



MEDICAL WRITING:  
**A Professional's  
Guide to Advancing  
Your Career**



# Medical Writing: A Professional's Guide to Advancing Your Career

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Medical communication is a fast-paced, ever-evolving field, and it's not enough to stay the course. To advance in their careers, medical communicators must continually challenge themselves to stay current with emerging trends, embrace new technologies and techniques, learn new skills, and pursue new avenues and opportunities.

This resource highlights the breadth of knowledge and skills that help all medical communicators become more valuable, either to their current employer or as a candidate for a new job. The greater your value, the more likely you are to advance in medical communication.

The recipe for success in medical communication is a combination of [building your value](#); enhancing your [soft skills](#); firmly grasping [core knowledge and skills](#), including [technology](#); and, of course, continuing a strong foundation in [writing and editing mechanics](#). Throw in a dash of ambition, curiosity, and professional drive, and you're on your way down the path of success.

# Building Your Value as a Medical Communicator

Medical communicators who commit to lifelong learning and continual professional development can successfully advance in whatever medical communication setting they work.

“Well-trained medical communicators are highly valued by their employers and the teams with whom they work,” says Cyndy Kryder, MS, MWC, 2018-2019 AMWA President. “Professional development and continuous learning are the keys to ensure we continue to perform our jobs well, provide value to our employers, and advance in our careers.”

We all want to progress in our careers. But what does that mean for a medical communicator?

## What Does Advancement Mean to You?

Just as no two career paths into the field of medical communication are exactly the same, neither are two career paths through the field exactly the same. Some medical communicators stay in the same work setting throughout their professional careers. Others may want or need a change in work setting to stay engaged and motivated. Some may want to climb the corporate ladder and manage people; others prefer to focus on their writing and manage only projects, not people. Some view career advancement as broadening the number of therapeutic areas in which they can work or the types of writing or editing they do. Still others feel the pulse of entrepreneurship in their veins and see employment as a stepping stone to launching a freelance business or starting their own company. There is no wrong way to move your career forward; medical communicators must decide for themselves what is most important to them.

No matter how you want to move forward, enhancing your value as a medical communicator is the best approach. Your immediate thought may be, “I’ve been doing this work so long, I write well. Do I really need to brush up on my writing and editing?” The answer is yes, but more important, writing is not the only skill to enhance. An article on the website of Randstad, a global consulting and recruitment agency, “Are you still hiring medical writers who only write?” suggests that you should enhance all your skills. What are those skills? Think about how you spend a good portion of your day. Depending on your work setting, you handle such nonwriting tasks as managing the review process, finding the appropriate reporting guideline for a manuscript, interpreting clinical data, using new technology, and creating slides, to name just a few.

*No matter how you want to advance, enhancing your value as a medical communicator is the best approach.*



“Trends in medical communication are leading to the need for expanding roles and breadth of expertise for medical writers,” says David B. Clemow, PhD, MWC, Principal Clinical Research Scientist, Global Medical Affairs, Eli Lilly and Co, and recipient of AMWA’s 2019 Swanberg Award. Clemow is also the lead author of the Medical Writing Competency Model, which outlines the roles of medical writers in the pharmaceutical and other settings by describing the functions, tasks, and activities (section 1) and knowledge, skills, abilities, and behaviors (section 2) needed to succeed.

## Identifying or Expanding Your Professional Focus Area

Every medical writer and editor should be familiar with the professional focus areas in medical communication and should be aware of trends occurring in these areas. Knowing more about these professional focus areas not only helps you identify other career options that may be a fit for you somewhere along your career path but also helps you network better with your colleagues.

AMWA has defined six main professional focus areas, which are described here. You probably are familiar with some of these areas, but you may be unfamiliar with others.

*There are six main professional focus areas in medical communication. You may be unfamiliar with some.*



1. **Regulatory writing:** Medical communicators who work in pharmaceutical and biotechnology companies and contract research organizations (CROs) develop documents required by regulatory agencies in the approval process for drugs, biologic agents, and medical devices. Artificial intelligence and natural-language processing are having an impact in this area of medical communication, as are data visualization, lay summaries, lean authoring, and structured content management.
2. **Scientific publications:** Medical communicators who help write and/or edit scientific publications work in pharmaceutical companies and CROs as well as medical universities and health care facilities. In this context, medical communicators may work on scientific manuscripts to be submitted to peer review journals, as well as posters, abstracts, and oral presentations to be submitted to professional conferences. This focus area also includes medical communicators who develop summaries of conference sessions and write news and feature articles for medical trade publications. Important trends in this area are alternative abstracts (visual and video), digital formats, and different publishing models.
3. **Health communication:** The health communication area encompasses a wide variety of materials for lay audiences, including patient education, decision aids, public health communication, medical/health news, news releases, and public relations/communications. Work settings include professional associations, patient advocacy groups, public health offices, and health care facilities, to name just a few. Medical communicators in health communication need to be proficient in the principles of plain language, health literacy, numeracy, and cultural competency, as well as techniques to communicate visually and social media strategies. The increase in patient engagement has led to a need for more medical communicators to write lay summaries of studies reported in scientific publications.
4. **Education for professionals:** Medical communicators in this focus area help create continuing medical education (CME) activities for physicians, nurses, and other health care professionals or help develop training materials for staff, especially field-based sales staff and medical staff for in-house training, in pharmaceutical and biotech settings. Medical education companies are the primary setting for this work, although many medical communicators work in health care professionals' societies or in academic centers. Exciting trends in the CME space include new educational delivery formats, patient engagement, and a growing interest in outcomes research. Knowledge of adult learning principles and learning styles is needed to excel in either area.

