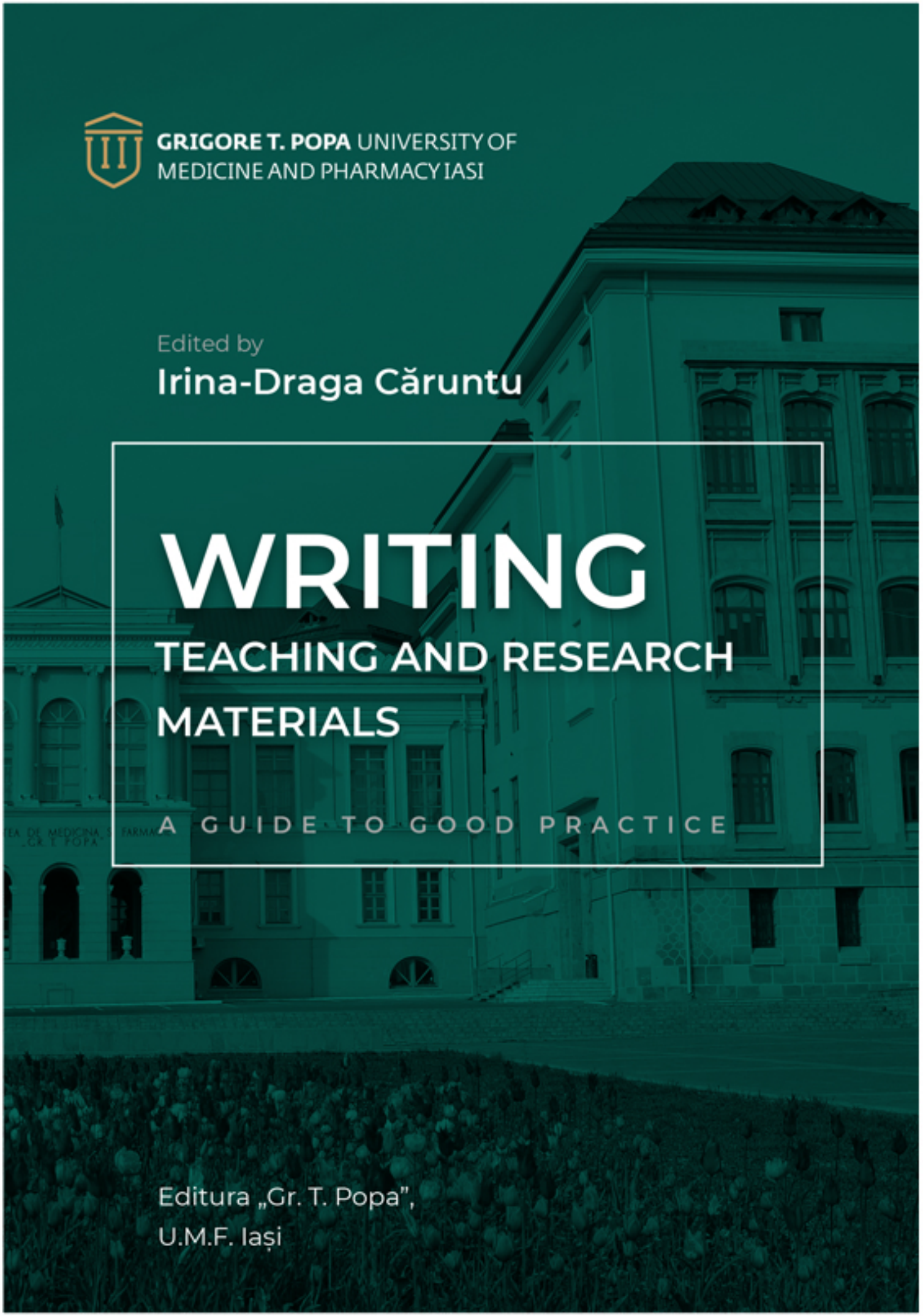
GRIGORE T. POPA UNIVERSITY OF
MEDICINE AND PHARMACY IASI
Edited by
Irina-Draga Căruntu
WRITING
TEACHING AND RESEARCH
MATERIALS
A GUIDE TO GOOD PRACTICE
Editura „Gr. T. Popa",
U.M.F. Iași

WRITING TEACHING AND RESEARCH MATERIALS

A GUIDE TO GOOD PRACTICE

Edited by
Irina-Draga Căruntu

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Trad. Ioan Crețu

CONTENTS

3. THESES AND DISSERTATIONS IN SUPPORT OF CANDIDATURE FOR ACADEMIC DEGREES

Irina-Draga Căruntu, Beatrice Gabriela Ioan, Daniela Cristina Dimitriu, Bianca Hanganu, Simona Eliza Giușcă, Veronica Mocanu, Liviu Oprea

Preamble

This guide focuses on writing for medical teaching and research purposes and aims to: 1) facilitate understanding of the features which define different types of didactic and scientific texts, and 2) promote good practices and high standards in the process of academic writing.

The intended users of the guide are the members of our academic community at the "Grigore T. Popa" University of Medicine and Pharmacy Iași. The information is organized so as to enable you to easily identify essential elements and observe compulsory steps in the writing of texts for teaching and research.

When drafting it, we took into consideration relevant international recommendations from universities, publishers, organizations and associations whose missions include the issue of academic writing guidelines. The content is based on these primary sources, but the guide also reflects our own experiences as academic learners, teachers, and researchers.

The guide is an output of the CEMED2019 project "2.0. Quality in education through the knowledge and upholding of professional standards and academic ethics", co-financed by the 2019 Institutional Development Fund, Domain no. 5: Improving the quality of teaching, including the upholding of professional standards and academic ethics, for which the beneficiary has been the "Grigore T. Popa" University of Medicine and Pharmacy from Iași.

CHAPTER 1. ACADEMIC BOOKS

Beatrice Gabriela Ioan, Daniela Cristina Dimitriu, Bianca Hanganu, Simona Eliza Giușcă, Veronica Mocanu, Liviu Oprea

Types of academic books

Didactic books

The handbook / the syllabus

The workbook

Scientific books

The textbook

The monograph

The content of didactic and scientific books in the medical field must be fit for purpose and level – bachelor, master, doctoral, or professional (residency, continuing medical education). Academic books should provide appropriate theoretical and practical knowledge, and the information should always be presented in a clear, concise, synthetic manner.

The more traditional formats of such books may be adapted to reflect the unique relationships between the complexity of topics and the authors' own perspectives. Value and quality undoubtedly increase with design choices aiming to promote the readers' understanding by highlighting key aspects and facilitating the identification of relevant

details, as well as to stimulate interest and cultivate inquisitiveness. The insertion of figures and tables, for instance, can do more than simply optimize access to information; these may also support and enhance the acquisition of theoretical definitions, notions, and concepts.

The success of an academic book intended for teaching is further ensured by including assignments and tests. The former enable readers to develop their analytical and synthesizing thinking skills within a certain context, while the latter allows for the (self-) assessment of learning outcomes from the reading experience. Inevitably, as medical knowledge continues to advance through research and development, academic books require periodical revision every 3-5 years, according to recommendations.

1.1. THE HANDBOOK

Definition

• *a book which contains the fundamental elements of a course/discipline in the curriculum and provides a framework for the teaching and studying of basic theoretical knowledge (notions and concepts).*

The educational objective of a handbook:

- basic instruction in a general, but clearly defined field of study (course/discipline) and facilitating the relationship between teaching and learning.

