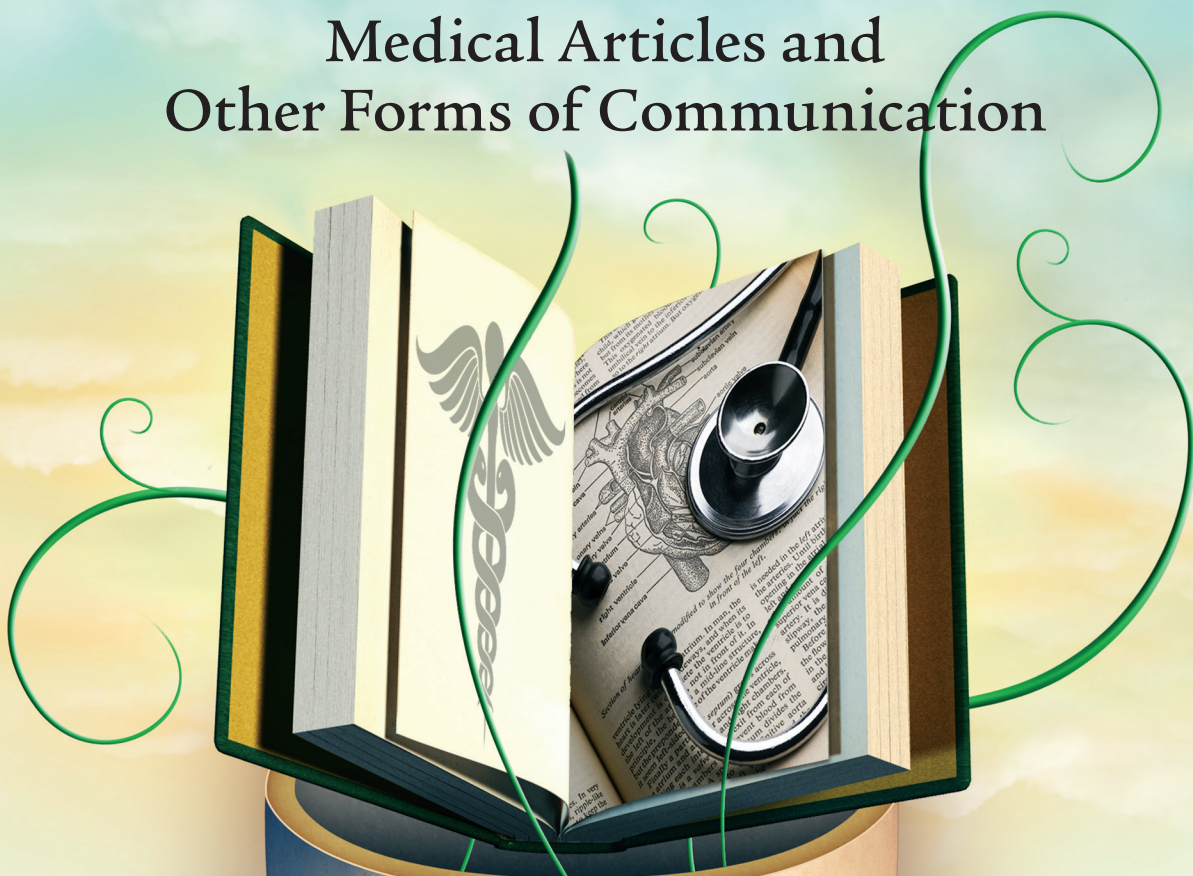


# Writing, Reading, and Understanding in Modern Health Sciences

Medical Articles and  
Other Forms of Communication



Milos Jenicek



CRC Press  
Taylor & Francis Group

A PRODUCTIVITY PRESS BOOK

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Boca Raton London New York

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How can I know what I think  
till I see what I say?

**Graham Wallas, 1926**

To all of us in all health professions who wish to share well our experience, read it well, understand it well, and use it in the most beneficial way for all, especially for our patients and communities under our care.