5. **Promotional writing:** This focus area includes developing marketing and advertising materials that promote therapeutic or diagnostic products. Medical communication companies are the setting for this type of work, and knowledge of regulations for promoting products is vital. Another type of work in this area is developing promotional materials for medical or health care institutions and organizations or corporate communications. Medical communicators in this setting must learn to work efficiently with the media, be familiar with different channels for disseminating information, and follow strict guidances for promoting drugs and devices.
6. **Grantsmanship:** Medical communicators in this area help write and edit grant applications to fund scientific research. As in all professional focus areas, writing and editing are not the medical communicator's only tasks; other responsibilities include searching for the best funding opportunity and coordinating the work of a team. The work setting is typically an academic or health care facility. Because of budget cuts, government funding for scientific research is limited, which means applications for funds from foundations are increasing.

## Soft Skills

Soft skills are often overlooked but are a vital aspect of anyone's career, including medical communicators. According to LinkedIn's 2019 Global Talent Trends report, 92% of hiring managers and talent professionals think that soft skills are just as important—or more important—than technical skills. Because these skills contribute substantially to success, some have argued for a stop to calling them “soft” skills and to instead call them “essential” skills.

“Soft skills are crucial for working efficiently, gaining trust, communicating and collaborating effectively with colleagues, and achieving personal and company goals,” says Linda Yih, MS, Senior Director, Medical Writing Services, Parexel International, who served as Chair of AMWA's Regulatory Writing Workforce Training Committee.

Jennifer Thayer, EdM, MBA, Vice President, Medical, Regulatory, and Scientific Communications and Principal Consultant, BioBridges, agrees. “Technical (or hard) skills are essential—but soft skills are what will determine overall success for a typical medical communicator. I might say that soft skills are the translation between having and applying hard skills.”

The inclusion of soft skills in the Medical Writing Competency Model also reflects how vital they are to success in medical communication. Among the soft skills–related behaviors in the model are embracing change, working well as part of a team, effective decision-making, time management, conflict resolution, and problem-solving.

Soft skills are also among the top educational needs identified in an AMWA survey of hiring managers about advanced skills needed across work settings in medical communication. One respondent notes that medical communicators “need help with soft skills, interacting with people at higher levels of the organization, and being ambassadors of medical writing.” Other soft skills specifically mentioned by survey respondents are time management, critical thinking, working with a team, conflict resolution, and leadership skills.

*Soft skills are among the top educational needs identified in an AMWA survey of hiring managers.*



## Time Management

Time tracking is the biggest challenge for most medical communicators, according to the results of AMWA’s survey of hiring managers. Along with managing time, medical communicators must excel at managing many other aspects of their work.

“When I started my journey as a medical writer, I never imagined I’d spend 30% of most of my days writing and 70% of my day managing myself, timelines, processes, documents, strategy, meetings, teams, and vendors,” says Lynne Munno, MA, MS, RAC, Director, Medical Writing (Oncology Submissions), Pfizer. “Mastering the art of self, time, project, and people management is crucial to the foundation of being a strong medical writer and leader.”

## Critical Thinking

Medical communicators need to hone their critical thinking skills for three reasons. First, sound critical thinking is crucial for good writing. In a blog on her website, Pamela Hurley, PhD, President of Hurley Write, Inc., writes, “Critical thinking in writing means asking the right

questions and questioning the old, no-longer-obvious answers. It means, in the end, finding solutions that are effective and efficient—and, often, new.”

Second, respondents to AMWA’s hiring managers survey about advanced skills say that many medical communicators “regurgitate information without interpretation,” and so they need to enhance their ability to interpret and write about scientific data. Kim Jochman, Managing Medical Writer, PhD, at Merck, who is developing AMWA educational activities on interpreting and writing about clinical data, describes this skill.

“Whether you are writing about data for regulatory reviewers, journal readers, patients, or other groups, your audience wants and deserves to read messages about what the data mean—they don’t want to read sentences that just repeat numbers from a table. Medical communicators need the knowledge and ability to confidently interpret data so that they can lead their teams through the creation of message-based documents,” says Jochman.