The structure of a handbook:

- is usually a detailed reflection of the manner in which the course content is taught orally at lectures;
- is adapted to rely and build on prerequisite knowledge;
- presents updated and widely accepted information generally, without discussing the latest research issues in the field;
- is organized into chapters which mimic the curriculum, such as:
  - title;
  - educational objectives;
  - theoretical content;
  - practical applications;
  - clinical reasoning;
  - relevant examples;
  - (self)-assessment tools (exercises, questions, tests).
- provides bibliographic references for further study; these should be publications widely appreciated for their clarity, historical relevance, and instructional value.

Particularities

The "syllabus" is an overview of the course content (printed or electronic) which is delivered orally during lectures. The syllabus contains a synthesis of the information presented at length during the lectures, and it may also include audio-video materials.

The syllabus is organized so as to reflect the "unique voice" of the lecturer.

In addition to the theoretical content specific to each course/discipline, the syllabus may also include:

- general information about the course;

- information about the teaching staff;
- the general and specific objectives of the course;
- details on what prerequisite knowledge is required in order to benefit from the course;
- information about the timetable, attendance requirements and low attendance recovery options, office hours, ongoing assessment and final examination scheme etc.

Comments

Whenever several faculty members teach a certain course/discipline, we recommend that you collaborate to produce a single handbook. This should contain a synthesis of the information taught by the different academics involved, thus providing students with one consistent approach and compulsory bibliography for their final examination.

At national level, we could argue for the adoption of a single handbook, similar to those which already exist in certain European academic communities, in order to ensure a more uniform student instruction.

1.2. THE WORKBOOK

Definition

• teaching material complementary to the handbook, designed to be used by the students in order to:

o expand theoretical knowledge pertaining to a certain course/discipline;

o better acquire notions which are to be applied in practice;

o develop practical competences by completing tasks related to the subject matter, or by executing certain procedures/maneuvers/experiments which help train and test dexterity or proficiency..

Practical classes are sessions during which students are actively engaged, either individually or in groups, in learning how instruments, equipment, or laboratory reagents are used. Such activities may be preceded by demonstrations conducted by the faculty member who coordinates the practical class.

Practical classes aim to motivate and guide students in their learning process by stimulating the students' interest, satisfaction and self-confidence resulting from conducting an experiment or employing a certain method/technique in order to develop practical skills.

A practical activity is successful and complements the acquisition of theoretical knowledge when:

- the learning objectives are clearly-defined and narrowed down to each task;
- the execution of the task requires not only the pursuit of predefined objectives, but also balancing clarification and organization with the actual work;
- the interactions stimulate the students' critical thinking, so that the practical task generates questions which require consideration.

The educational objectives of a workbook are:

- to transmit and facilitate practical knowledge acquisition complementary to the study of theoretical knowledge pertaining to a certain course/discipline;
- to develop familiarity with methods and/or techniques (some of which may also be suitable for scientific research in the field), as well as the practical skills required to apply these methodologies;
- to foster the ability to make connections and engage with both perspectives which define medical knowledge: the material dimension of observable objects, properties, and events, and the abstract dimension of ideas and theories; this then enables the attainment of a “scientific attitude” manifested in one's spirit of observation, objective assessment, freedom of thought, critical and creative thinking;
- to reduce the gap between what students know and what they are able to do.

The structure of a workbook:

- organization into chapters structured according to the syllabus, such as:
  - the title of the practical class or activity;
  - well established and clearly stated objectives;
  - prerequisite knowledge required in order to complete the practical activity;
  - materials: necessary laboratory reagents, equipment, instruments, worksheets, algorithms etc.;
  - procedure: demonstrations/applications to be carried out during the practical class or activity, individually and/or in groups; completed demonstrations/applications may also be included;
  - foreseen results;
  - observations;
  - self-assessment tools (exercises, questions, tests);
  - compulsory bibliography.

Comments

The educational value of practical classes is achieved through communication followed by discovery, analysis and synthesis. The materials used during such activities, including the workbook, must be adapted to the specifics of each course/discipline. For clinical disciplines, the workbook may also include clinical case presentations, diagnostic algorithms which may be observed interactively, or role-play scenarios of doctor-patient interactions.

Last but not least, it is important to distinguish between the teaching laboratory, where students learn basic knowledge and skills, and the significantly different research lab, where the working staff operates with advanced knowledge and skills.

1.3. THE TEXTBOOK

Definition

• a substantial scientific work which presents the fundamental principles of a certain field/specialty.

The educational objective of the textbook:

- in-depth instruction in a general, but clearly defined field.

The structure of a textbook:

- features detailed information, including recently (re)defined notions and concepts, as well as the latest scientific endeavors in the respective field;
- features bibliographic references such as research articles, other textbooks or similar breadth, monographs etc.

Comments

The process of writing a textbook is managed by a limited number of experts who can act as editors and/or coordinators. The different chapters can be drafted by fairly large teams of co-authors, each of whom contribute according to their individual expertise.

1.4. THE MONOGRAPH

Definition

• a comprehensive, in-depth scientific study of a single topic or specific aspect about a topic, viewed from an inter-/trans-disciplinary perspective.

The educational objective of a monograph:

- comprehensive, in-depth instruction in a narrowly defined field of study.

The structure of a monograph:

- is appropriate for a comprehensive, well-documented, scholarly exposé based on the results of scientific research;
- showcases the currently available information in a synthetic manner which bears the mark of the author(s) own scientific experience in the field;
- features bibliographic references such as landmark and recent research articles, other monographs dealing with similar/relevant topics.

1.5. THE IDENTIFICATION ELEMENTS OF A BOOK

- the title;
- the ISBN (International Standard Book Number): a standardized numeric code which enables a book title to be uniquely identifiable internationally; it is made of the ISBN acronym followed by 13 digits grouped into 5 elements separated by spaces or hyphens;
- the author(s), or the editor(s) and the authors;
- the edition;
- the publisher and the year of publication.

CHAPTER 2. RESEARCH ARTICLES

Irina-Draga Căruntu, Simona Eliza Giușcă

Types of research articles

Original research
Editorial
Review: Systematic review
Update
Case report
Technical notes
Letter to editor
Commentary
Didactic article

Each type of article has a distinct purpose and a structure that is appropriate for its clearly-defined objectives. When preparing a manuscript for submission, one should follow such general recommendations and principles of scientific writing in the medical field, as well as the more specific "Instructions/Guidelines for authors" in which journals outline their particular editorial policies and procedures.

The outline of any article must serve the reader by:

- facilitating the understanding of the scientific content in the wider context underlying the topic;
- highlighting the key issues;
- making it quick and easy to locate information;
- enabling the use or application of results.

Comments

The rules of scientific writing in the medical field are established internationally by organizations and associations whose missions include the widespread implementation of good practices with regard to authoring and publishing research articles. For the purposes of this guidebook, we have resorted mainly to the Recommendations for the Conduct, Reporting, Editing, and Publication of Scholarly Work in Medical Journals, issued by the International Committee of Medical Journal Editors. Additionally, we have also referred to similar documents from acclaimed leaders in the field, such as CIOMS (Council of International Organizations for Medical Sciences), WMA (World Medical Association), CONSORT (Consolidated Standards of Reporting Trials), WAME (World Association of Medical Editors), COPE (Committee on Publication Ethics), as well as various other publications on medical scientific writing.

2.1. GENERAL OUTLINE OF ARTICLES

All types of research articles are structured according to the following general outline:

- title;
- author(s) – affiliation;
- abstract;
- text;
- acknowledgments;
- bibliography / references.

2.1.1. The title

Characteristics

- it summarizes the contents of the article with maximum precision, accuracy, specificity and credibility (10-15 words);
- it constitutes, together with the abstract, an autonomous entity which may be viewed separately, as it is a direct reflection of the main body of the article;
- it should attract the reader;
- it is used as a selection criterion when conducting desk research and literature reviews, as it facilitates the speedy assessment of the article's relevance.

