**DESCRIPTION**

*Annals of Medicine and Surgery* is an online-only, peer-reviewed open access journal with a global outlook and focus on those training in medicine and surgery (postgraduate and undergraduate). *AMS* contains a mix of original clinical and basic science research, reviews, editorials, commentary, perspectives, debate, opinion, case reports and journal club reports.

The journal crosses the whole disease spectrum of medicine and surgery but does also have a special focus on the following areas: Patient safety Human factors, teamwork, communication and professionalism Quality improvement science and practice Evidence based medicine Implementation science clinical evidence into practice Leadership and management Medical education, teaching, and training Public and global health Healthcare policy, delivery, commissioning, and resource management Use of technology and health informatics Clinical ethics and medical law Research and innovation bedside to bench and back again including applications like personalised medicine

The journal uses an author-pays model and charges a fee per article accepted for publication. Following payment of this fee, the article is made universally available to all on ScienceDirect.

*Annals of Medicine and Surgery* is indexed in: AcademicPub The British Library Cancerlit EMBASE Google Scholar Medline PubMed PubMed Central ProQuest Scopus Scisearch Thomson Reuters Emerging Sources Index

**Disclaimer**

The information and opinions presented in the Journal reflect the views of the authors and not of the Journal or its Editorial Board or the Publisher. Publication does not constitute endorsement by the journal. Neither *Annals of Medicine and Surgery* nor its publishers nor anyone else involved in creating, producing or delivering *Annals of Medicine and Surgery* or the materials contained therein, assumes any liability or responsibility for the accuracy, completeness, or usefulness of any information provided in *Annals of Medicine and Surgery*, nor shall they be liable for any direct, indirect, incidental, special, consequential or punitive damages arising out of the use of *Annals of Medicine and Surgery*. *Annals of Medicine and Surgery*, nor its publishers, nor any other party involved in the preparation of material contained in *Annals of Medicine and Surgery* represents or warrants that the information contained herein is in every respect accurate or complete, and they are not responsible for any errors or omissions or for the results obtained from the use of such material. Readers are encouraged to confirm the information contained herein with other sources.
ABSTRACTING AND INDEXING

Scopus
Google Scholar
AcademicPub
The British Library
Cancerlit
Embase
PubMed/Medline
PubMed/Medline
ProQuest
Web of Science
Directory of Open Access Journals (DOAJ)

EDITORIAL BOARD

Editor-in-Chief
Riaz Agha, London, United Kingdom

Managing Editor
A.J. Fowler, London, United Kingdom

Executive Editor
M. Agha, London, United Kingdom

Executive Committee
D. Rosin, Bridgetown, Barbados
Barry Jackson, London, United Kingdom

Statistical Editor
L.C. See, Taoyuan, Taiwan

Editorial Board
X-P. Chen, Wuhan, China
M. Cohen, Bundoora, Australia
D. Green, London, United Kingdom
S. Hamid, Karachi, Pakistan
P. Hutchinson, Cambridge, United Kingdom
P. Littlejohns, London, United Kingdom
A.K. Mahapatra, New Delhi, India
J. McKimm, Swansea, United Kingdom
D. Muzumdar, Mumbai, India
A.A. Nabar, Mumbai, India
F. Nicoli, London, United Kingdom
J. Norcini, Philadelphia, Pennsylvania, United States
D. Sokol, London, United Kingdom
J. Talati, Karachi, Pakistan
J.V. Thomas, Birmingham, Alabama, United States
M. C. Warlé, Nijmegen, Netherlands
T.G. Williams, Tunbridge Wells, United Kingdom

Assistant Editors
J. Kleef, Liverpool, United Kingdom
P. Schemmer, Graz, Austria

Associate Staff Editors
S. Acuna, Toronto, Canada
G. Alsfasser, Rostock, Germany
F. Angarita, Toronto, Ontario, Canada
J. Clark, London, United Kingdom
T.J. Evans, London, United Kingdom
A. Frampton, London, United Kingdom

Junior Staff Editors
S. Agrawal, Jodhpur, Rajasthan, India
B. Al-Dulaimy, London, United Kingdom
Y. Al Omran, London, United Kingdom
M.O. Anwar, London, United Kingdom
M.R. Borrelli, London, United Kingdom
K.A. Burke, Manchester, United Kingdom
A. Cristaudo, Caboolture, Australia
T. Franchi, Sheffield, United Kingdom
B. Gundogan, Stevenage, United Kingdom
A. Gwozdz, London, United Kingdom
M.S. Hu, Stanford, California, United States
T. Joseph, London, United Kingdom
K. Koshy, London, United Kingdom
S.Y. Lee, Southampton, United Kingdom
C. Limb, London, United Kingdom
D. Mani, Puyallup, Washington, United States
K. Shah, Oxford, United Kingdom
R. Thavayogan, Nottingham, United Kingdom
M. Vella-Baldacchino, Glasgow, United Kingdom
Introduction
As a general medical and surgical journal, *Annals of Medicine and Surgery* covers all specialties, and is dedicated to publishing original research, review articles and more all offering significant contributions to knowledge in clinical surgery, experimental surgery, surgical education and history. **All articles will be peer reviewed and if accepted for publication in the Journal, authors will be notified of this decision and at the same time required to pay an Author Processing Fee of USD 1,295 for full length articles, USD 995 for case reports and USD 500 for short communications. Authors from Argentina, Brazil, India, Indonesia, Mexico, Philippines, Russia or Turkey will pay a fee of USD 650 (for Full Length Articles and Case Reports).** Following payment of this fee articles will be made universally available at no further charge through ScienceDirect. Corresponding authors from HINARI countries (http://www.who.int/hinari/eligibility/en/) may inquire about a waiver or discount in the fee, which must be requested prior to article acceptance by contacting the editorial office at annalsjournal@elsevier.com.

Uniform Requirements

When submitting a paper authors must complete the Author Disclosure Form, which can be downloaded here. This form confirms that all authors agree to publication if the paper is accepted and allows authors to declare any conflicts of interest, sources of funding and ethical approval (if required). Please download the form and submit it with your paper. Submissions that do not include a completed form will be returned without review.