*Your audience doesn’t want to read sentences that just repeat numbers from a table.*



Lastly, medical communicators need critical thinking as part of problem-solving and decision-making, two other crucial soft skills. In this case, critical thinking calls on the ability to “assess things legitimately for their merit and accuracy...[to] listen to opposing views and assess them for their merits...[to] practice both analytic and holistic thinking,...[and to] understand logical fallacies,” writes Kelleen Flaherty, MS, MWC, CMPP, Assistant Professor, Biomedical Writing Programs, University of the Sciences, Philadelphia, in an *AMWA Journal* article.

## Conflict Resolution

Conflict resolution is a specific type of problem-solving, and mastering the ability to resolve conflicts can help ensure a collaborative work environment and smooth, efficient processes. Because conflict is a natural part of any human endeavor, knowing how to work with others to achieve amicable resolution is of paramount importance. Conflict resolution calls for effective communication, sensitivity to people’s feelings, accurately interpreting people’s emotions, being an active listener, and being polite.



“Conflict resolution is something most of us shy away from, but once we are able to do it successfully, it builds our confidence to tackle just about any problem and is an indispensable leadership skill,” says Yih.

## Working with a Team

The ability to work well with a team is crucial at all stages of a medical communicator’s career. “Virtually all work is performed in teams,” says Thayer. “Teams are like living organisms, and success within them means constant self-awareness and adaptation—they regulate one’s application of hard skills in a team environment.” Flaherty adds that medical communicators “should help their teammates, consider and support their ideas, make suggestions...[and] tolerate and try to help improve the limited competencies some...teammates might have.”

## Leadership Skills

If you eventually want to become a manager, you need to know how to inspire, motivate, and guide others while simultaneously trusting and empowering them to make their own decisions and take ownership of their effort. Even if management isn’t your career trajectory, having such management and leadership skills can still help you. By design, many medical communicators are called on to lead without positional authority.

*By design, many medical communicators are called on to lead without positional authority.*



“As a leader, your positional power (your place in the organizational chart and the authority that comes with it) has some influence, but personal power is much more impactful,” says Yih. “If positional power is all you have, people will likely give you only what is required of them, and not any more. Personal power is earned based on who you are as a person. It relates to your integrity, the respect you demonstrate for others, and your trustworthiness. Your personal power is what will inspire people to engage in your goals and vision.”

In summary, no matter where your career is headed, enhancing your soft skills will help you become a more valuable medical communicator.

## Core Knowledge and Skills

To be a successful medical communicator, you must have certain core knowledge and skills, regardless of where you work or the type of work you do. As you progress in your career, you will need to expand your core knowledge and skills to fit new roles and responsibilities. Some core knowledge and skills are universal; that is, they are needed by medical communicators across work settings. Other core knowledge and skills are specific to particular work settings.

Medical communicators in all work settings should have strong knowledge and skills in a variety of areas, from ethical principles to statistics. Several of these topics are evolving, and medical communicators need to stay current with new developments to continue to advance in their current work setting or to begin a new path in another work setting. These topics are clinical trial design; concepts in health and medicine; plain language principles; resources, regulations, and guidelines; the scientific literature; visual communication; and technology.

### Clinical Trial Design

You know how randomized controlled trials are designed, but can you describe newer clinical trial designs that have been developed in this era of precision medicine? “Companies are rethinking their approach to oncology studies to include the voices of patients and get the most information while imposing the least burden on study participants. As a result, we are seeing some truly innovative—yet incredibly complex—study designs,” says Ann Winter-Vann, PhD, 2019-2020 AMWA President. Among the novel trial designs are enrichment, randomize-all, platform, basket, and umbrella trials. Medical communicators, especially those working in regulatory writing and scientific publications, should be familiar with how these innovative trial designs work.

*Can you describe newer clinical trial designs that have been developed in this era of precision medicine?*



## Concepts in Health and Medicine

Medical communicators enter this field because of their love of science and medicine, even if they didn't have an educational background in science. Writing effectively in more than one therapeutic area increases the breadth of your experience—and your value. On the other hand, specializing in one therapeutic area can make you an expert in that area, which can help advance your career. Gail Flores, PhD, 2019-2020 AMWA President-Elect, notes her journey. “I started my medical writing career 20 years ago straight after getting a PhD in molecular biology. Initially, I was willing to write about any disease state, but after a few years elected to specialize in just one—oncology—and have never regretted it. My depth of knowledge in this area makes me a valuable medical writer.” Whether you have experience in one or many therapeutic areas, you must stay abreast of new developments in those areas, especially as the molecular underpinning of diseases produces more complex disease-related information.

## Plain Language Principles

Many writers think that plain language principles are designed only for writing for lay audiences. The Plain Writing Act of 2010 defines plain language as “Writing that is clear, concise, well-organized, and follows other best practices appropriate to the subject or field and intended audience.” According to this definition, plain language principles apply to writing for all audiences, including the professional scientific community.

