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The AMWA Journal expresses the interests, concerns, and expertise of members. Its purpose is to inspire, motivate, inform, and educate them. The Journal furthers dialog among all members and communicates the purposes, goals, advantages, and benefits of the American Medical Writers Association as a professional organization.
An overview of the healthy human nervous system is presented, covering some important anatomical and functional characteristics, as well as clinical applications and diseases of the nervous system. In the first article of this two-part series, we discussed the basics of nervous system communication, sensory nervous systems, and motor neurophysiology. This article will discuss the autonomic nervous system and the central nervous system. Many body functions we are not routinely aware of are controlled by our autonomic nervous system, which is composed of the sympathetic system, the parasympathetic system, and the enteric system. The neurons of the autonomic system innervate gland cells, cardiac muscle, and smooth muscle to regulate physiologic activities such as sweating, blood pressure, and heart rate. The central nervous system acts as the communication hub of the body, interpreting incoming neural signals and, if necessary, dispatching other neural signals to relevant areas of the body. Within one functional area of the central nervous system, such as auditory perception, there are several distinct, yet interconnected, structures that carry out different roles to process the incoming neural signals.

Introduction to the Nervous System, Part 2: The Autonomic Nervous System and the Central Nervous System

By Agnella Izzo Matic, PhD / Principal, AIM Biomedical, Evanston, IL

ABSTRACT
An overview of the healthy human nervous system is presented, covering some important anatomical and functional characteristics, as well as clinical applications and diseases of the nervous system. In the first article of this two-part series, we discussed the basics of nervous system communication, sensory nervous systems, and motor neurophysiology. This article will discuss the autonomic nervous system and the central nervous system. Many body functions we are not routinely aware of are controlled by our autonomic nervous system, which is composed of the sympathetic system, the parasympathetic system, and the enteric system. The neurons of the autonomic system innervate gland cells, cardiac muscle, and smooth muscle to regulate physiologic activities such as sweating, blood pressure, and heart rate. The central nervous system acts as the communication hub of the body, interpreting incoming neural signals and, if necessary, dispatching other neural signals to relevant areas of the body. Within one functional area of the central nervous system, such as auditory perception, there are several distinct, yet interconnected, structures that carry out different roles to process the incoming neural signals.

AUTONOMIC NERVOUS SYSTEM
Many body functions we are not routinely aware of are controlled by our autonomic nervous system. The neurons of the autonomic system innervate gland cells, cardiac muscle, and smooth muscle to regulate physiologic functions such as sweating, blood pressure, and heart rate. There are three divisions of the autonomic nervous system: the sympathetic system, the parasympathetic system, and the enteric system. Sensory signals are relayed through autonomic neurons to a higher processing center in the brain, which interprets the signals and sends a corresponding neural signal to either increase or decrease a certain function.

The sympathetic and parasympathetic systems act in opposition to each other, as will be discussed below. The autonomic nervous system is always functioning, and most of the time a balance is achieved between the sympathetic and parasympathetic divisions regarding their influence on bodily functions. At certain times of the day and for certain functions, one division will have more influence than the other.

Sympathetic System
The phrase “fight or flight” is often used to summarize the function of the sympathetic nervous system. Essentially, the sympathetic nervous system acts to maximize the resources used by the body when presented with a stressful or threatening situation. For instance, blood vessels constrict in less critical organs such as the skin and gastrointestinal tract to make more blood available in muscles for exertion. The sympathetic system also increases heart rate and heart contraction force and relaxes and opens lung airways. At the same time that these functions increase, less survival-critical functions such as digestion decrease. Most sympathetic neurons release a neurotransmitter called norepinephrine, which along with its close relative epinephrine can bind to two types of receptors on receptor organs: alpha and beta adrenergic receptors.

The neurons that control the sympathetic system arise primarily from the spinal cord and ganglia (masses of neuron cell bodies) that lie outside of the spinal cord. Many of the functions influenced by the sympathetic system can be activated individually and in a graded fashion. This is helpful when exercising at the gym, so that your heart rate and breathing rate increase, but your pupils don’t dilate and the hair on your skin doesn’t stand on end as if ready for a fight.
Parasympathetic System

The parasympathetic system counterbalances the sympathetic system and puts the body into a “rest and digest” mode to conserve energy. When the parasympathetic system is exerting influence, there is an increase in salivation and secretion of digestive enzymes and a decrease in heart rate and airway diameter. The neurons that transmit information for the parasympathetic system mostly originate in the brainstem, although elimination functions are influenced by neurons that originate in the lowest (sacral) portion of the spinal cord. Almost all parasympathetic neurons release a neurotransmitter called acetylcholine, which can bind to two types of receptors on the effector organs: muscarinic receptors and nicotinic receptors.

Humans can voluntarily control some of the parasympathetic impulses that are received, most notably urination and defecation. In contrast, there is very little voluntary control over sympathetic impulses. Certain functions are influenced by the sympathetic system but not by the parasympathetic system, including sweating, blood vessel dilation, and release of epinephrine by the adrenal medulla.

Clinical Applications

Many pharmaceuticals act on the autonomic nervous system, with wide-ranging effects. Albuterol, used to dilate airways in patients with asthma, binds to beta-adrenergic receptors found in the sympathetic system. Atenolol, used to reduce abnormally rapid heart rates, blocks the action of the sympathetic system at beta-adrenergic receptors. Pilocarpine, used to treat dry mouth from cancer treatment, as well as glaucoma, binds to muscarinic receptors in the parasympathetic system. Numerous other agents have a direct or indirect effect on the autonomic nervous system. Pharmaceuticals often have side effects that manifest through the autonomic nervous system.

Enteric System

The third and least well-known division of the autonomic nervous system is the enteric system, which is a local nervous system for the digestive system. Although, as was just discussed, the digestive system is under sympathetic and parasympathetic control, the local enteric nervous system is influential in how food is processed and can act independently of the sympathetic or parasympathetic system. The enteric system is composed of various networks of neurons located within the walls of the digestive tract. The enteric neurons allow digestive functions to continue without the input of sympathetic or parasympathetic signals. These neurons respond to changes in the local environment to control gastrointestinal (GI) motility, fluid retention, electrolyte exchange, and digestive secretions. The enteric system has many connections with the central nervous system, so that there is local and global control of the digestive process.

CENTRAL NERVOUS SYSTEM

Think of the central nervous system (CNS) as the communication hub of the body: Neural signals arrive, are interpreted by the CNS, and if necessary, other neural signals are dispatched to relevant areas of the body. Within one functional area of the CNS, such as auditory perception, several distinct yet interconnected structures carry out different roles to process the incoming neural signals.

Spinal Cord

One of the most important functions of the spinal cord is to serve as a relay station for neural signals passing between the brain and peripheral neural structures. However, neural circuits that terminate in the spinal cord can also execute functions such as normal walking movements and motor reflexes to withdraw from painful stimuli without the influence of neural signals from the brain. In cross-section, the organization of the spinal cord is seen to be preserved throughout its length, with white matter matter around the outside and gray matter on the inside.

The cell bodies of neurons make up the gray matter, which roughly resembles a butterfly in a cross-sectional (horizontal) view. Within the gray matter, the dorsal (toward the back) horn of the spinal cord carries the cell bodies of somatosensory neurons (eg, touch, pain) relaying information from the periphery. The ventral (toward the belly) horn of the spinal cord is composed of motor neurons that send signals out to muscles. The lateral horn comprises autonomic neurons that connect to internal organs. Signals enter and exit the spinal cord through the roots of spinal nerves located between the vertebrae (Figure 1). The dorsal and ventral roots of the spinal nerves merge just outside the spine to form a whole spinal nerve that contains sensory, motor, and autonomic neurons.

The white matter of the spinal cord largely carries the axons of neurons within the spinal cord and is organized into columns and tracts based on function. The dorsal columns carry somatosensory information toward the brain. The lateral columns contain nerves that transmit signals from the brain (more specifically, the cortex) to the spinal motor neurons. The ventral columns carry neural signals in both directions. Pain and temperature information is carried from the periphery to the brain; motor information is carried from several brain structures to the spinal cord motor neurons.
Clinical Applications

Because the spinal cord contains neurons that control and coordinate many physiologic functions, an injury to the spinal cord can affect a variety of systems with a range of severity. Most spinal cord injuries are caused by a sudden blow to the spine that breaks the vertebrae. Some injuries can heal completely and some result in permanent paralysis. Spinal cord injuries are classified by the vertebral level at which they occur, and this level dictates the likely impairment(s) that will occur from the injury; for instance, an injury in the sacral region of the spine will commonly affect bowel and bladder function.

Figure 1. The spinal cord within the vertebral column. Notice the gray matter in the middle of the spinal cord, which is colored black and resembles a butterfly shape. Surrounding the gray matter is the white matter, which is primarily composed of neuron axons. The roots of spinal neurons enter and exit the spinal cord through openings between adjacent bony vertebrae. In this image, the ventral (belly) side of the spinal cord is facing the viewer. The image is courtesy of the National Institute of Arthritis and Musculoskeletal and Skin Diseases, National Institutes of Health, Department of Health and Human Services.

Brainstem

The brainstem is the physical juncture between the brain and the spinal cord and is located at the base of the skull. The brainstem is made up of the medulla, the pons, and the midbrain, each of which plays a different role in the CNS. Brainstem functions can be broadly categorized into three groups: information throughway, cranial nerve functions, and vital function control. The medulla is the section of the brainstem closest to the spinal cord, and it regulates vital physiologic functions such as breathing rate, heart rate, and blood vessel diameter. The medulla also acts as a crossing point for many axons passing between the spinal cord and the contralateral (opposite) side of the brain.

The pons is involved in motor control and consciousness level, including sleep. The pons also acts as a major relay point for information passing between multiple brain centers. The midbrain serves as a throughway for motor nerve axons that are traveling from the cerebral cortex to the spinal cord. The midbrain also contains the superior and inferior colliculi, which are collections of neurons that play critical roles in the visual and auditory senses, respectively.

The brainstem also contains the axons and cell bodies of many head and neck neurons that are involved in sensory and motor functions. Most of the cranial motor and sensory nerves enter the brainstem at the pons. These nerves include the motor nerves that control facial expressions, eye movements, and chewing. In this sense, the brainstem can be viewed as an extension of the spinal cord, which houses axons and cell bodies of sensory and motor neurons originating below the neck. Because the brainstem plays a critical role in several basic bodily functions and senses, any trauma to this region, including stroke, can be extremely debilitating or life-threatening.

Limbic System

The limbic system has been frequently described as the “emotional brain” because of the large part it plays in originating and regulating our emotions and behavior. The limbic system is not as anatomically discrete as other sections of the brain; it is organized more by functional relationships and neural connections. As a result, reports differ on which structures are included in the limbic system.

If you imagine the brain as a sphere, the limbic system is located toward the middle of this sphere. The hypothalamus (Figure 2) is a very small structure that controls functions such as body temperature, water regulation, and circadian rhythm. It can also influence endocrine hormone release from the pituitary gland. The hypothalamus is involved in regulating sexual satisfaction, fear, and aggression.

The amygdala is another major portion of the limbic system and is largely a behavior awareness area. It coordinates behavior and autonomic responses to the external environment. Early research indicated that the amygdala is involved with emotional responses to fear and anxiety. More recent studies have linked the amygdala to attention and a general ability to define a stimulus and evoke an appropriate response. The amygdala also helps form memories of emotional events.

The hippocampus is most well-known for its role in learning and memory, although it also plays a role in understand-
ing the body’s spatial position. The hippocampus consolidates short-term memories of experienced events into long-term memories. When a lesion occurs in the hippocampus, a person can’t form new long-term memories but can usually access memories that were consolidated before lesion formation. The hippocampus also aids with spatial memory and navigation, allowing people to remember where they have been or how to get somewhere.

Cerebellum
The cerebellum, meaning “little brain,” is a spherical structure that is estimated to contain 50% of the total neurons in the brain. The cerebellum plays a major role in coordinating movement, but it cannot initiate motor function by itself. Fast movements, such as running and typing, are smoothly executed under the control of the cerebellum. The cerebellum influences the timing of coordinated movements and makes corrections to monitored motor signals. The cerebellum can do so because it receives motor information about what should happen and sensory information about what is happening and compares the two inputs to see if they agree.

When muscle loads change, the cerebellum compensates by changing the force of muscle contraction. The cerebellum also relays information to the motor cortex to plan the next movement in a sequence so that the movement is smoothly executed. Motor learning happens in the cerebellum, both learning new skills and learning from previous movement errors.

Cerebral cortex
If we go back to our analogy of the brain as a sphere, the cerebral cortex would correspond to the outer shell covering the top approximately three-fourths of the sphere. However, the surface of the cortex is not smooth but rather has folds, called sulci, in which more than two-thirds of the cortical surface resides.

The cerebral cortex is often referred to as “gray matter” because of the gray color of the tissue, which is largely due to the presence of neuron cell bodies. The functional portion of the cortex is approximately 2 to 4 mm thick in humans, and most of it is composed of six morphologically distinct layers of neurons. The cortex is organized into right and left hemispheres, which are divided by a longitudinal fissure.

The cerebral cortex is often classified by physiologic function. For instance, there is an auditory cortex responsible for perceiving sound, a somatosensory cortex responsible for touch perception, a visual cortex responsible for seeing, and a motor cortex responsible for executing voluntary movements. Each cortical section is subdivided. The primary cortical area is involved in the direct perception of a stimulus or in executing a movement. The secondary cortical area (or associated area) is tasked with interpreting the signals delivered to the primary sensory cortex or, in the case of motor cortex, selecting the voluntary movements to execute.

In the somatosensory cortex, body areas that are more sensitive to touch (e.g., fingers and lips) compose a larger portion of the brain than body areas that are less touch sensitive. The two hemispheres of the somatosensory cortex receive information almost exclusively from the opposite side; i.e., touch information from the left hand will be transmitted to the right somatosensory cortex. Neurons in the visual cortex are highly activated by high-contrast edges (light-dark) in images, with...
different neuron locations responding preferentially to different orientation angles of the edge/bar. Stereo vision aids in depth perception and is achieved by mixing the input from both eyes into each hemisphere of the visual cortex.

Similar to the somatosensory and visual cortices, the auditory cortex contains a topographical map corresponding to different acoustic frequencies at different cortical locations. Some areas of the auditory cortex are suited to process frequencies found in speech, whereas others are specialized to extract information about variations in amplitude (loudness) or timing. The motor cortex receives inputs from the spinal cord and brainstem on the contralateral side of the body. The topographical organization of the motor cortex largely mirrors that of the somatosensory cortex, with a larger representation for areas with fine movements, such as the hands and face. It appears that the motor cortex acts to execute one functional movement by a neural circuit, rather than each area of the cortex corresponding directly to a single muscle.

