

## INSIDE

### RESEARCH

Editing by the Book:  
Lessons From Technical  
Editing Texts

### FEATURE

Sepsis and Septic  
Shock: Knowns and  
Known Unknowns

### FREELANCE FOCUS

Implications of the  
COVID-19 Pandemic  
for Freelancers

### PREVIEW

AMWA 2020  
Medical Writing  
& Communication  
Conference

## AMWA SURVEY IMPACT OF THE COVID-19 PANDEMIC ON MEDICAL COMMUNICATORS





# Our future is full of challenges and opportunities.

## Vision 2020

Join us October 20-22, 2020, to celebrate AMWA's 80 years as the leading resource for medical communicators working to create clear communications that lead to better health and well-being.

## Virtual 2020

Join us online and together we'll explore ideas and solutions, build meaningful connections, and envision a bright future for medical communication.



## Medical Writing & Communication Conference

**OCTOBER 20-22, 2020**

Coming to a device near you

*Trends and Opportunities for Medical Communicators*

[www.amwa.org/conference](http://www.amwa.org/conference)

**REGISTER NOW! See you online!**

# Contents

V35 N3  
FALL  
2020

## 111 RESEARCH

Survey Results: Impact of the COVID-19 Pandemic on Medical Communicators ▶ [Ann Winter-Vann](#) and [Cynthia L. Kryder](#)

## 115 RESEARCH

Editing by the Book: Lessons From Technical Editing Texts  
▶ [Tom Lang](#)

## 122 FEATURE - SCIENCE SERIES

Sepsis and Septic Shock: Knowns and Known Unknowns  
▶ [Paul C. Dolber](#)

## 129 SOUNDING BOARD

Two Easy, Essential Proscriptions in the COVID-19 Era:  
Locking Down Clarity and Respect ▶ [Mary E. Knatterud](#)

## 131 PRACTICAL MATTERS

Free Advice for Freelancers: Become the Medical Writer Your  
Client Needs ▶ [Jen LiMarzi](#)

## 133 FREELANCE FOCUS

[Brian Bass](#), [Lori De Milto](#), [Cathryn D. Evans](#), [Gail V. Flores](#), and  
[Phyllis Minick](#)

What do you feel will be the long-term consequences for  
freelancers as a result of coronavirus disease 2019 (COVID-19)?

Have you had to implement measures to bolster your income  
until corporate clients adjust to the effects of COVID-19?

What are some changes or trends that you have seen in your  
freelance business opportunities as projects are delayed/  
postponed/reworked?

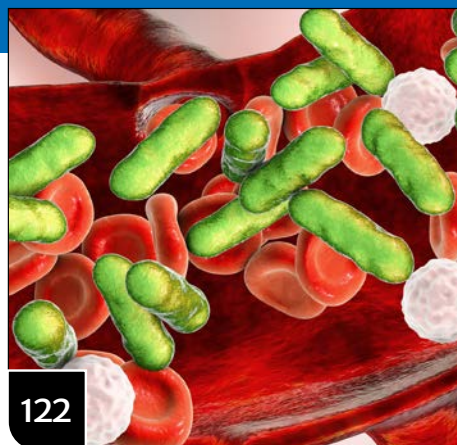
## 136 AROUND THE CAREER BLOCK

The Rise of the Messy CV: Are Life Sciences Companies  
Finally Starting to Value Professionals With Diverse and  
Nontraditional Career Paths? ▶ [Rosalie Harrison](#)

## 137 CALENDAR OF MEETINGS

## 138 REPRINT

Catching the Wave of Lifestyle Medicine ▶ [Maria Carolina Rojido](#)





# MORE Contents

## 145 CREATIVE WRITINGS

Overhead: "Code Blue at Nursing Station 2! Intubation!" [▶ Jodi-Ann Edwards](#)

## 146 IN THE SERVICE OF GOOD WRITING

Choose the Right Verb, and Don't Smother It [▶ Laurie Endicott Thomas](#)

## 148 CONFERENCE PREVIEW

Coming to a Device Near You—AMWA's First Ever Virtual Annual Conference [▶ Elise Eller](#)

## 149 2020 McGovern Award Recipient:

Lisa Sanders, MD, FACP [▶ Ann Winter-Vann](#)

## 150 2020 President's Award Recipient: Joan Affleck,

MBA, ELS [▶ Ann Winter-Vann](#)

## 150 AMWA Names Fellows for 2020 [▶ Karen Potvin Klein](#)

## 152 AMWA NEWS

From the President [▶ Ann Winter-Vann](#)

Slate of Candidates for 2020–2021 Election

[▶ Gail V. Flores](#)

AMWA Education at Your Fingertips

[▶ Lori L. Alexander](#)

## 157 INSTRUCTIONS FOR CONTRIBUTORS

### AMWA JOURNAL MISSION STATEMENT

In support of the mission of the American Medical Writers Association (AMWA) and to advance the broader profession, the *AMWA Journal* publishes content that reflects the interests, concerns, and expertise of medical communicators. Its purpose is to inform, inspire, and motivate medical communicators.