Medical communicators working on peer-reviewed scientific publications and on regulatory documents can benefit from learning more about how to enhance readers' understanding of their documents. For example, they should consult resources on plain language and consider using checklists for meeting plain language standards. These checklists include such items as the following:

- Organization that serves the readers' needs
- Useful headings
- Active voice
- Concrete familiar words
- Tables and graphs to simplify complex material

*Consider using checklists for meeting plain language standards.*



In addition, a trend for increased patient engagement in scientific research has led to the creation of lay summaries of clinical trials and journal articles. Medical communicators working in these areas can enhance their value by learning how to communicate effectively with different audiences.

“If you are used to writing for scientific and professional audiences, writing for the public can be challenging,” says Genevieve J. Long, PhD, an independent medical communicator who writes patient- and public-facing materials. “Writing for the public requires you to switch linguistic registers and use a whole different vocabulary—it’s like writing in a different language than you use for professional audiences.”

## Resources, Regulations, and Guidelines

Keeping up with changes to resources, regulations, and guidelines is vital for success in medical communication.

According to hiring managers who participated in the survey conducted by the AMWA Advanced Writing Skills Working Group, medical communicators need education that ensures awareness and utilization of the latest

- Guidelines
- Templates
- Consensus statements
- Standards or best practices

Familiarizing yourself with all the necessary resources, regulations, and guidelines can be daunting. AMWA’s new Member Resource Library contains more than 240 resources for medical communicators that are organized according to professional focus areas, to help you easily find what you need.

Determining which resources, regulations, and guidelines are necessary depends on your work setting, although some resources are universally important across all professional medical communication focus areas.

### *Universal Resources*

One key resource is the **American Medical Association (AMA) Manual of Style**, described as the “must-have guide for anyone involved in medical and scientific publishing.” Education focused on the 11th edition, which was published in 2020, drew unprecedented numbers of participants in AMWA Annual Conference sessions and an AMWA webinar. Every medical communicator needs to know the latest details of standard scientific style because not keeping up can be a step back.

For example, if you follow the crowd and write “healthcare” as one word, you will be identified as a writer or editor who is unfamiliar with AMA style, which adheres to this term as two words (“health care”). Knowing that “health care” should be two words will not necessarily help you advance in your career, but not knowing shows that you haven’t kept up with changing style. If you’re thinking of moving to a career as an editor, knowledge of AMA style is especially crucial.

*If you follow the crowd and write “healthcare” as one word, you will be identified as a writer or editor who is unfamiliar with AMA style.*

Other universal resources for medical communicators include ethical guidelines and position statements, which help to preserve and protect the integrity of the medical communication field. Recent position statements have been developed jointly by AMWA with the European Medical Writers Association (EMWA) and the International Society of Medical Publication Professionals (ISMPP). They address the role of professional medical writers in creating manuscripts as well as the status of predatory publishing.

If you’re thinking about moving into a different professional focus area, be sure to look for ethical guidelines for that type of medical writing. Guidelines and statements have been developed by such organizations as

- Grant Professionals Association
- International Society for Medical Publication Professionals

- National Association of Science Writers
- Public Relations Society of America
- Regulatory Affairs Professionals Society

### *Guidelines in Regulatory Writing*

In addition to ethical guidelines in medical writing, regulatory writers must be familiar with research ethics. They must also adhere to guidances published by the US Food and Drug Administration, as well as guidelines developed by health authority agencies around the world. Interpreting these guidances is often challenging, and education can help ensure that you evaluate and interpret correctly.

An array of guidances for regulatory writers can be found at professional sources such as

- AMWA's Member Resource Library
- Clarity and Openness in Reporting: E3-based (CORE)
- Enhancing the QUALity and Transparency Of health Research (EQUATOR) network
- International Conference on Harmonisation (ICH)

*In addition to ethical guidelines in medical writing, regulatory writers must be familiar with research ethics.*



### *Guidelines in Scientific Publications*

Medical communicators who work in scientific publications must remain current with guidelines for reporting various types of research (randomized controlled trials, observational studies, systematic reviews, etc). The EQUATOR network states, "If authors use reporting guidelines when they write up their work, the resulting manuscripts can be understood, replicated, and used in clinical decision-making." Medical communicators are often the ones tasked with ensuring that manuscripts adhere to the appropriate reporting guideline.

Medical writing assistance with adhering to reporting guidelines has been shown to be of value in two published surveys. In one survey, Gattrell et al. evaluated adherence to a predefined subset of the Consolidated Standards of Reporting Trials (CONSORT) checklist (12 items known to be often poorly reported) in a sample of controlled trial reports. The authors found that adherence

was better in articles that received medical writing support than in articles without medical writing support (39% vs 21%). It is encouraging to know that adherence to CONSORT guidelines is better for articles written with medical writing support, but still, adherence was only 39%. Clearly, improvement is needed, and medical communicators can stand out by excelling at the task of adhering to reporting guidelines.

The value of this task is confirmed in another study. In a small study of authors (researchers and clinicians) who had worked with a medical communicator on a manuscript, Marchington and Burd found that conformity to reporting guidelines was the second-most-valued service (behind editorial services), with approximately 74% of respondents noting the value of this service. Managing the submission process was the third-most-valued service (67% of respondents). Other valued services (not related to editorial services) were management of timelines, management of reviews by coauthors, and guidance on authorship/publication practices.