In addition to well-defined sensory and motor cortices, there are many association areas of the cortex that receive and process information from other cortical and subcortical structures. The association cortices process complex information, compare information from different sensory cortices, extract related information, and plan any necessary responses. For instance, Wernicke’s area is associated with language comprehension, whereas a separate area, Broca’s area, is associated with speech and language expression. (There are other cortical areas involved to a lesser degree in language skills.)

Association area functions have been determined mostly through lesion/deficit studies in humans and animals. The parietal association cortex is concerned with body awareness and external stimuli that act on the body. The temporal association cortex aids in facial and complex image recognition and is thought to participate in long-term memory. The frontal association cortex, also known as the prefrontal area, is largely responsible for personality expression and executive functions, such as judgment, reasoning, and working memory.

Clinical Applications
The cortex is not a static entity, but rather has plasticity, which is the ability to change and develop in response to its environment and inputs. The cortex can be modified in response to a change in sensory or motor system inputs (increase or decrease). For instance, when a lesion on the retina causes focal vision loss, the corresponding location on the topographic visual cortex map will regain function with inputs from areas neighboring the retinal lesion. Similar changes to lesions have been seen in other sensory cortices.

CONCLUSION
The overview of the nervous system provides a brief look at the complex communication and regulation that takes place in humans. Although much is known about neuron function and sensory systems, there is so much more that research has yet to uncover.

Author disclosure: The author notes that she has no commercial associations that may pose a conflict of interest in relation to this article.

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GLOSSARY

ganglion (pl. ganglia) – Mass of neuron cell bodies.

gray matter – Tissue in the central nervous system that is mostly composed of cell bodies and is gray in color.

plasticity – Changes in synapses and neural circuits due to changes in the neural environment or inputs.

sulcus (pl. sulci) – A fold on the outer surface of the brain.

white matter – Tissue in the central nervous system that is mostly composed of myelinated nerve fibers and is white in color.

RESOURCES


I teach a graduate class in science and medical writing in the professional writing program at UC. The students in our graduate degree program come from a variety of backgrounds. Many of them know they want a career in writing or editing, but have not pinpointed a specific field in which they would like to work.

Most of our students go into workplace positions rather than academic positions. My general goals for the class are to 1) develop their critical analysis skills to inform their writing skills and 2) hone their writing skills. As such, I designed the course so the students will learn to:

- Explain the conventions of scientific and medical writing
- Produce writing in a variety of forms specific to scientific and medical writing and for specific purposes and audiences
- Evaluate the differences between online and print scientific and medical writing
- Analyze popular discourse about science and health
- Define and discuss major issues of ethics and how they affect science and health writing
- Become adept at researching medical and scientific subjects
- Acquire a basic medical and science vocabulary

My list is the result of numerous years spent teaching and studying medical communication as well as working with medical professionals to write and design texts for patients and the general public. I don’t use all the texts in the following list in a term; it represents the bank of resources, my little black book if you will. Here I have divided resources into the categories of critical analysis and production. This division highlights how I approach the class: I ask the students to critically think about the rhetorical implications of medical, science, and health writing then to apply these lessons to the production of such documents. Using principles from rhetoric, the art of effective or persuasive speaking...
or writing, can help future medical writers become strategic communicators who can produce well-written and well-designed documents and persuasively engage an audience.

**Critical Lens Resources**

**Accommodating Science: The Rhetorical Life of Scientific Facts.** *Journal Article.*
Fahnestock investigates genres written for scientific audiences versus those written for nonscientific audiences.

**A Field of Expertise, the Organization, or Science Itself? Scientists’ Perception of Representing Research in Public Communication.** *Journal Article.*
This article looks at the role of scientist as spokesperson, “representing science as both ‘speaking on behalf of’ science and symbolically ‘standing for’ science and its organizations.” The author draws on literature from the field of organizational communication, a subfield of communication studies that analyzes the role of communication in organizational contexts, to argue that science communication should be considered as an activity linked with perceptions of identity and organizational culture.

**Forms as Boundary Genres in Medicine, Science, and Business.** *Journal Article.*
Popham's article analyzes medical treatment forms as genres to argue that medical forms represent a “commingling of the business, science, and medical professions in ways that show evidence of tension and conflict between the disciplines.”

**Health and the Rhetoric of Medicine.** *Book.*
Segal’s book uses rhetorical theory to investigate the persuasive elements of clinical and public medical discourse.

**Realms of Rhetoric in Health and Medicine.** *Journal Article.*
Derkatch and Segal introduce rhetorical theory into the study of health and medicine and suggest ways that a rhetorical perspective can offer insight into medical research and practice. The authors argue that an awareness of rhetorical principles in medicine can provide medical professionals with new perspectives on familiar problems of human interaction in health care contexts.

**Rhetoric of Healthcare: Essays Toward a New Disciplinary Inquiry.** *Book.*
This collection looks at the role of rhetoric in various health care and medical discourses and examines what rhetoric can contribute to the fields of medicine and health.

This article discusses Merck’s 2006 “Tell Someone” direct-to-consumer advertising campaign, which was created to educate the public about the link between the human papillomavirus and cervical cancer. The author uses the concepts of presence and absence, which are verbal or visual strategies for making persuasive arguments, to analyze two videos from this campaign that aired across major US television networks.

**Writing Resources**

**Style Guides**


**Reporting, Editing, and Publication of Scholarly Work in Medical Journals.** *Web page.*
**Writing Guides**

**AMWA Toolkit for New Medical Writers. Web page.**
www.amwa.org/toolkit_new_med_writers

The toolkit provides information on medical writing as a career, opportunities in medical writing, getting started in the field, and other useful information.

**CDC’s Guide to Writing for Social Media. Web page.**

This CDC guide offers guidance on using social media for promoting health messages. The guide focuses on Facebook, Twitter, and text messages (short message service, or SMS).

**CDC’s Health Communication Digest. Web page.**
www.cdc.gov/healthcommunication/sciencedigest/index.html

The CDC’s Health Communication Science Digest provides access to recently published articles and reports relevant for the public health communication community. Abstracts and PDF copies of most articles are available through the digital object identifier (DOI) hyperlink included with each citation.

**CDC’s Simply Put: A Guide to Creating Easy to Understand Materials. Web page.**

Simply Put provides guidance for translating complicated scientific and technical information into communication materials general audiences can understand.

**Creating Patient Education Materials. Web page.**
BioMedical Library at University of Minnesota
Maintained by: Katherine Chew chewx002@umn.edu
http://hsl.lib.umn.edu/biomed/help/creating-patient-education-materials#toc20622

The page provides lists of many relevant articles, books, videos, and illustrations.


The guide presents material on effective science writing. The book combines practical how-to advice about writing on science and medical topics in general and covers a range of workplaces students could find themselves in.

**Genres in Scientific and Technical Rhetoric. Journal Article.**

Miller and Fahnstock discuss differences and difficulties with defining genres and their relevance to science and technology. They provide an outline of the issues and questions.

**Health Writer's Handbook. Book.**

The book is written for the new medical writer. It gives guidance on selecting topics and gathering and analyzing information, and provides an overview of ethical and legal issues, and how to build a career in medical writing. I use the first section that includes resources for gathering information and strategies for interviewing medical professionals and patients.

**The Illusion of Certainty and the Certainty of Illusion: A Case Study of Misunderstandings in Scientific Articles. Journal Article.**

Lang discusses “analytical editing,” which involves the critical-thinking skills necessary to edit a scientific article. These skills are questioning the assumptions, documentation, and implications of the research. To illustrate the analytical editing process, Lang provides an example of a single sentence as a case study. He shows how the sentence raises important issues about meaning, measurement, statistical analyses, presentation of data, and interpretation of results.

**Judging the Quality of Medical Literature. Journal Article.**

Rogstad states that medical writers need to be able to evaluate the quality of the articles they use as information sources or choose to cite in their own writing.
Most of my students have backgrounds in the humanities, so I try to find approachable resources on statistics. The Khan Academy, a nonprofit organization that offers free educational resources, has several videos about statistics.


The author’s examination of samples from four medical journals—the Lancet, the New England Journal of Medicine, JAMA: the Journal of the American Medical Association, and the Journal of Laboratory and Clinical Medicine—reveals that one-fifth of the space of articles in medical science is devoted to an average of three tables and three flow charts, graphs, or photographs. Noting the importance of visuals in medical articles, Gross argues that we need to develop a coherent vocabulary for talking about tables and visuals.

The Non-Designer’s Design Book.

All students in our program are required to take technology and design courses, but students often take our medical wiring course first. Williams’ text covers the basic principles of good design and can help the students when executing assignments such as creating a website or brochure.

Nude Mice and Other Medical Writing Terms You Need to Know. Book.
Cynthia L. Kryder (2009).

Nude Mice is a language resource for students with little or no background in science and medicine.

Online FDA Regulations: Implications for Medical Writers. Journal Article.

Tomlin argues that the availability of online Food and Drug Administration (FDA) regulations contributes to a change in the organizational role of medical writers. This shift is from a peripheral role to a central role. As such, Tomlin argues that the curricula for medical writers should include instruction in persuasion, collaboration, strategic and project management, the drug development process, and the location and interpretation of FDA regulations.

www.bls.gov/ooh/media-and-communication/technical-writers.htm

Technical writers, also called technical communicators, prepare instruction manuals, journal articles, and other supporting documents to communicate complex and technical information more easily. They also develop, gather, and disseminate technical information among customers, designers, and manufacturers.


To help students learn how to research medical and scientific topics and publications, I ask them to complete the PubMed tutorial. The tutorial teaches students about PubMed’s scope and content and Medical Subject Headings (MeSH). It also teaches them how to build a search, manage search results, and save search strategies.

The Science Writers’ Everything You Need to Know to Pitch, Publish, and Prosper in the Digital Age. Book.

The book is an all-around good resource and touches on topics that many other texts also cover, such as ethics and how to find article topics. I use the short chapter “By the Numbers: Essential Statistics for Science Writers” to start our class discussions on reading statistics.
www.nature.com/news/policy-twenty-tips-for-interpreting-scientific-claims-1.14183
William J. Sutherland, David Spiegelhalter, and Mark Burgman
This list will help nonscientists to critically assess information provided by scientific resources. Items on this list include issues of statistical power and the inherent imprecision of measurement.

www.usa.gov/Topics/Graphics.shtml - Health_and_Nutrition
For some of our class assignments, students are directed to locate and use images. USA.gov has some resources that are in the public domain or US government works and may be used without permission or fee.

www.health.gov/communication/literacy/plainlanguage/PlainLanguage.htm
This Web page discusses plain language and health literacy. It also provides links to numerous other resources on the topics.

Writing in the Health Professions. Book.
This textbook is aimed at medical professionals such as nurses, but the chapters on audience analysis, ethics, and project management are useful to professional writing students.

Writing Online Style Guide. Web page.
http://writingspaces.org/wwsg/title
The Writing Spaces Web Writing Style Guide was created as a crowdsourcing project of Collaborvention 2011: A Computers and Writing Unconference.

Writing Science in Plain English. Book.
The short guide (124 pages) offers 12 principles for writing complex information based on readers’ needs. The principles include understanding the importance of audience analysis, the need to tell a story, and proper uses of the active and passive voices.

I assign three chapters of this textbook: Science as a Social Enterprise, Considering Ethics in Scientific Communication, and Communicating with Public Audiences.

Author disclosure: The author notes that she has no commercial associations that may pose a conflict of interest in relation to this article.

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Alexandra Howson, PhD, CCMEP, belongs to a rare new breed of medical writers. Howson serves clients who provide physicians with the newest, most complicated, and most expensive form of continuing medical education (CME) today. Howson’s clients deliver instruction via the performance improvement format, called PI-CME for short. These highly customized learning projects often require cooperation among half a dozen organizations, 2 or 3 years to design and complete, and budgets of more than $1 million.

PI-CME is “a fairly complex beast,” Howson, an AMWA member trained in medical sociology at the University of Edinburgh, says in her soft Scottish accent. The many clinical and research stakeholders involved, and the frequent requirement for institutional review board approval, make PI-CME “a bit like doing a research project. It’s not for the fainthearted.”

After a slow start, PI-CME is finally gaining more acceptance nationwide as a learning format. The number of physicians who participated in a PI-CME activity more than tripled from 2011 to 2012 (Table 1). Although the more traditional live meetings, self-paced Internet modules, and regularly scheduled events like hospital grand rounds remain far more popular, PI-CME now draws more physician participants than Internet searching and learning activities, according to annual figures published last year by the Accreditation Council for Continuing Medical Education (ACCME).1

Responding to criticism about the effectiveness of traditional CME, in 2005 the American Medical Association (AMA) approved both PI-CME and Internet search as novel learning formats worthy of earning continuing education credits. Around the same time, AMA officials began to tout PI-CME, in particular, as the most powerful way to not just educate clinicians but also improve patient and community health (Figure 1). Proponents even claimed PI-CME would become “the core of the new CME.”2 However, Internet search enjoyed explosive growth from the start, drawing more than 50,000 physicians in its first year, compared to only 3,000 for PI-CME.

Until about 2010, CME providers struggled to find an audience for activities that use PI-CME’s unusual and highly structured format. The Internet searching and learning format was much simpler—learners just needed to identify a relevant practice-related question, find the answer online from a trusted source, apply the new knowledge to patient care, and demonstrate what they had learned. There was no requirement to demonstrate an improvement in patient care. PI-CME sets a higher standard. Barriers to uptake among physicians included a general lack of familiarity with the concept, challenges in shifting from knowledge-based to performance-based outcome measurements, and time constraints on both teachers and learners. PI-CME also suffered from a reputation of being too expensive for education companies to develop, per capita, compared to other formats.

“It took the CME community awhile to warm up to this conceptually and learn how to do it right,” explains Mila Kostic, director of the Office of Continuing Medical Education within the Perelman School of Medicine at the University of

<table>
<thead>
<tr>
<th>Year</th>
<th>Internet Search</th>
<th>PI-CME</th>
</tr>
</thead>
<tbody>
<tr>
<td>2010</td>
<td>75,844</td>
<td>29,371</td>
</tr>
<tr>
<td>2011</td>
<td>92,114</td>
<td>44,275</td>
</tr>
<tr>
<td>2012</td>
<td>108,856</td>
<td>141,860</td>
</tr>
</tbody>
</table>

Source: ACCME 2012 Annual Report

Highly customized learning projects often require cooperation among half a dozen organizations, 2 or 3 years to design and complete, and budgets of more than $1 million.
Pennsylvania in Philadelphia. Attrition remains a common problem, as physicians often start a PI-CME activity with the best intentions, but then don't finish. Time-consuming and tedious data entry continues to be a key barrier to participation by physicians. Adds Kostic: “This has been a growth and learning opportunity for all of us, as educators.”