This book is dedicated to all writers, readers, and users of medical articles who know that a medical article is an exercise in argumentation fueled by the best available evidence behind all its propositions and that it is a communication tool to reach a specific readership to improve its practice, research, and quality of healthcare at all levels of disease prevention, health protection, and promotion. It is especially dedicated to those who don't, but who may, change their mind after reading the pages that follow.

Receiving the message does not necessarily mean getting the message. Writing a medical article is at stake, reading it is at stake, understanding it is at stake, putting it in a proper use is at stake. Both the content and the form of medical articles are at stake.



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# Introduction

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## *Writing Medical Articles Today*

“Do we not only produce, but also share, our thoughts by talking about them and putting them on paper?”

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### *Executive Summary*

Articles in all health sciences, colloquially called medical articles, have always been an essential vehicle of information about the lived experience of a health professional, his or her research, and desire to improve one’s work to the best benefit of the patient and the community. Medical articles were typically a purely descriptive, mostly clinical experience. However, medical articles have evolved over time.

Today information in a medical article must address not only research activities and findings, but also strategic, managerial, and administrative ones, and planning, political, cultural, spiritual, and other social aspects and lived experience in healthcare, health protection, disease prevention, and health promotion. Thus, the content and form of health communication likewise must diversify and expand accordingly. The purpose of this book is to help the authors of medical articles—and their readers—communicate better using medical articles in today’s practice and health research environment and fulfill vital communication demands for health information.

We expect a medical article to be a good communication tool, useful in knowledge translation, and produce best evidence that will contribute to further practice and research innovations. To succeed, articles must have a proper form and content. Most writing guides that are currently available focus mainly on the form, structure, and organization of medical articles. These structural aspects are well established, but, what about the content?

In this book, we will explore the most effective practices for communicating using three main medical literature formats: scientific articles, articles where the subject is not based on the practice of the scientific method, and business reports. Readers must build a critical appraisal system of these communication tools to be able to effectively read and assess them for their scientific quality and relevance to inform decision making and ultimately to use in the readers' subsequent clinical and other practice.

A medical article may be written and read in several ways: as a valid exercise in informal logic, critical thinking, and argumentation to convince the reader while describing health events, and discovering causal relationships between noxious and beneficial factors and their corresponding impact on health. Most often, information must be available across the conventional IMRAD (introduction → material and methods → results, and → discussion and conclusions → references) format. Using this structure, only selected book topics should guide meaningful message development: the Introduction that includes a seven-part research thesis; the challenge of definitions in the Material and Methods sections; causal reasoning behind the Results and Discussion sections structure and content; and modern argumentation and critical thinking that underly particularly the Discussion and Conclusions of an article. Clinical case reporting also merits special attention given the expanding spectrum of expectations and ensuing methodology placed upon this medical literature genre. Medical articles are necessarily subject as well to editorial and publication ethics.

---

“There are three rules for writing a medical article. Unfortunately, no one knows what they are.”

**Paraphrasing W. Somerset Maugham (1874–1965)**

## In These Introductory Comments

In our continuous effort to do meaningful research with its dual objectives to maintain and improve patient and community healthcare, medical articles are among the vital cornerstones of written communication among health professionals, subjects in their care (patients and community) and other stakeholders in health and disease, such as social organizations, politicians, administrators, technology and material resources providers as well as other system stakeholders.

A medical article is not only a product of reflection and research reporting, but it is also a vehicle of information between its proponents and recipients about a health problem, question and its solution. Knowledge translation relies on such communication tools. These basic characteristics as well as objectives of a “medical” article, however, are common to most articles in all the health sciences.

How then should we see and conceive medical articles today? They take time to write and sometimes even more time to read and understand fully.

About what do we argue in these pages? For the thesis of this introductory chapter, let us propose and discuss the medical article as a communication tool that is intended to share the message about health, disease and care. We propose that given the diversity of health topics, there is no uniform and universal way to write and read health sciences communication. All approaches have their own specific objectives, format and structure and corresponding strengths and weaknesses. Depending on the purpose and the nature of the problem discussed, they are not necessarily all based on the scientific method, but they all hold an important place in improving understanding and activities across health professions.

