

Treatment of maladies in medical writing

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MEDICAL literature and medical writing, we think, will be with us as long as physicians investigate disease and wish to share their findings. The rate at which scientific information (science in general) is published is so great that it has been called an "information explosion,"¹ though Weale² has said it is "... the cataract of information: 'explosion' is hardly the word for what is occurring since this term refers to something that is sudden and finite." A glance at the pages of journals indexed in Volume 7 (1966) of the "Cumulated Index Medicus"³ gives some idea of the number of medical journals that is being published—several thousand journals is a safe estimate. There are still others that are not indexed.

An interesting proof of the increase in scientists and in scientific writing is documented by Dexter,⁴ Historian of The Ohio Academy of Science. The Academy, incorporated in 1892 with 59 charter members, had increased to more than 2000 members by 1964. During the first 50 years of the existence of The Academy, 3,829 papers and lectures were presented at Academy meetings. The number must have increased enormously in the last 25 years.

FOCUS ON IMPROVEMENTS IN WRITING

Quality control of medical literature has become a matter of great concern to numerous persons and organizations. Some medical journals publish pages of information for contributors. The instructions to authors are guides in the preparation and submission of manuscripts. A number of medical journals have published papers, editorials, or letters to the editor, on medical or scientific writing, urging improvement.

Many medical centers maintain editorial departments to help physician-authors with their manuscripts. Private business organizations, both non-profit, like Battelle Memorial Institute, and profit, like Merck Sharp & Dohme, employ editors and editorial assistants to help the scientists with their manuscripts and reports. Several universities offer courses in medical writing. At Tulane University School of Medicine, Dr. Lois DeBakey is

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teaching medical students and residents the principles and technics of writing. Both she and her sister, Miss Selma DeBakey, have published papers that are helpful to physician-authors.^{5, 6} One organization dedicated solely to improvement in medical writing is the American Medical Writers' Association. This Association maintains a manuscript editing service for physician-writers, and last year sponsored publication of a directory⁷ of free-lance editors and researchers.

Individual physicians such as Ohio's Dr. Robert M. Zollinger and Dr. Jonathan Forman have made fine contributions in helping the medical author present his material in the best possible form. The Zollinger, Pace, and Kienzle⁸ book, "A Practical Outline for Preparing Medical Talks and Papers" is excellent. Doctor Forman has conducted workshops on medical writing.

WHEN AND HOW TO TREAT ERRORS

Although there is increased awareness of the need for better writing in medical papers, maladies nevertheless still beset manuscripts. (There may even be one or two present in our paper, which some eagle-eyed readers will detect!) Treatment of the ills can occur only after recognition and diagnosis, and always consists of making appropriate changes. Errors really should be eradicated before the manuscripts are submitted for consideration for publication. When they occur on galley proofs, mistakes must be corrected immediately. When they have been published, they are incurable.

The person who treats the maladies may be the author himself, a member of his family, a colleague, or a professional editor. The therapist must take the time to scrutinize the manuscript for every type of mistake—from the obvious to the hidden. If the author is resentful of criticism, he cannot be helped; he is the patient who refuses to undergo an operation for acute appendicitis. (It is a natural reaction, though, since all of us know English and are authorities on the written or spoken word.) A painstaking review of the manuscript will prevent the author from committing mistakes such as the following, which are taken from medical manuscripts.

"Case 10 subsequently died."

Cases do not die (though they may be buried in the files); *patients* die.

"100,000 Americans die every year."

These poor souls die not only once, but annually!

"A nitrofurantoin suppository is used nightly for 12 days."

How is the suppository cleansed after each use, so that the same one will last for 12 nights—or days?

In a similar manner of expression:

"... one dose was given daily for the first 2 weeks."

Repetitious use of drugs would really put the pharmaceutical houses out of business.

“As an outpatient, the position of the capsule was determined fluoroscopically.”

What outpatient department was the position of the capsule visiting?

“... pregnant women and children...”

Pregnant children are juvenile delinquents. To stop such pregnancy, place a comma after women: pregnant women, and children.