*Conformity to reporting guidelines was the second-most-valued service to researchers and clinicians working with medical communicators.*

Data on the value of medical communicators are sparse, so these studies—and their results—are particularly important. Nevertheless, these findings show that medical communicators in this setting can enhance their individual value by becoming highly skilled in performing tasks that are of most value to manuscript authors.

### *Resources and Guidelines in Other Focus Areas*

Health communicators who consult resources and guidelines in health literacy, cultural competency, and plain language can stay steps ahead of other writers.

Medical communicators in the field of CME can advance in their careers by learning more about best practices in developing needs assessments and test items.

Writers and editors working on grant applications must stay abreast of new submission guidelines and new sources of funding.

## Scientific Literature

Medical communicators are heavily invested in the scientific literature; they need to search the literature efficiently, evaluate it critically, and cite it accurately. Although it's essential for medical communicators to have these skills as they start their careers, continually honing these skills and becoming more knowledgeable about issues related to the scientific literature are crucial.

### *Searching the Literature*

Medical communicators must be familiar with databases and other online repositories of medical literature, and they must know how to seek the information they need as they research, draft, and fact-check their work. “In order for medical writers to create high-quality work, the databases and information tools they use must be considered authoritative sources,” write Walters et al. in a review of “reliable and reputable” databases in the *AMWA Journal*.

**PubMed** is the go-to source for all medical communicators, with its more than 27 million records representing articles in the biomedical literature and a small selection of items from the National Center for Biotechnology Information (NCBI) Books. PubMed offers many features and tools to help you find what you're looking for more quickly and easily, and PubMed tutorials are a great way to get tips and recommendations for efficient searches.

But depending on what you're looking for, PubMed may not have everything you need or want. For example, what if you're looking for a conference abstract? They're not in PubMed, but Embase, another searchable electronic database, includes about 2 million conference abstracts in addition to journal articles. The database is also particularly well-suited for researching drug information. Embase and PubMed stand alone as comprehensive search engines, but when they're used together, their search results can be complementary.

If you're looking for systematic reviews, the **Cochrane Library** comprises six databases that contain different types of high-quality, independent evidence to inform health care decision-making.



*Embase and PubMed stand alone as comprehensive search engines, but when they're used together, their search results can be complementary.*

Health Services/Technology Assessment Texts, known as **HSTAT**, is a free searchable database that is part of the expanded Health Services Research Information Program coordinated by the National Library of Medicine's National Information Center on Health Services Research and Health Care Technology. You can access the database through the National Library of Medicine, and it includes a variety of full-text documents that provide health information for health care professionals, policymakers, payers, and consumers.

In addition, the following databases are helpful for medical communicators in other settings.

- PRNewswire, which offers breaking news about a product or industry
- CD Promo, a web-based visual library that contains images of promotional materials for the pharmaceutical industry
- NIH Reporter, which provides information about NIH grants awarded since 1992

And what about the **grey literature**? In 2010, the Twelfth International Conference on Grey Literature defined it as "manifold document types produced on all levels of government, academics, business and industry in print and electronic formats that are protected by intellectual property rights, of sufficient quality to be collected and preserved by libraries and institutional repositories, but not controlled by commercial publishers; i.e. where publishing is not the primary activity of the producing body." Examples of grey literature include the following:

- Conference abstracts, presentations, and proceedings
- Regulatory data
- Unpublished trial data
- Government publications
- Reports (such as white papers, working papers, internal documentation)
- Dissertations/theses; patents

- Policies and procedures

“Finding grey literature can be a challenge by nature because it is not systematically organized or indexed like traditional formats,” says Rosie Hanneke, MLS, Assistant Professor and Liaison Librarian to Public Health at the University of Illinois at Chicago’s Library of the Health Sciences.

Tools for finding these different types of literature vary, and knowing how and where to find this literature can make the difference between writing an excellent document and writing an outstanding one.

*Knowing how and where to find grey literature can make the difference between writing an excellent document and writing an outstanding one.*

### *Reviewing the Literature*

As you gather your references, how do you know if they’re reliable? When searching the scientific literature, be sure to check whether any of the articles have been retracted or revised since publication. Also pay attention to the source (journal) of the article, and avoid predatory journals, which subvert the peer-review publication system for the sole purpose of financial gain and little evident concern for ethical behavior. AMWA, EMWA, and ISMPP have published a joint position statement on predatory publishing that provides guidance on how to identify, and thus avoid, these journals. Medical Publishing Insights & Practices (MPIP) is another source of information about predatory journals as well as a host of other topics related to scientific publications, such as transparency, data-sharing, and open access. Medical communicators in the scientific publications setting can add value by helping authors navigate options in selecting a journal for their manuscript.