Declarations
When submitting a paper authors must declare the following aspects:

(1) **Conflicts of Interest**: At the end of the text, under a subheading 'Conflict of interest statement', all authors must disclose any financial and personal relationships with other people or organisations that could inappropriately influence (bias) their work. Examples of potential conflicts of interest include employment, consultancies, stock ownership, honoraria, paid expert testimony, patent applications/registrations, and grants or other funding.

(2) **Ethical Approval** (if required): Work on human beings that is submitted to *Annals of Medicine and Surgery* should comply with the principles laid down in the Declaration of Helsinki (*Recommendations guiding physicians in biomedical research involving human subjects*. Adopted by the 18th World Medical Assembly, Helsinki, Finland, June 1964, amended by the 29th World Medical Assembly, Tokyo, Japan, October 1975, the 35th World Medical Assembly, Venice, Italy, October 1983, and the 41st World Medical Assembly, Hong Kong, September 1989). The manuscript should contain a statement that the work has been approved by the appropriate ethical committees related to the institution(s) in which it was performed and that subjects gave informed consent to the work. Studies involving experiments with animals must state that their care was in accordance with institution guidelines. Patients and volunteers names, initials, and hospital numbers should not be used.

(3) **Funding Sources**: All sources of funding should be declared as an acknowledgement at the end of the text. Authors should declare the role of study sponsors, if any, in the study design, in the collection, analysis and interpretation of data; in the writing of the manuscript; and in the decision to submit the manuscript for publication. If the study sponsors had no such involvement, the authors should so state.

(4) **Acknowledgements**: All contributors who do not meet the criteria for authorship as defined above should be listed in an acknowledgements section. Examples of those who might be acknowledged include a person who provided purely technical help, writing assistance, or a department chair who provided only general support. Authors should disclose whether they had any writing assistance and identify the entity that paid for this assistance.
Randomised Controlled Trials
All randomised controlled trials submitted for publication in *Annals of Medicine and Surgery* should include a completed Consolidated Standards of Reporting Trials (CONSORT) flow chart. Please refer to the CONSORT statement website at http://www.consort-statement.org for more information.

Case reports
When submitting a Surgical Case Report authors are requested to comply with the Surgical Case Report (SCARE) guidelines, please see SCARE. Please complete the SCARE checklist and submit the checklist with your case report. Submissions that do not include a completed checklist will be returned without review. Please also ensure you state that the work has been reported in line with the SCARE criteria and cite the following paper in the first paragraph of your Introduction:


When submitting a medical Case report, authors are requested to comply with the Case Report (CARE) guidelines: clinical case reporting guidelines, please see http://www.care-statement.org. Please complete the CARE checklist and submit the checklist with your case report. Submissions that do not include a completed checklist will be returned without review.

Experimental Animal Studies
Animal studies must be reported in accordance with the ARRIVE guidelines (Animals in Research: Reporting In Vivo Experiments) and must include the checklist as supplemental material. A blank form can be downloaded for completion here. An example of a completed checklist can be found at http://www.nc3rs.org.uk/page.asp?id=1357. (The example checklist is based on an original publication by Kilkenny C, Browne WJ, Cuthill IC, Emerson M, Altman DG (2010) Improving Bioscience Research Reporting: The ARRIVE Guidelines for Reporting Animal Research. PLoS Biol 8(6): e1000412. https://doi.org/10.1371/journal.pbio.1000412). The institutional protocol number should be included at the end of the abstract of the article.

PROCESS Guidelines
Please ensure your case series is compliant with the PROCESS Guidelines: https://www.processguideline.com and submit a completed PROCESS checklist. Please also ensure you state that the work has been reported in line with the PROCESS criteria and cite the following paper: Riaz A. Agha, Mimi R. Borrelli, Reem Farwana, Kiron Koshy, Alex Fowler, Dennis P. Orgill, for the PROCESS Group. The PROCESS 2018 Statement: Updating Consensus Preferred Reporting Of CasE Series in Surgery (PROCESS) Guidelines. International Journal of Surgery 2018;60:279-282..

Systematic Reviews
Systematic reviews should be reported in accordance PRISMA (Preferred Reporting Items for Systematic Reviews and Meta-Analyses) Guidelines (http://www.prisma-statement.org) and must include the flow diagram as a figure and the checklist as supplemental material, please click here. Please also upload a completed AMSTAR 2 checklist to aid the methodological quality of your article: https://amstar.ca/Amstar_Checklist.php or https://amstar.ca/docs/AMSTAR-2.pdf.

Cohort, Case-control and Cross-sectional studies
Cohort, Case-control and Cross-sectional studies should all be compliant with the STROCSS criteria (Strengthening the reporting of cohort studies in surgery). Please see http://www.strocssguideline.com and Agha RA, Abdall-Razak A, Crossley E, Dowlut N, Iosifidis C, Mathew G, for the STROCSS Group. STROCSS 2019 Guideline: Strengthening the reporting of cohort studies in surgery. - each study type has its own checklist which should be uploaded as a supplemental file.

Diagnostic, Quality Improvement and Qualitative studies
Diagnostic Studies should be reported in accordance with the STARD statement criteria (Standards for the Reporting of Diagnostic accuracy studies) flow diagram and checklist please see (http://www.equator-network.org/wp-content/uploads/2015/03/STARD-2015-flow-diagram.pdf and https://www.elsevier.com/__data/promis_misc/ISSM_STARD_Checklist.pdf). Quality Improvement studies should comply with the Standards for Quality Improvement Reporting
Excellence (SQUIRE) criteria: http://squire-statement.org. Qualitative studies require the Consolidated criteria for Reporting Qualitative Research (COREQ) checklist, please see: http://intqhc.oxfordjournals.org/content/19/6/349.long

Tumour Marker Prognostic Study
Tumor Marker Prognostic studies should be reported in accordance with the REMARK criteria, please see http://www.equator-network.org/resource-centre/library-of-health-research-reporting/reporting-guidelines/remark

Best Evidence Topic
Best Evidence Topic papers are structured mini-reviews, offering the best available evidence to address small focused questions in surgery. Authors proposing to write a Best Bets topic should e-mail the Editorial Office prior to writing these and register their topic with them. This process ensures that there is no duplication of articles and allows guidance to be given to authors as to the suitability of their chosen topic.