GROWTH DRIVERS
Technically, nonphysicians may also participate in PI-CME, but as a practical matter, few do: ACCME data from 2012 show that physicians outnumber nonphysicians by a ratio of 15:1. Diverse factors appear aligned to drive increased physician participation in the future. Kostic, a fellow of the Alliance for Continuing Education in the Health Professions (ACEHP), predicts the ACCME’s 2013 annual report—to be released this summer—will show continued growth. Major drivers include:

- **Popularity among medical specialties.** Of the eight categories of membership within the ACEHP, the medical specialty category is where PI-CME enjoys the strongest foothold in physician participation. Nearly 80% of physicians who took part in PI-CME activities nationwide in 2012 did so through nonprofit physician membership organizations, according to ACCME data.

- **Popularity among hospital executives.** PI-CME seems a natural fit within larger hospitals and groups of hospitals, where the culture of continuous quality improvement already has deep roots. According to ACCME data, 57% of the 631 PI-CME activities offered nationwide last year were offered by hospitals and health care delivery systems.

- **Federal mandates.** Beginning in 2015, the Centers for Medicare and Medicaid Services’ Physician Quality Reporting System will impose penalties for nonreporting of performance data. Meanwhile, the Affordable Care Act requires health plans and insurance issuers to show how health outcomes are being improved in several ways, including quality indices. These are the same types of quality data used to drive and evaluate PI-CME activities.

- **Electronic medical records (EMRs).** Used properly, these can be a powerful resource for an intervention that uses the PI-CME format. Every EMR system requires creation of a database, and once the database exists, it can be searched to inform physicians how their patients are doing on many outcome variables. These patient care data can then be used to set a baseline, plan an intervention, and measure the results. These three steps are common to all PI-CME activities.

- **Publications in the medical literature.** Outcomes data from performance improvement initiatives were previously limited mostly to nonmedical journals; for example, a PI-CME study of improved diabetes care at the Joslin Clinic was published by an educational journal in 2011. More recently, however, medical specialty journals not just in diabetes, but also in therapeutic areas as diverse as leukemia, lung cancer, and osteoporosis have begun accepting and publishing PI-CME outcomes reports. As physicians read these articles in journals that cover their specialty areas, acceptance of the PI-CME format may continue to grow.

- **Word of mouth.** PI-CME does require significant time and effort upfront, but once this initial investment is made, physicians often begin to feel a sense of ownership. According to Kostic, they find the outcomes deeply rewarding because they can actually see how their actions are improving patient care.

**ROLES FOR MEDICAL WRITERS**
Gregory Liptak, president of a small, for-profit company out-
side Philadelphia, started out as a medical writer about 8 years ago, and worked on traditional CME projects. He worked his way up to the position of director of medical education at a medical education company before leaving to team up with business partners to form Intelligent Medical Decisions, which specializes in PI-CME.

Liptak vividly recalls a time about 5 years ago when he faced a daunting PI-CME writing challenge in diabetes. Physicians enrolled in the activity had been instructed to review the records of their patients with diabetes and measure their performance against a nationally approved standard for quality care: hemoglobin A1C goal attainment rates. It became Liptak’s job to write what was essentially a customized gap analysis for each physician, indicating where his or her performance met the standard, and where it fell short. These analyses were prepared after all participating physicians had entered their patients’ records into a database.

“For each section of the report that dealt with a diabetes performance metric,” Liptak recalls, “the medical writer’s job was to go into the guidelines, provide a very concise summary that was highly relevant to that particular measure, and add language to the visual display of data that showed the provider that the current status was not within the guidelines and provide an explanation as to why.”

Today, while he no longer carries the title of medical writer, Liptak frequently writes the grant proposals that make new PI-CME projects possible. He also expects his next hire to be a medical writer.

“Good writing is critical for these programs,” Liptak says. “You need to be able to communicate at the front end about what you are measuring, and on the back end, for publication.” Liptak advises medical writers who would like to work on PI-CME projects to gain a working knowledge of the many national organizations that develop and publish quality standards for medical practice.

Working from her home office in the foothills of the Cascade Mountains overlooking Seattle, Howson has developed a subspecialty: helping her clients prepare PI-CME outcomes data for publication in peer-reviewed journals. She advises freelance medical writers and editors who are starting out in this complex field to ask many questions at the outset, as a way to gather detailed knowledge of the various stakeholders involved and a clear vision of how they are meant to work together.
It is common for a PI-CME initiative to produce enormous amounts of raw outcomes data, Howson says. The write-up then begins to resemble a clinical study report, though on a much smaller scale, and the medical writer’s job becomes one of sifting through piles of documentation in search of a compelling story angle.

“Someone with a keen eye, some time, and some tenacity can help turn those data into a piece of gold,” Howson says.

A former Boy Scout, Don Harting enjoys exploring the ever-changing landscape of continuing education in the health professions. He tweets daily using the handle @CME_Scout.

Author disclosure: The author notes that he has no commercial associations that may pose a conflict of interest in relation to this article.

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References


EXAMPLES OF PERFORMANCE IMPROVEMENT INITIATIVES

1. REMEDIES (Risk Evaluation and Mitigation Strategies: An Employer-Driven CME Initiative for Efficacy and Safety). This is a mixed-methods educational program including live, Web-based, interactive, and performance improvement (PI) activities. Physicians who complete the program may earn up to 24.5 continuing education credits, of which 20 come from the PI component. In addition, learners may earn a certificate of compliance with FDA educational requirements for prescribing extended-release opioid analgesics.

2. Performance Improvement Strategies in Multiple Sclerosis. Now in its third year, this initiative is designed to help health care professionals assess their clinical practice methods according to current evidence and expert consensus. Physicians who complete the activity may earn credit toward maintenance of certification (MOC) requirements set by the American Board of Psychiatry and Neurology and 20 continuing education credits from the American Medical Association (AMA).

3. Advanced Clinical Management of Diabetes and Its Complications. Completed in 2012, this PI program was designed to give physicians the chance to assess their current practice by submitting data on patients with diabetes and receiving confidential reports on how their performance compared to quality standards established by the American Diabetes Association and the AMA. Participants could earn up to 20 continuing education credits from the AMA and help satisfy MOC requirements set by the American Board of Internal Medicine.
Shake, Rattle, and Write in Memphis

By Lori Alexander, MTPW, ELS / 2013–2014 Annual Conference Administrator

Shake your medical communication blues, rattle your pen (laptop?), and write your ticket for professional development at the AMWA Annual Conference in Memphis! Whether you’re a newbie or veteran medical communicator, you will gain valuable knowledge and skills at this year’s conference. And with this year’s location, you’re bound to have more fun than ever after conference hours.

The Wonder of the Conference Program
This year’s conference program offers open sessions on a wide variety of topics, from the practical advice in “Put on Your Own Oxygen Mask First: Getting (and Staying) Organized” to an overview of the latest in medical science in “Organ on a Chip and Other Exciting New Advances in Non-animal Biotechnology.” Nearly 60 roundtables provide a similar range of diverse topics for medical communicators at every career level, from beginning to experienced. Twelve posters have been accepted for display, with presenters from all over the country—and world. (Poster abstracts are planned for the September issue of the Journal.)

Rounding out the program are three Intensive Seminars, the session format that debuted last year. The goal of Intensive Seminars is to provide a more robust learning experience in a particular topic, especially one that is outside the expertise of typical AMWA members. This year, the planned Intensive Seminars focus on how to combine cognitive science and common sense to make effective presentations; leading, managing, and writing in a global virtual environment, with best practices for effective virtual meetings; and strategies for creating online health content for readers with limited literacy that is relevant, motivating, and actionable. Intensive Seminars are 2 hours and 45 minutes long (with a 15-minute break), are limited to 40 to 50 attendees, and cost $40.

You’re the Boss: Personalize Your Program
This year, it will be easier than ever to find the events of most
interest to you. We are again using tracks to categorize sessions according to broad topics, such as freelance, regulatory writing, social media/technology, etc, and this year workshops have also been assigned to these tracks. We also have developed “Track Facts”—simple reference guides that include all sessions within each track—not just open sessions and workshops, but roundtables and posters too! The new Track Facts, coupled with the Schedule at a Glance, will help you create your unique program quickly and easily. Track Facts will also help you demonstrate the value of the annual conference to your boss or to yourself, if you’re a freelance. Track Facts are available on the AMWA website at www.amwa.org/events_annual_conference.

The conference app will also be available in the fall to help you manage our personal program in your mobile device.

You’ll Never Walk Alone
If you are a new AMWA member or have never attended an AMWA annual conference, don’t worry about being alone. Many AMWA members and staff will be on hand to help welcome you and guide you. The traditional New to AMWA event has been enhanced to focus on providing the most relevant information and resources to new members and first-time attendees. This event, Navigating AMWA and the Annual Conference, will feature AMWA staff, chapter leaders, and conference mentors who will help first-time attendees get the most out of the conference. The event will be held Wednesday, 4:30 to 6:15 PM.

Burning Love for the Profession
If you are passionate about your profession, the annual conference is the place to learn more about two professional development opportunities: becoming an AMWA workshop leader and taking the medical writing certification examination. Special tables will be available in the registration area, where you can talk individually to AMWA staff and volunteers involved in these initiatives. Special brief group talks (10 to 15 minutes) will also be scheduled throughout the day. In addition, you can learn more about becoming a workshop leader or a certified medical writer by viewing posters on those topics in the poster display section.

Can’t Help Falling in Love with AMWA Award Recipients
The annual conference is also a time to honor AMWA award recipients, and this year, recipients will be highlighted more than ever (see box). As mentioned in the last issue of the AMWA Journal, AMWA awards will be presented in a variety of venues this year, offering you a greater opportunity to celebrate their accomplishments with them. Onsite, look for posters describing the background and achievements of our award winners. Online, you’ll be able to listen to award winners describe their AMWA service in brief deskside chats.

You can also become better acquainted with the Alvarez and McGovern award winners, Rosemary Gibson and Gary Schwitzer, at the AMWA Meet and Greet Table, which will also host AMWA members who have written a book. If you’re an AMWA member and wish to take advantage of an opportunity to promote your book, sign up for a time to be at the table by sending an e-mail to annual_conference@amwa.org.

Get All Shook Up for the 75th Anniversary Celebration
Next year marks the 75th anniversary of AMWA, and plans are underway for a full year of celebrating. Join us Saturday eve-
ning at the closing reception to kick off the celebration that will culminate in the 2015 Annual Conference in San Antonio.

Put on Your Blue Suede Shoes for a Tour

No visit to Memphis is complete without a visit to Graceland. Even if you’re too young to have been an Elvis fan, Graceland offers a glimpse into a historic time and an even more historic celebrity. Tours of Graceland, with transportation, will be offered on both Wednesday and Sunday, starting with pick-up at 9:30 AM at the AMWA hotel (the Sheraton) and returning between 12:30 and 1 PM. The ticket price is $40.

For medical communicators, another must-do in Memphis is a tour of St. Jude Children’s Research Hospital, which is less than 1 mile from the convention center. Complimentary tours exclusively for AMWA conference attendees are being planned for Wednesday.

Keep up to date on the conference by visiting the AMWA website (www.amwa.org). Also, learn about more details as they happen with the AMWA Conference Connector, the Conference Blog—now available through AMWA’s home page, Twitter (@AmMedWriters, #amwa14), and LinkedIn groups.

2014 AMWA AWARD RECIPIENTS

Swanberg Award
J. Patrick Barron
Founder, International Medical Communications Center, Tokyo Medical University
To be presented at the Sablack Award Lunch

AMWA Fellowships
Lori De Milto, MJ, Delaware Valley Chapter
Joanne McAndrews, PhD, Mid-America Chapter
Deborah Whippen, Florida Chapter
Justina Molzon, US Food and Drug Administration (honorary fellowship)
To be presented at the Sablack Award Lunch

Golden Apple Award
Thomas Gegeny, MA, ELS, New England Chapter
To be presented at the Sablack Award Lunch

President’s Award
To be named
To be presented at the Opening Session

Eric W. Martin Award
Professional Audience: Art Gertel (with Cindy Hamilton, Adam Jacobs, Gene Snyder, and Karen L. Woolley) for “The Global Alliance of Publication Professionals: Update on a Small Group with a Big Mission”

Public or Health Care Consumer Audience: Randi Redmond Oster for “A Beautiful Choice: Living, and Dying, with Dignity”
To be presented at the Closing Session

Student Scholarship
To be named
To be presented at the Welcome Reception
The Harold Swanberg Distinguished Service Award is presented each year to "an active member who has made distinguished contributions to medical communication or rendered unusual and distinguished services to the medical profession. The 2014 award will be presented to J. Patrick Barron at the annual conference in Memphis, Tennessee. The winner will give an address at the Sablack Awards Luncheon on October 10. J. Patrick Barron submitted the following about his background in medical communication.

I am honored to be selected as this year’s recipient of the Harold Swanberg Award. When I moved to Japan as a student, I had no idea my career would lead me to this award.

In 1969, after completing a bachelor’s degree in English literature at the University of Pennsylvania, I moved to Japan where neither the country nor I knew that medical writing existed. However, I began translating medical texts in 1971, later enrolled in the MPhil/PhD program of the University of London’s School of Oriental and African Studies, and in 1980 became associate professor of English, St. Marianna University School of Medicine, in Kawasaki.

In 1975, I proposed a center to enhance the flow of scientific information from Japan to the rest of the world by providing authors full English-language, medical writing, editing, and translation support. In 1991, at Tokyo Medical University, I founded the International Medical Communications Center—the first of its kind in Japan—to provide these services to all clinical and academic departments and to educate medical and PhD students in English for medical purposes, scientific publications, and publishing ethics. The center became a full academic department in 2009, the only one in the country authorized to develop and offer master’s and doctoral programs in medical communications.

In the new Department of International Medical Communications, we created a standardized curriculum to globalize the teaching of English for medical purposes. The website now contains 18 clinical modules and videos of physician-patient consultations, reading materials, and self-assessment tests for medical students. South Korea and several European countries are now implementing or considering this program under the aegis of the European Union’s sTANDEM, a standardized assessment system for English for medical purposes, of which Tokyo Medical University is the only non-European partner.