Recommendations:

- use relevant key words in order to ensure effective indexation in bibliographic databases (see Medical Subject Headings, National Library of Medicine, USA);
- place the most informative key words first, so they may best draw the reader's attention.

2.1.2. Author(s) – affiliation

Characteristics

- authorship is defined in the reference document *Recommendations for the Conduct, Reporting, Editing, and Publication of Scholarly Work in Medical Journals* issued by the International Committee of Medical Journal Editors;
- the number of authors varies depending on the size of the research team;
- the order in which the authors are mentioned indicates how much each has contributed to the research;
- the affiliation shows the professional membership of the authors at a certain institution (e.g.: university, hospital, research center); it may be single or multiple.

Definitions

Author

- an individual involved in the drafting of a manuscript (research article), who concurrently meets the four criteria listed below:
  1. has contributed substantially to the conception or design of the study, or to the collection, analysis or interpretation of the data on which the study is based;
  2. has contributed to the writing of the manuscript or has edited it substantially by adding relevant scientific content;
  3. has approved the final version of the manuscript before its submission for publication;
  4. has formally accepted accountability for all the aspects of the research, ensuring that all issues related to the accuracy and validity of all article sections have been reviewed and adequately resolved.
- the *Authors* section of the article (also known as the byline), located immediately under the title of the article, names the authors directly responsible for the manuscript;
- in order to confirm authorship, some journals require the inclusion of an additional section (*Authorship*), in which the authors must provide a detailed account of their individual responsibilities in producing the study and demonstrate that they meet the 4 concurrent conditions for authorship.

Example of authorship
Article:
Schmitt C, Adamski V, Rasch F, Adelung R, Lucius R, Synowitz M, Hattermann K, Held-Feindt J. Establishment of a glioblastoma in vitro (in)complete resection dual co-culture model suitable for drug testing. *Ann Anat* 2019; pii: S0940-9602(19)30144-X. doi: 10.1016/j.aanat.2019.151440. [Epub ahead of print]

Authorship
Christina Schmitt: Data curation; Formal analysis; Investigation; Visualization; Validation; Software; Methodology; Writing- Original draft preparation. Vivian Adamski: Data curation; Formal analysis; Investigation; Visualization; Validation; Software; Methodology; Writing- Original draft preparation. Florian Rasch: Project administration; Resources Data curation; Investigation; Writing- review and editing. Rainer Adelung: Funding acquisition; Resources; Writing- review and editing. Ralph Lucius: Resources; Writing- review and editing; Michael Synowitz: Resources; Writing- review and editing. Kirsten Hattermann: Conceptualization; Funding acquisition; Project administration; Writing- review and editing. Janka Held-Feindt: Conceptualization; Funding acquisition; Project administration; Supervision; Methodology; Writing- Original draft preparation.

Main authorship

- first author, last author, and corresponding author in the Authors section of the article;

First/Lead author

- this position rightfully belongs to the individual who conducted the actual research AND/OR coordinated it AND/OR wrote the manuscript;

Last author / promoter

- this position is rightfully awarded to the individual who initiated the research, assembled the team, secured the financing, supervised the process, objectively assessed the exposition of results and the quality of the writing, and whose expertise gives credibility to the research when the other authors are less known to the scientific community;

Corresponding author

- the author designated as contact person, who facilitates communication between the authors and the editors of the journal to which the manuscript was submitted; he or she is responsible for correspondence, manuscript revisions, provision of excerpts, and the transfer of intellectual property rights (© - copyright);
- generally, this role is granted to the first or last author.

The collaborator / contributor who does not qualify as author

- an individual involved in the research or the writing of the manuscript, but who does not meet all the 4 authorship criteria.
- such contributions are acknowledged explicitly in designated sections of the full text of the article, known as:
    - "Contributors", or "Clinical Investigators", or "Participating Investigators", in which individual or collective recognition is granted and the details of involvement are provided (scientific advisory, data collection, research subject enrollment and care, critical revision of the research project application, participation to

the technical writing or editing of the manuscript);

- "Acknowledgements", in which the authors acknowledge specific individual contributions such as financial sponsorship, general coordination of a research group, administrative support, technical assistance in the writing, editing, translation and proofreading of the manuscript.

Special authorship situations

1. Collaborative, multicenter studies which involve a large number of contributors who are part of a work group under a generic name

Rules:

- authorship is decided before manuscript submission;
- authorship may be expressed as:
  - names of individuals affiliated to the work group;
  - exclusively the name of the work group;
- upon the submission of the manuscript, the corresponding author identifies those group members who take responsibility for the study as its authors; in such situations, the American National Library of Medicine Medline/Pubmed (and other databases) will mention:
  - the names of these members in the *Authors* section

  AND
  - the names of the other members who contributed, IF a note is added to the *Authors* section, clearly pointing to another section in the article where their names are given (generally

at the end), entitled "Contributors", or "Clinical Investigators", or "Participating Investigators", where their contributions are described in detail (scientific advisors, data collection, research subject enrollment and care, critical revision of the research project application, participation to the technical writing or editing of the manuscript)

Academically inappropriate practices:

- claiming authorship in one's own scientific portfolio when, in fact, the individual was a collaborator/contributor, which may be verified by requesting the American National Library of Medicine Medline/Pubmed (or other databases) to confirm the names of the authors and those listed as "Contributors", or "Clinical Investigators", or "Participating Investigators".

2. Articles in which the *Authors* section explicitly indicates that certain authors contributed equally and share the same position

- lead authorship roles (first, corresponding, last author) are granted to more than three authors

Academically inappropriate practices:

- granting/claiming the role of corresponding author to more authors in order to artificially increase the number of lead authors and benefit from a higher individual rating than from the position of regular author.

2.1.3. The abstract

Characteristics

- it condenses the essential information in the article;
- it guides the reader interested in the article contents;
- it is featured, together with the title, in bibliographic databases (PubMed - the American National Library of Medicine);
- it is used as a selection criterion when conducting desk research and literature reviews, as it facilitates the speedy assessment of the article's relevance;
- it ends with a set of key words, usually selected according to MeSH / Medical Subject Headings issued by the American National Library of Medicine.

Types of abstracts:

- *the informative abstract*: written using the IMRAD approach (Introduction, Material/Methods, Results And Discussions) (150-250 words);
- *the indicative abstract*: presents the general content and outline of the article, summarizing the information according to its specific sections and subheadings (250-300 words).

2.1.4. The text

Characteristics

- it is structured according to the type of article.

2.1.5. Acknowledgments

Characteristics

- this section nominates:
  - the organizations/institutions/individuals that provided financial sponsorship for the research, including - if applicable - the identification elements of the research grant (name, number) and the name(s) or the grant beneficiary author(s);
  - the individuals who contributed to the research, but whose participation does not meet all the authorship criteria;
  - the head of department, in case he or she did not contribute directly to the research;
  - technical staff (technicians, research assistants, secretaries);
- the formatting should be according to the style guide of the journal: as a footnote or a distinct section at the end of the article, before the bibliography.

Example
Article: Jin L, Balian G, Li JX. Animal models for disc degeneration - an update. *Histol Histopathol* 2018; 33: 543-554.

Acknowledgments
We thank the financial supports from NIAMS R01AR064792 and North America Spine Society to XL.