Writing a Best Bets
Once a topic is registered, all authors are encouraged to read the following article, which explains the rationale and basis of Best Bets: 1. OA Khan, et al. Towards evidence-based medicine in surgical practice: Best BETs International Journal of Surgery 2011; 9: 585-588. Authors should also review recently published Best Bets, for example; (L.A. Bailey et al. International Journal of Surgery 2012; 10: 421-424) in order to make sure that their article conforms with the Best Bets format. Please note that the format of Best Bets is fairly rigid and articles which do not conform to these guidelines will be rejected without review. All articles need the following:

- An unstructured abstract (maximum 250 words).
- Body of texts divided into the following sections:
  1. Introduction
  2. Clinical scenario
  3. 3-part question
  4. Search strategy
  5. Search outcome
  6. Results
  7. Discussion
  8. Clinical bottom line
  9. References

In addition, a table summarising the Best Bets evidence should be added as an appendix containing six columns, i.e.

<table>
<thead>
<tr>
<th>Author, Country and Date</th>
<th>Patient Group</th>
<th>Study Type and Level of Evidence</th>
<th>Outcomes</th>
<th>Key Results</th>
<th>Comments</th>
</tr>
</thead>
</table>

The word limit for a Best Bets article has been increased to a maximum of 3000 words (excluding tables and references). However, it is anticipated that the majority of articles can be written in less than 2000 words.

Registration of Research
The World Medical Association's Declaration of Helsinki 2013 states in article 35: 'Every research study involving human subjects must be registered in a publicly accessible database before recruitment of the first subject'. Editors of IJS require that all types of research studies involving human participants should be registered prospectively, but failing that retrospectively. There are many places to register your research, and you can choose which is the most suitable for your needs:

- Clinicaltrials.gov - for all human studies - free
- Chinese Clinical Trial Registry chictr.org.cn - for all human studies - free
- Researchregistry.com - for all human studies - charge
- ISRCTN.com - for all human studies - charge
- Prospero - for systematic reviews - free
- There are many national registries approved by the UN that can be found here

Elsevier does not support or endorse any registry. Once registered, you will need to submit your assigned Unique Identifying Number (UIN) from your registration body as a mandatory part of your submission.

Article Information
Title The study design should be included at the end of the title, e.g. Case Report.

1. Original Research Articles:
Structure: Abstract, Introduction, Methods, Results, Discussion, and References
Abstract: Limited to 300 words, structured with the following headings: Background, Materials and Methods, Results, Conclusion
Total Word Limit: 2,500 words
Reference Limit: None (if more than 50, editorial staff should be contacted)
Figure/Table Limit: 6 colour figures or tables

2. Quality Improvement Research Articles:
Structure: The following structure is recommended: (1) The context; (2) Outline of problem (patient centred); (3) Key measures of improvement; (4) Institutional setting; (5) Process of gathering info about the problem; (6) Analysis and interpretation - how the info helped your understanding of the problem/solution; (7) Strategy for change; implementation of change; (8) Effects of Change - reassessment (PDSA cycles and what happened within them); (9) Lessons learnt, message for others and next steps.
Abstract: Limited to 300 words, structured with the following headings: Background, Materials and Methods, Results, Conclusion
Total Word Limit: 2,500 words
Reference Limit: None (if more than 50, editorial staff should be contacted)
Figure/Table Limit: 6 colour figures or tables
Squire Checklist: http://squire-statement.org

3. Cohort, Case-control and Cross-sectional studies:
Structure: Cohort, Case-control and Cross-sectional studies should all be compliant with the STROCSS criteria (Strengthening the Reporting of Cohort Studies in Surgery).
Abstract: Limited to 300 words, structured with the following headings: Background, Materials and Methods, Results, Conclusion
Total Word Limit: 3000
Reference Limit:
Figure/Table Limit: 6 colour figures or tables
STROCSS Checklist

4. Editorial:
Structure: Editorials should provide a clear introducing and concluding sections. Sub-titles are at the author's discretion.
Abstract: Limited to 250 words, semi-structured (no titles or references)
Total Word Limit: 2,000 words
Reference Limit: None (if more than 50, editorial staff should be contacted)
Figure/Table Limit: 3 colour figures or tables

5. Commentary/Perspectives/Brief Reports/Short Communications/Correspondence:
Structure: One body of text with no sub-titles
Abstract: None
Total Word Limit: 1,000 words
Reference Limit: 20 references (exceptions can be made if editorial approval obtained)
Figure/Table Limit: 3 colour figures or tables

6. Policy Review:
Structure: Modelled on the structure of the policy being reviewed. Contact editorial staff if you require further guidance.
Abstract: Limited to 250 words, semi-structured (no titles or references)
Total Word Limit: 2,500 words
Reference Limit: 20 references (exceptions can be made if editorial approval obtained)
Figure/Table Limit: 3 colour figures or tables

7. Reviews:
Structure: Reviews should provide a clear introducing and concluding sections. Sub-titles are at the author's discretion.
Abstract: Limited to 250 words, semi-structured (no titles or references)
Total Word Limit: 2,500 words
Reference Limit: None (if more than 50, editorial staff should be contacted)
Figure/Table Limit: 6 colour figures or tables
8. 'How To' Articles:
Structure: Articles should be set out in a clear manner with sub-titles to highlight sections and make the process easier for the user to follow.
Abstract: Limited to 250 words, semi-structured (no titles or references)
Total Word Limit: 1,500 words
Reference Limit: 20 references (exceptions can be made if editorial approval obtained)
Figure/Table Limit: 3 colour figures or tables

9. Round-Table Discussions:
Structure: Round-Table Discussions should provide a clear introducing and concluding sections. Sub-titles are at the author's discretion.
Abstract: None
Total Word Limit: 1,500 words
Reference Limit: 20 references (exceptions can be made if editorial approval obtained)
Figure/Table Limit: 3 colour figures or tables

