MAXIMIZING COMMUNICATION SKILLS IN GRADUATE AND POSTGRADUATE HEALTH-CARE EDUCATION THROUGH MEDICAL WRITING

Roscoe C. Young, Jr, MD, Raylinda E. Rachal, MD, and Argiro L. Morgan, EdD
New Orleans, Louisiana

Graduate and postgraduate health-care professional training and postdoctoral fellowship programs that deny trainees opportunities to practice both oral and written communication skills produce an incompletely trained health-care provider unable to compete for faculty positions at university hospitals and affiliated staffs. Therefore, it is imperative that program directors make medical writing a prerequisite to successful completion of postgraduate training programs.

To make trainees as well as administrators and faculty aware of the importance of oral and written communication skills, a variety of oral abilities needed for presenting medical findings prior to publication are detailed. The use of 2×2 slides to support a presentation as well as transparencies, movies, and videotapes are considered. The poster session/scientific exhibit, now becoming more visible because of increasing attendance at professional meetings, is also explained.

Written communication abilities are discussed. Consideration is given to the writing of professional manuscripts for publication in a refereed journal. Other types of written communication include case reports, clinicopathological conferences, letters to the editor, book reviews, books, and book contributions.

The opportunity to learn needed skills must be offered in the postgraduate health-care curriculum. Mandatory medical writing will maximize the marketability of black health-care professionals for faculty staff placement. Moreover, the establishment of a "track record" early in a professional career will increase the likelihood that black health providers are awarded grants for research. (*J Natl Med Assoc.* 1991;83:691-696.)

Key words • communication skills • medical writing • oral communication • written communication •

The foremost objective of predominantly black schools of health education is the production of top-quality primary care providers. These graduates support black urban and rural communities in the United States and those of its developing neighbors.[1] Many administrators and faculty members involved in

From the College of Pharmacy and the Graduate School, Xavier University of Louisiana, New Orleans, Louisiana. Presented during the 13th National Conference on Blacks in Higher Education, March 23-27, 1988, Washington, DC. Sponsored by the National Association for Equal Opportunity in Higher Education (NAFEO). Requests for reprints should be addressed to Dr Roscoe C. Young, Jr, Xavier University of Louisiana, College of Pharmacy, 7325 Palmetto St, New Orleans, LA 70125.

TABLE 1. HEALTH-CARE SCHOOLS IN WHICH MEDICAL WRITING IS APPLICABLE

- Medicine
- Dentistry
- Nursing
- Pharmacy
- Allied health sciences
  - Laboratory technology
  - X-ray technology
  - Physicians' assistants
  - Nutrition
  - Physical therapy
  - Occupational therapy
- Medical social work
- Hospital administration
- Psychology

training black health-care professionals are not fully aware of the importance of communication skills in medical fields.

Some internship, residency training, and postdoctoral fellowship programs do not offer their trainees the types of opportunities that are needed for the professional dissemination of medical findings. Frequently, time is not scheduled to foster the use of communication skills. Such programs produce incompletely trained health-care professionals who are unable to compete for academic positions on university hospital and affiliated staffs.

It is essential for predominantly minority health education schools and teaching hospitals to enhance trainee education. The enhancement should be over and above specialty-practice board preparation. Medical writing should be a prerequisite to successful completion of health-care graduate and postgraduate training programs.

This article clarifies the types of communication skills that health-care providers need to possess. Trainees in a wide variety of medical fields, as indicated in Table 1, have need for such communication abilities. Deans, department chairpersons, program directors, and faculty members should be aware of the need to maximize communications skills in postgraduate health education. Opportunities for both oral and written medical communication should be built into the sequence of experiences offered to medical trainees. The first half of this article clarifies the types of skills needed for oral presentations, while the second half is devoted to the types of written texts required in medical fields.

ORAL COMMUNICATION

In the sequence of medical communications, publication is preceded by "a talk show." Presentation may begin locally. A hospital seminar, clinical conference, clinicopathological conference, or grand ward rounds all make a good initial forum for expression. Next, the presentation may be refined, shortened, and presented at a local health-care society meeting.