2.1.6. The bibliography / References

Rules

- the referencing of all the information included in the article is a fundamental principle of scientific research;
- only those publications that have been read and selected for their relevance should be cited; the practice of indirect referencing based on citations in other articles (e.g. reviews) or on reading only the abstracts is considered academically inappropriate, as it is misleading for the author(s) and potential readers;
- publications (articles) which communicate different results contrasting those of the author(s) should also be cited; the inclusion of such references shows familiarity with the relevant scientific literature, occasions the interpretation and discussion of results, and helps highlight the originality of the research;
- it is recommended to avoid excessive referencing, which suggests poor critical thinking in selecting the most relevant and recent sources of information rather than vast, impressive knowledge;

- the number of references may be limited according to the journal's editorial policy; this should be checked in the Instructions for authors when deciding which journal to submit the manuscrip to;
- the same source may be cited more than once within the same article;
- all references should be cited both in the text, immediately after stating the information coming from the respective source (at the beginning, inside or at the end of a sentence) and at the end of the article, in the bibliography section.

The value of references for desk research and literature reviews:

- references allow readers to learn about sources of information which may be useful to in their own work beyond the scope of the citations in that one article (other articles, textbooks, monographs, official documents, other types of publications).

Referencing systems and style guides:

- the “author-date” (“author-year”) system - Harvard;
- the numbered system - Vancouver;
- the alphabet number reference system.

The "author-date" ("author-year") system – Harvard

In the text

- if the cited document has one or two authors, the name(s) of the author(s) is/are given, together with the year of publication;
- if the cited document has more than two authors, the name of the first one is given, followed by "et al." and the year of publication;
- citations are placed between (…) and ordered chronologically.

Example:
Article: Inyushin M, Zayas-Santiago A, Rojas L, Kucheryavykh Y, Kucheryavykh L. Platelet-generated amyloid beta peptides in Alzheimer's disease and glaucoma. *Histol Histopathol* 2019; 34(8): 843–856.

Introduction
Amyloid beta (Aβ) peptides are 36–43 amino acids in length, have a specific sequence that is slightly different between mammalian species (GenScript database), and are produced in many cell types by cleavage of the longer amyloid precursor protein (APP). Due to hydrogen bonding between the peptide bonds of parallel monomers, Aβ forms dimeric or tetrameric oligomers, even at very low concentrations, while in higher concentrations it associates into β-pleated sheets, tending to join in misfolded aggregations known as amyloid plaques (Lomakin et al., 1997; Tjernberg et al., 1999). Mutations within Aβ and its precursor affect this aggregation, which is the basis of familial early-onset diseases (reviewed and studied in Hatami et al., 2017). A common factor in a number of health problems is the accumulation of Aβ in tissues, including different cancerous tissues (Hansel et al., 2003; Jin et al., 2017), the zone of traumatic brain injury (Johnson et al., 2010), skeletal muscles in special cases of myositis (Askanas et al, 1992), myocardium with diastolic dysfunction (Gianni et al., 2010), and the placenta during preeclampsia (Buhimschi et al., 2014).

At the end, in the References section:

- the cited documents are listed alphabetically, beginning with the first letter of the first authors' surnames, without numbering;

Example 1
Article: Inyushin M, Zayas-Santiago A, Rojas L, Kucheryavykh Y, Kucheryavykh L. Platelet-generated amyloid beta peptides in Alzheimer's disease and glaucoma. *Histol Histopathol* 2019; 34(8): 843–856.

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Askanas V, Engel WK, Alvarez RB. Light and electron microscopic localization of beta-amyloid protein in muscle biopsies of patients with inclusion-body myositis. *Am J Pathol* 1992; 141: 31–36.
Buhimschi IA, Nayeri UA, Zhao G, Shook LL, Pensalfini A, Funai EF, Bernstein IM, Glabe CG, Buhimschi CS. Protein misfolding, congophilia, oligomerization, and defective amyloid processing in preeclampsia. *Sci Transl Med* 2014; 6: 245ra92.
Gianni D, Li A, Tesco G, McKay KM, Moore J, Raygor K, Rota M, Gwathmey JK, Dec GW, Aretz T, Leri A, Semigran MJ, Anversa P, Macgillivray TE, Tanzi RE, del Monte F. Protein aggregates and novel presenilin gene variants in idiopathic dilated cardiomyopathy. *Circulation* 2010; 121: 1216–1226.
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Jin WS, Bu XL, Liu YH, Shen LL, Zhuang Z, Jiao SS, Zhu C, Wang QH, Zhou HD, Zhang T, Wang YJ. Plasma amyloid-beta levels in patients with different types of cancer. *Neurotox Res* 2017; 31: 283–

288.
Johnson VE, Stewart W, Smith DH. Traumatic brain injury and amyloid-β pathology: a link to Alzheimer's disease? *Nat Rev Neurosci* 2010; 11: 361–370.
Tjernberg LO, Pramanik A, Björling S, Thyberg P, Thyberg J, Nordstedt C, Berndt KD, Terenius L, Rigler R (1999). Amyloid beta-peptide polymerization studied using fluorescence correlation spectroscopy. *Chem Biol* 1999; 6: 53–62.

- if more documents by the same first author are cited, they will be ordered alphabetically based on the first letter of the second author's surname;
- the same principle is applied in case more documents by the same two, three etc. authors are cited;

Example 2
Articol: Inyushin M, Zayas-Santiago A, Rojas L, Kucheryavykh Y, Kucheryavykh L. Platelet-generated amyloid beta peptides in Alzheimer's disease and glaucoma. *Histol Histopathol* 2019; 34(8): 843–856.

References
Kucheryavykh LY, Dávila-Rodríguez J, Rivera-Aponte DE, Zueva LV, Washington AV, Sanabria P, Inyushin MY. Platelets are responsible for the accumulation of β-amyloid in blood clots inside and around blood vessels in mouse brain after thrombosis. *Brain Res Bull* 2017; 128: 98–105.
Kucheryavykh LY, Kucheryavykh YV, Washington AV, Inyushin MY. Amyloid beta peptide is released during thrombosis in the skin. *Int J Mol Sci* 2018; 19: 1705.

- more documents by the same author(s) should be listed chronologically;

Example 3
Article: Inyushin M, Zayas-Santiago A, Rojas L, Kucheryavykh Y, Kucheryavykh L. Platelet-generated amyloid beta peptides in Alzheimer's disease and glaucoma. *Histol Histopathol* 2019; 34(8): 843–856.

References
Harris SA, Harris EA. Herpes simplex virus type 1 and other pathogens are key causative factors in sporadic Alzheimer's disease. *J Alzheimers Dis* 2015; 48, 319–353.
Harris SA, Harris EA. Molecular mechanisms for herpes simplex virus type 1 pathogenesis in Alzheimer's disease. *Front Aging Neurosci* 2018; 10: 48.

- to cite more documents by the same author(s) and published in the same year, small letters "a", "b", "c" etc. are added to the publication year and the documents are listed in this order; the same addition of "a", "b", "c" etc. is made to the publication year every time these documents are cited in the text of the article.

Example 4
Article: Jin L, Balian G, Li JX. Animal models for disc degeneration - an update. *Histol Histopathol* 2018; 33: 543-554.

References
Vo N, Niedernhofer LJ, Nasto LA, Jacobs L, Robbins PD, Kang J, Evans CH. An overview of underlying causes and animal models for

the study of age-related degenerative disorders of the spine and synovial joints. *J Orthop Res* 2013a; 31:831–837.
Vo NV, Hartman RA, Yurube T, Jacobs LJ, Sowa GA, Kang JD. Expression and regulation of metalloproteinases and their inhibitors in intervertebral disc aging and degeneration. *Spine J* 2013b; 13: 331–341.

Advantage

- this referencing system makes it easy for the author or add or remove references.

Disadvantage

- it makes the reading of the text more cumbersome.