10. Debate:
Structure: Debates should provide a clear introducing and concluding sections. Sub-titles are at the author's discretion.
Abstract: None
Total Word Limit: 1,500 words if an individual article. 1,000 words if article forms either for or against the position and is paired with another article.
Reference Limit: 20 references (exceptions can be made if editorial approval obtained)
Figure/Table Limit: 3 colour figures or tables

11. Conference Reports:
Structure: One body of text with no sub-titles
Abstract: None
Total Word Limit: 1,000 words
Reference Limit: 20 references (exceptions can be made if editorial approval obtained)
Figure/Table Limit: 3 colour figures or tables

12. Case Reports:
Structure: Abstract, Introduction, Presentation of Case, Discussion, Conclusion, Consent of Patient
Abstract: Limited to 250 words, semi-structured (no titles or references)
Total Word Limit: 1,500 words
Reference Limit: 20 references (exceptions can be made if editorial approval obtained)
Figure/Table Limit: 3 colour figures or tables

13. Tumour marker prognostication study:
Structure: Tumour marker prognostication studies should be reported in accordance with the REMARK guideline and should include the following subsections; Introduction, Materials and methods (including Patients, Specimen characteristics, Assay methods, Study design, Statistical Analysis), Results (including data, analysis) and Discussion.
Abstract: 300 words
Total Word Limit: 3000 words
Reference Limit: None (if more than 50, please contact Editorial staff)
Figure/Table Limit: 6 Colour figures or tables
Reamark Check list: http://www.biomedcentral.com/1741-7015/10/51/abstract

14. Health Economic Evaluation:
Structure: These should be reported in line with the CHEERS statement, and should include the following basic headings Title and abstract, Introduction (Background and objectives), Methods (target population, setting, perspective, comparators, timeframe, measurement of effectiveness, estimations of resources, costs and analytic method), Results (Parameters, costs, outcomes), Discussion (findings, limitations, generalisability), Other (Source of funding, Conflict of interests)
Abstract: 300 words
Total Word Limit: 3000 words
Reference Limit: (if more than 50, please contact editorial staff)
Figure/Table Limit: 5 colour figures or tables
15. Grand Rounds:
Structure: Abstract, Introduction, Presentation of Case, Discussion and Learning Points
Abstract: Limited to 250 words, semi-structured (no titles or references)
Total Word Limit: 1,500 words
Reference Limit: 20 references (exceptions can be made if editorial approval obtained)
Figure/Table Limit: 3 colour figures or tables

Title
Your title page, numbered as 1, should give the title in capital letters (not exceeding 100 letters), a running title (not exceeding 50 letters) and the authors names (as they are to appear), affiliations and complete addresses, including postal (zip) codes. The author and address to whom correspondence should be sent must be clearly indicated. Please supply telephone number, postal address, and e-mail addresses for the corresponding author.

Submission checklist
You can use this list to carry out a final check of your submission before you send it to the journal for review. Please check the relevant section in this Guide for Authors for more details.

Ensure that the following items are present:

One author has been designated as the corresponding author with contact details:
• E-mail address
• Full postal address

All necessary files have been uploaded:
Manuscript:
• Include keywords
• All figures (include relevant captions)
• All tables (including titles, description, footnotes)
• Ensure all figure and table citations in the text match the files provided
• Indicate clearly if color should be used for any figures in print
Graphical Abstracts / Highlights files (where applicable)
Supplemental files (where applicable)

Further considerations
• Manuscript has been 'spell checked' and 'grammar checked'
• All references mentioned in the Reference List are cited in the text, and vice versa
• Permission has been obtained for use of copyrighted material from other sources (including the Internet)
• A competing interests statement is provided, even if the authors have no competing interests to declare
• Journal policies detailed in this guide have been reviewed
• Referee suggestions and contact details provided, based on journal requirements

For further information, visit our Support Center.

BEFORE YOU BEGIN

Ethics in publishing
Please see our information pages on Ethics in publishing and Ethical guidelines for journal publication.

Declaration of interest
All authors must disclose any financial and personal relationships with other people or organizations that could inappropriately influence (bias) their work. Examples of potential competing interests include employment, consultancies, stock ownership, honoraria, paid expert testimony, patent applications/registrations, and grants or other funding. Authors must disclose any interests in two places: 1. A summary declaration of interest statement in the title page file (if double-blind) or the manuscript file (if single-blind). If there are no interests to declare then please state this: 'Declarations of interest: none'. This summary statement will be ultimately published if the article is accepted.
2. Detailed disclosures as part of a separate Declaration of Interest form, which forms part of the
journal's official records. It is important for potential interests to be declared in both places and that
the information matches. More information.

Submission declaration
Submission of an article implies that the work described has not been published previously (except in
the form of an abstract, a published lecture or academic thesis, see 'Multiple, redundant or concurrent
publication' for more information), that it is not under consideration for publication elsewhere, that
its publication is approved by all authors and tacitly or explicitly by the responsible authorities where
the work was carried out, and that, if accepted, it will not be published elsewhere in the same form, in
English or in any other language, including electronically without the written consent of the copyright-
holder.

Use of inclusive language
Inclusive language acknowledges diversity, conveys respect to all people, is sensitive to differences,
and promotes equal opportunities. Content should make no assumptions about the beliefs or
commitments of any reader; contain nothing which might imply that one individual is superior to
another on the grounds of age, gender, race, ethnicity, culture, sexual orientation, disability or health
condition; and use inclusive language throughout. Authors should ensure that writing is free from bias,
stereotypes, slang, reference to dominant culture and/or cultural assumptions. We advise to seek
gender neutrality by using plural nouns ("clinicians, patients/clients") as default/wherever possible
avoid using "he, she," or "he/she." We recommend avoiding the use of descriptors that refer to
personal attributes such as age, gender, race, ethnicity, culture, sexual orientation, disability or health
condition unless they are relevant and valid. These guidelines are meant as a point of reference to
help identify appropriate language but are by no means exhaustive or definitive.

Authorship
All authors should have made substantial contributions to all of the following: (1) the conception and
design of the study, or acquisition of data, or analysis and interpretation of data, (2) drafting the
article or revising it critically for important intellectual content, (3) final approval of the version to
be submitted.

