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## How to Make a Good First Impression<sup>\*</sup>

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### A Proper Introduction

MaryAnn Foote, PhD

(*CHEST* 2006; 130:1935–1937)

**Key words:** manuscripts; medical writing

**Abbreviations:** EGFR = epidermal growth factor receptor; NSCLC = non-small cell lung cancer

The old adage “You have one chance to make a good first impression” applies to job applicants, cocktail party attendees, and authors of clinical articles. The introduction is not a data dump or an exercise in mental throat clearing. A proper introduction has a definite format and sets the tone for the remainder of the article.

A previous article provided some insight on writing a clear and concise 250-word structured abstract for a clinical article.<sup>1</sup> Using the same fictional example, I hope to show how to write a good introduction, the first part of the full article in the IMRaD style (*ie*, introduction, materials and methods, results, and discussion). Again, I caution, I am offering suggestions and food for thought, not a template, for manuscripts based on clinical hypothesis-testing trials.

#### MAIN POINTS TO CONSIDER

It is always prudent to read the instructions to authors for the intended journal and to read a few recent articles to observe the style of the journal. Many authors erroneously believe that they should be able to immediately and succinctly write a clinical research paper. However, when faced with a blank

computer screen or sheet of paper, few can actually dive right in and produce a final version with the first draft. It is okay to do some mental throat clearing, as it were, to get started. Subsequent revisions will most likely remove the first sentence equivalents of “It was a dark and stormy night. . . .”

The function of the introduction is to introduce the topic and engage the readers. The introduction should pique the reader’s curiosity and provide enough information so that an educated person who is not a specialist in the field can understand and follow the logic for the clinical trial. The introduction should be as short as possible to introduce the topic; 300 words is a good target. If the introduction is much longer and contains too much general knowledge, the reader (and the reviewer) may lose interest. Ideally, a good introduction has three paragraphs that move from a large area of knowledge to the specific research question. These three paragraphs (for an article based on a hypothesis-testing study) should contain the following:

- Why the research question is important;
- The patient population (*eg*, patients with lung cancer);
- The type of study (*eg*, open-label; randomized, controlled, double-blind; or prospective or retrospective); and
- The research question that furthers research on the topic.

#### POTENTIAL PROBLEMS

The most common problem with the introduction to a research article is lack of focus. A research article is not a review article, and it is not necessary, or prudent, to provide a review of the topic or of the anatomy and physiology of any pertinent organ system. The readers of *CHEST*, for example, are probably well versed in the organs of the thoracic cavity. Another common problem is overuse of references. Again, a review article most likely would have a wider and deeper reference list. For an article reporting the results of a hypothesis-testing clinical trial, it is

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important to credit the work of others, but it is inappropriate to cite every reference on the topic. Use the most recent, most direct, most succinct, and the most relevant references (the term *elegant* is often applied to these references). Use of too many references in a hypothesis-testing article suggests that the author is not truly knowledgeable in the field and cannot discern the most important studies on the topic. On the other side of the coin, failure to cite the work of others in the area is inexcusable.

As with the abstract section of a research article, use abbreviations sparingly and define at first use those that require defining. Move from general to specific, and end with the research question. Use the appropriate verb tense, which will change within the introduction depending on the sentence; the research question is, however, presented in the present tense. It is acceptable to use "I" or "We" when presenting the research question. To do otherwise, often produces convoluted sentence and is false modesty; it is your work, after all!

#### EXPLICATION

What does a good introduction look like? I have provided a fictional example and added explanatory notes. This example is far too simplistic to do justice to the topic, however. I will be using the same information as presented in the earlier article<sup>1</sup> to illustrate how the entire article flows logically (reference numbers are for demonstration only).

##### *First Paragraph*

The prognosis for patients with advanced-stage non-small cell lung cancer (NSCLC) [stage IIIB or IV] is poor. Surgery alone is generally not beneficial for patients with advanced disease, but combined-modality treatment (eg, chemotherapy plus radiotherapy) has improved survival compared with radiotherapy alone.<sup>1-3</sup> Research over the last several decades, however, has elucidated our understanding of basic cellular and molecular biology, particularly the presence of cellular and tissue markers in malignant solid tumors. Epidermal growth factor receptor (EGFR) is a 170-kd, membrane-bound glycoprotein that is expressed on the surface of epithelial cells.<sup>4</sup> A gene mutation causes overexpression, which causes apoptosis, or inhibits the action of tyrosine kinase, or both.<sup>4</sup> (*In this paragraph, I provided the setting for the research: advanced-stage disease, not-so-successful traditional treatment, and finally a bridge from very general to more specific.*)

##### *Second Paragraph*

Drug S is a biological therapy that induces apoptosis and has received marketing approval for the

treatment of patients with advanced NSCLC. Randomized controlled studies with drug S compared with chemotherapy drug P have shown that patients who are treated with drug S have improved survival (9 vs 6 months, respectively;  $p = 0.043$ ).<sup>8-10</sup> Fewer patients who receive drug S require palliative radiotherapy compared with standard chemotherapy drugs<sup>8-10</sup>; however, drug S is associated with the dose-limiting adverse events of neutropenia and mucositis. Drug N is a new biological therapy that inhibits the action of tyrosine kinase; it has received marketing approval for the treatment of patients with metastatic breast cancer. The mechanism of action of drug N, however, is more specific than the mechanism of action of drug S.<sup>11</sup> A metaanalysis of five studies of the use of drug N in the setting of metastatic breast cancer suggested that the drug did not produce prolonged neutropenia or severe mucositis.<sup>12</sup> More importantly, progression-free survival in this patient population was longer (mean, 18 months), with some patients surviving 5 years with no need for palliative radiotherapy. (*In this paragraph, I have given some information about the two therapies, with references to original research and a metaanalysis, albeit with data that are fictional.*)

##### *Third Paragraph*

Given the better survival outcome with drug S compared with standard chemotherapy with drug P, we were interested to know whether drug N could improve patient outcomes, particularly survival, in the setting of advanced NSCLC. A therapy that provided longer survival with fewer adverse events of neutropenia and mucositis could have clinical utility in this poor-prognosis disease setting. (*In this paragraph, I have given the research question and why it is important.*)

#### TAKE-HOME LESSON

A well-written introduction to a research article assists the reader and the reviewer. The introduction moves the reader from what is known about a topic to what is unknown (*ie*, the specific research question). It provides some background as to the importance of the research (*ie*, the origin of the research question). A good introduction to a research article cites a few appropriate references. The patient population (or research material) is provided, in this example, patients with advanced NSCLC. No results or implications of the results are given. Three short paragraphs fill the requirements.

Granted, the data are fictional and a "real" introduction could go into a bit more depth about the drugs (but does not give the trade names, manufac-

turers, or dosages, which will be provided in the “Materials and Methods” section). It could be necessary to add some more information about EGFR, apoptosis, and tyrosine kinase, but cautiously and contained, as this is not a review article.

With the proper introductions made, the tone set, and interest piqued, the reader is eager to read and learn more.

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#### REFERENCE

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