The numbered system – Vancouver

In the text

- the references are numbered in the order in which they are cited using Arabic numerals placed between brackets;
- if a source is cited more than once, the same numeral is used at the first time;
- the citation of multiple sources is done by ennumerating the corresponding numerals between brackets, from smallest to largest, separated by commas.

Example
Article: Kim A, Lee SJ, Ahn J, Park WY, Shin DH, Lee CH, Kwon H, Jeong YJ, Ahn HY, I H, Kim YD, Cho JS. The prognostic significance of tumor-infiltrating lymphocytes assessment with

hematoxylin and eosin sections in resected primary lung adenocarcinoma. *PLoS One* 2019; 14(11):e0224430.

Introduction
Remarkable advances in immunotherapy have resulted in recent increased interest in cancer immunology. The immune system is now believed to have an important role in cancer development through "cancer immunoediting", encompassing three processes: elimination, equilibrium, and escape [1, 2], and various studies support the role of immunosurveillance in lung cancer. Immune-mediated paraneoplastic syndromes in malignant tumors occur most frequently in lung cancer [3]. Organ transplant recipients, who are immunosuppressed, have a higher risk of developing non-small cell lung cancers [4]. Furthermore, Ichiki et al. reported that in the case of lung cancer, the immune system spontaneously recognized the tumor-associated antigens [5]. Also, the immune microenvironment in NSCLC is known to have a strong prognostic impact [6].

In the References section

- the sources are ordered according to the numberals indicating the order in which they are cited in the text, not aphabetically.

Example
Article: Kim A, Lee SJ, Ahn J, Park WY, Shin DH, Lee CH, Kwon H, Jeong YJ, Ahn HY, I H, Kim YD, Cho JS. The prognostic significance of tumor-infiltrating lymphocytes assessment with hematoxylin and eosin sections in resected primary lung adenocarcinoma. *PLoS One* 2019; 14(11):e0224430.

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Advantage

- this system facilitates the reading experience because the text is not cluttered with authors' names.

Disadvantage

- it is difficult for the author(s) to manage because making any new citation in the text requires the numbering of all the other references to be revised, which also increases the risk of mistakes; this disadvantage can be overcome by using referencing software, which automatically update the numbering of cited sources.

The alphabet number reference system

In the text

- the citation of sources in the text of the article is done by including between brackets their corresponding numbers from the list of references at the end, where they are listed and numbered alphabetically.

Example
Article: Ernst-Stecken A, Lambrecht U, Mueller R, Sauer R, Grabenbauer G. Hypofractionated stereotactic radiotherapy for primary and secondary intrapulmonary tumors: first results of a phase I/II study. *Strahlenther Onkol* 2006;182(12):696-702.

Introduction
Stereotactic radiotherapy and radiosurgery (SRS) is well established for the treatment of brain tumors [5,13,15]. Given the ability to perform stereotactic radiosurgery and fractionated stereotactic treatment with the Novalis™ system (Brain-LAB AG, Heimstetten, Germany), we decided to translate the technique into body stereotactic treatment. Extracranial stereotactic radiotherapy (ESRT) has demonstrated high efficacy and a low rate of side effects [4,32,36,38].

At the end, in the References section:

- the listing is done alphabetically, starting with the first letter of the first author's surname
- each source is numbered according to its position in the list, and the corresponding number is used to cite it in the text of the article.

Example

Article: Ernst-Stecken A, Lambrecht U, Mueller R, Sauer R, Grabenbauer G. Hypofractionated stereotactic radiotherapy for primary and secondary intrapulmonary tumors: first results of a phase I/II study. *Strahlenther Onkol* 2006;182(12):696-702.

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2.2. THE ORIGINAL RESEARCH ARTICLE

Characteristics

- it is the most valuable type of scientific article because it describes in detail the results of original fundamental or clinical research on:
  - innovative topics / subjects / directions;
  - topics / subjects / directions which have already been studied.

Outline:

- the IMRAD structure – sections:
  - **Introduction** – provides a general framework for the research, its aims and objectives;
  - **Material and method** – outlines the way in which the research was conducted;
  - **Results** – describes the results of the research;
  - **Discussion** – contains the observations and comments made regarding the significance of the results in relation to what is already known, what the study adds to that (the originality), and its limitations; the final paragraph sums up the contributions of the study and any subsequent opportunities for further research (which may also be presented separately if there is a Conclusions section).

Recommendations for designing and writing an original research article

- **Introduction**

  Key features:

  - an up-to-date overview of the general aspects which define the research topic:
    - it explains how the author's/authors' research fits in the wider context of generating scientific knowledge in the field; Tips: analyze what is already known about the topic; identify the knowledge gaps as well as the research gaps which justify the questions and objectives of your study; show the importance of conducting such research and the potential value of the results in terms of making progress in the field;
    - it allows the reader to appreciate why the research was conducted and to access essential information necessary for understanding it;
    - it is the only section of an original research article which may have pedagogical connotations, but without turning into a review of the literature;
    - all the claims, including those which enjoy unanimous agreement, must be supported by accessible, relevant, recent references (not older than 10 years, except articles that are considered milestones in the respective field), selected in the order of importance; it is good practice to cite reviews which may facilitate additional reading depending on the readers' needs

and interests; when writing the text, it is recommended to use the present tense;

- the aim of the research, clearly stated: elucidate a controversial aspect, fill certain gaps in the knowledge, provide an answer to a yet unresolved problem, test and demonstrate a hypothesis;
  - the text has 4 parts: (i) overview of available knowledge, (ii) definition of the specific research topic, (iii) explanation of the rationale for conducting the research, (iv) argumentation of the relevance of the research.
  - when addressing these aspects in writing, the past tense it preferred.

- **Material and method**

  Key features :
  - the presentation of the methodological approach;
  - the presentation of the studied material (e.g. research subjects, test animals used);
  - the presentation of the method / methods used:
    - it is recommended to organize the information into sub-headings in order to facilitate understanding of the research process;
  - the presentation of ethical implications and any formal approvals by Ethics Research Committee(s) from the institutions where the research was conducted;
  - the information must be presented in detail, so that the reader may understand exactly how the research was

undertaken and verify the data or replicate the study;
- when writing this section of the article, it is recommended to use the past tense.

- **Results**

  Key features:
  - objective, impersonal, neutral exposition of results, without interpreting or discussing their significance;
  - here it is recommended to use tables and figures, making sure that the data is presented accurately and consistently throughout the text and visual representations, without unnecessary redundancy;
  - logical ordering, possibly chronological (from immediate to later results);
  - the compulsory inclusion of the results of statistical analysis, mentioning the statistically significant differences;
  - it is recommended to use sub-headings in order to help the reader corroborate the presented results with the different methods or stages of research;
  - the information must allow readers to make their own observations and draw their own conclusions before reading those of the author(s);
  - when writing the results, the past tense is recommended.

- **Discussion**

  Key features:

  - the succinct review of the main results as they respond to the aim of the research, commenting on the degree to which this was achieved;
  - emphasis on the contributions of the study to advancing the knowledge in the field;
  - comments on the quality and validity of results in a critical, objective manner which further highlights their significance;
  - comparisons between the results of the study and those obtained by other authors (possibly facilitated by visual means such as comparative figures and tables designed so as to avoid redundancy and commented upon in a way that does not reiterate details already included graphically), as well as explanations of any differences such as due to the specific features of the materials and methods used;
  - comments on the limitations and weaknesses of the research;
  - any personal opinions, which are appropriate or even recommended here, but not elsewhere in the article;
  - the interpretation of results is a reflection of the author's/authors' scientific experience, intelligence, and writing abilities;
  - when writing this section, the present tense is used whenever results are discussed in relation to the available literature, while the past tense is more appropriate when the author(s) are commenting on their own research endeavors.