A great deal has been written recently in original papers and monographs about medical article writing. Having a choice between their rather technical aspects and norms and their nature, we are opting for the latter. This book is more about the “soul” of medical articles, their “message” rather than about their “body” in technical terms of writing.

## So Many Expectations from a Medical Article

Medical articles are not only about research, they also must meet the needs of corporate and other stakeholder organizations. Editorial boards of many



medical journals prefer an objective article nature and structure, most often its IMRAD format. Is it enough for both authors and readers? Not necessarily. Other articles in health sciences convey rather subjective views of health problems—editorials, book reviews and reporting on health policies, management issues, rules and regulations in the health domain and others.

In all of these communications, too, more must be expected from a medical article. In general:

1. It must be a good **communication tool**.
2. In the research-related domain, it is preferably a reflection and summary of the **scientific method** used to improve understanding and/or decision making about what to do to solve the health or disease problem. In this domain, a medical article summarizes research results and provides analysis using the scientific method to improve understanding and/or decision making about a particular health or disease problem. Not all articles, however, are based on the scientific method.
3. It must be logically sound as a valid exercise in terms of informal logic, critical thinking and modern argumentation. In colloquial terms, “it must make sense.”
4. Its **structured form and content** (findings presented) must be user (reader)-friendly.
5. However important the best possible **cause–effect relationships demonstrations** in a medical article are, it may focus on other problems, such as **descriptions** of what happens (single or multiple clinical case reporting, occurrence of disease, experience with new technology uses, etc.) and **new concepts**: hypotheses, research questions or action strategies.
6. It must reach its desired readership, improve knowledge, attitudes and skills of readers and be translated to benefit patients and the community.

So, how should we write, read and understand a medical article as a knowledge communication tool?

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Let us make a distinction between knowledge communication as we understand it and knowledge translation in the health domain. **Knowledge translation** focuses on the movement of a specific kind of health information and evidence from its source to various recipients of the message. If these actors use this knowledge in

their practice and research, will it have an impact on health activities and people's health itself? The term *knowledge* in this context is the written and spoken body of experience from both research and practice. **Communication** is a vehicle for such knowledge, a basic tool to make knowledge detected, understood and used.

---

## Medical Article as Communication Tool and Vehicle of Knowledge

To look in more detail at such multifaceted expectations in the sections, which follow this introduction, let us first discuss the communication aspects and expectations of a medical article. Simply put, if the information does not get through to the reader, even the best article may be lost. This is one of the main problems in the knowledge translation domain as we understand it today.<sup>1,2</sup>

We will focus on the communication between health professionals themselves and their patients. Expanding this to include communication to the general population involves journalists and electronic media<sup>3</sup> and goes beyond the essence of medical communication itself and its main objective as proposed here.

## What Is Communication Today?

We may see our context **communication in general** as the exchange of thoughts, data and other messages by sensory-motor or technical means, whether auditory (speech), written (such as our articles), visual (images), or conveyed by signals, or behavior of a message sender (usually a health professional) and a recipient (other health professionals, patients, community). Such exchange also may work in reverse.

Hence, human communication may, and usually is, most often:

- verbal, **oral** (such as on clinical rounds or scientific or professional meetings) or **written** (articles, books, posters, other electronic media, etc.)
- **nonverbal** through the use of body language, gestures, posture, eye contact, sign language and through “mimicry.” Patients often communicate with health professionals by “mimicking,” and psychiatrists and clinical psychologists follow and know them all too well

Both senders, such as medical article authors in our case, and their readers as receivers of the message, must share the common understanding called also **communicative commonality. Understanding** of the message by the receiver as an end result of communication may be challenging in the case of medical articles.

If **communication in health sciences** is defined as *the art and technique of informing, influencing and motivating individuals and groups (institutions, public) about health, disease and care issues*, it also represents *ways to share health, disease and care-related information in, and by adopting and using, such techniques and underlying information to sustain, modify and further develop activities, practices and policies and further advance research to ultimately improve health outcomes both in individuals (patients) and communities under our care at all levels of disease prevention, health protection, and health promotion*. Medical articles are the embodiment of such arts and techniques.