Changes to authorship
Authors are expected to consider carefully the list and order of authors before submitting their
manuscript and provide the definitive list of authors at the time of the original submission. Any
addition, deletion or rearrangement of author names in the authorship list should be made only
before the manuscript has been accepted and only if approved by the journal Editor. To request such
a change, the Editor must receive the following from the corresponding author: (a) the reason
for the change in author list and (b) written confirmation (e-mail, letter) from all authors that they
agree with the addition, removal or rearrangement. In the case of addition or removal of authors,
this includes confirmation from the author being added or removed.

Only in exceptional circumstances will the Editor consider the addition, deletion or rearrangement of
authors after the manuscript has been accepted. While the Editor considers the request, publication
of the manuscript will be suspended. If the manuscript has already been published in an online issue,
any requests approved by the Editor will result in a corrigendum.

Copyright
Upon acceptance of an article, authors will be asked to complete an 'Exclusive License Agreement' (see
more information on this). Permitted third party reuse of open access articles is determined by the
author's choice of user license.

Author rights
As an author you (or your employer or institution) have certain rights to reuse your work. More
information.

Elsevier supports responsible sharing
Find out how you can share your research published in Elsevier journals.
Role of the funding source
You are requested to identify who provided financial support for the conduct of the research and/or preparation of the article and to briefly describe the role of the sponsor(s), if any, in study design; in the collection, analysis and interpretation of data; in the writing of the report; and in the decision to submit the article for publication. If the funding source(s) had no such involvement then this should be stated.

Open access
Please visit our Open Access page for more information.

Language (usage and editing services)
Please write your text in good English (American or British usage is accepted, but not a mixture of these). Authors who feel their English language manuscript may require editing to eliminate possible grammatical or spelling errors and to conform to correct scientific English may wish to use the English Language Editing service available from Elsevier's Author Services.

Submission
Our online submission system guides you stepwise through the process of entering your article details and uploading your files. The system converts your article files to a single PDF file used in the peer-review process. Editable files (e.g., Word, LaTeX) are required to typeset your article for final publication. All correspondence, including notification of the Editor's decision and requests for revision, is sent by e-mail.

PREPARATION

Peer review
This journal operates a double anonymized review process. All contributions will be initially assessed by the editor for suitability for the journal. Papers deemed suitable are then typically sent to a minimum of two independent expert reviewers to assess the scientific quality of the paper. The Editor is responsible for the final decision regarding acceptance or rejection of articles. The Editor’s decision is final. Editors are not involved in decisions about papers which they have written themselves or have been written by family members or colleagues or which relate to products or services in which the editor has an interest. Any such submission is subject to all of the journal's usual procedures, with peer review handled independently of the relevant editor and their research groups. More information on types of peer review.

Double anonymized review
This journal uses double anonymized review, which means the identities of the authors are concealed from the reviewers, and vice versa. More information is available on our website. To facilitate this, please include the following separately:
Title page (with author details): This should include the title, authors' names, affiliations, acknowledgements and any Declaration of Interest statement, and a complete address for the corresponding author including an e-mail address.
Blinded manuscript (no author details): The main body of the paper (including the references, figures, tables and any acknowledgements) should not include any identifying information, such as the authors' names or affiliations.

Use of word processing software
It is important that the file be saved in the native format of the word processor used. The text should be in single-column format. Keep the layout of the text as simple as possible. Most formatting codes will be removed and replaced on processing the article. In particular, do not use the word processor’s options to justify text or to hyphenate words. However, do use bold face, italics, subscripts, superscripts etc. When preparing tables, if you are using a table grid, use only one grid for each individual table and not a grid for each row. If no grid is used, use tabs, not spaces, to align columns. The electronic text should be prepared in a way very similar to that of conventional manuscripts (see also the Guide to Publishing with Elsevier). Note that source files of figures, tables and text graphics will be required whether or not you embed your figures in the text. See also the section on Electronic artwork.

To avoid unnecessary errors you are strongly advised to use the 'spell-check' and 'grammar-check' functions of your word processor.

Article structure
Subdivision - numbered sections
Divide your article into clearly defined and numbered sections. Subsections should be numbered 1.1 (then 1.1.1, 1.1.2, ...), 1.2, etc. (the abstract is not included in section numbering). Use this numbering also for internal cross-referencing: do not just refer to 'the text'. Any subsection may be given a brief heading. Each heading should appear on its own separate line.

Introduction
State the objectives of the work and provide an adequate background, avoiding a detailed literature survey or a summary of the results.

Material and methods
Provide sufficient details to allow the work to be reproduced by an independent researcher. Methods that are already published should be summarized, and indicated by a reference. If quoting directly from a previously published method, use quotation marks and also cite the source. Any modifications to existing methods should also be described.

Theory/calculation
A Theory section should extend, not repeat, the background to the article already dealt with in the Introduction and lay the foundation for further work. In contrast, a Calculation section represents a practical development from a theoretical basis.

Results
Results should be clear and concise.

Discussion
This should explore the significance of the results of the work, not repeat them. A combined Results and Discussion section is often appropriate. Avoid extensive citations and discussion of published literature.

Conclusions
The main conclusions of the study may be presented in a short Conclusions section, which may stand alone or form a subsection of a Discussion or Results and Discussion section.

Appendices
If there is more than one appendix, they should be identified as A, B, etc. Formulae and equations in appendices should be given separate numbering: Eq. (A.1), Eq. (A.2), etc.; in a subsequent appendix, Eq. (B.1) and so on. Similarly for tables and figures: Table A.1; Fig. A.1, etc.