As you review the references in your search, how do you know the studies are of high quality? “Some degree of critical appraisal of study quality is more likely to lead to selection of the best studies and to a more accurate representation of their findings,” writes Theresa L. Rogstad, MPH, a health services research consultant, in an *AMWA Journal* article. Rogstad suggests that, in reviewing an article, medical communicators assess the study (methodologic) strength, which

involves four factors: research design, study conduct, sample size, and reporting and analysis of results, and also assess the usefulness of the study.

### *Citing the Literature*

As you cite your references, make sure you attribute facts and data appropriately. Even after years of writing papers in undergraduate, graduate, and postgraduate settings, many medical communicators are still unclear about when a citation is needed. “In general, a citation is needed wherever an idea, a concept, data, or a direct quote is used,” says Michelle Sauer Gehring, PhD, Senior Research Scientist at the University of Texas Health Science Center–Houston. “The citation allows the reader to clearly identify what is being stated by the author and what is from other sources. Correct referencing techniques allow for the reader to evaluate the credibility of the data and/or source.”

Although citing the literature correctly is another task that medical communicators should know from the outset, a survey of worst practices in writing CME needs assessments, conducted by Harting and Bowser, showed that more than 25% of open-ended responses were related to “sources and referencing.” Among the specific responses were “insufficient references” and “lack of citation”; plagiarism was another common worst practice in this setting of CME needs assessments.



*Insufficient references, lack of citation, and plagiarism are among the “worst practices” in writing CME needs assessments.*

Plagiarism is a controversial topic in the scientific publications setting, especially self-plagiarism, also known as text recycling. The Committee on Publication Ethics (COPE) notes that text recycling occurs “when sections of the same text appear (usually unattributed) in more than one of an author’s own publications. The term ‘text recycling’ has been chosen to differentiate from ‘true’ plagiarism (i.e., when another author’s words or ideas have been used, usually without attribution).” Among the greatest challenges with text recycling is the lack of standards on how much text recycling is acceptable to journals, and journal editors lack consensus on this issue. Medical communicators in scientific publications who understand the issue of text recycling can help their authors tremendously by finding appropriate solutions.

## Visual Communication

By and large, medical communicators entered this career because they're good with words. But to remain relevant and be successful, medical communicators must communicate visually as well. Studies have shown that people remember 10% of what they hear, 20% of what they read, and 80% of what they see and do. Clearly, communicating visually is vital to engage readers. Visual communication is also a popular topic among medical communicators; in 2019, this topic had the most click-throughs on AMWA's *Medical Communication News*.

Many terms are used interchangeably for visual information, including data visualization, information visualization, information design, information architecture, and infographics. **Data visualization** and **infographics** represent two distinct types of visual communication of special interest to medical communicators. Data visualization illustrates raw values, delivers information, and offers objectivity; on the other hand, infographics visualize stories, provide stances, and offer subjectivity.

“Research clearly shows that visualization significantly improves engagement, understanding, and retention, which is the driving factor for the trend of visualization to replace complex data and long prose,” says Clemow. Data visualization is important not only for communicating data but also for understanding the data. Interactive data analysis and visualization tools are now being used for clinical statistical analyses to aid in data review and to study data interpretation. Data visualization, particularly animated or interactive data visualization, is also driving medical information to more digital-based outputs and communication channels. For example, manuscript supplements and congress posters are evolving from paper to PDF to digital format, the latter allowing for video, animation, and audience interactivity. Medical communicators do not need the skills to create complex data visualizations, but they should understand the environmental shifts from static to animated data figures and from prose to dynamic content.

Data visualization is used primarily in scientific publications, regulatory writing, and other types of documents aimed at scientific and professional audiences. Visual elements have always had a place in scientific publications, and their use has expanded over time. So have the different types of visual elements. We are all familiar with line graphs, bar charts, and Kaplan-Meier curves. But there are many other types of figures, and hiring managers surveyed by AMWA note that medical communicators often confuse the use of tables and figures and need help visualizing data from the reader's perspective. “Writers need to expand their viewpoint,” says one respondent. “Is there some visual to communicate the idea better?” In addition, other respondents point to the

need for education in “graphical presentations—something more than tables and graphs.” Lastly, medical communicators should know which type of table or figure is best for showing a specific kind of data. One place for medical communicators to begin is the 11th edition of the *AMA Manual of Style*, which includes a variety of updated and new examples of figures, including hybrid graphs, funnel plots, spaghetti plots, frequency polygons, and box-and-whisker plots. The manual is also helpful in establishing trends in figures. For example, the manual states that pie charts should be avoided in scientific publications.

The hiring managers in the AMWA survey also acknowledge a “huge shift to a more infographic way to communicate information.” Indeed, the use of infographics (and of other types of similar visual information) to communicate ideas more effectively has increased exponentially in the 2000s. Use has increased 400% since 1990 (in literature) and 9,900% since 2007 (on the internet)!