In the meantime, I started the Medical Interpreters and Translators Association (MITA) in 1993 and have been vice chair of the Board of the Japanese Society for Medical English Education for several years.

In 2005, I started what has become one of the largest websites in the world on scientific publications and career development, www.ronbun.jp. My colleagues and I invested more than 5,000 hours making more than 100, 60-minute videos for the site, which also includes all the instructional materials I have produced on medical writing and scientific publications during the past 40 years.

I have been an editorial board member for several journals, including the Journal of Gastroenterology, Breast Cancer, Haigan (Lung Cancer), the Journal of Cardiac Surgery, and the Journal of the Japanese Society for Geriatrics. As an editorial board member for CHEST, I edited a monthly column called “Medical Writing Tip of the Month.”

I received the 2005 Inagaki Educational Award for Educational Achievements from Tokyo Medical University and the 2007 Albert Soffer Award for Editorial Excellence from the American College of Chest Physicians. I am also an adjunct professor at Bundang Hospital, Seoul National University, South Korea, and a member of the Committee on Publication Ethics (COPE).

In addition to writing more than 35 peer-reviewed articles, most on medical writing, medical education, and cardiopulmonary medicine, I have edited and translated several key medical texts into English, two of which received Japan’s Translation Publishing Culture Prize.

I retired in 2013 and became the first non-Japanese to be awarded emeritus status at a Japanese medical school. My tenure at Tokyo Medical University has been marked by many successes, but perhaps the most important to me is that the number of manuscripts published each year by TMU authors rose from 18 in 1989 to nearly 300 in 2013, an increase more than 4 times the average of all other Japanese medical universities.

To have these activities and accomplishments recognized by AMWA is, indeed, one of the highest honors I have received.

Thank you.
You can write. That’s why they want you. You have experience writing the types of materials they need: regulatory documents, continuing medical education activities, promotional education materials, journal articles. That’s why they want you. You specialize in the central nervous system or metabolic disorders or cancer, and you know all the regulations and guidelines and American Medical Association style rules. That’s why they want you. This experience and training, and these skills, are the technical proficiencies you possess.

However, it’s only half of what you need to be a “complete professional.” The other half is that constellation of qualities collectively referred to as “soft skills”: the nontechnical characteristics that make a technically talented person a desirable professional. The term soft skills (in some places they are referred to as transferable skills) is unfortunate; the soft implies that they’re not that important when, truth be told, they are as important as your technical skills.

So what are they? Before they acquired their own titular status, soft skills were the kinds of things you learned in kindergarten, scouting, church, team sports, and yes, even from your parents and teachers. No cheating, killing, lying, or stealing. The Seven Deadly Sins might be entertaining at a party, but gluttony and vanity would be looked upon with disfavor in the workplace. There is no official list of soft skills. You can find many resources online, but rarely will two of them have the same set of skills, or group the skills the same way, or emphasize the same items as the most important skills.

Soft skills crop up in every job description. That’s usually the de rigueur part of the job description you gloss over, since of course “everyone” has those skills: “enthusiasm,” “ability to work in a fast-paced environment,” “good team-building skills,” and the ubiquitous “deliver on time and under budget.” I gloss over these desirable qualities myself when I read job descriptions, despite the flaws I know I have:

I am not enthusiastic when clients wait 3 months before signing off on a project; the “fast-paced environment” is just fine until I get four concurrent assignments; I break out in hives when directed to role-play during corporate team-building retreats; and there truly is no such thing as “under budget” when clients start down the path of “project scope creep.”

This makes me a bit of a hypocrite to talk about soft skills, but at least I know what these critically important skills are, even if I sometimes struggle with manifesting some of them. So what are they, exactly? Here is a sampling of them. No one truly possesses of all of them (even if some individuals think they do possess them all, which is actually worse than not possessing some of them). Think about the items on the list. Can you apply them to yourself? It will probably be easy to think of people you know who lack some of these skills. What’s important is being able to recognize if you are lacking a particular skill. If you can identify your challenges, you can work to improve them. Note that these skills are universal; they do not apply only to medical communicators.

Interpersonal skills
Smile, make eye contact, be nice, listen to others, be sensitive, cover your mouth when you sneeze or cough, and practice good grooming and hygiene.

Etiquette
Turn your mobile phone off during meetings, and never answer it in a restaurant or when speaking to someone. Lose the ear buds. Be sincere when saying please and thank you, and say these things all the time. Be polite.

Positive attitude
Assume your projects will succeed. Conversely, never go into a project thinking it is doomed to fail.
Self-confidence
Believe in yourself, and believe in your skills. Recognize your strengths. Poor self-confidence is obvious to others and will limit your responsibilities and opportunities for promotion. Self-confidence is not, however, the same thing as “arrogance.” Unfortunately, the arrogant are pretty clueless about this.

Work ethic
Work hard. Work full days. Miss work rarely, but avoid “presentseeism” if ill. Take your work seriously. Help others even if it’s not your job. Take on extra responsibilities if you have enough time. Enjoy your work. Work hard but maintain work-life balance.

Cultural competency and sensitivity
Recognize that not everyone is like you with regard to age, country of origin, religion, gender, sexual orientation, physical ability, political affiliation, or marital and family status.

Time management
Never ever miss a deadline. You often have people working downstream who require your deliverables before they can start their work. Do not be late to work or meetings. Do not procrastinate (you know who you are). You do not have to “just finish this e-mail” while your colleagues wait for you for lunch. I heard the movie producer and director Steven Soderbergh speak once, and he said the greatest thing I ever heard: “If you’re on time, you’re already late.”

Being a team player
Go on that retreat. Try to role-play without being snarky about it. Help your teammates, consider and support their ideas, make suggestions, and help. Serve as a mentor when possible, and be a respectful mentee when the situation calls for it. Tolerate and try to help improve the limited competencies some of your teammates might have, but at the same time do not tolerate incompetency or toxicity in others.

Written and spoken communication
As a writer, your competency in writing is assumed, but you also need speaking skills: lucidity, clarity, animation, enthusiasm, eye contact, and engagement. And you also should know when to shut up. This applies to one-on-one interlocution as well as speaking to a group or an audience.

Critical thinking
Can you assess things legitimately for their merit and accuracy? Can you set aside your biases (you have them, everyone does) when judgment is called for? Can you restrain knee-jerk responses? Can you listen to opposing views and assess them for their merits? Can you practice both analytic and holistic thinking? Do you understand logical fallacies? Can you think on your feet and reflect and evaluate evidence? Are you scientifically literate? You need critical-thinking skills to be able to use...

Problem-solving and decision-making skills
Can you assess a problem rationally and critically and evaluate the pros and cons? Can you use both inductive and deductive reasoning? If you look at the trees, can you back up and look at the forest? If you tend to see the forest, can you zoom in to the trees? Can you brainstorm new ideas, even wacky ones? “Thinking outside the box” may be a cliché, but it is a good skill to possess. Good problem-solving skills are necessary for...

Negotiation
If you are on a team and everyone agrees with each other, or you work with a client who loves everything you pitch, you’re working in some kind of fantasy dreamland. Business would slam to a halt without compromise. Dig in your heels when necessary, but be able to identify the things you can cede to others and the things that can be acceptably modified to satisfy the parties involved. Be respectful, but be tough.

Conflict resolution
Technically under the aegis of problem-solving, conflict resolution is a type of problem-solving that is interpersonal. Conflicts can be toxic, affect morale, delay project completion, imperil deadlines, and lose you your clients. Conflicts need to be identified and resolved as soon as they appear.

Computational skills
For many of us, avoiding math is a lifelong goal, but you should be able to understand budgets and cost modeling, basic math, and statistics commensurate with the type of writing or editing that you do. If you’re a freelance or entrepreneur, understand the math associated with running your business.

Ethics
Personal, business, and medical ethical behavior is a must, for yourself and for those you affiliate with professionally. If you
work for a company that alters, withholds, is selective about, or outright steals data (or that plagiarizes regularly), quit. Quit even if you don't have another job. Unethical behavior in medical communications can result in damage or death to a patient.

Working under pressure
Writing is by default a deadline-driven profession, and there is nothing like a deadline to ramp up the pressure in one's life. Pressure can be compounded by multiple simultaneous assignments, travel, family demands, and working with difficult teammates, superiors, clients, or consultants. When the job description actually mentions “working under pressure,” they're not kidding.

Good judgment
In any job, you will be faced with problems and choices, and you may suddenly find yourself in awkward situations. You may have to make snap decisions. Does your behavior sometimes reflect bad judgment, such as relaxing too much with a client or consultant, telling inappropriate jokes, or downing too many drinks at a reception? Good judgment includes being a good judge of character. People might not be who you think they are; they might not be as trustworthy or respectful as they outwardly appear.

Taking and giving criticism
Criticism is necessary for personal and professional growth. Criticism can range from positive feedback to scathing rebukes. Criticism is effective when it is constructive and respectfully tendered, whether you are on the receiving end or are doling it out yourself. You have to be open to receiving it. It might not all be legitimate and might not all be useful, but listen to it. You will never make it as a medical writer if you become devastated or infuriated by criticism.

Flexibility
The last thing you want to hear (apart from “we're going to do a little role-playing exercise now”) is a client saying “I think we want to go in a different direction” after you have submitted a project you have been working on for 3 months. You have to be able to adapt when project managers quit, new bosses arrive, or you are suddenly shifted to a new project.

Leadership
You don't have to be a vice president to be a leader. There are responsibilities you're going to have where you are the de facto leader. It is easy to define a good leader: He or she simply possesses all the soft skills. A good leader listens and is compassionate, transparent, fair, inclusive, and respectful and avoids top down management. And, at least in my opinion, he or she will never make you role-play.

No one has all the soft skills. You are deluding yourself if you think you do. Individuals who are confident that they possess all these qualities are arrogant and serve as toxic speed bumps on teams or in management. It is important that you recognize where you have challenges and try to improve them.

Think hard about each of these skills. Don't do the “job description glossover.” Make a table. Write an example of one thing you do right for each, and one thing you do wrong, however minor. Think about the qualities and flaws of other people. There's a reason certain coworkers annoy you, and it's very rarely because they don't write well or don't know AMA style. It's because they interrupt you when you are speaking, are always late to meetings, are reading e-mail on their mobile phones during meetings, or they are arrogant or insulting. Or they make you role-play.

Author disclosure: The author notes that she has no commercial associations that may pose a conflict of interest in relation to this article.

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RESOURCES


Sorry, I had to revive an old heteronym to grab your eye!

If we go by sound, that head should read *Spice Up Your Lead: Get the Lead Out*. Any of us writers who have been exposed to newspaper journalism know the rule: Your lead (leed) should contain the five W's: who, what, when, where, and why.

(Random thought: We don't have this kind of trouble with heed and head—or with read or read!) The purpose was to give the reader the gist of the article (without details) in the first paragraph, so that the reader could quit at that point and still know the main points of the article.

Yes, like a lot of my readers, I learned those five w's early in my career. And, I might add, I can still turn out a formal news story with that pattern when I need to. We also know that feature stories (or magazine articles) are a different thing. They don't have to conform to that rule. Occasional attention-grabbers—known colloquially as "the hook"—add a little spice to your work to make it attractive, readable, and interesting.

Sometimes the hook is the title, sometimes the lead following it, and often both together. Here are some examples.

**The title as hook**
- Writing with Suspenders This: (), That: — —, and The
- Other Things: , ,
- Sharp...but Dull
- Title is Vital
- This is a Complaint
- Times, They Are A-changin'

**The title as a question**
- Good Ole Days?
- Have You Ever Seen...the Singular?

**Two attention-grabbing leads**
- “First, I will advise you: Do not write a speech.”
- “Years ago, it was easier. Most students didn’t know the answer.”

**Or, familiar song lyrics, familiar book quotes or jokes -- used to create curiosity**
- “Your lips tell me no-no, but there's yes-yes in your eyes”
- “Someone once said that a camel was a horse put together by a committee.”

**Or, a combination of head and lead**

Some newspapers carry a heading in addition to the columnist’s name (and maybe picture). In some instances, that title is written by the columnist, and in others it is a regular news headline added by the newspaper itself. Other publications use a regular news headline written by the newspaper itself.

Fortunately for me, for all of the more than 160 signed columns I have written in the past few years, I have been allowed to write my own heading (title, not a newspaper headline). By this, I was able many times to create a point with the heading and a counterpoint with the lead—and together create an attention-getting mechanism—a written hook. Some examples:

For a column on people who are brilliant in their field but turn out to be boring speakers, my head was “Sharp...Dull” and the tie-in lead, hoping to make the reader curious, was “How can that be? Isn't that an oxymoron?” A much duller lead could have been “It is important for the physician not to discharge a patient until he is certain that all her questions had been answered.”

For a column on the most important question a physician can ask a patient, I titled it “Your Most Important Question,” and the lead was “All right, Mrs. Brown, that about does it. I'll see you in three weeks.”

For a column headed “Listen to the Patient,” the lead was: “A red light means STOP. A flashing red light means STOP! LOOK! LISTEN!”

On a column about a newspaper article on patient care: “What can you expect to learn about patient care from the *Wall Street Journal*?”

All instances of eye-catching titles or clever leads, or both, must be followed with an intelligent segue to the serious matter of the article. In other words, once you have captured their attention, quickly go to the meat of your column.

Remember, that your column—no matter how important it may be, or how good you think it is—must first be seen by the reader and then read. Thus, sometimes you have to think ahead about attracting attention to it and then corral your readers.

My advice: Try to get away from the lead, that is, the heavy, formal, stilted leads and go to something more attractive—and interesting—to the reader. So *heed* my words and use your *head*, *read* this column again and after it has been *read*, spice up your *lead* by getting the *lead* out of it.
How do you keep track of business expenses for tax purposes?

I use QuickBooks Pro from Intuit for all my business bookkeeping and timekeeping, and have been using this software (upgraded versions, of course) since 1993. I love it and highly recommend it. When a business expense comes in (e.g., monthly Internet fee), I log it into accounts payable using the appropriate class designation. When I write the check, the expense automatically attributes to the class, so when I run my quarterly report, the expense is appropriately reported. I use this same process when I receive invoices from writers and editors on my team, assigning them as direct expenses to the appropriate job number. That takes care of the expense side of my balance sheet.

On the ever-more-important income side of the balance sheet, I use the estimating function in QuickBooks to prepare estimates for every assignment. Then, when it comes time to invoice, I simply identify the project by its job number and turn the estimate into an invoice. QuickBooks allows me to invoice for 100% of the total estimate, for a percentage of the total estimate, or for any amount or percentage per line item, which makes “progress invoicing” a snap. The sent invoice goes automatically into accounts receivable, where I can track it until payment is received. I then use QuickBooks to record received payments.

