

Training surgery residents to write for publication

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For several decades I have conducted a manuscript-writing workshop at the University of New Mexico Hospital to train graduate students, undergraduate medical students, and junior faculty (including both PhDs and physicians) to write scientific papers in the biomedical sciences. The workshop has served hundreds of scientists at health sciences centers in the United States and teaching hospitals and universities in Africa, Asia, the Middle East, and the Pacific Rim.

Soon after I retired and took up a quarter-time emeritus professor position in the Department of Surgery, the head of the department and the director of the residency program asked me to conduct a writing workshop to encourage a greater number of surgery residents and newly hired tenure-track faculty to engage in research and publish their findings. Several consecutive site visits by external assessors evaluating the residency program for the purpose of accreditation had downgraded the program because of the relatively low participation of surgery residents in

research, as well as the faculty's low output of scholarly reports in peer-reviewed journals. The residents had been asking the reasonable question, "Is it really fair to expect us to do research and publish our work if few of the faculty are engaged in research and most of them do not publish regularly?"

Interviews I conducted with resident doctors and clinical faculty yielded some useful insights. I soon discovered that it wasn't a lack of interest in research or writing that kept residents from publishing. The majority of residents either had cared for patients whose case reports they wanted to write up, or had actually collected data on a research topic and begun analyzing it. But that was the point at which, without exception, the task of actually writing the manuscript stopped their progress. Although many residents had participated in research projects as premedical students or in medical school, and about one-third of them were listed as co-authors on a published research report, they all believed they did not have well-developed writing skills, and all regarded writing a scientific paper as a difficult and painful task.

They knew that books existed that taught how to write a scientific paper, but they were of one mind in preferring

live instruction. Every one of them rated knowing how to write a scientific manuscript as no less important than executing a research project. Well over half of them complained that their research mentors failed to set aside adequate time to show them how to develop their findings and observations into a manuscript suitable for publication in a peer-reviewed journal. Several residents expressed deep frustration because their faculty collaborators were too busy, unwilling, or incapable of guiding them through the manuscript-writing process. I discovered that often the "mentoring" in manuscript preparation consisted of the mentor suggesting that the resident consult the literature, select a recent publication related to her project, deconstruct it, and use it as a template for her own manuscript. That method of teaching seemed a lot like asking a second-year surgery resident to do her first appendectomy after reading the relevant chapter in a surgery textbook instead of taking her into the operating theatre and explaining and demonstrating how it's done.

When I spoke to the faculty of the Department of Surgery about these results, all of them said they would strongly encourage the residents they