EDITOR James R. Cozzarin, ELS, MWC

MANAGING EDITOR Jennifer Workman

### SECTION EDITORS

Around the Career Block Lauren McMahon, PharmD

Media and Technology Tara Ann Cartwright, PhD

Practical Matters Qing Zhou, PhD, ELS

Regulatory Insights Jennifer Bridgers, MS, MWC

Science Series Paul C. Dolber, PhD

Social Media Jennifer Minarcik, MS

Statistically Speaking Thomas M. Schindler, PhD

Everyday Ethics Julie Ravo, BA, MA

Members Matters Govindi (Jaya) Samaranayake, PhD

### REGULAR CONTRIBUTORS

Freelance Focus Ruwaida Vakil, MSc

Brian Bass, MWC

Melissa L. Bogen, ELS

Sherri Bowen, MA, ELS

Lori De Milto, MJ

Cathryn D. Evans

Gail V. Flores, PhD

Phyllis Minick

In the Service of Good Writing Laurie Endicott Thomas, MA, ELS

EDITOR AT LARGE Haifa Kassis, MD

EDITOR EMERITUS Lori L. Alexander, MTPW, ELS, MWC

EDITOR IN MEMORIAM Ronald J. Sanchez

2019–2020 PRESIDENT Ann Winter-Vann, PhD

2019–2020 BOARD LIAISON/  
AT-LARGE DIRECTOR R. Michelle Sauer Gehring, PhD, ELS, CRA

2019–2020 STAFF LIAISON Shari Rager, MS, CAE

EXECUTIVE DIRECTOR Susan Krug, MS, CAE

GRAPHIC DESIGNER Amy Boches, biographics

**EDITORIAL OFFICE:** ManagingEditor@amwa.org. Instructions for authors available at: [www.amwa.org/journal](http://www.amwa.org/journal).

**ADVERTISING:** Contact [marketing@amwa.org](mailto:marketing@amwa.org) or (240) 239-0940. All advertising is subject to acceptance by AMWA and should be for products and services relevant to professional medical communicators. AMWA is not responsible for the content of advertising and does not endorse any advertiser or its products or services.

**SUBSCRIPTION:** The *AMWA Journal* is published quarterly. Subscription is included with AMWA membership. Nonmember subscriptions cost is \$75 per year.

**CONTACT:** American Medical Writers Association, 30 West Gude Drive, #525, Rockville, MD 20850-4347. Phone: (240) 238-0940; Fax: (301) 294-9006; Email: [amwa@amwa.org](mailto:amwa@amwa.org).

The *AMWA Journal* is in the MLA International Bibliography and selectively indexed in the Cumulative Index to Nursing and Allied Health Literature (CINAHL) print index and the CINAHL database.

The opinions expressed by authors contributing to the *Journal* do not necessarily reflect the opinions of AMWA or the institutions with which the authors are affiliated. The association accepts no responsibility for the opinions expressed by contributors to the *Journal*.

©2020 American Medical Writers Association. All rights reserved, worldwide.  
ISSN 1075-6361

# Survey Results: Impact of the COVID-19 Pandemic on Medical Communicators

Ann Winter-Vann, PhD / 2019–2020 AMWA President

Cynthia L. Kryder, MS, MWC / 2018–2019 AMWA President

Since the beginning of the coronavirus disease 2019 (COVID-19) pandemic, AMWA leadership and staff have monitored the situation and its effects on workers. To gain a perspective on the impact of the pandemic on medical communicators, AMWA designed a 25-question survey and sent it to nearly 5,700 medical communicators. We report the results of the survey here.

## WHO COMPLETED THE SURVEY?

In May 2020, AMWA emailed a link to the survey about the impact of the COVID-19 pandemic to 5,694 current AMWA members and those whose membership had been expired since 2018. AMWA promoted the survey on other platforms, including several social media channels, so more than 5,694 people had access to the survey link; 957 people (17% of the initial mailing) answered at least 1 survey question. Keep in mind that respondents frequently skipped questions, and some questions were included for a subset of participants

based on their response to prior questions. Consequently, the number of people who completed each question varied widely.

