

## EDITOR'S NOTE

## Scientific Writing

*Wilderness & Environmental Medicine* has a broad mandate as a peer-reviewed international journal. The publication is devoted to original scientific and technical contributions on the practice of medicine defined by isolation, extreme natural environments, and limited access to medical help and equipment. Papers consider a wide range of human physiology, health, and emergency and medical management issues related to environmental extremes—pressure, temperature, weather, and medium—along with the many plants, animals, actions, and agents that can increase or ameliorate hazards.

We receive manuscripts from many nations and from authors with a broad range of clinical, research, and technical writing experience. Although we evaluate each submission thoughtfully, those that are closest to the required form will have the greatest share of the feedback directed at high-level content and/or refinement issues. We have recently updated our instructions to authors (<http://www.wemjournal.org/content/authorinfo>), which includes both detailed guidance and common errors, but I will also use this space to provide a primer on scientific writing.

Scientific writing is structured to maximize content and clarity and minimize length. The format is consistent so the informed reader knows immediately where to find any piece of information. There are 4 common levels of presentation of original research, differentiated by the amount of detail provided. Abstracts are the most concise, often at 250 words (excluding title, authors' names, and affiliations lists); tables are strongly discouraged and figures not allowed. Poster presentations are expanded to 600 to 800 words with a focus on figures and tables and summary text to catch the eye of the walking reader. Brief reports can be in the 1500 to 2000 word range, and comprehensive full papers will generally run to 2000 to 5000 words or more. The key sections of scientific writing include the abstract, introduction, methods, results, discussion, conclusions, acknowledgments, and references.

### Abstracts

Abstracts are the most condensed summary of a research project. Some sections found in full manuscripts are eliminated to meet word counts, leaving the introduction,

methods, results, conclusions, and essential acknowledgments. Parsimony and clarity are balanced to control the word count while retaining readability. Abstracts can be most easily created from complete manuscripts by progressively cutting down the content to its essence without sacrificing the meaning. Abstracts are also frequently prepared to submit for presentation at meetings before manuscripts are complete. In this case, it may be most effective to make a long first draft to include key elements and then to begin the progressive cut down to meet word count limits. If done properly, each sentence will be crafted to maximize content quality.

### Introduction

The introduction starts with background information to justify the work and ends with a clear statement of purpose. The background orients the reader to the concept of the subject and the need for the current work. The content progresses from general to specific, drawing the reader down a metaphorical funnel. Readers should have a sense of a question that needs to be answered as they reach the final objective sentence. The abstract introduction achieves this in a handful of sentences. The length is increased in the full paper, but the funnel structure should remain.

### Methods

The methods section describes how the work was conducted. The goal for full papers is to provide enough detail to allow a reasonably trained person to replicate the work. Abstracts will include far fewer specifics, but they should provide an overview of the key techniques and anticipate fundamental questions. Units as well as tests used must be identified (eg, "Data are presented as mean $\pm$ SD with range, where appropriate").

### Results

The results summarize the key observations resulting from the study. Careful editing can allow a tremendous amount of information to be conveyed clearly with the lowest possible word count. Even if allowed in an abstract, tables and figures should be avoided because they may be excluded or corrupted during online

publication. Tables and figures are added to posters and to full manuscripts.

### **Discussion**

Excluded from abstracts, the discussion can be added to posters and is the heart of a full manuscript. The discussion should not repeat methods, but should interpret the results. A critical component of the discussion is the limitations section, which clearly describes any shortcomings of the work. Clearly stating limitations allows readers to put the work in the appropriate context.

### **Conclusions**

Abstracts do not allow the luxury of discussion, so the conclusions summarize the key findings and/or interpretations of the study. Conclusions can be expanded where appropriate in full papers. Acronyms and jargon should be avoided where possible. Some readers will start with the conclusions and read the rest of the work if engaged.

### **Acknowledgments**

Support should be recognized whenever possible. Abstract acknowledgments are extremely brief (as few words as possible) and normally limited to sources of primary funding support. Acknowledgments can be expanded in full papers but should still remain extremely concise.

Our current issue delivers a variety of scientific writing for the readership. Original research addresses the biochemistry of hypobaric hypoxia, injuries and illness associated with recreational bicycling tours, educational wilderness expeditions, and fluid balance associated with ultramarathons. Original brief research reports consider proton pump inhibitors and intestinal infections, surgical repair of rotator cuff injuries in rock climbers, and altitude illness associated with use of a new high-altitude road in Nepal. Continuing medical education credit is available for 3 of the original research reports. Case reports consider injuries from wild boar, inappropriate dexamethasone use, improvised hand injury treatment, and pulmonary injury attributed to exposure to waterproofing spray. Review articles provide interesting summaries on catfishing injuries and the complex relationship of medical care and leeches. The clinical image addresses mushroom ingestion, and the wilderness essay reviews the history and physics of phase changing water. Selected abstracts highlight some of the original research presented at the 2017 summer Wilderness Medical Society meeting. Numerous interactions in letters to the editor further demonstrate the high level of engagement in our community, and finally, 2 errata keep the record straight.

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