State or sectional society meetings, and national or international society meetings reach wider audiences and get the message to more health-care providers. These constitute appropriate forums for verbal expression. At larger meetings, presentations are generally shortened to 10 minutes with 5 additional minutes for questions and answers.

Visual Aids: The Slide Show

Visual aids are effective supporters of oral communications skills. The 35-mm or 2×2 slide format is the most popular medium for medical meetings. The large $3\frac{1}{4}\times4$ lantern slides have become obsolete, largely because of their size, weight, and fragility. Portability, ease of production, and ready availability of equipment have contributed to the widespread use of the 35-mm or 2×2 slide. Graphics, line drawings, and photographs are readily producible in this format.

A good slide is one with no more than four lines. Large tables of data should not be reproduced on a single slide.[2] The most significant data should be extracted, on several slides, if necessary.

A well-made colorful opening title slide attracts immediate audience attention. One must first gain attention in order to be heard. An introduction and discussion (with historical developments and work others have done) are best followed by materials and methods. Results and conclusions should follow in that order. For greatest impact in the finale, the room illumination should be increased prior to summarizing with a "take home message."

Rehearsing with slide preview in a quiet room assists in perfecting oral delivery. Videotaping of the presenter with playback may be used to assist elimination of mannerisms during the talk, as well as keeping the talk within the allotted time. An excess number of visual aids frequently causes talks to run beyond their scheduled time. As a rule, the speaker should plan no more than one slide for 2 minutes of talk. It is also desirable to run a preview for slide sequence and orientation. Wordy, busy slides and handouts are all distracting and divert attention away from the speaker.

In order to avoid out-of-sequence and upside-down slides, it is prudent to preview the slides prior to loading them into the tray. The speaker should personally load the tray. When using the carousel type tray, the slide should be held by the lower left hand corner up to the light so the graphics/illustration is right-side up. Rotation of the slide 180° clockwise will position the fingers in the upper right hand corner of the slide. Thus, when the slide is dropped into the tray, it will appear properly orientated on the screen.

When speaking out of town and traveling on public transportation, it is best to place the loaded slide tray and prepared speech in carry-on luggage, to avoid the possibility of a misplaced presentation.

Overhead Transparencies

Overhead transparencies are more expensive than 35-mm slides. They are also more difficult to transport without mutilation. An advantage of the overhead transparency is the ability to mask material not under discussion at that instant without requiring another slide or transparency. This could decrease the overall cost of a presentation. The lecturer may stand adjacent to the overhead projector. This visibility lends authority to a speaker. It is prudent for the speaker to use a pen or pencil as a pointer to indicate a specific item or area on the transparency—not the screen. The shadow is projected onto the screen. This can be seen better than when a light pointer is used. Another advantage of the overhead transparency is the ability to use overlays to assist in developing a topic.

Videotapes

Videotapes have replaced movies in popularity and are used to advantage at health-care meetings to demonstrate methodology, surgical, and diagnostic procedures. Because of better resolution, movies are superior to videotapes for capturing detail, such as in operative surgery. However, the prohibitive cost of producing movies has yielded to less expensive videotapes. Both may be used as supplements as they highlight and further illustrate a presentation in yet another medium.

Videotapes make excellent fillers for early arrivers and late lingerers to a presentation. They can lend more discussion to a subject in greater detail. The interest catching ability of movement and color on a screen along with sound attracts interest before the speaker begins. Subject matter may be covered in greater depth for those with more interest and time. Tapes are also portable. They can disseminate your message further than you can personally deliver the information, and at times and places when the speaker is unavailable or unwilling to participate.

Poster Exhibits

Health-care meetings are increasing in size. The poster session/scientific exhibit has been adapted to expand author participation. Poster sessions have a more rigid format than scientific exhibits. The purpose is to ensure uniformity regarding size of posters and format for title, authors, and institutions. To permit greater participation, exhibition time is usually limited to one afternoon or morning.