Effective health sciences communication is explored through an increasing number of titles, such as Schiavo's *Health Communication: From Theory to Practice*<sup>4</sup> or Higgs et al.'s *Communicating in Health Sciences*.<sup>5</sup> Both stand out in terms of their timelines and comprehensiveness. Brown, Crawford and Carter's *Evidence-Based Health Communication*<sup>6</sup> focuses on verbal communication in patient–health professional encounters. A broader introductory framework for communicating in health sciences may be found elsewhere<sup>7</sup> in health sciences,<sup>5</sup> medicine,<sup>8</sup> and public health.<sup>9</sup>

Communication may be carried out via the verbal, spoken word or through written approaches like medical articles. Verbal communication may be both positively and negatively enhanced through nonverbal means, such as *artifacts* (clothing and other attire reflecting the message), *haptics* (touching affecting attitudes and feelings), *chronemics* (time perception and uses), *kinesics* (body language) or *proxemics* (using physical and personal territory).

Written messages and communication likewise may contain also a type of “nonverbal” communication in the written world—artifacts, such as type-setting of the article, appeal to attitudes (haptics) in essay-type articles (see below) or kinesics (artwork). However, the message of the medical article relies more substantively not only on the nature and quality of its research material, i.e., how it is defined (*orismology*, see below), measured, counted and collected, but also on how the material is described, analyzed, interpreted and presented through logic and critical thinking. And, all this must occur in a way that does not detract from the content of the article.

## Types and Basic Formats of Medical Articles

Depending on the type of information and intended readership, medical articles may take the form of a:

- **literary essay**, mostly nonargumentative propositions and personal views
- **research report** based on material obtained by the scientific method, in some domains, also called **laboratory report**, an argumentative message
- **business report**, a directive message that may be either argumentative or not

Figure I.1 proposes one possible classification of medical articles, such as essays and others, which are based on the scientific method, supported or not by some kind of evidence and presented using an argumentative or nonargumentative approach.

Both major categories of medical articles—subjective essays and objective scientific reports—are worthy of separate reflections and discussion with possible descriptions for future developments. Chapters 1 and 2 explore these domains.

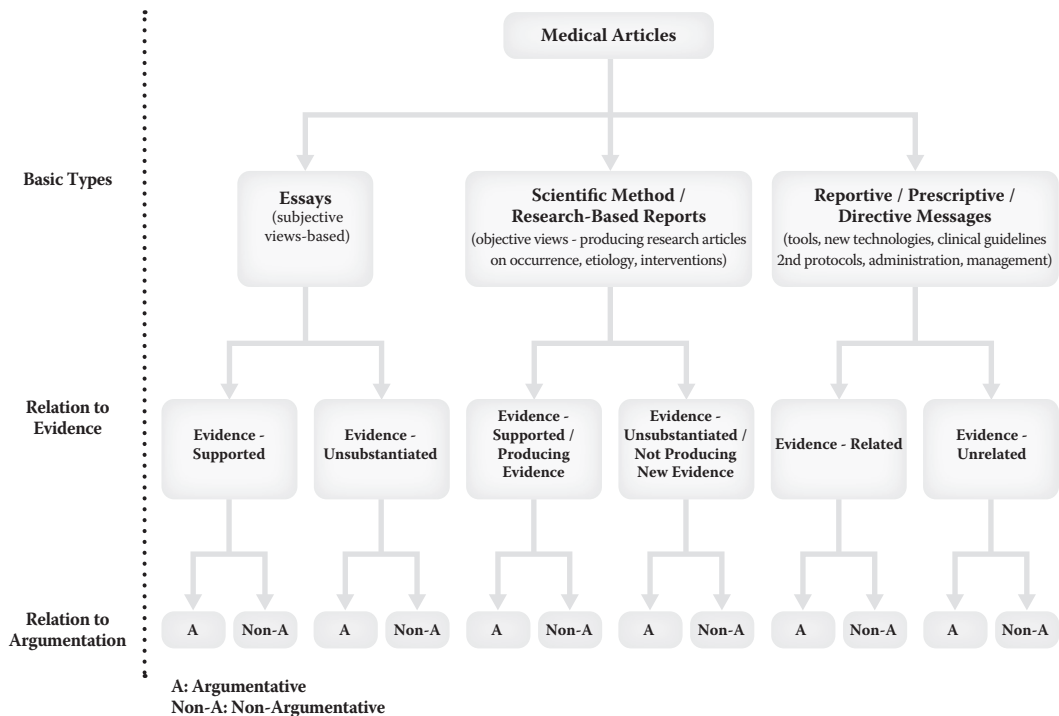


Figure I.1 Major categories and types of medical articles.