*Use of infographics has increased 400% in literature since 1990 and 9,900% on the internet since 2007.*



Infographics have become an effective way to educate lay audiences about medical and health issues. As examples, the Centers for Disease Control and Prevention (CDC) regularly uses infographics to convey key health information, as do state and local public health agencies, and image-based decision aids help patients better understand the risks and benefits of treatment.

“Patients and the public are used to visual information online,” says Long. “In health communication, it’s important to choose images that truly represent the audience, including older adults and people of color, to help users trust and relate to the message.”

Visual information is effective for professional audiences as well because of the ease and swiftness with which information can be delivered and understood. The best example of this use is visual abstracts, which are an integral part of publication for more and more scientific journals. Visual abstracts have been shown to increase the dissemination of articles on social media; impressions and retweets each increased about eightfold and visits to the full article increased nearly threefold when a visual abstract accompanied the tweet or posting.

In summary, images effectively convey important information to scientific audiences as well as to people with low literacy—and everyone in between. Medical communicators need to learn how to think visually in order to effectively integrate images with their words. They can enhance their value even further if they can become adept at working with any of the various programs now available to create infographics on their own.

## Technology

Beyond the knowledge and skills that medical communicators nurture throughout their careers to become and remain experts in their craft, the tools they use daily to do their jobs are also foundational to career success. Medical communicators must embrace technology and use tools that make them more efficient.

Sure, you know how to use Microsoft Word, Excel, and PowerPoint. You should certainly be comfortable with Adobe Acrobat. But are you sure you know all the tricks and shortcuts embedded in these programs that make your life (and work) easier? These software tools that medical communicators use every day have features most users never realize. Refreshing your skills or digging deeper into the capabilities of these programs through ongoing professional development isn't a luxury to put off until you have the time. It's necessary for survival and advancement. Not only is there plenty more to learn about the software versions you use now, it's vital to update your software regularly to ensure compatibility and access to the latest features.

The Medical Writing Competency Model contains a long list of tools that help medical communicators perform a variety of functions. These functions include the following, to name just a few:

- Editing and proofreading
- File sharing
- Reference management
- Project management
- Collaborative tools
- Document review

Knowledge of templates and skills in their use are also becoming even more important in the regulatory writing setting. The common protocol template (CPT), developed by TransCelerate Biopharma (a nonprofit organization with a mission to collaborate across the biopharmaceutical research and development community), is designed to address a well-documented need for

template-driven protocol development. In an article on the CPT in the *AMWA Journal*, McNally and Whitsell write, “Certainly, the standardization of protocol development procedures will facilitate collaboration, encourage information sharing and disclosure, and, hopefully, increase efficiency in clinical development.”

*Knowledge of templates and skills in their use are also becoming even more important in the regulatory writing setting.*



Following on the heels of success with the CPT, in late 2018, TransCelerate’s common clinical study report (CSR) template was publicly released. AMWA has offered conference sessions and webinars on how to use these templates that encourage a streamlined authoring approach and will ultimately speed new therapies to patients who need them.

“Embracing innovation trends is important for staying competent; competency in overall medical communication opens doors to opportunity, and medical communication expertise can expand horizons for medical writers and other medical communicators,” says Clemow.

## Writing and Editing Mechanics

A solid knowledge of writing and editing mechanics forms the foundation of a career in medical communication. It doesn’t matter how much you know about science, health, or medicine; if you lack the ability to write about it and/or edit text that’s been written about it, you can’t communicate it effectively to others. And that’s what medical communication is all about—clear, concise, accurate, accessible communication that’s appropriate for the intended audience. Writing and editing are skills that bridge all work and career settings within the medical communication field. Successful medical communicators must know the mechanics of writing and editing and must continue to sharpen these skills throughout their careers.

“I cannot emphasize enough the importance of strong writing and editing skills,” says Marianne Mallia, Editor, MWC, Scientific Publications, Mayo Clinic, and an AMWA Golden Apple recipient for her high-quality AMWA Workshops. “In 40 years of managing and training medical writers and editors, I have found that the best and most successful ones are those who work the hardest to attain strong skills both in writing and in editing, which occurs only through education.”

Two studies highlight the vital role medical communicators play in enhancing the editorial quality of scientific research reports. In the study by Marchington and Burd, editorial services were ranked as being the most valuable services for physicians and academic researchers who worked with a medical communicator. And in the study by Gattrell et al., articles with declared medical writing support were more likely than articles without such support to have acceptable written English (81% vs 48%).

Grammar, punctuation, and sentence structure are the building blocks of effective writing and editing. Medical communicators at all levels of experience must master these essential skills. AMWA offers self-study workbooks and in-person workshops on these topics to help ensure a standard starting point for all medical communicators. But medical communicators need more than a solid understanding of correct grammar, punctuation, and sentence structure. In the survey conducted by the AMWA Advanced Writing Skills Working Group, hiring managers note that medical communicators need education in building a logical and science-based argument that is tailored to the audience.