Unlike the poster, the scientific exhibit's size and format are more liberal. Exhibition time is less limited, usually lasting the duration of the meeting. Illumination, size, and color attraction are limited only by the exhibitors' imagination and cost constraints. Cost is generally increased for larger exhibits. Both poster sessions and scientific exhibits are similar in that the exhibitor is expected to stand by the presentation to answer questions and discuss it with interested program attendees. Constraints of space availability, headroom, and security for poster exhibits are considerations of the program committee.

Effective posters and exhibits at scientific meetings can be achieved by planning. The sequence includes an initial sketch, rough layout, and final layout. Consideration must be given to balance, graphics, eye movement of the viewer, and simplicity.

The space should conform with the dimensions specified by the meeting exhibit committee. Balance is a requirement. Graphics should be large enough to be visible at a distance of 3 feet. Title, authors, and institutional affiliation form the heading. The abstract and introduction should be placed to the left at the top, and photographs or results in the middle, while purpose and conclusions should be to the right of the poster board at the bottom.

WRITTEN COMMUNICATIONS

The types of written communications suitable for health-care purposes are many. The most prestigious health-care writings are published in refereed journals. Another form of written communication encompasses articles published in throw-away journals, which serve a slightly different purpose than refereed journals. The final type of medical writing is a book or a book chapter. Each of the three types of medical writing is summarized below.

There are also many forms of medical communica-

TABLE 2. TYPICAL FORMAT FOR AN ORIGINAL RESEARCH PAPER

- Abstract/summary
- Introduction
  Goals, objectives, and specific aims
- Materials/methods
  Experimental design
- Results
  Tabular data, graphs, figures
- Discussion
  With conclusions
- References/literature cited

tion to and through the lay press. These include pamphlets, brochures, television, radio, newspapers, newsletters, periodicals, popular magazines, and books. Our discussion, while confined to the professional health-care publication, can be applied to the lay press.

Refereed Journals

These journals have the widest circulation and readership. Manuscripts for these journals undergo peer review. Such writings include original research articles and review articles. Other articles that appear in refereed journals include case reports, clinicopathological conferences, editorials, letters to the editor, descriptions of new diagnostic/therapeutic techniques, new technologies, book reviews, books, and book contributions.[3] The complete circle of professional medical communications encompasses everything from the initial contact with a patient or subject, to verbal and written transmissions.

Original Research/Reference Articles. Original research may be either clinical or basic science research, retrospective or prospective. Editors look for some new, exciting finding in health care that has not been previously published. They look for miraculous breakthroughs in etiology of disease, diagnosis, or treatment. They anticipate use of the accepted scientific method including suitable controls. Furthermore, the editors expect conclusions to be drawn logically from the data presented.[3,5]

Typically, the format for original research begins with an abstract or summary. This is followed by an introduction and materials and methods section. Next, the results are presented. Then comes a discussion of the findings with conclusions. Pertinent references are interspersed throughout the text. Generally references are listed at the end, not at the bottom of each page (Table 2).

Reference articles pertinent to the selected topic may be obtained with assistance of the health science reference librarian, through *Index Medicus*, or a Medline information search. Information searches are offered as a service by some pharmaceutical companies.

Review Articles. The review article is an exhaustive account of all aspects of a disease, mechanism of pathogenesis, procedure, or other medical subject material. It is an article that includes history, development, and current state-of-the-art of a subject. It may further include the present thinking or even future projection of the subject matter. In the case of a disease, it may consist of etiology, definitions, epidemiology, pathology, diagnosis, clinical picture, prognosis, treatment, and prevention. The number of references may range from 300 to 500. Review articles may be published in periodicals designed for that purpose, or they may appear in a special monograph or as a book contribution.