Easily identifiable mistakes include misspelling, and transposition of letters. In a published paper⁹ a table lists “Types of Parental Solutions” (these could be useful for those who are raising teenagers); *parenteral* solutions are meant; another table lists *theraphy*, eight times, instead of *therapy*. Although the physician-author undoubtedly knows better, he assumes ultimate blame for an obvious, preventable error contributed to both by printer and by editor.

Eponymous terms are easy to misspell. Dr. J. Marion Sims has a position named for him; Dr. Harvey Cushing, a syndrome; Dr. Robert James Graves, a disease; accordingly, Sims’s position, Cushing’s syndrome, and Graves’ disease require correctly placed apostrophes—not all of their names end in *s*.

Spelling of medical terms changes through the years and with usage. The latest edition of a good medical dictionary should be freely consulted. For many years now, *gallbladder* has been one word, likewise *postoperative*, *gastrointestinal*, *bypass*, and *roentgentherapy*. *Vagotomy* has become an acceptable term (although the procedure literally should be called *vagus transection*).

Tables must be examined to be sure that the numbers and units are consistent with those mentioned in the text. Percentages must be verified; abbreviations must be considered for consistency; the title of the table must be appropriate and understandable. If the tabulated material could be stated clearly in sentences, the transference to sentence form should be made. This change also appeals to journal editors, because tables are expensive to print.

Illustrations and their legends must be examined critically: graphs, as to whether or not the same abbreviations or designations used in the text have been lettered in, and whether or not the units are specified for the ordinate and for the abscissa. Roentgenograms may need arrows added, to orient the reader; on the backs of certain photomicrographs, the top and the bottom should be labeled; their magnifications and stains should be stated in the legends. The text of the legends must correspond appropriately. It is inaccurate and awkward to label a *photo*:

“Fig. 1. A five-day-old girl.”

It should be "A photograph of a five-day-old girl," since the live baby is not on the page of the journal.

The initials and actual file numbers of patients should be removed from the finished manuscript. The identity of the patient should *not* be divulged, as this is in the realm of medicolegal matters, and is never necessary for the scientific mission of the paper.

At least three expressions have medical implications that should be considered before they are used: (1) felt, (2) on the one hand, and (3) in a similar vein. For example, (1) *palpation* is an important part of the physical examination by the physician. Therefore, to use the expression "The authors *felt* that explorative surgery should be performed" should be changed, since the decision was not based on palpation. The statement could be: "The authors *believed . . .*," or "*advised,*" or "*recommended*" that explorative surgery be performed.

- (2) "The dosage of Imuran is determined by the amount of protein in the urine on the one hand, and the level of the white blood cells on the other hand."

(We trust the technician wore rubber gloves.)

- (3) The word vein should be used in its medical context only.

Hyphens are a touchy type of punctuation, aside from their use in dividing words at the ends of lines. There is no question that used properly a hyphen can clarify relationship of words and therefore meaning. Examples are the terms *follow-up*, *cross-examination*, and *self-satisfied*. An example from Kerfoot¹⁰ follows.

"1. At the zoo, we saw a man-eating lion.

2. At the restaurant, we saw a man eating chicken.

Try moving the hyphen from the first to the second sentence [after the word man]. Interesting, isn't it?"

The one absolute rule about when *not* to use a hyphen is after an adverb ending in *ly*. The *newly described* entity, the *relatively dense* portion on the roentgenogram, the *admittedly small* series, a *highly pigmented* strain, are examples of when the hyphen must be absent. These relationships are considered to be entirely clear without that punctuation.

The use of the words *negative* and *positive*, and *present* and *absent* should be precise. Test results usually are negative or positive. Signs, such as Babinski's sign, and Hoffmann's sign, are not positive or negative—they are present or absent.

Scrutiny of the reference list and the careful confirmation of each complete citation must not be neglected. *Figure 1* is an example of how one author (foreign-born it is true) listed a reference; *Figure 2* is a photograph of the

Morris, J.D.; Sloan, H.; Wilson, W.S.;
Brandt, R.L., and Arbor, A.: An appraisal of clinical results in open mitral valvuloplasty. *J. Thoracic & Cardiovas. Surg.*43: 17-32, Jan. 1962.

Fig. 1. Reference as carried on a manuscript, listing Arbor, A., as an author.

