

REVIEW ARTICLE—EDUCATIONAL TRACK

Medical Writing by Non-native English-speaking Authors: The “Mentorship at a Distance” Option of the Journal of Nuclear Cardiology

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Abstract

The Editor-in Chief of the Journal of Nuclear Cardiology created in 2014 the “*Mentorship at Distance Committee*” to provide editorial assistance to foreign authors. The chair of the committee discusses in the present communication his 3-year experience with mentoring manuscripts. He addresses the selection of manuscripts, the process of mentoring and common problems encountered and resolved. The mentoring process required the full commitment by both the mentor and the author, because of necessary intensive and frequent communications by email. The average time involved from start to finish averaged about 9 weeks. Eight of 11 mentored manuscripts could be sufficiently revised and were accepted for publication.

Keywords: Mentoring foreign authors, Scientific writing

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Medical research aims to augment the knowledge and understanding of diseases and thus improving health of society. For research to be relevant, effective communication of new findings to an as wide as possible audience is important. In the present era English is recognized as the *lingua franca* in science and business.

However, only about 5.4% of the world’s population (378 millions in 2018) is native English-speaking, although a substantially larger number (744 millions) speaks English as a second language. In contrast there are 128 millions native speakers of Japanese and only 131,000 people are estimated to speak Japanese as a second language.

Non-native-English speakers

Speaking a foreign language is one thing, but writing grammatically correct English is something else. Furthermore, writing about science and research in English requires yet other skills and experience. Thus, non-native speakers are at some disadvantage when aspiring to publish their scientific research in one of the major English-language professional

journals.

For speakers of Western languages, it is relatively easy to learn English as a second language, because the (Indo-) European languages are loosely related through grammar and vocabulary. However for speakers of different language family such as Japanese, it may be substantially more difficult. Not only may the syntax of the language be totally different, certain concepts that can be expressed in one language may be impossible or difficult to articulate in another language.

All manuscripts submitted to the *Journal of Nuclear Cardiology* undergo peer review by experts in the field of cardiovascular imaging. The task of a reviewer is not only to judge the scientific merits of a manuscript, but also to critique and make suggestions on how a manuscript may be improved.

All of us, even the most experienced authors, have felt the “pain” of a thorough review. But, we also have benefited from this valued process and acknowledge that in the end our work was improved. The editorial board of the *Journal of Nuclear Cardiology* realized that perhaps manuscripts by foreign authors might be unjustly rejected because of linguistic

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problems. This may imply that otherwise capable investigators in nuclear cardiology, disillusioned by rejection are discouraged to submit future work for publication.

Mentorship at a distance

Reviewers of the *Journal* identified at times manuscripts by foreign authors that seem to have scientific value, but that were not acceptable for publication in the submitted form. Such manuscripts could benefit from substantial editing and rewriting. To address this problem, the *Journal* established in 2014 a Committee, the “*Mentorship at Distance Committee*” that would provide assistance to foreign authors. Several Editorial Board members of the *Journal* volunteered to serve on the committee.

Since its initiation, more than 11 manuscripts by foreign authors have gone through the “*Mentorship at Distance*” process. To understand better what this mentoring would involve, I decided, as Chair of the committee, to mentor myself the first manuscripts referred to the committee. Although very time-consuming, mentoring turned out to be an interesting and rewarding experience for both authors and mentor.

As was to be expected, some manuscripts were not salvageable or the authors could not make the required changes ($n=3$), but most ($n=8$) mentored manuscripts improved sufficiently and were, after a *de novo* review, accepted for publication.

The *Mentorship at Distance* program differs from commercial manuscript editing services in that the *Journal*’s mentorship is provided free-of-charge to the author and conducted by recognized experts and published authors in the field of nuclear cardiology.

Process of mentoring

It may be useful to describe in some detail how the mentorship process works.

When a manuscript is identified as a possible candidate for mentoring, the editors discuss its potential merits with the chair of the Mentorship at Distance Committee. If the chair agrees, the opportunity of mentorship is proposed to the corresponding author.