Essential title page information
• **Title.** Concise and informative. Titles are often used in information-retrieval systems. Avoid abbreviations and formulae where possible.
• **Author names and affiliations.** Please clearly indicate the given name(s) and family name(s) of each author and check that all names are accurately spelled. You can add your name between parentheses in your own script behind the English transliteration. Present the authors' affiliation addresses (where the actual work was done) below the names. Indicate all affiliations with a lower-case superscript letter immediately after the author's name and in front of the appropriate address. Provide the full postal address of each affiliation, including the country name and, if available, the e-mail address of each author.
• **Corresponding author.** Clearly indicate who will handle correspondence at all stages of refereeing and publication, also post-publication. This responsibility includes answering any future queries about Methodology and Materials. **Ensure that the e-mail address is given and that contact details are kept up to date by the corresponding author.**
• **Present/permanent address.** If an author has moved since the work described in the article was done, or was visiting at the time, a 'Present address' (or 'Permanent address') may be indicated as a footnote to that author's name. The address at which the author actually did the work must be retained as the main, affiliation address. Superscript Arabic numerals are used for such footnotes.

Highlights
Highlights are optional yet highly encouraged for this journal, as they increase the discoverability of your article via search engines. They consist of a short collection of bullet points that capture the novel results of your research as well as new methods that were used during the study (if any). Please have a look at the examples here: example Highlights.
Highlights should be submitted in a separate editable file in the online submission system. Please use 'Highlights' in the file name and include 3 to 5 bullet points (maximum 85 characters, including spaces, per bullet point).

**Abstract**
A concise and factual abstract is required. The abstract should state briefly the purpose of the research, the principal results and major conclusions. An abstract is often presented separately from the article, so it must be able to stand alone. For this reason, References should be avoided, but if essential, then cite the author(s) and year(s). Also, non-standard or uncommon abbreviations should be avoided, but if essential they must be defined at their first mention in the abstract itself.

**Graphical abstract**
Although a graphical abstract is optional, its use is encouraged as it draws more attention to the online article. The graphical abstract should summarize the contents of the article in a concise, pictorial form designed to capture the attention of a wide readership. Graphical abstracts should be submitted as a separate file in the online submission system. Image size: Please provide an image with a minimum of 531 × 1328 pixels (h × w) or proportionally more. The image should be readable at a size of 5 × 13 cm using a regular screen resolution of 96 dpi. Preferred file types: TIFF, EPS, PDF or MS Office files. You can view Example Graphical Abstracts on our information site. Authors can make use of Elsevier’s Illustration Services to ensure the best presentation of their images and in accordance with all technical requirements.

**Keywords**
Immediately after the abstract, provide a maximum of 6 keywords, using American spelling and avoiding general and plural terms and multiple concepts (avoid, for example, 'and', 'of'). Be sparing with abbreviations: only abbreviations firmly established in the field may be eligible. These keywords will be used for indexing purposes.

**Abbreviations**
Define abbreviations that are not standard in this field in a footnote to be placed on the first page of the article. Such abbreviations that are unavoidable in the abstract must be defined at their first mention there, as well as in the footnote. Ensure consistency of abbreviations throughout the article.

**Acknowledgements**
Collate acknowledgements in a separate section at the end of the article before the references and do not, therefore, include them on the title page, as a footnote to the title or otherwise. List here those individuals who provided help during the research (e.g., providing language help, writing assistance or proof reading the article, etc.).

**Abstract**
Our system requires that an abstract be provided to the system for each article. For articles which do not require an abstract, please simply N/A when prompted during the submission process.

**Math formulae**
Please submit math equations as editable text and not as images. Present simple formulae in line with normal text where possible and use the solidus (/) instead of a horizontal line for small fractional terms, e.g., X/Y. In principle, variables are to be presented in italics. Powers of e are often more conveniently denoted by exp. Number consecutively any equations that have to be displayed separately from the text (if referred to explicitly in the text).

**Footnotes**
Footnotes should be used sparingly. Number them consecutively throughout the article. Many word processors can build footnotes into the text, and this feature may be used. Otherwise, please indicate the position of footnotes in the text and list the footnotes themselves separately at the end of the article. Do not include footnotes in the Reference list.

**Artwork**
**Electronic artwork**
**General points**
- Make sure you use uniform lettering and sizing of your original artwork.
- Embed the used fonts if the application provides that option.
- Aim to use the following fonts in your illustrations: Arial, Courier, Times New Roman, Symbol, or use fonts that look similar.
- Number the illustrations according to their sequence in the text.
- Use a logical naming convention for your artwork files.
• Provide captions to illustrations separately.
• Size the illustrations close to the desired dimensions of the published version.
• Submit each illustration as a separate file.
• Ensure that color images are accessible to all, including those with impaired color vision.

A detailed guide on electronic artwork is available.

You are urged to visit this site; some excerpts from the detailed information are given here.

**Formats**
If your electronic artwork is created in a Microsoft Office application (Word, PowerPoint, Excel) then please supply 'as is' in the native document format. Regardless of the application used other than Microsoft Office, when your electronic artwork is finalized, please 'Save as' or convert the images to one of the following formats (note the resolution requirements for line drawings, halftones, and line/halftone combinations given below):

- EPS (or PDF): Vector drawings, embed all used fonts.
- TIFF (or JPEG): Color or grayscale photographs (halftones), keep to a minimum of 300 dpi.
- TIFF (or JPEG): Bitmapped (pure black & white pixels) line drawings, keep to a minimum of 1000 dpi.
- TIFF (or JPEG): Combinations bitmapped line/half-tone (color or grayscale), keep to a minimum of 500 dpi.

**Please do not:**
• Supply files that are optimized for screen use (e.g., GIF, BMP, PICT, WPG); these typically have a low number of pixels and limited set of colors;
• Supply files that are too low in resolution;
• Submit graphics that are disproportionately large for the content.

**Color artwork**
Please make sure that artwork files are in an acceptable format (TIFF (or JPEG), EPS (or PDF), or MS Office files) and with the correct resolution. If, together with your accepted article, you submit usable color figures then Elsevier will ensure, at no additional charge, that these figures will appear in color online (e.g., ScienceDirect and other sites) regardless of whether or not these illustrations are reproduced in color in the printed version. For color reproduction in print, you will receive information regarding the costs from Elsevier after receipt of your accepted article. Please indicate your preference for color: in print or online only. Further information on the preparation of electronic artwork.