*Hiring managers note that medical communicators need education in building a logical and science-based argument that is tailored to the audience.*

## The Art of Medical Writing

Developing a science-based, or critical, argument creates a framework for persuasion, which many medical writers think is taboo. But persuasion does indeed have a role in the objective world of science. Scientific research methods are objective, but scientists are biased. This bias is the very reason that scientific methods must be objective. Otherwise, it would be tempting for researchers to do whatever was necessary to be the first to find the answers to the big research



questions. So, one thing researchers must convince their readers of is that their research is based on sound scientific methods.

“Excellent medical communicators are proficient in the technique of medical writing,” says Lori Alexander, MTPW, ELS, MWC, AMWA’s Education Director. “Outstanding medical communicators have taken their writing to a higher level by mastering the art of medical writing, which consists of critical argument and rhetorical appeals, such as persuasion. These concepts enrich all genres of medical writing and deepen the audience’s engagement.”

“Persuade” and “convince” can have negative connotations, and the words can make legal departments cringe. As noted earlier, ethical behavior is paramount for medical communicators, and as such, their writing must be written with appropriate intention and honesty. “You must present data in the best possible light without implying facts or leaving out pertinent information. You must serve the needs of your audience rather than your own needs and goals. It is indeed an art to use persuasion and critical argument without compromising the accuracy or integrity of what you’re communicating,” says Alexander.

The need for persuasion and critical argument in scientific publications dates back to the classic medical writing textbook, *Writing and Publishing in Medicine*, by Edward J. Huth, MD. In that book, Huth devoted an entire chapter to this topic: “Critical Argument and the Structure of Scientific Papers.” A sentence from that chapter: “Scientific papers must argue you into believing what they conclude; they must be built on the principles of critical argument.”

Critical argument and persuasion are integral to documents other than scientific manuscripts. Needs assessments in CME must argue the case for education on a topic; grant applications must persuade a review team to fund research; public health messages must influence people to adopt healthy behaviors; and regulatory documents must convince health agency reviewers that a new therapeutic agent is effective and safe.

Storytelling is another vital aspect of all writing. The science behind stories provides evidence that stories better engage readers by activating more of a listener’s or reader’s brain. If you don’t think storytelling has a place in medical communication, consider these comments:

*“Scientific storytelling allows the broader scientific community to understand, grasp, and remember your research.”*

—Rafael Luna, PhD, author of *The Art of Scientific Storytelling*

*“These complex and highly scientific documents [regulatory documents] need to convey a story in an understandable and transparent manner to enhance the drug submission process.”*

—Mary Jane Lunsford, Executive Director, Syneos Health

*“The documentation required in an NDA is supposed to tell the drug’s whole story...”*

—US Food and Drug Administration website (description of a New Drug Application)

*“An excellent [grant] proposal writer needs to be an excellent storyteller.”*

—Mathilda Harris, Grant Training Center

*“Write a compelling, persuasive document. Tell a story.”*

—Debra Gordon, MS, President, GordonSquared, Inc., on writing needs assessments for e-learning (on Scitent)

*“Scientific storytelling allows the broader scientific community to understand, grasp, and remember your research.”*

—Rafael Luna, PhD



## Style and Usage

Medical writers and editors must remain current with prevailing style (especially as put forth in the *AMA Manual of Style*) and with nuances in word usage, precise terms, and patient-sensitive language. If you don’t see anything wrong with statements such as those that follow, you need to sharpen your knowledge on medical word usage, especially to avoid insensitive language.

- “No radiologic evidence of disease was found.”
- “Four people developed pneumonia.”
- “The new treatment will help cancer patients around the world.”

Mary E. Knatterud, PhD, a long-time AMWA member and editor at the University of Minnesota Medical School, writes “I strive to close the gate, firmly and forever, on terms that heartlessly dehumanize patients or hopelessly derail readers; ie, terms that are insensitive or obfuscating or both. We all should be this vigilant in our medical writing and editing.”

They say that every writer needs a good editor, and some medical writers rely on editors to “clean up after them.” But sometimes, no editor is available, and you must be your own editor.

“Editing and proofreading your own work can help it to meet high standards,” says Barbara Gastel, MD, MPH, Professor, Department of Veterinary Integrative Biosciences and Department of Humanities in Medicine, Texas A&M University. “It can thus increase acceptance of what you write and minimize the need for editing and proofreading by others. Most important, carefully editing and proofreading your work can aid in communicating with your audience and thereby achieving the goals of your medical writing.” A long-time AMWA member and AMWA Golden Apple recipient, Dr. Gastel is also the author (with Robert A. Day) of *How to Write and Publish a Scientific Paper*.

Workshops on writing and editing form the core of AMWA educational activities. From outlining to proofreading, from word usage to eliminating wordiness, and from copyediting to macroediting, AMWA has a wide array of educational offerings to help medical communicators strengthen their most essential skills.

## Summary

As highlighted here, you can take many roads to enhance your value as a medical communicator. As a first step, it is essential to assess your own knowledge and skills to determine the areas of greatest educational need for you.

The key to advancing your career, no matter where you’re headed, is finding your passion and becoming the best at it that you can be.



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