Until now, most of the methodological directions in health communication writing have been devoted to scientific reports and especially to their structure, grammar, syntax and style.<sup>10–12</sup> They dominate most essential health communication writing and instructive discourse available as they occur in variable proportion elsewhere.<sup>13–19</sup>

Equal attention must be paid to the nature, meaning and content of the message. Let us try to contribute to this vital essence of medical article writing. Rather than detailing each standard section of a scientific medical article in exhaustive and systematic detail, such as introduction, material and methods, results and discussion (and conclusions and recommendations), we will pay attention rather to some selected and particular challenges of each of them:

- The article's **thesis** beyond a research question (usually in the Introduction of an article).
- **Definitions** beyond solely the dependent and independent variables (typically in the Material and Methods section).
- **Modern critical thinking and argumentation** to give meaning to findings in the reporting Results, Discussion, Conclusions and Recommendations sections.

Reflections about the *future* of medical article writing and some particular aspects, such as **ethics** of medical writing, will conclude our efforts.

These reflections on writing medical articles apply not only to medicine, but to all health sciences: dentistry, nursing, nutrition science, physiotherapy, clinical psychology, chiropractic medicine, homeopathy and all others. These health disciplines share similar philosophy, reasoning and strategies, and the health professionals working in the health disciplines must communicate, understand and share the same types of messages in daily practice and while conducting research. This book will be a modest contribution in such directions.

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In the above-mentioned multidisciplinary sense, the reader is reminded that for the sake of brevity we will speak of “medical articles.” However, this term is used throughout the book synonymously for articles in most health sciences and professions: dentistry, nursing, clinical psychology, chiropractic medicine, homeopathy, or alternative medicines. Basic rules of communication by way of articles are the same for all. The reader is encouraged to add specifics of his or her profession to this opening message.

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## So, What This Book Is Not About

To make a useful and complementary addition to the guides to writing in health sciences that are currently available, we tried to avoid any major redundancy with existing high-quality references. Thus, this book is NOT about

- The language, style or structure of medical articles. These matters are already competently and extensively covered in several widely accepted and endorsed titles.<sup>10–12</sup> Let us accept these recommendations as a pre-requisite for how to construct a proper article.
- Medical writing in general. Other titles in the broadest health domain cover how to write medical articles, including clinical and laboratory research,<sup>13–15,19–27</sup> articles of a scientific nature as they are understood today,<sup>21</sup> general scientific writing,<sup>28–31</sup> or critical thinking in writing about life sciences.<sup>14</sup> We suggest that this reading is complementary and expands our understanding of communication through medical articles.
- Journal styles and formats. In addition to the diversity in the health domain as outlined above, both the form and the content of medical articles vary from one journal to another, and from one specialty to another. Authors of medical knowledge communications are wise to respect this. The journal's readers are usually accustomed to the journal style and directions.
- Basics of scientific investigation. This book is not for novices who have not mastered the most essentials of fundamental and clinical epidemiology, biostatistics, critical thinking and decision making, and research methodology. For this reason, we have added a Glossary of selected terms from the above-mentioned domains at the back of the book, rather than within the book itself.
- A “*How-To Guide*.” This book is not a systematic and exhaustive recipe for how to write an article in health sciences. Several outstanding monographs already mentioned do this each in its own way, for medicine,<sup>19–27</sup> nursing,<sup>32,33</sup> and other biomedical sciences as well. Instead, ours outlines relevant selected elements of this kind of communication. Most of these are related to the IMRAD format.
- Editorial expectations of medical articles. This book is not in any way a formal consensus of health sciences journals' editorial expectations from a medical paper's author. It offers rather a selection of reflections,