2.3. THE EDITORIAL

Characteristics

- statistically, it is the most widely read type of article;
- it is written by the editor or by a renowned expert in the field of the journal at the request of the editor/editorial board;
- it defines/outlines the editorial policy of the journal and it bears the mark of the editor's style; it may also be considered a message to the readers;
- in case the journal dedicates an issue to a certain topic (partially or entirely), the editorial may be "themed" so as to provide an overview of the topic and of how the articles featured in that issue contribute to the study of the topic;
- it is typically 1-2 pages long and without bibliographic references.

The author of an editorial:

- may present their personal views freely and encourage others to develop opinions (thus being an opinion maker);
- promotes a topic which generates significant scientific/medical interest;
- provides a succinct overview of a topic which does not necessarily justify a review;
- draws attention to recent findings or developments;
- formulates scientific hypotheses or questions;
- proposes new research approaches;
- comments on public health, economic, legal or ethical issues;
- critically appraises other publications.

Rules for a successful editorial

- the choise of topic: of current interest and/or controversial;
- the author's reputation and expertise supported by:
- the quality of researching the relevant literature, including the selection and presentation of essential information (background, rationale, personal perspective, critical analysis);
- the ability to present the information in a way that generates interest and opinion;
- the judicious use of data (including statistical) in order to showcase the quantitative relevance of the topic;
- a well balanced approach based on:
- the ability to distinguish between own experience and other perspectives (contradictory, conflicting opinions);
- the ability to mediate between opposing points of view;
- clear, straighforward style (the rule of the 3 Ss – short, short, simple).

The structure of an editorial:

- a logical progression of ideas underpinning the critical view of the topic;
- the analysis of evidence in favor and againts a certain view;
- the suggestion of one or several solutions based on the outlined evidence;
- a statement of opinion regarding the topic.

2.4. THE REVIEW

Characteristics

- it is a synthetic, yet comprehensive presentation of what is known about a topic based on the thorough analysis of already published research;
- the research objectives are clearly defined;
- it is monographic in the sense that it deals with all the aspects which define the topic and may also suggest new vistas;
- it is extremely useful in surveying what has been published on a topic, helping the reader understand the current level of knowledge in the field;
- the author(s) are usually acknowledged experts who have contributed substantially in the respective field and who may be invited by the editor(s) to conduct the review;
- the references point to the entire history of research in the respective field (usually, the number of cited articles is the hundreds);

The systematic review

- it is specific type of review aiming to provide an answer to a clearly defined question based on previously published original research articles which contribute substantial relevant evidence;

- it appraises all the available scientific literature on the topic in a highly rigorous manner;
- such a systematic analytical approach requires the identification and in-depth assessment of all available documents relevant to the topic;
- it includes the review of the "grey" literature consisting of very recent articles that have been accepted for publication but have yet to be published; references to such fundamental research and clinical studies that may still be underway, reports, dissertations, conference papers and abstracts, governmental research etc. increase the value of the review;
- it plays a major role in promoting the culture and practice of evidence-based medicine, apart from contributing to specific medical fields.

Types of systematic reviews

- the qualitative/analytical systematic review, which describes and synthesizes in a narrative format the results of relevant research, without conducting a statistical analysis in this regard;
- the quantitative systematic review, which appraises the results of relevant research (at least two studies) by employing statistical methods;
- the meta-analysis, which is an exclusively systematic review effort consisting of the statistical assessment of large quantities of data produced by numerous single studies that are comparable and relevant, followed by a synthesis of the results.

Rules for conducting a review

- the systematic survey of available research evidence relevant to a certain topic, including the process of identifying, selecting, and appraising articles, the complex analysis and synthetic presentation of results;
- a well established methodology, clearly explained and reproducible, which ensures minimal bias and serves as a protocol;
- the review protocol:
  - defines the objectives and the methods, as well as which types of results are of interest;
  - ensures the transparency of procedures:
    - identifies the bibliographic databases to be searched, including any additional grey literature;
    - specifies the key words used in the search ;
    - indicates the limits of the search (inclusion and exclusion criteria)
    - outlines the screening process;
    - describes what data is selected for extraction;
    - describes what data is selected for reporting;
    - must be registered in order to avoid overlap with another, similar review effort
  - some examples of libraries in which systematic review protocols may be registered, and which also provide access to databases of existing systematic reviews:
    - Campbell Collaboration: for systematic reviews in social sciences;

        - Cochrane Collaboration: for systematic reviews in health sciences;
        - PROSPERO: for systematic reviews regardless of field;
    - the protocol is included in the structure of the article;
- it is recommended that such protocols follow the PRISMA approach (Preffered Reporting Items for Systematic Reviews and Meta-analysis) ; this includes a checklist of 27 items and a flow chart aiming to help authors design their systematic review protocols and write the review articles ; another useful guide is Consort (Consort Statement - Consolidated Standards of Reporting Trials), and other similar guides are available for epidemiological studies, non-randomized clinical trials, studies for the development of diagnostic tests or genetic studies.

The stages of a review:

- formulating the research question;
- defining the criteria for inclusion and exclusion of available studies;
- identifying the studies;
- selecting the studies;
- assessing the quality of the selected studies;
- extracting data;
- analysing data;
- presenting the results;
- interpreting the results;
- updating the review at regular intervals.

The structure of a review:

- is similar to that of an original research article using the IMRAD approach
- **Title**:
  - it is useful to include the phrase "review sistematic" in order to clearly signal the type of research;
- **Abstract**:
  - the information should be summarized in the following order: background, methodology, results, conclusions;
- **Introduction** – a succinct presentation of:
  - the topic;
  - the rationale which justifies the review (for instance, if there are any contradicting views expressed in the literature or certain gaps in the current level of knowledge in the field);
  - the aim and objectives;
- **Method:**
  - this section is essential and should provide clear, pertinent, logical information, including the protocol used in the review (described above);
- **Results:**
  - a description of the results (the studies which were identified)
  - the main features of the studies;
  - the quality of the studies;
- **Discussion:**
  - an overview of the most significant observations made during the analysis;

- comments regarding the limitations of the review and the reliability of results, the strengths and weaknesses of the review, any implications for clinical practice;

- **References**
  - a substantial number of references carefully curated and managed.

2.5. THE UPDATE

Characteristics

- it presents the latest developments in the study of a certain subject or research topic; the level of detail is between an editorial and a review;
- it is commissioned by the editorial board of a journal;
- the author/authors have already published significantly in the field;
- the topic is narrowly defined and unpacked based on (i) recent relevant publications and (ii) the author(s) own experience; the distinction between these two sources of insights - (i) and (ii) - must be easily apparent;
- the update may be extremely useful when surveying the literature avaialable on a certain topic because it provides the interested reader with a synthesis of the latest research;
- it is common for the references to list tens of relevant sources.

2.6. THE CLINICAL CASE (SERIES) REPORT

Characteristics

- it consists in the reporting of medical observation, with concise remarks, in order to:
  - draw attention that a certain new, unexpected situation may occur in clinical practice;
  - contribute to a better understanding of the pathogenesis of a certain medical condition;
- this type of article draws directly from clinical practice and conveys a clinical message; it, therefore, provides first hand evidence in the medical literature and subsequently contributes to advancing medical knowledge (by promoting new ideas, theories or concepts), medical education, and medical audit;
- it does not exceed 4-6 pages;
- usually, mainstream journals limit the number of clinical case reports per issue; at the same time, some journals publish exclussively case reports, but only a few of them are indexed in noteworthy databases;
- it provides a suitable context for developing medical scientific writing skills.