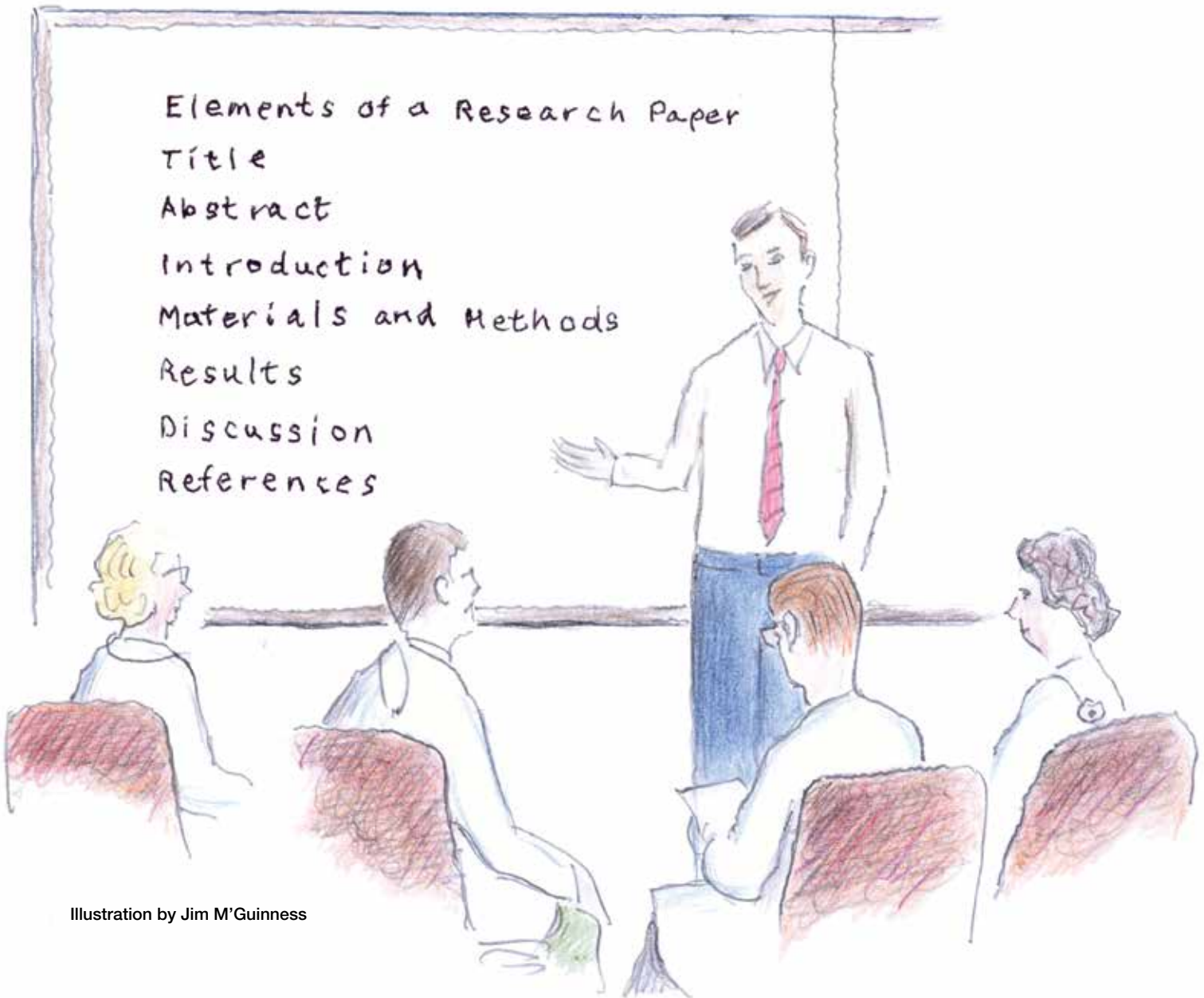


Illustration by Jim M'Guinness

were mentoring to attend a formal writing workshop if one were available and if it would not take too much time away from their clinical training. They all recognized the need to spend more time with the residents on all phases of their research and projects. At the same time, it was apparent to me that the residents I had interviewed would

be very interested in engaging in clinical research and writing case reports or data-driven, full-length manuscripts, but only if formal training in manuscript-writing was provided and they could count on their mentors to assist them in a serious way with all phases of their projects, from preparing the application for approval of the study by the Human

Research Review and Ethics Committee through the final stages of manuscript preparation.

While assuring the surgery residents that writing a scientific paper is a learned skill, I cautioned them that just like mastering a musical instrument or oil painting, good writing is difficult for most people, and asked, "Why should it

be any different for you?"

So for the last three years I have been working with residents in surgery and other clinical specialties, either one-on-one or in a formal writing workshop, to teach them about the components, structure, and organization of a manuscript, be it a case report or a full-length manuscript describing the results of some hypothesis-driven investigation.

Experience has taught me that a formal writing workshop is the most effective and efficient method of teaching residents (and any other group, for that matter) manuscript writing. The writing workshop I teach is an eight-session twenty-five-hour program that convenes once a week in the afternoon for three hours. The workshop is limited to twelve people. The only prerequisite for admission into the workshop is a minimum of three pieces of informative data (e.g., three tables or a table and two figures). The workshop is not a review course in English grammar, nor is it intended to improve one's literary style. It teaches the elements of the scientific manuscript and shows the workshop participants how to prepare for and approach the task of writing a research paper. The content and organization of the various sub-sections of the manuscript are reviewed, including: title page, abstract, introduction, materials and methods, results, discussion, and references. Also addressed during workshop sessions are closely related issues such as: criteria for authorship; ethical obligations and responsibilities of the senior author and corresponding author; how to avoid or escape writer's block; how to present to best advantage data in tabular and graphical form; and standards for reporting significant figures and statistical information. The workshop also trains participants to exchange criticism (either verbally or in writing) constructively, professionally, and without using hurtful language. About two-thirds of each session is devoted to reading and critiquing work written by the participants between sessions. By the end of the workshop each participant is

expected to have completed a draft of a manuscript. Rarely does a participant who has sat for all eight workshop sessions fail to meet this expectation.

Some of those who would like to participate have schedules that preclude them from attending the writing workshop. I meet with each of these individually for a one- to two-hour session weekly or bi-weekly. Just as in the writing workshop, these participants likewise write from their own data.

The workshop has already begun to bear fruit. Since it was established in the Department of Surgery, there has been a seven-fold increase in the number of residents and medical school faculty who attended the workshop and who are pursuing scholarly work, writing papers, and submitting them for publication to peer-reviewed journals. These articles are divided about two-thirds between full-length investigations and one-third case reports. A total of sixteen faculty and residents sat for the first two workshops. About half were members of the Department of Surgery; the other participants were from the School of Nursing, Emergency Medicine, or the Neurosciences Graduate Program. In the year before attending the workshop, four papers were published by these sixteen individuals; one year after the program they had published thirty-one papers in peer-reviewed journals.

Every surgery resident is expected to publish at least one paper during the five-year training period. It is noteworthy that all those who have completed the manuscript-writing workshop with a draft manuscript in hand have already embarked on at least one new writing project. Several residents have said that having a senior faculty member on site to advise them about their writing and edit their work critically and promptly has emboldened them to involve themselves in additional research projects. Some have even gone so far as to acknowledge (in private, of course) that research and writing are enjoyable pastimes.

The attending surgeons likewise seem quite happy to have an in-house

faculty member readily available and enthusiastic about teaching residents to write case reports and research articles well and expeditiously. I advise residents who take part in the workshop that every time one of them hands her newly written manuscript or revision to her mentor for constructive criticism or editing, she needs to state that she would like to get the corrected, annotated draft back in one week and no longer than two weeks. It's a reasonable expectation and a matter of professionalism on the part of the faculty member.

When it comes to producing a final version of the manuscript, by far the most nettlesome aspect of the faculty-resident collaboration is mentor procrastination. In fact, the two most important questions a resident should investigate before entering into research collaboration with a particular faculty member are: 1) Does he or she publish on a regular basis? and 2) Can he or she be counted on to work closely, thoughtfully, and expeditiously on any manuscript that might arise from the project?

Time and time again my experiences teaching manuscript writing to young scholars in North America and elsewhere in the world have convinced me that, independent of cultural or ethnic idiosyncrasies, when participants collaborate in writing manuscripts during an intensive workshop they quickly overcome their fear of writing, their anxieties about the editorial review process, and their worries about the fate of their papers. They also learn to regard the comments of a journal's reviewers as constructive criticism and an opportunity to improve their manuscripts. Finally, they come to understand how a manuscript acceptance clears the mind for the next manuscript.

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