The mentor and senior author then enter into an intense communication by email. The mentor will familiarize himself with the original or revised manuscript, as well as with all reviews and comments. The mentor will then send emails to the author with questions in order to obtain a good understanding of the data, purpose of study and methodology. The mentor makes a substantial time commitment and the corresponding author is expected to be equally committed to answer numerous questions and/or make changes without much delay to keep the momentum of revision going. For the 8

manuscripts that ultimately were accepted for publication in the *Journal*, the time involved with mentoring ranged from 2 to 18 weeks (average 9 weeks).

I would like to emphasize two aspects of medical writing.

First, scientific writing is not exactly writing high literature. The most important quality of a medical article must be clarity of English style and grammar and not the beautiful prose. No embellishments are needed and convoluted sentences should be avoided.

Second, scientific writing should follow a standard format. This makes not only writing easier, but also the reading once the article is published. The typical standard format of a medical article consists of abstract, introduction, methods, results, discussion, references, legends to figures and tables. Furthermore, the use of subheadings makes writing easier. This format has been developed by the major medical journals over the last 40–50 years and is not optional. Dr. A. Iskandrian (1) and H. Beanlands (2) published already in the *Annals* excellent reviews about medical writing and present day standards. I find it interesting to look at medical publications of the years 1950 or earlier. Medical articles of that era are markedly different from those in current medical journals. They were generally rather lengthy and often consisted a series of personal patient observations. In the end the authors provided personal opinions and recommendations. Statistical analysis was rarely used. Medicine was at that time still an individual and empirical art.

Through mentoring manuscripts of foreign authors, it became clear that precise wording of research questions, clear descriptions of methodology and results in English remains a challenge for non-native speakers. The mentor’s role is not only to polish the language, but also to reanalyze and reorganize data when needed. Manuscripts sometimes suffered from too much and not essential information and analyses. A fresh look was needed to bring out the merits of a study.

As mentioned above, in order to gain a better understanding of the research, the mentor will request additional data and clarifications. This is the fun part for the mentor: perusing the raw material, extracting what is essential, dismissing what is not and finally coming to a logical conclusion that is supported by data. Once the manuscript is stripped from vagaries and redundancies and the line of reasoning and final conclusion is reassessed by mutual agreement, the rewriting of the manuscript can start. For efficiency reasons, it is inevitable that this will be done in large part by the mentor him- or herself. The mentor will rewrite the manuscript anew, while preserving as much as possible edited parts of the original manuscript. I like to believe that the intense one-to-one interaction between mentor and author has educational value for the mentee.

One aspect of scientific writing that is not fully appreciated,

is that the most important parts of any original article are the Methods and Results sections. The mentor always spends a substantial amount of time with rephrasing, clarifying and re-organizing those important sections. The Discussion section is the last part to be edited and it is relatively easy when everything else is in good shape.

Frequently encountered problems (Table 1)

In the following I will briefly address some of the problems that I frequently encountered mentoring the first 11 manuscripts.

Introduction

The introduction was often unnecessarily long and needed rewriting to focus on the research goal. A clearly worded purpose of study is the most important sentence of the introduction, preferably stated as a hypothesis to be tested. The introduction should provide a succinct background of the question at hand and not more. The introduction is not the place for an extensive review of the literature.

Methods

The methods section is truly the most essential part of a research manuscript. It should provide complete information so that the validity of the research can be understood. Readers who peruse the published article should, in principle at least, have all information needed to reproduce the research.

Patient selection

When patients are involved, information should be provided about the process of recruitment. Were they recruited prospectively in a clinical setting or were they identified retrospectively by interrogating an existing database? When study patients are recruited from a larger cohort, entry and exclusion criteria should be precisely defined. In studies involving a large number of patients it is good practice to display a flow diagram showing the number of patients in each group. Biased patient selection may substantially invalidate the general applicability of results. The reader should be able to verify if there could be possible selection bias.

Procedures

If multiple procedures or imaging modalities were performed, the time interval between procedures should be provided. This may be important when results are compared. Imaging and all other procedures should be described in detail and/or with reference to previous publications providing all relevant technical details.

The methodology of data analysis should also be described in detail e.g. whether subjective or quantitative analysis methods were used. Criteria or values for normal and abnormal results should be clearly defined. Appropriate statistical analysis should be used depending on whether data were normally or not-normally distributed and whether data were categorical or continuous.