Rules for writing a case report

The typical content of reported medical observation focuses on interesting phenomena/conditions from the point of view of etipathogeny, diagnosis, and treatment, e.g.:

- acknowledging and describing a new, previously unknown/undefined pathological entity;

- characterizing a pathological entity which is in the process of being defined at the time;
- showcasing a novel/unusual or rare manifestation of a disease (including new, unique diagnostic features);
- reporting a new/unusual or rare complication of a disease;
- signalling a particular association of diseases of symptoms which may generate confusion;
- illustrate spatial or quantitative variations of certain anatomical structures;
- highlighting the original features regarding the pathogeny of a certain condition: new theories or new perspectives of existing theories;
- introducing a new diagnostic approach (imagistic, serologic, mollecular, genetic);
- discussing the novelty and efficacy of a therapeutic intervention or treatment, the controversies of a therapeutic approach, or the absence of a therapeutic response;
- announcing obscure, unusual side effects (negative or beneficial) or interactions between medications;
- reporting an unforeseen event in the natural progression or treatment of a medical condition;
- drawing attention to possible medical errors.

The structure of a case report:

- **Abstract**
  - it is a concise presentation of the clinical case or issue, highlighting the value of the scientific message;

- it is short (150 words);

- **Introduction**
  - it is a brief overview of the medical context of the reported clinical case or issue, supported with relevant bibliographic references (for instance, the rarity of the condition or the significance of clinical signs in a patient suffering of a certain pathology);
- **Case presentation**
  - it includes general information about the patient, his/her medical history, clinical signs and symptoms, paraclinical investigations, diagnostic algorithm, positive and differential diagnostic criteria, treatment, monitoring, progress etc.
  - it may be enhanced with relevant visuals;
  - it requires the patient's informed consent prior to submission, as well as ensuring that the manuscript observes the rules of patient confidentiality;
- **Discussion**
  - this section highlights the interest and significance of the case report;
  - relevant mainstream literature is referred to and commented on synthetically: etiology, epidemiology, physiopathology, complications, prognosis – a limiter number of similar case reports may illustrate the rarity of the condition and may increase the chances of the manuscript being published;

  - any evidence in support of the rarity of the case should be put forward, including aspects which may lead of diagnostic confusion or difficulty;
  - here is where "lessons learned" are shared with a view to inform and improve future clinical practice;
  - the case as reported must be placed in the context of available knowledge in the field, explaining what features align with or deviate from current approaches in defining the respective pathology;
- **Conclusions**
  - summarize which 3-4 features are key to understanding the case;
  - include recommendations for clinicians and/or researchers;
  - in the absence of such a section, the conclusions are presented in the final paragraph of the Discussion.

Comments

A review of the literature prompted from a single, isolated case is not recommended. Also, the preferred layout for case reporting may differ from one journal to another; therefore, we encourage you to first read other similar articles from the journal(s) you intend to submit your manuscript to.

2.7. THE TECHNICAL NOTES

Characteristics

- the technical notes outline a new, experimental method, test, procedure or equipment;
- the novelty may be relative in the sense that an optimized, innovative, updated version of an already existing methodology is presented.

2.8. THE LETTER TO EDITOR

Characteristics

- the letter to the editor is a particular, expeditious type of scientific text which facilitates the interaction between authors and readers with the editors as intermediaries who may publish a reader's opinion of a certain article;
- it tends to deal with controversial scientific/medical topics;
- it serves as a quality control mechanism by which articles continue to be assessed after being published;
- once a letter is published, its effects are monitored by the editor, who may also have to mediate potential conflicting views and reactions among the authors and readers;
- its publication is swift compared to that of an original article;
- it may prompt subsequent elaboration is a separate article;
- usually, it is submitted by a maximum or 5 authors, and it contains up to 600 words and 5 references.

Types of letters to the editor

- the short communication of preliminary research data, without methodological details, motivated by:
  - the potential usefulness to other research groups;
  - the relevance with respect to advancing knowledge in the field, such as by proposing and/or confirming hypotheses;
  - the opportunity to claim priority in researching a topic, especially in the case of highly competitive or rapidly developing fields of study;
- a brief case report of practical clinical interest (such as with regard to risks, e.g. unexpected adverse effects to certain medication);
- objective and constructive commentaries of a previously published article from the same or another journal, possibly with a reply from the authors;
- critical commentaries or differences of opinion regarding an article published in the same journal, provided it accommodates the authors' reply; in such a case, both the letter and the authors' reply are published in the same issue, one after the other, possibly adding the title of the article which generated the exchange, in order to draw and direct the readers' attention to that article;
- comments on the journal's editorial policy, focusing on the quality or format of scientific content;
- declarations of interest regarding patients.

Rules for writing a letter to the editor

- the core message must be stated clearly and concisely;
- the topic must be of interest;
- the format must be that which is recommended/required by the journal;
- in the case of critical views or differences of opinion regarding an article:
    - the purpose must be clearly defined, such as criticism of a certain aspect regarding an article (possible examples of problems with the article in question: a flawed underlying rationale for the study, a poorly defined hypothesis, inaccurate results);
    - the comments must be specific, not general, and should not refer to the satisfactory aspects of the contested article;
    - the comments and suggestions should be supported by additional data/scientific evidence corroborating or contradicting the authors' claims;
    - the tone should be amiable, collegial, in no way disrespectful or pejorative;
    - a biased personal attitude would not serve the author of the letter well.

2.9. THE COMMENTARY

Characteristics

- a commentary is a critical review/analysis of a recently published article or book (textbook, monograph);
- the authors are highly knowledgeable of the subject and their scientific expertise has already been validated
- it tends to be fairly short (2-3 pages).

The structure of a commentary:

- the content is organized in two main sections:
  - a summary of the article/articles/book that makes the subject of the commentary;
  - the critical discussion of aspects such as the validity of results or the originality of the approach in dealing with the topic.

2.10. THE DIDACTIC ARTICLE

Characteristics

- the didactic article aims to educate readers with respect to a certain field/topic/subject;
- the authors are highly knowledgeable and their expertise has already been validated;
- the information is widely addressed at readers with minimal specialized knowledge in the field;
- the bibliography allows interested readers to study the topic further.

2.11. VISUAL REPRESENTATIONS

Characteristics

- content may be communicated visually through figures and tables; figures may be graphic representations such as drawings, charts, diagrams, pictures/photographs, which tables feature mainly numeric information;
- selecting the appropriate depiction method depends on:
  - the specific objective or intention in communicating the data (e.g. original research articles contain tables in order to present the results);
  - the type and quantity of data;
- figures and tables
  - allow for a synthetic, clear representation of much information in as little space as possible;
  - can help convey content that would be difficult to describe in writing and to read;
  - feature a level of informational autonomy/independence provided by their title, legend, footnotes;
  - draw attention onto significant aspects and stimulate the reader's interest in the full text;
  - are referred to in the text of the article and numbered in the order of mention/inclusion; each table or figure must be cited at least once;
  - if well designed, they convey a general impression of professionalism in how the manuscript is presented;
- deciding and designing the figures and tables before writing the text limits the risk of repeating the same information in the Results section of the article (where information is mainly presented) and in the Discussion section (where previously presented information is commented upon);
- original images, files and metadata used in graphs must be archived and shared with peer-reviewers on request;
- reproduction elsewhere requires the permission of intellectual property and copyright owner.