**Illustration services**
Elsevier's Author Services offers Illustration Services to authors preparing to submit a manuscript but concerned about the quality of the images accompanying their article. Elsevier's expert illustrators can produce scientific, technical and medical-style images, as well as a full range of charts, tables and graphs. Image 'polishing' is also available, where our illustrators take your image(s) and improve them to a professional standard. Please visit the website to find out more.

**Figure captions**
Ensure that each illustration has a caption. Supply captions separately, not attached to the figure. A caption should comprise a brief title (not on the figure itself) and a description of the illustration. Keep text in the illustrations themselves to a minimum but explain all symbols and abbreviations used.

**Tables**
Please submit tables as editable text and not as images. Tables can be placed either next to the relevant text in the article, or on separate page(s) at the end. Number tables consecutively in accordance with their appearance in the text and place any table notes below the table body. Be sparing in the use of tables and ensure that the data presented in them do not duplicate results described elsewhere in the article. Please avoid using vertical rules and shading in table cells.

**References**

Citation in text
Please ensure that every reference cited in the text is also present in the reference list (and vice versa). Any references cited in the abstract must be given in full. Unpublished results and personal communications are not recommended in the reference list, but may be mentioned in the text. If these references are included in the reference list they should follow the standard reference style of the journal and should include a substitution of the publication date with either 'Unpublished results' or 'Personal communication'. Citation of a reference as 'in press' implies that the item has been accepted for publication.
Reference links
Increased discoverability of research and high quality peer review are ensured by online links to the sources cited. In order to allow us to create links to abstracting and indexing services, such as Scopus, CrossRef and PubMed, please ensure that data provided in the references are correct. Please note that incorrect surnames, journal/book titles, publication year and pagination may prevent link creation. When copying references, please be careful as they may already contain errors. Use of the DOI is highly encouraged.

A DOI is guaranteed never to change, so you can use it as a permanent link to any electronic article. An example of a citation using DOI for an article not yet in an issue is: VanDecar J.C., Russo R.M., James D.E., Ambeh W.B., Franke M. (2003). Aseismic continuation of the Lesser Antilles slab beneath northeastern Venezuela. Journal of Geophysical Research, https://doi.org/10.1029/2001JB000884. Please note the format of such citations should be in the same style as all other references in the paper.

Web references
As a minimum, the full URL should be given and the date when the reference was last accessed. Any further information, if known (DOI, author names, dates, reference to a source publication, etc.), should also be given. Web references can be listed separately (e.g., after the reference list) under a different heading if desired, or can be included in the reference list.

Data references
This journal encourages you to cite underlying or relevant datasets in your manuscript by citing them in your text and including a data reference in your Reference List. Data references should include the following elements: author name(s), dataset title, data repository, version (where available), year, and global persistent identifier. Add [dataset] immediately before the reference so we can properly identify it as a data reference. The [dataset] identifier will not appear in your published article.

References in a special issue
Please ensure that the words ‘this issue’ are added to any references in the list (and any citations in the text) to other articles in the same Special Issue.

Reference management software
Most Elsevier journals have their reference template available in many of the most popular reference management software products. These include all products that support Citation Style Language styles, such as Mendeley. Using citation plug-ins from these products, authors only need to select the appropriate journal template when preparing their article, after which citations and bibliographies will be automatically formatted in the journal's style. If no template is yet available for this journal, please follow the format of the sample references and citations as shown in this Guide. If you use reference management software, please ensure that you remove all field codes before submitting the electronic manuscript. More information on how to remove field codes from different reference management software.

Users of Mendeley Desktop can easily install the reference style for this journal by clicking the following link:
When preparing your manuscript, you will then be able to select this style using the Mendeley plug-ins for Microsoft Word or LibreOffice.

Reference style
Text: Indicate references by number(s) in square brackets in line with the text. The actual authors can be referred to, but the reference number(s) must always be given.
Example: '..... as demonstrated [3,6]. Barnaby and Jones [8] obtained a different result ....'
List: Number the references (numbers in square brackets) in the list in the order in which they appear in the text.
Examples:
Reference to a journal publication:
Reference to a journal publication with an article number:
Reference to a book:
Reference to a chapter in an edited book:

Reference to a website:

Reference to a dataset:

Reference Format
Manuscripts should use the Vancouver style for references, which should be numbered consecutively (using superscript numerals) in the order in which they are first cited in the text and listed at the end of the paper.

Journal References: All authors should be included when there are six or fewer. When seven or more authors are present, the first three should be recorded followed by et al. This should be followed by the title of article, name of journal abbreviated according to Index Medicus (see http://www.nih.nlm.gov), year, volume, issue (if recorded), and first and last pages. For example:


Data citation example:

Book References: The author(s) should be followed by the chapter title (if applicable), editor(s) (if applicable), book title, place of publication, publisher, year, and page numbers (if applicable). For example:


Website/Online References: Author(s) should be followed by the title of the page. The year it was last updated should be followed by ' [online]', the webpage, and the date accessed.


Newspaper Articles: Articles should be sourced from mainstream printed media (e.g. newspapers, magazines). The author(s) should be followed by the paper title, the publication title, and the date of publication. If found online, the date should be followed by ' [online]', the webpage, and the date accessed.


Figures
Figures of good quality (minimum 92 DPI) should be uploaded separately from the text. Permission to reproduce illustrations should always be obtained before submission and details included with the captions.

Tables
Tables should be uploaded separately from the main text, bear a short descriptive title, and be numbered in Arabic numbers. Tables should be cited in the text.
Journal abbreviations source

Journal names should be abbreviated according to the List of Title Word Abbreviations.

Video

Elsevier accepts video material and animation sequences to support and enhance your scientific research. Authors who have video or animation files that they wish to submit with their article are strongly encouraged to include links to these within the body of the article. This can be done in the same way as a figure or table by referring to the video or animation content and noting in the body text where it should be placed. All submitted files should be properly labeled so that they directly relate to the video file's content. In order to ensure that your video or animation material is directly usable, please provide the file in one of our recommended file formats with a preferred maximum size of 150 MB per file, 1 GB in total. Video and animation files supplied will be published online in the electronic version of your article in Elsevier Web products, including ScienceDirect. Please supply 'stills' with your files: you can choose any frame from the video or animation or make a separate image. These will be used instead of standard icons and will personalize the link to your video data. For more detailed instructions please visit our video instruction pages. Note: since video and animation cannot be embedded in the print version of the journal, please provide text for both the electronic and the print version for the portions of the article that refer to this content.