Case Reports. A case report is a presentation of an unusual specific illness or injury. It is written to teach a lesson about a newly described disease, surgical or diagnostic procedure, or treatment. The usual presentation consists of an introduction, the case report proper (including chief complaint, history, physical examination, and pertinent laboratory data, with clinical course and follow-up, if applicable), followed by discussion and summary. References are kept to a minimum and usually number between 2 and 12.

Clinicopathological Conferences. The clinicopathological conference is a special type of morbid case report and serves as a teaching tool of the pathologist. The clinicopathological conference is designed to teach other pathologists as well as clinicians. Its aim is to avoid future diagnostic and therapeutic mistakes that may contribute to a patient's death. The entire clinical record is abstracted. The initial entry of the patient into the health-care system, clinical diagnoses, treatment, patient's death, and the completion of the postmortem examination are covered.

Following the presentation of events, a radiologist may present the diagnostic images pertaining to the patient. The clinician then discusses the case, giving clinical diagnoses and differential diagnoses based on the report of the patient's history, physical examination, laboratory findings, clinical course, and follow-up. If surgery was involved, a surgeon may discuss the indications for surgery, surgical technique used, and complications of surgery if any.

A pathologist then discusses what was found at postmortem examination. The discussion follows the

usual course of inspection/examination of the patient's body and vital organs. Gross and microscopic demonstrations are supplemented with current state-of-the-art techniques such as electron microscopy, histochemical studies, x-ray diffraction, and toxicology. The pathologist has the final word on the patient's cause of death. Thus, physicians learn to avoid situations that may precipitate a patient's death.

One of the famous clinicopathological conference serials published in this country is the Case Records of the Massachusetts General Hospital. It appears weekly in the *New England Journal of Medicine*.[4]

Editorials. Health-care professionals also need to be able to write persuasively and clearly. Editorial writing offers health-care professionals the opportunity to highlight a subject of current interest in a medical periodical. The editorial may be controversial or provocative, and it may have few or even no references. Editorials frequently introduce and highlight other articles on the same subject in the same periodical. Medical professionals need the skills to address current issues in health care to be able to write editorials effectively.

Letters to the Editor. The health-care professionals also may find the need to write a letter to the editor of a medical journal or to the lay press. Letters may take issue with some of the conclusions of a research article, an editorial, or a review article. A letter may provide additional observations or experiences pertinent to an issue. It may report an exception, an historical anecdote, current activity in the area discussed, or even relate a projection of future trends. Letters to the editor are provocative and informal, and experience in their writing should be required in training programs.

Throw-Away Journals

Throw-away journals constitute another type of health care periodical. Such articles are considered easy reading with colorful pictures and graphics. These publications are made available free of charge to selected audiences. Writing for inclusion in throw-away journals can begin while in training, as these journals generally require less stringent rules for acceptance of a contribution.

Books/Book Chapters

Once an author becomes an authority in his or her field, the editor or publisher of a book may invite the writer to submit a chapter for inclusion in a book. Authority status is achieved through research, publications, and other professional medical communications. Frequently, the editor may request a chapter or subchapter on a limited aspect of a broader topic. Such a request occurs most often when many other contributors are planned. Whatever the format, "good medical writing" as distinct from "bad medical writing," how to start to write, edit, revise, and complete a paper have been reviewed by King.[6]

PREPARING A MANUSCRIPT FOR SUBMISSION

Most, but not all, articles are published on merit. Occasional evidence of "the good old boys club" denies some authors the privilege of publishing their work. More often than not, however, reviewers' comments are constructive and lead to a superior revised manuscript.

Because writing for a refereed journal is an exacting process, a discussion on preparing a manuscript for submission to a health-care publication is in order. Additional assistance can be found in a guide to scientific writing published by King.[6] The process of writing a manuscript begins with the careful reading of a journal's "instructions to contributors" (a set of editors' directions for anticipatory authors).[3,6,7] The instructions are usually found in the advertisement pages before or sometimes following the journal contents. These guidelines are sometimes published in each journal issue or sometimes in alternate issues, depending on the periodical. Most journals request an original and several copies of the manuscript with its illustrative material. It is best to order three 5×7 glossy prints of the same 2×2 slides that were used for earlier meeting presentations.