Rules for designing and using figures

- figures should be numbered using numerals;
- throughout the text, all the figures (graphic representations, illustrations) should be subject to a single numbering system, a consistent style of citation in the text and a uniform legend design;
- the legend should be placed below the main graphic elements of the figure and feature all the elements necessary to understand the content: the explanation of symbols and abbreviations, the scale etc.;
- quality can be ensured by setting the image resolution to a minimum of 300 dpi
- pictures/photographs:
    - digital images, either in color or black-and-white, depicting X-rays, CT scans, MRI scans, scintigraphies, macroscopic samples, ECG and EEG results;
    - for pictures containing human faces, it is recommended to cover the eyes in order to ensure subject anonymity;
    - content "editing" is forbidden; submitted photographic material must be identical to the original photographs; luminosity or contrast adjustments are only allowed if applied equally to all the images, including the control pictures, with clear mention of the settings and processing software used
- types of graphic representations:
    - pie charts are recommended for expressing percentages (< 7 sectors);

  - vertical or horizontal bar charts (histograms) are recommended for the static comparison of various results, with or without indicating the standard deviation (< 7 bars);
  - line graphs (distribution curves) in which the x axis (independent variable) is used for the control or explanatory variable and the y axis (dependent variable) is used for the measured or explained variable; such a graph is recommended for the dynamic representation of the y variable in relation to the x variable;
  - scatter plots/diagrams or scattergrams (Fr. nuages de points) are recommended for illustrating the distribution of discrete data or for showing the presence/absence of a correlation between variables x and y; the dots must be sufficiently large in order to be easily identifiable; such representations may include the correlation coefficient "r", the degree of freedom, the regression curve, the statistical significance threshold "p";
- diagrams:
  - are used to outline mechanisms or processes;
  - provide greater design flexibility compared to photographs or graphs;
  - the graphic elements should be labeled and well spaced, not cluttered.

Rules for designing and using tables

- tables allow for the concise and efficient presentation of large quantities of numeric data;

- they may occupy a single column of text or spread across two columns on the printed page;
- usually, but not necessarily, tables are numbered using Roman numerals;
- the title of the table should be placed at the top and contain all the elements necessary to understand the contents;
- if the number of columns in the table exceeds twice the number of rows, the columns and row may be switched around; the design should allow enough spacing between columns and rows, and the font type and size should be readable;
- common features: the column headers are used for measured or explained variables (with corresponding measuring units) and the row headers are used for controlled or explanatory variables (with corresponding measuring units);
- abbreviations may be used as long as they are explained in the table title or footnotes;
- tables which contain comparable data must feature the same types of information using the same structure and measuring units;
- data alignment can be done using the decimal dot (or comma) as point of reference, and variables with the same significance should be expressed using the same level of precision (number of decimals);
- missing data can be best expressed with the mention “absent”, thus avoiding potentially confusing mathematical symbols (. 0);
- try to avoid creating unnecessary tables to present information that can be presented in words with sufficient clarity.

2.12. THE IDENTIFICATION ELEMENTS OF A MEDICAL JOURNAL

- title and abbreviation (according to the Amedical National Library of Medicine);
- the ISSN (International Standard Serial Number): a standardized numeric code which allows for the unique international identification of the title of a periodical; it is made of the ISSN acronym followed by two groups of 4 digits separated by a hyphen;
- the scientific / professional society / organization / institution with editorial responsibility;
- the editor/editorial board;
- the periodicity;
- the publisher.

CHAPTER 3. THESES AND DISSERTATIONS IN SUPPORT OF CANDIDATURE FOR ACADEMIC DEGREES

Irina-Draga Căruntu, Beatrice Gabriela Ioan,
Daniela Cristina Dimitriu, Bianca Hanganu, Simona Eliza Giușcă,
Veronica Mocanu, Liviu Oprea

3.1. THE GRADUATION THESIS

Definition

• a scientific text authored, submitted, and defended by an undergraduate student at the end of the final year of study in order to obtain a bachelor's degree.

Types of graduation theses:

- original research thesis;
- literature review thesis.

Comment

At the "Grigore T. Popa" University of Medicine and Pharmacy Iași, the general rules for the writing and defense of a graduation thesis are established and applied according to the Work Procedure entitled Writing the Graduation Thesis (WP-88), available on the University website.

3.2. THE MASTER'S DISSERTATION

Definition

• a scientific text authored, submitted, and defended by a master student at the end of master studies, in order to obtain a master's degree.

Comment

At the "Grigore T. Popa" University of Medicine and Pharmacy Iași, the general rules for the writing and defense of master dissertations are established and applied according to the Work Procedure entitled Writing the Master's Dissertation (WP-107), available on the University website.

3.3. THE DOCTORAL THESIS

Definition

• a scientific text authored, submitted, and defended by a doctoral student at the end of doctoral studies in order to obtain a doctoral degree.

Comment 1

At the "Grigore T. Popa" University of Medicine and Pharmacy Iași, the general rules for the writing and defense of doctoral theses are established and applied according to the

Regulations for Organization and Running of Doctoral Education, issued by the University as an accredited institution organizing doctoral studies (I.O.S.U.D.), supplemented by a Guide for Writing and Defending Doctoral Theses. Both documents are available on the University website. The Guide provides doctoral students with the necessary information in order to write their theses in accordance with the standards of medical scientific writing, highlighting the core of their research; the Guide also describes the system of public presentation and defense of a thesis, by which the doctoral degree is awarded to a candidate.

The Doctoral School of I.O.S.U.D. – U.M.Ph. Iași strives to eliminate practices which disregard the ethics of scientific research (e.g. copying the results obtained by other researchers without their permission or plagiarism). We do so by using plagiarism detection software to screen theses before they are formally submitted.

Comment 2

Beginning with the academic year 2018-2019, the minimal national standards for awarding doctoral degrees are established in accordance with the Order 5110/2018 issued by the Ministry of National Education. At the "Grigore T. Popa" University of Medicine and Pharmacy Iași, these standards are implemented through the Rector's Decision no. 893/17.10.2018 as follows:

- *for Medicine: the publication as first author, single author or corresponding author of at least three research articles communicating results from the doctoral thesis; of these, at least one article must be published in an ISI-rated journal*

(Clarivate Analytics) with an Impact Factor ≥0.5 and at least two articles must be published in PubMed-indexed journals;

- *for Dentistry: the publication as first author, single author or corresponding author of at least two research articles, of which at least one article must be published in an ISI-rated journal and at least one article must be published in a PubMed-indexed journal;*
- *for Pharmacy: the publication of results from the doctoral thesis, as an author, in at least one article published in an ISI-rated journal with an Impact Factor > 0.5 and at least two articles published in journals indexed by PubMed or in other international bibliographic databases (or, alternatively, one article published in an ISI-rated journal); these may be original research articles or reviews, but at least two of them must be original research article; all must be (co-)authored by the doctoral student, who must be the first author of at least one.*

By upholding these standards, the Doctoral School of I.O.S.U.D.– U.M.Ph. Iaşi is promoting the principle according to which the public defense of a doctoral thesis may only take place provided the doctoral research in question has been validated through dissemination in mainstream journals with international visibility.

3.4. QUALITY AND ORIGINALITY OF THESES AND DISSERTATIONS IN SUPPORT OF CANDIDATURE FOR ACADEMIC DEGREES

Theses and dissertations in support of candidature for academic degrees must be the culmination of the candidate's individual desk and scientific research efforts by which the candidate attempts to contribute with original results to the progress of scientific knowledge.

By authoring such a thesis or dissertation, the undergraduate/master/doctoral student who aspires to attain the corresponding academic degree takes responsibility for the accuracy of the data, information, views and demonstrations included in the text. Content based on other sources must be adequately referenced by citing the respective sources.

Together with the candidate (undergraduate, master or doctoral student), the scientific coordinator/supervisor is jointly responsible for observing the standards of quality and professional ethics, as well as for the originality of the content.

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