Results

The Results section should always match with the Methods section. For any of the data presented in the results section, the methodology of data acquisition and analysis should have been described precisely in the methods section. This particular aspect was often neglected and required a lot of back and forth emails. Results should be presented in a logical way: first, the “global picture”: overall findings in the total cohort, e.g. how many patients had normal or abnormal results, only then followed by results in subgroups and further detailed data analysis.

Tables and figures

The purpose of *tables* is to present all numerical data and statistics that otherwise would clutter the text. In the text of the manuscript the author should refer to tables and summarize only the most important data. The purpose of *figures* is to show representative images and to display statistical results graphically. Tables and figures must have adequate labeling, so that even the uninitiated reader can understand what is displayed by inspecting the figures and their legends. All mentored manuscripts needed changes of tables and figures. The text of the manuscript should not duplicate what is already in the tables and figures, but at appropriate places the text should refer to them.

Discussion

Once Methods and Results are finalized to satisfaction of the mentor, the discussion can be rewritten. The original discussion was almost always too long. A good discussion should just contain the following: a summary of the findings, a brief discussion of relevant literature, limitations of study, practical implications and summary. Similar to the need of focus in the introduction, the Discussion should focus on the main “take-away message” of the research. More is often distracting and superfluous. Few will complain that a discussion is too short. Albert Einstein’s seminal publication on $E=MC^2$ was all of 3 pages long (3).

Final decision

The authors should understand that after completion of the mentoring process, acceptance for publication is not guaranteed. The edited and revised manuscript will be reviewed again as a new submission.

Manuscripts that accomplished publication through this mentoring process will be identified in the *Journal* under the acknowledgments by the following phrase: *This article was finalized under the auspices of the “Mentorship at Distance” committee of the Journal of Nuclear Cardiology. We gratefully acknowledge the editorial suggestions by (name of mentor)*(4). It is important to understand that the responsibility for the authenticity and validity of the manuscript’s data rest solely with the authors and not with either the mentor or the *Journal*.

Table 1 Frequent issues to focus on when revising a manuscript

Title	Clear and concise. If possible, should contain main "message".
English and Style	<ul style="list-style-type: none"> • Use clear language, uncomplicated sentences and plain words. • Scientific writing has not to be high literature. • Do not use unnecessary jargon. • Use abbreviations sparingly. • Use comprehensible abbreviations, e.g. first letters of frequently used word combinations. • Number pages.
Abstract	<ul style="list-style-type: none"> • Well-defined objective of study. • Number of subjects studied. • Condensed methodology. • Most relevant results stated. • Summary and implications.
Introduction	<ul style="list-style-type: none"> • Statement of background in a few sentences. • Define goal of study and/or hypothesis to be tested. • An extensive review of literature is not appropriate in introduction. • Conclude the introduction with short statement of what was done.
Methods	<ul style="list-style-type: none"> • Organization of the Method section should match the organization of the Results section. • Selection of study population, inclusion and exclusion criteria, groups or cohorts compared. • Methodology should be described in appropriate detail. • A reader should be able to repeat the study. • Describe techniques and instrumentation in appropriate detail. • Define endpoint data, define normal/abnormal
Analysis	<ul style="list-style-type: none"> • Define analysis of endpoints. • Describe overall analysis and statistical analysis. • Power calculations, if appropriate.
Results	<ul style="list-style-type: none"> • Demographics and baseline characteristics in Table. • Present first overall results, e.g. number normal/abnormal, then subgroups. • For each result, the method section should have clarified the methodology. • Tables and Figures are used to present complete numerical results. • In the body of the text, only the most important numbers are stated, for the remaining details refer to tables and figures.
Tables	<ul style="list-style-type: none"> • The purpose of tables is to limit numbers in text. • Data should be presented with units. • All abbreviations should be explained at the bottom.
Figures	<ul style="list-style-type: none"> • All labels/abbreviations in figures should be clear and explained in the legend. • Colors should be distinctive and contrast well with background. • Figures should be large enough to allow comprehension of details in a printed version. • A figure should be comprehensible without reading the main text,
Discussion	<ul style="list-style-type: none"> • Discussion should be to the point and concise. • Deliver the "message". • Start with summarizing main results. • State how the findings in the study add to existing knowledge/literature. • Discuss implications for (clinical) practice.

Disclosure

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Conflicts of interest

None.

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