, tables and figures. Do **not** use SID, BID, TID

<table>
<thead>
<tr>
<th>Abbreviation</th>
<th>Frequency Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>q8h</td>
<td>Every 8 hours, three times per day, TID</td>
</tr>
<tr>
<td>q12h</td>
<td>Every 12 hours, two times per day, BID</td>
</tr>
<tr>
<td>q24h</td>
<td>Every 24 hours, once per day, SID</td>
</tr>
<tr>
<td>q48h</td>
<td>Every 48 hours, every other day, EOD</td>
</tr>
<tr>
<td>q72h</td>
<td>Every 72 hours, every third day</td>
</tr>
<tr>
<td>1/wk</td>
<td>Once per week</td>
</tr>
<tr>
<td>3/wk</td>
<td>Three times per week</td>
</tr>
<tr>
<td>PRN</td>
<td>As needed, pro re nata</td>
</tr>
</tbody>
</table>