Because I track all my company’s business finances in one place, it’s simple to prepare for my quarterly and year-end meetings with my accountant. I am busy enough running my business, so I am glad managing my business finances doesn’t get in the way of making sure I have plenty of money to manage.

—Brian Bass

I start by never using cash for anything and only using my corporate credit card. This way I always have a receipt. With American Express, you can also see all your expenses by category.

My business is set up as a subchapter S corporation. I have two bank accounts—regular checking and payroll—with automatic transfers set up each month from regular checking to payroll, from payroll to my home checking account, and from regular checking to my 401K. Again, keep it paperless.

I track everything in QuickBooks, and I use it for invoicing and accepting payments. I used to manage it all myself, downloading everything from the bank and American Express, but about a year or so ago I hired a bookkeeper. Her hourly rate is far lower than mine, and she’s far better at it than me. She also pays my payroll taxes (which is all done electronically), handles quarterly filings, and provides me with a spreadsheet each year showing how much to pay myself, taxes, etc. I use the online version of QuickBooks, so my accountant and bookkeeper can access it and maintain it.

I do stick my receipts in a folder, then just store each year’s.

I don’t have to do anything at tax time; my accountant can access income and expenses (by category) from QuickBooks. She e-mails me any questions, tells me how much I should put into my retirement fund, and files everything.

Yes, I pay for these services, but it costs far less than it would for me to do it myself, and I have peace of mind that the experts are handling what they do best, while I handle what I do best (writing and running my business).

—Debra Gordon
We use a certified public accountant who set up our system 20 years ago (with minor modifications over the years), so he can easily calculate income and expenses for tax purposes. Our business spreadsheet (which we still do by hand) balances each month with our corporate bank checking statement. We do not have a great deal of major business expenses, so the system works for us. It is a simple system, one that takes us less than an hour each month to record all business income and expenses.

—Elizabeth L. Smith

**TIPS FOR TRACKING TIME**

Whether you bill hourly or by the project, it is crucial that you track your time so you know how much time you spend on a project. I prefer a software approach to tracking it manually on a spreadsheet.

In my pre-Mac days, I used TraxTime, available at [www.spudcity.com/traxtime/](http://www.spudcity.com/traxtime/) for $39. It is extremely simple to use. You add the project, then punch in and punch out as you’re working on it. You can run reports to see how many hours you spent on it, or across all projects that day, week, or year. Now that I’m a Mac person, I use OfficeTime, available at [www.OfficeTime.net](http://www.OfficeTime.net) for $47. (A Windows version is available at the same price. iPhone and iPad apps are also available.) It works similarly to TraxTime but also enables you to track expenses, sync with iCal, and invoice right from the app. It also creates pretty graphics from your data.

One of the best features of both programs is a reminder box that pops up when you haven’t been typing but haven’t logged out. It asks you if you still want to count the time that’s passed. In other words, it keeps you from cheating!

—Debra Gordon

Track how you’re spending your time (per client, per project, and on administration) by putting a small notebook next to your computer. When you start working, note the client, project, and time. When you stop, note the time. Do this for every client and every project you work on, and also note the amount of time you spend on administrative tasks.

At the end of each day, transfer your times onto a weekly work log, either on paper (stored in a three-ring binder) or on your computer. The work log should have rows for each day and the weekly total, and columns for total hours, billable hours, client (with room to track time for multiple clients), and administration.

This method lets you quickly see whether you are spending too much or too little time on each client and on administrative tasks, and how much you’re actually working (eg, not surfing on the Web or talking to family or friends) during your hours in the office.

—Lori De Milto

**TIPS FOR CREATING JOB NUMBERS**

Assigning a job number to every project makes it simple to track the job from start to finish. Job numbers serve several important purposes. They provide a logical way to save all the files related to each project. They also enable you to track the project financially including your estimates, invoices, and any expenses you may have that are related to the job. Another important function of job numbers is providing a way for you to track down a job you did long ago. There’s no right or wrong way to assign job numbers, but here are a few tips for creating job numbers that may prove helpful down the line.

**Tip #1: Consider how many projects you work on during the year.** If you don’t work on many projects throughout the year, a job number might serve as simply a name for the project so you can identify it. You could call it “1,” “01,” or almost anything else, and that would probably suffice. You could even give it a name if you prefer, like “Product X CSR” or “Gary.” But if you work on a lot of projects during the year, you might want a slightly more sophisticated numbering system.

**Tip #2: Consider what is most important to identifying the job.** If you work with a lot of clients, you might want to create a job numbering system that identifies the client associated with the project. You might prefer to use a numbering system that identifies the product on which you’re working. Or, you might want a numbering system that identifies both the client and the product.

**Tip #3: Consider what will be most helpful in tracking down the job.** Regardless of the type of job numbering system you use, it’s important to have a master job number list. This way, you can cross-reference to the master list when you’re searching for a particular project. If you’re most likely to remember the client for whom you did a certain project, using a numbering system that identifies the client first and a master list that groups job numbers by client might be best for you. If you’re most likely to remember when you did a particular project (eg, “Last fall, I think…”), then a numbering system that reflects the month or season and a master list that groups job numbers the same way would be best. Adding a year to your numbering system might also be helpful.

**Tip #4: Consider what is most important to your success.** Logging in a certain number of projects for a particular client might be the key to knowing whether you are having a good year. If so, a job numbering system that identifies the client and the number of projects you have done for that client might be helpful. If you track projects by the month or season, you might want to marry that with the number of projects to create your job numbering system. If the sheer number of projects you log in a given year is indicative of income, then a simple numbering system that counts the number of projects might work best for you.

Remember, there’s no right or wrong way to create a job numbering system. Use these tips to create a system that works best for you.

—Brian Bass
I think most of us could benefit from greater knowledge and understanding of social media. I know I could. The problem is wading through the array of information clamoring for our attention online to find people who really know what they are talking about when it comes to social media marketing. To make that task easier, I’ve compiled an alphabetical list of five online influencers who are well known as experts in marketing and social media. These people are passionate about social media, and I eagerly consume the ideas, strategies, and tactics they share on their blogs and in their books. Now, if only I could put all of their wonderful ideas into practice. Start following any of them and you will probably feel the same!

Seth Godin (www.sethgodin.com). Godin is an author, entrepreneur, and marketer who writes about marketing, leadership, and the ways ideas spread. His book, Permission Marketing, which launched 15 years ago, focused on connecting brands and consumers through online marketing campaigns that first sought the consumer’s permission to engage, that is, to opt-in to receive marketing messages. At the time, the idea of seeking consumers’ permission was revolutionary and not very well received by direct marketers, as you can imagine. Today, opting-in is the standard on the Internet. Godin has written numerous books, including Unleashing the Ideavirus, Tribes, Purple Cow, and All Marketers Are Liars. He offers a variety of content for free, as downloadable PDFs, on his website. Godin is also the creator of Squidoo (www.squidoo.com), a platform that enables users to create custom Web pages called lenses on various topics of interest.

Neal Schaffer (nealschaffer.com). Schaffer is a social media consultant and adviser who delivers a wide range of social media tips, with a focus on LinkedIn. You’ll find useful content on either one of his websites: Maximize Your Social (http://maximizeyoursocial.com) and Maximize Social Business (http://maximizesocialbusiness.com). He is the author of Maximize Your Social: A One-Stop Guide to Building a Social Media Strategy for Marketing and Business Success, a useful book if you are struggling to design a social media strategy for your business. He also has written two other highly regarded social media books: Maximizing LinkedIn for Sales and Social Media Marketing, and Windmill Networking: Understanding, Leveraging, and Maximizing LinkedIn.

By Cynthia L. Kryder, MS, CCC-Sp / Medical Communications Consultant, Phoenixville, PA
Mari Smith: (www.marismith.com). Dubbed “the Pied Piper of Facebook,” Smith is considered to be a global leader in social media strategy and THE top Facebook marketing expert in the world. Dun & Bradstreet identified her as one of the most influential small business people on Twitter¹ and Forbes named her as one of the top ten influencers online.² She is author of The New Relationship Marketing and coauthor of Facebook Marketing: An Hour A Day. Smith has made social media her specialty and her website is filled with content you can use to develop relationships and build your social media network.

Michael Stelzner. Another leading voice in social media, Stelzner is the founder of Social Media Examiner (www.socialmediaexaminer.com), the world’s largest online social media magazine. He also is one of the driving forces behind the Social Media Success Summit, a live, online conference with presentations by some of the world’s leading social media influencers. He has written the books Launch: How to Quickly Propel Your Business Past the Competition and Writing White Papers: How to Capture Readers and Keep Them Engaged. He hosts the Social Media Marketing Podcast show (https://itunes.apple.com/us/podcast/social-media-marketing-podcast/id549899114), designed to help businesses thrive with social media.

Gary Vaynerchuk (http://garyvaynerchuk.com/). Vaynerchuk used social media to propel his family’s liquor store in New Jersey from a $3 million business into a $45 million enterprise. In the process, he created Wine Library TV (http://tv.winelibrary.com) and built a loyal community of wine lovers. In 2009, Vaynerchuk and his brother launched VaynerMedia, to help Fortune 500 companies find their social voices and build their digital brands. He is the author of three books: Crush It!: Why Now is the Time to Cash in on Your Passion, The Thank You Economy, and Jab Jab Jab Right Hook: How to Tell Your Story in a Noisy Social World.

Author disclosure: The author notes she has no commercial associations that may pose a conflict of interest to this article.

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References
A decade ago, Bill Gates declared that the password would soon be dead. Instead, passwords have continued to proliferate, and there doesn’t seem to be a good alternative on the horizon. For most people, passwords have become an integral and frustrating part of daily life. Better off dead. Despite continued high profile data breaches that underscore the need to protect online information, most Internet users manage their passwords poorly. This is hardly surprising. Creating and recalling dozens of complex, individual passwords is a formidable and onerous task. To simplify matters, people often write down their passwords, store them in insecure places, or choose weak ones that are easy to remember. In 2013, 123456 and password were still the two most common passwords. One of the worst habits is password reuse. A 2012 study found that most adults in the United Kingdom were using the same password at multiple (or even all) websites.

Although there isn’t a perfect solution to the password management problem, implementing some fairly simple measures can help mitigate risk.

Train your brain. Consider using a passphrase instead of a password. Passphrases are usually long and sufficiently complex, but are easy to type and remember. It’s important, however, to avoid phrases that can be easily guessed, such as popular quotes, movie titles, and song lyrics. For these reasons, some experts suggest inventing a lie or using a nonsensical sentence. Others suggest using a series of common but unrelated words (eg, correct horse battery staple), or using person-action-object statements, such as “Bill Gates swallowing a bicycle.” Creating a visual or story that goes with the words can aid memorization.

Although passphrases can help you memorize long strings of characters, they do not address the problem of remembering which one goes with which account. One solution is to create a strong base password, and then apply a rule that incorporates elements of the website to which it belongs. This enables generation of custom passwords linked to a specific website and only requires remembering the password core and formula. One problem with this strategy is that different websites often have different character requirements (length, allowable symbols, etc), so it may be difficult to create a base password and rule that can be applied across the board. Moreover, hackers are well aware of the common techniques for creating and obfuscating passwords, so the formula must be clever.

One password to rule them all. An alternative to memorizing all of your passwords is to have a software program do it for you. Password managers like OnePassword and LastPass store encrypted login information for all of your accounts behind a single master password. There are many types of programs to choose from, and most offer basic services that are free or available for a nominal fee. Many password managers will evaluate the strength of existing passwords and can also generate long, random passwords for you. Some offer additional features such as filling out forms automatically or tracking other bits of data such as personal identification, bank account, or credit card numbers. Because creating a single point of failure creates a major vulnerability, some password managers also offer a two-factor authentication system that uses biometrics or a hardware device.

Don’t forget the reset button. Even highly complex, unique passwords won’t be effective if hackers can simply change

By Laura Mizoue, PhD / Research Specialist, Howard Hughes Medical Institute, Department of Chemistry and Biochemistry, University of Colorado, Boulder, CO
them on the fly. The challenge questions used for retrieving or resetting forgotten passwords are often based on personal information that can be easily guessed or found online (What is your favorite color? What is your mother’s maiden name?). One work-around is to use false or counterintuitive answers, such as “pizza” instead of your mother’s actual maiden name. Of course, this adds to the amount of information that must be remembered.

Even highly complex, unique passwords won’t be effective if hackers can simply change them on the fly.

Unfortunately, no password is unbreakable, and hacking techniques are only going to improve with time. By varying your passwords, however, you can at least reduce the likelihood that a hacker breaking into one site can use that information to gain access to your other accounts. Although it’s difficult to know how effectively companies are protecting your private information, a good password management system can help ensure that you aren’t the weakest link.

Author disclosure: The author reports that she has no commercial associations that may pose a conflict of interest in relation to this article.

Author contact: lmizoue@gmail.com

References
We all do it, even though some of us may hesitate to admit it. We search Google and its more academic cousin Google Scholar for medical information. According to a 2010 survey, the three most popular databases among science researchers are PubMed, Web of Science, and Google Scholar.1

Google Scholar may not have the scholarly reputation of the other two, but it requires no subscription (unlike Web of Science), is easy to use, and can even yield results not available in PubMed. When searched effectively, Google Scholar can be an important and helpful resource to supplement information found in other academic literature databases. As with any database, the key to searching Google Scholar effectively and efficiently is to understand what it can and cannot do (Table 1) and to use some of its unique properties.

Google Scholar will retrieve published and unpublished literature, conference papers, technical reports, dissertations, pre-prints, drafts, patents, abstracts, and many other resources. However, it is important to note that Google Scholar is not a comprehensive database and may not include all scholarly works. Additionally, Google Scholar does not allow for the search of full-text articles, which are available in other databases like PubMed.