Supplementary material

Supplementary material such as applications, images and sound clips, can be published with your article to enhance it. Submitted supplementary items are published exactly as they are received (Excel or PowerPoint files will appear as such online). Please submit your material together with the article and supply a concise, descriptive caption for each supplementary file. If you wish to make changes to supplementary material during any stage of the process, please make sure to provide an updated file. Do not annotate any corrections on a previous version. Please switch off the 'Track Changes' option in Microsoft Office files as these will appear in the published version.

Research data

This journal encourages and enables you to share data that supports your research publication where appropriate, and enables you to interlink the data with your published articles. Research data refers to the results of observations or experimentation that validate research findings. To facilitate reproducibility and data reuse, this journal also encourages you to share your software, code, models, algorithms, protocols, methods and other useful materials related to the project.

Below are a number of ways in which you can associate data with your article or make a statement about the availability of your data when submitting your manuscript. If you are sharing data in one of these ways, you are encouraged to cite the data in your manuscript and reference list. Please refer to the "References" section for more information about data citation. For more information on depositing, sharing and using research data and other relevant research materials, visit the research data page.

Data linking

If you have made your research data available in a data repository, you can link your article directly to the dataset. Elsevier collaborates with a number of repositories to link articles on ScienceDirect with relevant repositories, giving readers access to underlying data that gives them a better understanding of the research described.

There are different ways to link your datasets to your article. When available, you can directly link your dataset to your article by providing the relevant information in the submission system. For more information, visit the database linking page.

For supported data repositories a repository banner will automatically appear next to your published article on ScienceDirect.

In addition, you can link to relevant data or entities through identifiers within the text of your manuscript, using the following format: Database: xxxx (e.g., TAIR: AT1G01020; CCDC: 734053; PDB: 1XFN).
**Mendeley Data**

This journal supports Mendeley Data, enabling you to deposit any research data (including raw and processed data, video, code, software, algorithms, protocols, and methods) associated with your manuscript in a free-to-use, open access repository. During the submission process, after uploading your manuscript, you will have the opportunity to upload your relevant datasets directly to Mendeley Data. The datasets will be listed and directly accessible to readers next to your published article online.

For more information, visit the Mendeley Data for journals page.

**Data statement**

To foster transparency, we encourage you to state the availability of your data in your submission. This may be a requirement of your funding body or institution. If your data is unavailable to access or unsuitable to post, you will have the opportunity to indicate why during the submission process, for example by stating that the research data is confidential. The statement will appear with your published article on ScienceDirect. For more information, visit the Data Statement page.

**Keywords**

A list of three to six keywords should be supplied; full instructions are provided when submitting the article online.

**Units and Abbreviations**

Système Internationale (SI) units should be used, with the traditional equivalent in parentheses where appropriate. Conventions for abbreviations should be those detailed in: Baron DN, ed. Units, Symbols, and Abbreviations: A Guide for Biological and Medical Editors and Authors. 5th edition. London: Royal Society of Medicine Services, 1994.

**Data statement**

To foster transparency, we encourage you to state the availability of your data in your submission. This may be a requirement of your funding body or institution.

**Submission Preparation Checklist**

As part of the submission process, authors are required to check off their submission's compliance with all of the following items, and submissions may be returned to authors that do not adhere to these guidelines.

1. The submission has not been previously published, nor is it before another journal for consideration (or an explanation has been provided in Comments to the Editor).
2. The submission file is in Microsoft Word, OpenOffice, RTF, or WordPerfect document file format.
3. Where available, URLs and access dates for the references have been provided.
4. - ALL illustrations, figures, and tables are placed within the text at the appropriate points, rather than at the end.
   - The text is single-spaced
   - uses a 12-point font
   - employs italics, rather than underlining (except with URL addresses)
5. The text adheres to the stylistic and bibliographic requirements outlined in these Author Guidelines
6. If submitting to a peer-reviewed section of the journal, the instructions in Ensuring a Blind Review have been followed.

**Accepted Articles**

Visit https://www.elsevier.com/authors for the facility to track accepted articles and set email alerts to inform you of when an article's status has changed. The website also provides detailed artwork guidelines, copyright information, frequently asked questions and more. Contact details for questions arising after acceptance of an article, especially those related to proofs, are provided after registration of an article for publication.

**AFTER ACCEPTANCE**

**Online proof correction**

To ensure a fast publication process of the article, we kindly ask authors to provide us with their proof corrections within two days. Corresponding authors will receive an e-mail with a link to our online proofing system, allowing annotation and correction of proofs online. The environment is similar to MS Word: in addition to editing text, you can also comment on figures/tables and answer questions from the Copy Editor. Web-based proofing provides a faster and less error-prone process by allowing you to directly type your corrections, eliminating the potential introduction of errors.
If preferred, you can still choose to annotate and upload your edits on the PDF version. All instructions for proofing will be given in the e-mail we send to authors, including alternative methods to the online version and PDF. We will do everything possible to get your article published quickly and accurately. Please use this proof only for checking the typesetting, editing, completeness and correctness of the text, tables and figures. Significant changes to the article as accepted for publication will only be considered at this stage with permission from the Editor. It is important to ensure that all corrections are sent back to us in one communication. Please check carefully before replying, as inclusion of any subsequent corrections cannot be guaranteed. Proofreading is solely your responsibility.

**Offprints**
The corresponding author will be notified and receive a link to the published version of the open access article on ScienceDirect. This link is in the form of an article DOI link which can be shared via email and social networks. For an extra charge, paper offprints can be ordered via the offprint order form which is sent once the article is accepted for publication. Both corresponding and co-authors may order offprints at any time via Elsevier's Author Services.

**AUTHOR INQUIRIES**
Visit the Elsevier Support Center to find the answers you need. Here you will find everything from Frequently Asked Questions to ways to get in touch. You can also check the status of your submitted article or find out when your accepted article will be published.