The manuscript is best prepared on a word processor. The text is then easily altered. Editors generally require that the final manuscript copy be double spaced, including the footnotes and references. Margins are usually 1- or 1½-inches on all sides of the paper. References are generally arranged and numbered in the sequence in which they appear in the text (not alphabetically).

A convenient way to manually organize references is to place them on 3×5 file cards (or even larger ones). The cards are then placed in numerical order (as cited in the text) and transferred to the reference section of the manuscript. Some word processors are equipped to handle references and footnotes in various, more sophisticated ways. They are then sorted, eliminated, or rearranged almost at will.

Most health-care journals require the title page to contain the full names of the authors. Some journals

require academic degrees, while others do not. Most scientific journals request they not be included. The footnote page generally requires: institutional affiliation of the authors; grant number and source of financial support, if applicable; previous meetings where the work was presented; and the address for reprint requests.

In the text, only standard abbreviations are permitted. If medications are mentioned, only generic names are acceptable because brand names suggest endorsement of a product. Human experimentation requires informed consent. Notation that a signed statement was obtained from experimental subjects must be included in the materials and methods section. Informed consent forms and letters of permission should be kept on file for future reference if required. Some journals even require the signed consent forms as proof.

Acknowledgments generally follow the text. Tabular data are also required to be typed. This is also usually double spaced with horizontal lines (but without vertical lines) to separate the headings of the table from the data. Finally, figure legends must support the illustrations, but should not duplicate the text.

If an author plans to reproduce illustrative material from published literature, written permission must be obtained from both the original author and the publisher. The reference must be cited. Indication that permission was obtained should appear in the figure legend.

A letter of transmittal should accompany each manuscript. Most journals now require that the transmittal letter contain a copyright release statement signed by the author and coauthors. Specifics are usually covered in a journal's "instructions to contributors."[3,7]

Reprints of the published article may be ordered for a fee. These are usually made available to the senior (first listed) author at the time of publication. Some journals send the senior author a number of "tear-page" reprints gratis. Some book publishers include a gratis copy to the senior author automatically. Others send a copy only if requested. Many health periodicals invite challenging contributions from qualified health professionals.

CONCLUSION

A cursory reading of the demands of oral and written communications placed on health-care professionals should underscore the need to incorporate speaking and writing skills into the sequence of professional experiences of health-care providers. Mandatory medical writing in the graduate and postgraduate health-care trainee's curriculum will maximize that individual's marketability. Faculty staff placement or grantsmanship competition on completion of training would be enhanced by the development of a "track record" of publications and presentations early in a health-care provider's career. Once these skills are developed, effective oral communication and good medical writing become habits that continue throughout the professional's career.

Literature Cited

1. Keith SN, Bell RM, Williams AP. Affirmative action in medical education and its effect on Howard and Meharry: a study of the class of 1975. *J Natl Med Assoc.* 1988;80:153-158.

2. Rogers R. *What's a Good Slide?* Audio-Tape Slide Cassette. New York, NY: American Thoracic Society; 1962.

3. Day PA. *How to Write and Publish a Scientific Paper.* 2nd ed. Philadelphia, Pa: ISI Press; 1983:181.

4. Scully RE, Kowall NA, Sobel RA, eds. Case records of the Massachusetts General Hospital: a 27-year-old man with acute myelomonocytic leukemia in remission and repeated intercranial hemorrhages. *N Engl J Med.* 1988;318:427-440.

5. Reigelman RK. *Studying a Study and Testing a Test; How to Read the Medical Literature.* Boston, Mass: Little, Brown & Co; 1981.

6. King LS. *Why Not Say It Clearly: A Guide to Scientific Writing,* 1st ed. Boston, Mass: Little, Brown & Co; 1978:186.

7. Cunningham JJ. Use this checklist to help get your next paper published. *Clear Images.* 1989;3:30-34.