Table 1: Comparison of Academic Literature Databases

<table>
<thead>
<tr>
<th>Database Features</th>
<th>Google Scholar</th>
<th>PubMed</th>
<th>Web of Science</th>
</tr>
</thead>
<tbody>
<tr>
<td>Controlled vocabulary</td>
<td>No</td>
<td>Yes (MeSH)</td>
<td>No</td>
</tr>
<tr>
<td>Period covered</td>
<td>?</td>
<td>1946 may have some older material</td>
<td>1900~</td>
</tr>
<tr>
<td>Publications covered</td>
<td>?</td>
<td>~5600 journals</td>
<td>12,000 journals &amp; 150,000 conference proceedings</td>
</tr>
<tr>
<td>Update frequency</td>
<td>Google says several times a week, but updates to some existing records take more than 6 months.</td>
<td>Daily</td>
<td>Weekly</td>
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<tr>
<td>Citation counts</td>
<td>Yes</td>
<td>No</td>
<td>Yes</td>
</tr>
<tr>
<td>Export to reference software</td>
<td>1 record at a time</td>
<td>Yes</td>
<td>Yes</td>
</tr>
<tr>
<td>Alerts</td>
<td>Yes</td>
<td>Yes</td>
<td>Yes</td>
</tr>
<tr>
<td>Truncation symbols</td>
<td>No</td>
<td>Yes</td>
<td>Yes</td>
</tr>
<tr>
<td>Provides search limits (date, publication type, age, etc.)</td>
<td>Limited. Date, journal name, author</td>
<td>Extensive. Can limit by age group, humans, animals, type of article such as guidelines, randomized control trial, meta analyses</td>
<td>Yes</td>
</tr>
<tr>
<td>Searches full text</td>
<td>Yes</td>
<td>No</td>
<td>No</td>
</tr>
<tr>
<td>Boolean Searching (and, or, not)</td>
<td>Yes</td>
<td>Yes</td>
<td>Yes</td>
</tr>
</tbody>
</table>

By Michelle A. Kraft, MLS, AHIP / Senior Medical Librarian, Cleveland Clinic Alumni Library, Cleveland, OH
other document types. It finds these items from publisher sites, online repositories, professional societies, and universities. Google Scholar provides a way to track article citations and follow the links to citing articles. Searchers with college or university library privileges can add links to their institutions (under “library links” in the settings area of Google Scholar). The library links are added to search results, making it easy to gain access to articles that normally require a fee but are paid for through library subscriptions.

Although Google Scholar has the ability to retrieve a lot of resources from very diverse areas, it does not search the “deep web” that consists of sites that require logins, have pay walls, or are otherwise buried deep in university repositories or websites.

**Document Retrieval**

Google Scholar lists results by date or according to “relevancy,” which it determines through its own algorithm. Although Google does not disclose the exact nature of the algorithm, it uses information within the full text of the article, author, and journal information, and the number of times an article has been cited by other journals to help build the list of relevant results. Other databases, such as PubMed, rely on their indexing systems, which use controlled vocabulary terms, in addition to author and journal names, article titles, and other article information, to build the list of relevant results. The lack of information about the Google Scholar algorithm is one of its downsides, as it is easier to create effective searches by knowing how a database retrieves articles.

**Term Mapping**

One key difference between Google Scholar on the one hand and PubMed and other scientific databases on the other hand, relates to the issue of “term mapping” and how synonyms are handled. Google Scholar does not use controlled vocabulary to index items. Google Scholar finds items only if the specified terms actually appear within the full text of the article or abstract. There are no subject terms added to increase retrieval.

This can have positive and negative implications. Web searchers and authors tend to use terms common to their professions or every day language in their articles and search strategies, not the indexing terms in controlled vocabulary. The use of familiar language makes it easy and can yield some good results. It does, however, limit the ability for people to find articles that use alternative spellings or synonyms. By contrast, PubMed maps popular key words and terms to Medical Subject Heading (MeSH) controlled vocabulary index terms (Figure 1). Google Scholar has not developed a way to map similar terms. Therefore, to retrieve all relevant articles on breast cancer, for example, Google Scholar searchers might also need to include the terms tumor and neoplasm. For medical communicators, this term mapping issue can be important in many situations, such as preparing systematic reviews or meta-analyses or identifying gaps in the research literature.

**Truncated Words**

Google Scholar does not recognize truncation symbols. It uses “automatic stemming,” which means it looks at the word and adds any additional letters on the end of that word. The word jump would also include the terms jumps, jumped, and jumping. Unfortunately, searching by the shortened root of the word does not get all variants. Searching for the term surgery will not retrieve surgery, surgeries, or surgeon. Google Scholar searchers must not only include possible variants and synonyms for terms and include them in their search strategy but also be aware that automatic stemming might require them to use additional terms.

**Boolean Operators**

Google Scholar uses Boolean operators, but there are some things to be aware of. Scholar automatically adds the word AND between search terms or sets of search terms in parentheses. The searcher must deliberately type the word OR between terms or sets of parentheses. Additionally, the Boolean term
OR must be in all capital letters or it will be ignored. Somebody doing research on cancer may want their search strategy to look like this: cancer OR neoplasm OR tumor.

Google Scholar does understand parentheses that are used in search statements. Much like in addition and multiplication problems, the parentheses force Google Scholar to combine search terms in a specific way. For example, someone looking for information on colon cancer might want to type colon AND (neoplasm OR cancer OR tumor). If the searcher does not use parentheses and capitalized Boolean terms, then he or she might get articles about the colon as well as articles on other types of cancer, cluttering their results on colorectal neoplasms. Searchers who don’t want any articles on rectal cancer can use the minus symbol (hyphen) to eliminate the word rectal. The search phrase would look like this: colon (neoplasm OR cancer OR tumor) -rectal. (There are dangers, of course, in such a strategy. The word rectal could be mentioned briefly in an article that otherwise would meet the searcher’s needs.) Google Scholar’s advanced search function enables searchers to look for specific authors, publications, titles, date ranges, and subject areas. Any search result can be turned into an automated e-mail alert to be notified of new papers.

Limitations
Unlike other databases, Google Scholar does not actually contain any full text articles or abstracts. Instead, it data mines websites and uses its algorithms to display the search results. Therefore if the information that Google Scholar finds is incorrect, then the search results will be incorrect. In the past, Google Scholar’s server has had some problems correctly identifying authors, titles, and journals. The article “Google Scholar’s Ghost Authors” by Peter Jasco describes how Scholar’s crawling techniques misidentified many authors of articles as “subscribe” or, in the case of an article, “fabricated the title of another paper and the second author’s name from the journal.” While it appears Scholar has addressed some of the indexing issues, it still seems to have problems. As recently as February 2013, blogger Karen Blakeman reported Google Scholar erroneously listed an author as “MA Lib” instead of the correct author K. Fraser. Since Google Scholar factors the number of times a paper has been cited to help build the list of relevant results, Google Scholar’s ghost authors may affect search results.

Citation searching is a helpful way to supplement a Google Scholar subject search. Simply click on the “cited by” link to see the authors who cited that specific work. Although the citation searching is helpful, it is important to know that this can be easily manipulated artificially. In the article, “Manipulating Google Scholar Citations and Google Scholar Metrics: simple, easy and tempting,” researchers reported that they could artificially increase an article’s display rank by uploading fake papers to the Web that are discovered by Google’s Web crawlers. Their experiment resulted in an increase of 774 citations for 129 papers. While there hasn’t been a documented case of somebody manipulating citations to increase their article’s ranking, it is important to be aware of as other databases such as PubMed, Web of Science, and Scopus are not as vulnerable to this type of manipulation.

Several recent studies have found that searching Google Scholar can be helpful and yield interesting and relevant results. For quick clinical research, Google Scholar can be quite effective. A study of nephrologists seeking information for clinical questions found “Google Scholar returns twice as many relevant articles as PubMed and provides greater access to free full-text articles.” Scholar may be effective for quick clinical questions, but it may not be as effective for other search queries. The authors of an article in Systematic Reviews found Google Scholar’s article retrieval “too low” to be used as a single database for conducting systematic reviews.

No database is perfect; every database has its strengths and weaknesses when it comes to indexing, structure, and coverage. To find comprehensive information on a subject, searchers must look at a variety of databases. Because each database is created differently, it is essential to know how those differences affect searching and to adjust the search strategy accordingly. Google Scholar is a very helpful database and can serve as a great additional tool for retrieving articles.

Author disclosure: The author notes that she has no commercial associations that may pose a conflict of interest in relation to this article.

Author contact: kraftm@ccf.org

References
## Calendar of Meetings

<table>
<thead>
<tr>
<th>Event</th>
<th>Date</th>
<th>Location</th>
<th>URL</th>
</tr>
</thead>
<tbody>
<tr>
<td>Regulatory Affairs Professionals Society</td>
<td>September 27–October 1, 2014</td>
<td>Austin, TX</td>
<td><a href="http://www.raps.org">www.raps.org</a></td>
</tr>
<tr>
<td>National Association of Science Writers</td>
<td>October 17–21, 2014</td>
<td>Columbus, OH</td>
<td><a href="http://nasw.org">http://nasw.org</a></td>
</tr>
<tr>
<td>European Medical Writers Association</td>
<td>November 6–8, 2014</td>
<td>Florence, Italy</td>
<td><a href="http://www.emwa.org">www.emwa.org</a></td>
</tr>
</tbody>
</table>

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**Shake, Rattle, and Roll**

**AMWA’s 74th Annual Conference**

October 8–11, 2014 • Memphis, TN
My philosophy of editing: What a big wide deep topic, impossible to fully delve into in a few sentences! The roots of those two words (the Greek *philos*, beloved or loving, grafted onto *sophia*, knowledge, learning, or wisdom, as applied to *editus*, the past participle of the Latin verb meaning to publish or produce) are inextricably tangled—tangled like the roots in the bottom of a too-small terra cotta pot whose out-of-control plant is dying for some help, in need of being lovingly and knowledgeably cut apart and then transplanted into larger terrain. As a long-time author’s editor at two major research-intensive medical schools (the University of Minnesota in Minneapolis and the University of Arizona in Tucson), I know that my job entails loving knowledge or learning or wisdom enough to help cultivate it into publishable form, to organically tend it (perhaps to uproot parts of it) so that it produces its best flowering in the appropriate target journal or textbook.

Note that I am not a journal editor, an acquisitions editor, a rewrite editor, or even a copyeditor; basically, as an author’s editor, I have no power whatsoever, other than the power of persuasion. My substantive editing services are available as a departmental asset that faculty and staff members, fellows, and residents can ask to tap anytime, all at no charge to themselves or their subdivisions; whether or not to accept my suggestions is up to them. (They usually do, if their many expressions of gratitude to me are any indication.)

To try to replant, into the rich soil of the wider scholarly world, the manuscripts that typically overflow my surgery department in-box, I don’t need my well-worn gardening gloves or pointed trowel or watering can. To shake excess dirt off the page, to divide and reassemble the cuttings so they thrive, and to send the most healthily pruned specimens off into the sunlight, I rely on my decades of experience in academia, on all those years of loving (the never-finished pursuit of) knowledge and learning and wisdom. The main tools of my trade are my well-thumbed dictionaries and reference books, my favorite journals (including the *AMWA Journal*, the flagship *New England Journal of Medicine*, and *College Composition and Communication*), and online research resources like PubMed. Rather than a pointed trowel, I might grab a pointed red felt-tip pen for proofs and other graphics-heavy items that I then scan and send, but I typically wield a Dell computer cursor, digging into sentences and vigorously tilling them with bright-red track changes. My workplace watering can takes the form of a warm-toned cover e-mail to the lead author, in which I gently spray a light mist of support over those starkly embedded suggestions to securely tamp them down, summarizing and explaining my edits, and even more vitally, encouraging and thanking the author.

I am a writer, too; like nearly all of the authors I edit for, I know what it’s like to be bruised by clueless, even cruel reviewers and other uncaring gatekeepers. I want all authors who seek my input to know that I am on their side, emphatically yet empathetically rooting for the success of their intellectual seedlings, the manuscripts that are the heartfelt outgrowths of their hard ongoing work. Ultimately, each lead author and I, as part of the same departmental team, are also on the reader’s side (and, in the case of medical editing, on the patient’s side as well).

The copious editorial suggestions that I unabashedly shower on the near-final drafts of their manuscripts (and elaborate on in my cover e-mail messages) are all grounded in sound rhetorical principles and best practices aimed at the sky of effective, efficient communication, with an unwilt-
If I had to distill my philosophy of editing into one word, it would be **kindness**, directly and liberally rained down on authors for the sake of readers and patients alike. If I had to distill my philosophy of editing into one word, it would be kindness, directly and liberally rained down on authors for the sake of readers and patients alike. Of course, I show no kindness to grammatical errors, syntactic lapses, factual mistakes, and other distracting slip-ups but instead consider it a kindness to meticulously weed them out—a kindness to my authors, their readers, and patients everywhere. In the epilogue to my 1997 doctoral dissertation, I quoted Aldous Huxley, and his words still resonate, root and branch, with me: “It’s a bit embarrassing to have been concerned with the human problem all one’s life and find at the end that one has no more to offer by way of advice than ‘try to be a little kinder.’”

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Mary E. Knatterud is an editor-educator at the University of Minnesota in Minneapolis with three research-oriented departments: Surgery, Urologic Surgery, and Otolaryngology. From October 2008 through May 2014, she was an associate professor in the Department of Surgery at the University of Arizona in Tucson (a telecommuting faculty position based in her home office in St. Paul); before that, she worked at the University of Minnesota for 30 years, including 21 years in the Department of Surgery.

Her 1997 doctoral dissertation, *First Do No Harm: Empathy and the Writing of Medical Journal Articles*, was published by Routledge (New York and London) in 2002. Her work on medical communication has appeared in *Archives of Surgery*, *Science Editor*, *AMWA Journal*, *Obesity Surgery*, *JAMA*, *Transplantation*, *Dialysis & Transplantation*, and *Minnesota Physician*, among other journals. Her poetry has appeared in *Annals of Emergency Medicine*, *The Pharos* (the Alpha Omega Alpha Honor Medical Society journal), and *Harmony* (the Arizona Health Sciences Center medical humanities magazine), among other publications.
Medical communications are supposed to make sense. Thus, one of a medical editor’s most important responsibilities is to find and fix nonsensical sentences. Many different kinds of problems can cause a sentence to be nonsensical. Some of these problems are syntactical, which means that they arise from some flaw in the grammatical structure of the sentence. Others are semantic, which means that they arise from the meanings of the words. In his 1957 book Syntactic Structures, Noam Chomsky provided a classic example of a sentence that makes no sense even though it is grammatically correct:

The sentence is grammatical. It contains a noun phrase that serves as a subject (colorless green ideas) and a verb phrase that serves as a predicate (sleep furiously). The noun in the subject phrase and the verb in the predicate phrase even agree in number. Yet the phrase colorless green ideas makes no sense. Ideas have no color. Even if they had a color, they could not be colorless and green at the same time. Nor does the predicate make sense. Ideas cannot sleep, and nothing can sleep furiously.