**AN APPRAISAL OF CLINICAL RESULTS IN OPEN
MITRAL VALVULOPLASTY**

Joe D. Morris, M.D., Herbert Sloan, M.D., William S. Wilson, M.D. (by invitation), and Ralph L. Brandt, M.D. (by invitation), Ann Arbor, Mich.

Fig. 2. Photograph of the title and authors' names—listed incorrectly in *Figure 1*. Note that Ann Arbor is in the same type of italic that is used for the authors' names.

publication.¹¹ In defense of the author, it must be admitted that the italicizing of Ann Arbor does give it the appearance of being the name of a lady author.

The errors just discussed are fairly obvious ones, and, if not benign, at least they are not potentially malignant. The occult maladies in manuscripts can be in the realm of ethical and medicolegal matters. When a manuscript carries the names of more than one author it should mean that each author named has contributed something to the manuscript. It means then that each author is in agreement with the statements made on the final draft. The Committee on Form and Style of the Conference of Biological Editors¹² state categorically: "It is unethical to include in the by-line the name of any person who was not actually engaged in the reported research." The grave error of adding the name of a colleague to the list of authors—*without consulting that colleague, on the assumption that he is being honored*—is indefensible. The use of the name of the referring physician without obtaining his permission is both discourteous and unethical.

The republication of tables and illustrations, even though they are from the writings of the author, must receive clearance in writing from the editor of the copyrighted publication in which they were first printed. In the legends of the republished illustrations, credit must be given to the original source. It has no bearing on the matter that the illustrations and tables belong to the author; he does not own the copyright. It is his responsibility to obtain written permission to reuse the material.

Semantics can enter into the wording of titles. For example, the title, "The Problem of Increasing Azotemia During Management of Diabetic Acidosis,"¹³ leads one to wonder why the authors are trying to make the patient's condition worse.

Although maladies are author-made or printer-made, they are not pur-

posely made, with a unique exception. In Nelson's "Textbook of Pediatrics,"¹⁴ in the seventh edition, the index carries the waggish entry: "Birds, for the, 1-1413" (the page numbers include the entire text!). This entry is alleged to have been made by the editor's daughter in retaliation for the boredom of preparing the index.

What then should be done about all the accidental errors? Someone with '20-20' writing vision should give the manuscript a complete diagnostic workup—including psychologic and deeply probing procedures. Then, although perhaps grammatically correct statements have been created, their inadvertent absurdity will become apparent. Two final examples are:

"There were 19 babies delivered at the Cleveland Clinic during the study period."

One wonders what the birth rate is during work periods, or the coffee break.

"There are now 8 patients with kidneys from cadaver donors alive for more than 1 year."

It is distinctly unusual for cadavers to live at all, much less for a year. It might encourage one to plan to give one's kidneys for such unexpected prolongation of one's life.

SUMMARY AND CONCLUSION

The written word, in scientific papers, is the major medium of communication among physicians engaged in improving therapy. Maladies in medical writing mar the effectiveness of that communication. Individual physicians, medical schools, and professional groups increasingly are focusing on ways to improve writing. Cogent, literate, scholarly writings are the result of prepublication recognition and treatment of mistakes in the manuscripts. An absolute prerequisite for the elimination of errors is a receptive attitude by the author to constructive criticism of his writings, and he should actively seek such criticism. Detection of errors may be made by the author, his colleagues, his family, or a professional editor.

Disorders that beset medical writing are obvious or occult. Obvious errors include: the misspelling of the names of syndromes, positions, and signs; incorrect punctuation; and inaccurate citation of references. Occult errors may verge on ethical and medicolegal matters, such as the inclusion of physicians as coauthors, without their knowledge, and the use of copyrighted material without appropriate permission. Treatment of the maladies in medical manuscripts can be on a do-it-yourself basis or by an editorial specialist.

Until such time as printing is discarded, if ever, scientific information will be transmitted in writing and in print. It should be a matter of pride for

physicians and other scientists who wish to share professional experiences, discoveries, and theories with their fellow scientists, to produce exact and literate manuscripts. The reward is the accurate and rapid comprehension by the readers, for whom, after all, the manuscripts are written.

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