When I am editing someone else’s writing or reviewing my own, I analyze the sentences for semantic problems of that kind. Do the noun-verb transactions make sense? Does each modifier (i.e., adjectival and adverbial elements) really modify its head (the sentence element that it’s supposed to be modifying)? In particular, I focus on each verb and think about how it relates to each of its arguments and adjuncts. The arguments of a verb are the nouns and noun phrases that stand in some sort of relationship to a verb in a particular sentence: namely, the subject(s), direct object(s), and indirect object(s) of the verb. A verb may also have adjuncts. Adjuncts are sentence elements that are not structurally necessary. In other words, the sentence would still qualify as a complete, grammatical sentence if they were left out. Nevertheless, they can provide some useful information.

**Syntactic Structures**

The syntactical arguments of a verb include the subject, direct object, and indirect object. The adjuncts of a verb include adverbial prepositional phrases and adverbial clauses.

All verbs can have a subject. However, only transitive verbs can take a direct object. Note that some verbs can be used in a transitive or intransitive sense:

- I eat. (In this sentence, eat is intransitive because there’s no direct object.)
- I eat cookies. (Here, eat is a transitive verb because there is a direct object: cookies.)

The syntactical relationships are easily shown by diagramming the sentence:

```
I eat
```

```
I eat cookies
```

A good dictionary will tell you whether a verb can be used in a transitive sense. If the dictionary lists a particular verb as only being intransitive, I avoid giving it a direct object.

Verbs that can take an indirect object are sometimes called dative verbs:

- I sang to her.

Verbs that can take a direct and an indirect object are called ditransitive verbs:

- I gave him $20.

Laurie Endicott Thomas, MA, ELS
There are also some tritransitive verbs, such as to trade, which can take a direct object and two indirect objects:

\[\text{I traded him my peanut butter sandwich for a Twinkie.}\]

**Semantic Structures**

Linguists have come up with some terminology to describe the semantic relationships between nouns and verbs. For example, an agent is an entity that performs an action, and a patient is an entity that undergoes an action. Note that the agent of a verb is not necessarily the subject of the sentence. Nor is the patient always the direct object. When the passive voice is used, the patient is the subject of the verb and the agent is in a prepositional phrase, if it is mentioned at all.

\[\text{I broke the window. (Active voice: the agent is the subject and the patient is the direct object.)}\]
\[\text{The window was broken [by me]. (Passive voice: the patient is the subject and the agent can even be omitted.)}\]

The table lists some common types of semantic arguments and adjuncts, sorted according to their syntactical roles. Notice that some of the arguments are subjects, direct objects, and indirect objects, whereas the adjuncts are adverbial phrases or adverbial clauses.

These terms are helpful in thinking about how a verb relates to the nouns and adverbial elements in the sentence. However, the boundaries between these terms are sometimes hazy. For example, it may be hard to decide whether something is a patient or a theme.

**Verb Arguments**

Careful writers and good editors think about whether the argument structure of each verb makes sense. For example, some kinds of verbs can be performed by only certain kinds of subjects. For example, an animal, an inanimate object, or a natural event can kill you, but only another human being can murder you. That's because the word murder is defined as the unlawful premeditated killing of one human being by another.

When I am writing or editing, I think about whether the arguments of each verb make sense. Can the agent of that verb really perform that action? If there is a direct object, is the verb really transitive, and does that verb express something that is really happening to that direct object? For help in making these decisions, I often turn to the dictionary. Besides providing definitions of the words involved, dictionaries give you examples of how those words are used. Often, those examples show the kind of argument structures that are appropriate for particular nouns and verbs.

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<table>
<thead>
<tr>
<th>Subjects</th>
<th></th>
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</thead>
<tbody>
<tr>
<td><strong>Agent</strong></td>
<td>deliberately performs an action</td>
<td>I spoke.</td>
</tr>
<tr>
<td><strong>Force or natural cause</strong></td>
<td>mindlessly performs an action</td>
<td>The wind blew.</td>
</tr>
<tr>
<td><strong>Experiencer</strong></td>
<td>receives sensory or emotional input</td>
<td>They suffered.</td>
</tr>
<tr>
<td><strong>Direct objects</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td><strong>Patient</strong></td>
<td>undergoes an action and changes its state</td>
<td>I broke the window.</td>
</tr>
<tr>
<td><strong>Theme</strong></td>
<td>undergoes an action but is not changed</td>
<td>I gave him $20.</td>
</tr>
<tr>
<td><strong>Indirect objects</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td><strong>Recipient</strong></td>
<td>someone or something that receives ownership</td>
<td>I gave him $20.</td>
</tr>
<tr>
<td><strong>Beneficiary</strong></td>
<td>the entity for whose benefit the action was performed</td>
<td>I baked her a pie.</td>
</tr>
<tr>
<td><strong>Adverbial phrases and clauses</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td><strong>Time</strong></td>
<td>when an action occurred</td>
<td>The operation was performed on Tuesday.</td>
</tr>
<tr>
<td><strong>Location</strong></td>
<td>where an action occurred</td>
<td>The procedure was performed in the examination room.</td>
</tr>
<tr>
<td><strong>Source or origin</strong></td>
<td>where the action originated</td>
<td>The foreign body was removed from his ear.</td>
</tr>
<tr>
<td><strong>Direction or goal</strong></td>
<td>where the action is directed toward</td>
<td>She was taken to the hospital.</td>
</tr>
<tr>
<td><strong>Instrument</strong></td>
<td>something used to perform the action</td>
<td>The incision was made with a scalpel.</td>
</tr>
<tr>
<td><strong>Manner</strong></td>
<td>how some action was carried out</td>
<td>The bill was sent to me in error.</td>
</tr>
<tr>
<td><strong>Purpose</strong></td>
<td>why someone chose to do something</td>
<td>She called to remind me about the meeting.</td>
</tr>
<tr>
<td><strong>Cause</strong></td>
<td>why an action occurred</td>
<td>The ice in the freezer melted because the power went out.</td>
</tr>
</tbody>
</table>
Michelle L. Kienholz and Jeremy M. Berg
New York, NY: Oxford University Press, 2014; 188 pp., $29.95

This slim volume begins with a refreshingly candid assertion: The National Institutes of Health (NIH), with more than 20 separate institutes and a multitude of specialized offices, can be byzantine. Where the authors take that premise, however, is less straightforward.

I was struck by this book’s title for two reasons. First, this is the first I heard that the NIH could help me. Second, although Dr Berg is a former “insider” (he used to run the National Institute of General Medical Sciences), he no longer works for the NIH. His coauthor is a grant writer and editor who assists researchers with developing their applications. Thus, neither one is an “insider.” Perhaps a picky distinction, but one I returned to as I read the book.

As the opening paragraph suggests, this book has good points. The Appendix is a 20-page treasure trove of URLs and Web pages for a plethora of pieces, parts, and institutes within the NIH. The introduction to the Appendix notes that updated links and information can be found at Ms Kienholz’s blog, thereby deftly addressing the top problem in writing a how-to book about grant applications—timeliness of information, especially online information. I also liked the brief introduction, “Essential Steps for Securing NIH Grant Funding: A Quick Guide to Key Concepts.” The 15 key concepts are each linked to a chapter in the book, allowing readers to browse based on their needs and interests.

And that leads me to a dreaded minefield in writing about grants—abbreviations. After the “Essential Steps” section, there is a four-page list of abbreviations that jumbles together names of grant mechanisms, institutes, offices, and miscellaneous terms—some arcane, some basic. It would be churlish to blame the authors for the existence of all those abbreviations. But who is the list for? Seasoned investigators won’t need it, and new ones will find it overwhelming. In addition, there’s no need to memorize or highlight terms that won’t need it, and new ones will find it overwhelming. In addition, there’s no need to memorize or highlight terms that

This is something I’ve wanted to see for ages. But why put this information before the key tips on how to write effectively (chapters 8 and 9), when inexperienced grant writers won’t know how to interpret it?

The puzzling organization of this book is its weakest point. Why tell readers about their eRA Commons account (the online “in box” for each principal investigator, which includes self-populated demographic details, application status updates, and reviewers’ critiques of submitted proposals) on page 46, when it is not defined until page 68? Why explain the mechanics of a grant review panel (called a study section) and how to get on one, when less-experienced investigators still don’t understand how to write for that audience (again, chapters 8 and 9)? Why say that the project summary section of a grant application is not “a throw-away 30 lines of text,” without ever saying that the summary is limited to 30 lines in length? Why discuss the federal budget process (chapter 5), over which the applicant has little control, before discussing how to talk to people within the NIH structure who could help you (chapter 10)?

My biggest source of confusion with this book is who the authors believed their audience was, since the information, its organization, and degree of detail (lots in some places, none in others) suggests different audiences at different times. This confusion is reflected in the title, where I began: Few readers will think the NIH exists to help them get money, rather than to improve public health through research. A more accurate title would have been “How Knowing More About the NIH Will Help Your Grant’s Chances of Funding.” The nuggets tucked away in this book do serve that purpose, and seasoned grant writers will appreciate them; less-savvy ones will get lost in the welter of details and miss the nuggets altogether.

Brevity doesn’t mean a guide to grant writing is suboptimal. My favorite is Guide to Effective Grant Writing: How to Write a Successful NIH Grant Application, by Otto O. Yang, which is only 100 pages long. But tastes and needs differ; do some homework into the best guides, and choose based on your background and needs.

—Karen Potvin Klein, MA, ELS
Karen Potvin Klein is the director of grant development and medical editing, Translational Science Institute, Wake Forest University Health Sciences, Winston-Salem, North Carolina.
In my last column, I made a promise to you that the volunteers and staff at AMWA would continue to work tirelessly to ensure AMWA remains relevant to our members, to our profession, and to our industry. If only you could have seen that promise kept in Bethesda, Maryland, this past April!

Our usual spring Executive Committee (EC) and Board of Directors (BOD) meetings began in a very unusual way. On April 10, 2014, leaders of the American Medical Writers Association, the Drug Information Association (DIA), the International Society for Medical Publication Professionals (ISMPP), and the Society for Technical Communication (STC) met for the first Medical Communications Interorganizational Summit. The purposes of the summit were to recognize the many similarities among the respective organizations; explore synergies that might benefit the organizations and their members; discuss challenges facing the medical communications industry, the organizations, and their members; and identify opportunities to share resources and experiences that can strengthen the organizations, benefit their members, and serve their missions.

The participating organizations share certain core beliefs: a commitment to integrity for the medical communications field and to being leaders in promoting excellence, both within the industry and to their members, by providing guidance and continuing education. All of the participating organizations are nonprofit, membership-based organizations. They are rich in educational resources and content, and their members are collectively involved in all aspects of medical communications.

Summit participants were particularly interested in exploring how to share educational resources, capitalize on the use of social media to further their missions, and advocate for best practices and industry standards that uphold their common commitments to integrity and excellence. They agreed to reconvene soon via scheduled teleconferences to address these and other topics warranting deeper discussion.

If this summit was the only reason for us to gather in Bethesda, that would have been enough. But it was just the beginning. The EC met to discuss AMWAs finances, which are outstandingly healthy, and to continue our strategic work in furthering AMWAs mission. The Nominating Committee presented an outstanding slate of officers, which was then brought to the BOD the next day for approval. Together, the EC and BOD took the next important step forward in the certification process, and now we’re on our way to securing a trademark for the designation successful candidates will be able to place after their names. I am purposefully holding off telling you what that designation is until we have cleared the first hurdle at the US Patent and Trademark Office.

The EC and BOD also took an important step forward in our commitment to developing a top-notch online education program that will be second to none and worthy of the AMWA name. Our staff at headquarters has been empowered to research and present recommendations for a learning management system that will open up the e-learning environment for whatever we want to do. Online learning was a message heard loud and clear from the medical communicator needs assessment survey AMWA conducted last year, and we are making progress.

During the BOD meeting, chapter representatives spent a few hours brainstorming solutions to common chapter challenges. A lot of innovative solutions were discussed as ideas flowed freely from chapter to chapter and from table to table. I believe all the delegates were eager to get home to their chapters to discuss—and, hopefully, implement—some of the great ideas that were shared.

The EC and BOD then devoted several additional hours to brainstorming on another very important topic: how to pay for all the exciting new programs and projects we have planned for AMWA. As I mentioned earlier, AMWA is in a very healthy financial state. We have the money we need to enable AMWA to keep doing the great things we do now. But clearly, AMWA members want and need more, and the medical communications field demands more of its leading organization. It’s not a matter of saying “We can’t afford to do these things.” Rather, it’s a matter of asking “How can we afford to do these things?” The EC and BOD came up with flip chart pages filled with ideas, and you will be hearing more about these exciting developments in the coming months.

At the end of our first full day together, the EC and BOD celebrated with a little downtime and were treated to brief remarks by the proposed slate of officers. I made a few brief remarks as well, which I want to share with you here. I asked the board members to look at the current EC members and proposed slate of new officers, and realize we were once all in their shoes. We all started as members, became involved at the chapter level, served on the BOD, and joined the EC. What’s special about EC members is what’s special about BOD members, is what’s special about many members: We share a love for and commitment to AMWA. I encouraged every BOD member to consider service on the EC in their future, just as I encourage you now to get involved at the chapter level. You’ll be amazed at where it can take you professionally and personally.
Slate of Candidates for 2014–2015 Election

Each year, the slate of AMWA officers is chosen by the Nominating Committee, which consists of the president-elect (who serves as chair) and six voting members who are not members of the Executive Committee (EC). The Nominating Committee receives from AMWA headquarters the names and biographies of all members meeting the criteria for the three elected offices: president-elect, secretary, and treasurer. The EC interest form also was sent to qualified candidates, giving them an opportunity to express their interest in serving in an elected officer position. Members of the Nominating Committee discuss the potential candidates and select one candidate for each position. The names of these candidates are then presented to the Board of Directors for approval at its spring meeting.

The following candidates were approved by the Board of Directors at its spring 2014 meeting:
- President-elect Stephen Palmer, PhD, ELS
- Secretary Lori Alexander, MTPW, ELS
- Treasurer Christine F. Wogan, MS, ELS

President: The president-elect automatically assumes the office of president at the annual business meeting held during the annual conference of the following year. The 2014–2015 AMWA president will be Karen Potvin Klein, MA, ELS, GPC. Karen is director of grant development and medical editing in the Translational Science Institute at Wake Forest University Health Sciences in Winston-Salem, North Carolina. She earned an AB in classics from Brown University and an MA in liberal studies from Wake Forest University. Karen joined AMWA in 1989 and become a fellow in 2006. Karen previously served AMWA in the elected office of secretary; as administrator of special projects/communications, awards, publications, and public relations; as Certification Commission chair and job analysis panelist; in various roles on committees and task forces, including chair and member of the Eric Martin Award Committee, member of the Budget and Finance Committee, and member of the Task Force on Partnering with Higher Education; as a roundtable, workshop and klatch leader; as open session moderator and panelist; and as peer reviewer, editor, and author of manuscripts for the AMWA Journal and reviewer for Essays for Biomedical Communicators: Volume 2 of Selected AMWA Workshops.

President-elect criteria: The president-elect (1) must have served on the Executive Committee for a minimum of 2 full years and (2) must be a current member of the Executive Committee when his or her name is being considered by the Nominating Committee.

Nominated for president-elect is Stephen N. Palmer, PhD, ELS. Steve is a senior scientific medical writer at the Texas Heart Institute in Houston. He earned a PhD in social and health psychology at the State University of New York at Stony Brook, where he also earned his MS. He holds a BA from Wesleyan University. Steve joined AMWA in 2002 and become a fellow in 2011. He is currently serving on the Executive Committee as secretary. His previous AMWA service includes the following: administrator of awards, administrator of the annual conference, administrator of chapters and membership; annual conference roundtable and klatch leader; open session leader and speaker; member of many committees, including Medical Book Awards and Constitution and Bylaws; and, for the Southwest Chapter, program chair, president, immediate past president, and board delegate.
Secretary criteria: The secretary must have served on the Executive Committee within the 3 years immediately preceding his or her consideration by the Nominating Committee.

Nominated for secretary is Lori Alexander, MPTW, ELS. Lori is president of Editorial Rx, Inc, an independent medical writing and publishing company based in Orange Park, Florida. Lori received a bachelor’s degree in English (concentration in journalism) from the University of New Hampshire and a master’s degree in technical and professional writing from Northeastern University in Boston. Lori joined AMWA in 1998, received the AMWA President’s Award in 2009, and became a fellow in 2010. In 2012, she received a special award for her 10 years of service as AMWA Journal editor. Lori’s service to AMWA also includes: administrator of the annual conference (twice); member of numerous AMWA committees, including the job analysis and item writing committees supporting the development of medical writing certification; and annual conference roundtable leader, open session moderator and speaker, and workshop leader. Lori is a past president of the Florida Chapter, and she coordinated several chapter conferences for both the Mid-Atlantic and Florida chapters.

Treasurer criteria: The treasurer must have served at least 1 year on the Budget and Finance Committee within the 5 years preceding his or her consideration by the Nominating Committee. It is also desirable for the treasurer to have served on the Executive Committee before assuming the office of treasurer.

Nominated for treasurer is Christine F. Wogan, MS, ELS. Chris is publications manager in the Division of Radiation Oncology at the MD Anderson Cancer Center in Houston. She earned a BA in biology at Swarthmore College and an MS in biological sciences at the University of Houston at Clear Lake. Chris joined AMWA in 1989 and received the AMWA President’s Award in 2010. She was named a fellow in 2012. Chris currently serves on the EC as treasurer. Her previous AMWA service includes the following: administrator of awards; Journal peer reviewer; annual conference editing/writing sections chair, workshop leader, open session panellist and moderator, and roundtable leader; and, for the Southwest Chapter, director-at-large, treasurer, president, and immediate past president.

Procedure for Additional Nominations

According to AMWA’s bylaws (Article III.2d), additional nominations for president-elect, secretary, or treasurer may be made by any member whose dues and special assessments are current, provided that any such nomination is submitted in writing to the secretary of AMWA at least 30 days before the annual business meeting (which will take place October 11, 2014, at the annual conference in Memphis, Tennessee). Any individuals so nominated must meet the criteria outlined in the bylaws (Article III.1.a through 1.d) for their names to be placed on the ballot. Such a nomination must clearly state the qualifications of the candidate, must be signed by 50 members in good standing as of the date of the receipt of the nomination, and must be accompanied by a letter from the candidate stating that he or she is willing to serve if elected.
The American Medical Writers Association (AMWA) operates on a fiscal year from July 1 to June 30. At the end of the fiscal year that ended June 30, 2013, AMWA had generated $1,798,972 in revenue (including $105,199 in net investment revenue) and $1,622,049 in expenses, for an increase in revenue over expenses of $176,923.

Financial Performance Trends

The organization’s revenue sources for the fiscal years that ended June 30, 2011, June 30, 2012, and June 30, 2013 (Figure 1), reflect a stable organization, with more than 90% of revenues coming from membership, the annual conference, and the certificate program. Expenses for 2012–2013 were lower than those of the previous year (Figure 2). The rise in expenses during 2011–2012 primarily reflects development costs for the certification program and a period of transition in which AMWA’s current executive director came onboard before the departure of the previous executive director to ensure the organization’s stability. In 2012–2013, despite increased investment in enhanced member services and educational offerings, overall expenses declined by 4.5% owing to restructuring of headquarters staff positions.

A slight increase in membership dues each year accounts for the revenue growth in that category. Revenue from the annual conference remains relatively flat, but revenue from the certificate program has shown a steady increase. The small investment income in 2011–2012 reflects the market performance during that period.

Figure 1. AMWA’s sources of revenue for the fiscal years that ended June 30, 2013, June 30, 2012, and June 30, 2011, obtained from the financial statements for those years.

Figure 2. AMWA’s total expenses for the fiscal years that ended June 30, 2013, June 30, 2012, and June 30, 2011, obtained from the financial statements for those years.

Major expense categories for AMWA are personnel, program services, and supporting services (Figure 3). Personnel costs reflect compensation for the AMWA headquarters staff. Program services include the costs of all of the mission-based activity of the organization, including the annual conference, membership, the journal, online education, the certificate program, and the certification program. Supporting services are defined as administrative costs such as rent, telephone, network systems and support, board meetings, insurance, and supplies.
Looking forward, AMWA continues to invest in products and services that are of value to the medical writing community. Our new association management software and website improvements will enhance AMWA’s ability to meet the needs of our members as well as those of other medical writers. Development of the certification program and enhanced online education offerings will require a continued investment of resources. Financial performance through the second quarter of the current fiscal year (June 1, 2013, through December 31, 2013) is consistent with the budget and is expected to result in a modest increase in the organization’s reserves.

**Reserves**

Reserves are the accumulation of funds over years to allow the organization to withstand an emergency or to invest in new programs. Unrestricted reserves of 6 to 12 months of annual operating expenses are a standard target for not-for-profit organizations. With budgeted annual operating expenses of $1,816,285 for the current fiscal year (from July 1, 2013, to June 30, 2014), the target for AMWA’s reserves ranges from $908,142 to $1,816,285. AMWA’s current reserve level of $1,337,165 is comfortably within this target range (Figure 4).

**Financial Position**

An organization’s financial position is reflected in its asset and liability holdings (Figure 5). AMWA is well positioned to pay its obligations and invest for the future. Total assets had grown to $2,180,832 by June 30, 2013, and the organization’s liabilities totaled $498,794. The vast majority of AMWA’s assets are liquid, including cash, CDs, and mutual funds.

**Conclusions**

AMWA is in a stable financial position. The future of the organization is dependent on a stable membership base and growth in our educational offerings. Targeted investment in these areas began in fiscal year 2012–2013 and will continue into fiscal 2015–2016.

**Acknowledgment**

I thank Vickie McCormick of Calibre CPA Group PLLC for providing the financial data and the 2012–2013 Budget and Finance Committee members for their invaluable insights in their review of reports and budgets: Mary Alice Ditzler, Jane Krauhs, Leslie Neistadt, Judi Pepin, Alison Woo, and Jeanie Woodruff (and ex officio members Brian Bass, Doug Haneline, and Susan Krug).

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Quarterly Update on Certification
Summer 2014
By Thomas Gegeny, MS, ELS, and Marianne Mallia, ELS / 2014 Certification Commission Co-Chairs

During the past quarter, the Certification Commission has continued to move closer to launching a certification examination for medical communicators. The first exam is on target to be given at the 2015 Annual Conference in San Antonio, Texas.

The commission has completed a draft of the Policies and Procedures Manual and Candidate Handbook and will be finalizing these documents in the next quarter. We anticipate that these materials and the examination application will be available online in the first quarter of 2015. The eligibility requirements for applying for the examination were described previously in the AMWA Journal [2014;29(1):47].

Bart Harvey, MD, PhD, who chairs the Examination Development Committee, worked with the commission this past quarter to define terms and responsibilities for the committee. There will be seven to nine committee members who represent a diversity of practice settings and areas of skill and expertise in medical writing (eg, regulatory writing, quantitative research methods, manuscript editing/writing, education, plain language, and patient materials). The committee’s duties will include:

- Making recommendations regarding the certification examination “blueprint” (ie, areas of knowledge, skills, and abilities to be tested).
- Periodically reviewing and making recommendations regarding the list of resources suggested to candidates for certification examination preparation.
- Developing items for inclusion in the certification examination item bank, especially in areas of the examination blueprint that require additional items.
- Reviewing and providing feedback regarding proposed and existing certification examination items.
- Recommending items to be included in the certification examination.
- Reviewing item performance on the certification examination (ie, item difficulty and item-total correlation) and recommending any indicated item revisions.

Bart will also work with the consultant testing agency, as needed, on tasks related to developing the certification examination.

These are exciting times. Continue to watch for more information about the certification exam in upcoming AMWA Updates and in the AMWA Journal.

In Memoriam

Joseph H. Bloom

AMWA has learned that Joseph H. Bloom, a long-time member, died June 26, 2013, at the age of 75 in Candler, North Carolina. He was a freelance writer who began his career in Philadelphia and moved to the green hills of North Carolina in semi-retirement many years later. Joseph joined AMWA in 1983 and was named a Fellow of AMWA in 1991. He served AMWA as president of the Delaware Valley Chapter and was a board delegate from that chapter for a number of years as well as a workshop leader at many conferences during the 1980s and 1990s. In 1994, Joseph received the President’s Award, and from 1997 to 1999 he was administrator of chapters on the Executive Committee. Joseph’s love of grand opera was legendary, and he was able to sing selections from Wagner’s Die Meistersinger and other operas with aplomb. He is survived by his wife, two sons, and two stepdaughters.

—Barbara C. Good, PhD
Writers Write. So why not write for the AMWA Journal?

The Journal is seeking volunteers to cover speakers and Open Sessions at the upcoming Annual Conference. Volunteer by sending an e-mail to JournalEditor@amwa.org.

AMWA Writers Write for the AMWA Journal.
Instructions for Contributors

Unless otherwise noted, submit manuscripts and suggestions for content to the Journal Editor at JournalEditor@amwa.org.

**FEATURE-LENGTH ARTICLES**
Feature-length articles include topical features, original research in medical communication, and Science Series articles.

**Topical Features**
The Journal accepts manuscripts on areas of interest to medical communicators, including topics within such broad categories as regulatory writing, continuing medical education, patient education, medical marketing/advertising, public relations, medical journal management, publication ethics, health policy, etc. The Journal especially encourages the submission of articles on the theoretical underpinnings of specific types of medical communication. AMWA Journal readers are primarily practitioners (not academicians), and application of theory to practice is an essential component of manuscripts. **Word Count:** 600-1,000 words

**Original Research**
The Journal accepts manuscripts reporting original research on written communication, publication trends, and medical communicators’ productivity and value added. **Word Count:** 600-1,000 words

**Science Series**
The Science Series accepts manuscripts that provide an overview of a specific anatomic or physiologic topic (e.g., body system), disease or condition, diagnostic method (e.g., laboratory tests, imaging systems), or type of treatment (e.g., devices). Submit manuscripts for the Science Series to Randy Fritz, Science Series Editor, at fritz.randall@mayo.edu. **Word Count:** 3,000 words

**OTHER TYPES OF ARTICLES**

**Around the Career Block**
The Around the Career Block section accepts manuscripts that provide advice on career-related issues, profiles of professional organizations, and first-person accounts of educational experiences.

**Career-related Articles**
These articles address topics that are relevant to the career development of medical communicators. Areas of interest include job hunting, developing a portfolio, interviewing techniques, hiring guidance, performance evaluation, mentoring programs, performance goals, etc. **Word Count:** 750-1,500 words

**Profiles of Professional Organizations**
These profiles help readers discover or better understand organizations that address specialty niches and may therefore be a useful supplement to AMWA membership. **Word Count:** 600-1,000 words

**First-person Accounts of Educational Programs**
These articles provide overviews of educational programs designed to enhance the knowledge and skills of medical writers and editors. **Word Count:** 600-1,000 words

**Commonplaces**
Commonplaces is a new section devoted to the exchange of ideas between teachers of medical communication and practitioners. Contact Commonplaces Editor Lora Arduser (ardusell@ucmail.uc.edu) with article ideas.

Media Reviews
The Media Reviews section includes reviews of books, CD-ROMs, and videos that are of practical value or topical interest for medical writers and editors. Contact Book Reviews Editor Evelyn Kelly (evelykell@aol.com) if you wish to submit a book for review or wish to write a review.

Practical Matters
The Practical Matters section accepts manuscripts that provide practical guidance to medical writers and editors (at all levels of experience) for improving the skills involved in their daily work activities in a variety of medical communication settings. **Word Count:** 750-1,800 words

Regulatory Insights
This section provides information of particular interest to communicators who write or edit documents related to the pharmaceutical or device industries. **Word Count:** 750-2,000 words

Social Media
The Social Media section includes articles focusing on the use of social media and networking in the medical communication industry. Send suggestions for topics to the appropriate Social Media Section Editor: Cynthia L. Kryder (ckwriter@comcast.net), general social media topics; Mali Schantz-Feld (mschantzfeld@gmail.com), LinkedIn.

Tech Talk
The Tech Talk section includes articles about technology topics, that may of interest to biomedical communicators. **Word Count:** 500-1,000 words

**OTHER SECTIONS**

**Member Musings**
The Member Musings section is a forum for members to share personal essays (related to medical writing and editing) and creative work. **Word Count:** 500-750 words

**Sounding Board**
The Sounding Board is a forum for members’ opinions on topics relevant to medical writing and editing. Contact the Journal Editor to seek approval for the topic before preparing and submitting a manuscript. **Word Count:** 750-1,000 words

**Letters to the Editor**
Letters to the Editor provide an opportunity to comment on topics published in the Journal. Letters should refer to contents within the past two issues. **Word Count Limit:** 500 words

**MANUSCRIPT SUBMISSION**
Manuscripts are accepted for consideration with the understanding that they have not been published elsewhere and are not under review elsewhere. Submit the manuscript as an attachment to an e-mail note to the Journal Editor (JournalEditor@amwa.org).

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