## WHO RESPONDED TO THE SURVEY?

The work status (employed or freelance), primary work setting or client, and primary professional focus area were reported (Figure 1). The majority (80%) of respondents had no supervision or management responsibilities.

## EFFECTS ON REGULATORY WRITING TASKS AND PROCESSES

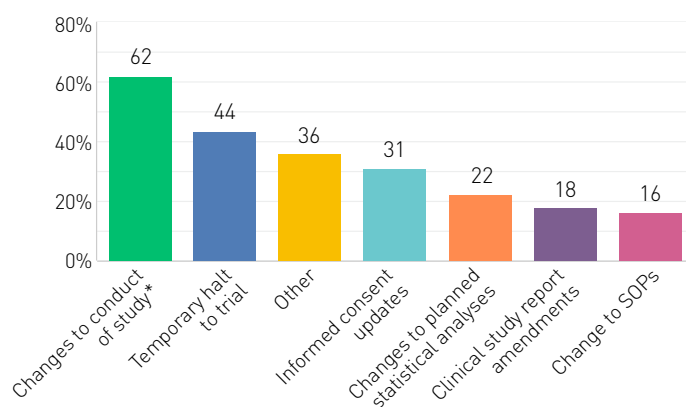
The ways in which the pandemic has affected regulatory writing tasks and processes were reported by 252 respondents (Figure 2). The most commonly reported effect was change to the way in which a clinical trial was conducted, such as changes to the dosing schedule, visit windows, and monitoring frequency. Nearly half of respondents reported temporary halts to in-progress clinical trials.



Figure 1. Demographics of survey respondents. HEOR, health economics and outcomes research.

Analysis of the write-in comments for this survey question (the “other” category) showed additional trends, including

- Rushed and shortened timelines
- Protocol amendments
- Delays in study start, query resolution, availability of results, US Food and Drug Administration reviews, and European Union Medical Device Regulation requirements
- Reduction in work hours, hiring freezes, diminished workloads
- Shifts to writing high-priority documents, including COVID-19–related study protocols and standard operating procedures



\*Dosing schedule, visit windows, monitoring.  
SOPs, standard operating procedures

**Figure 2.** Ways in which COVID-19 pandemic has affected regulatory writing tasks and processes.

## EFFECTS ON EFFICIENCY AND PRODUCTIVITY

Effects on efficiency and productivity were fairly split, with 44% of respondents reporting a somewhat or substantial negative effect on efficiency and productivity and 41% reporting that efficiency and productivity were unaffected. Respondents reported several common causes of reduced efficiency and productivity:

- Increased personal responsibilities, including but not limited to childcare
- COVID-related mental health issues
- Increased stress and fatigue, more distractions, diminished motivation, competing work priorities
- Negative impact of COVID-19 on freelance clients/contract opportunities
- Reduced workload/hours
- Increased work responsibilities, added workload (overload)
- Unpreparedness to work from home

Not surprisingly, the disruption associated with the abrupt transition to remote work was a common theme throughout respondents’ write-in responses to several survey questions.

Respondents cited numerous disruptions associated with the learning curve as writers, teams, and clients were forced to figure out new ways to function—and do so quickly.

## EFFECTS ON WORKFLOW AND OPERATIONS

As would be expected when employees shift from working in the office to working from home, workflow disruptions were common. A majority (71%) of respondents reported some degree of workflow disruption. Contributing factors included

- Decrease/increase in workload
- Organizational problems that emerged and/or changes that were implemented
- Conference cancellations
- Pivot from in-person (live) to virtual content delivery
- Abrupt transition to remote work without adequate preparation
- Shifting work priorities
- Project postponements and cancellations

Although freelancers were already well equipped for remote work, many of their clients were not, causing project delays and reduced workloads.

## EFFECTS ON REQUESTS FOR MEDICAL WRITING SUPPORT

Nearly one-third (31%) of respondents reported an increased number of requests for medical writing support, whereas 24% reported a decreased number of requests. Increased workloads and/or changing deadlines, shifting priorities, prioritization of COVID-19–related work, and the pivot from live to virtual content delivery were contributing factors for increased requests. In contrast, decreased workloads, project delays and cancellations, clinical trial interruptions, company furloughs, and the pivot from live to virtual content delivery were reasons for decreased requests.

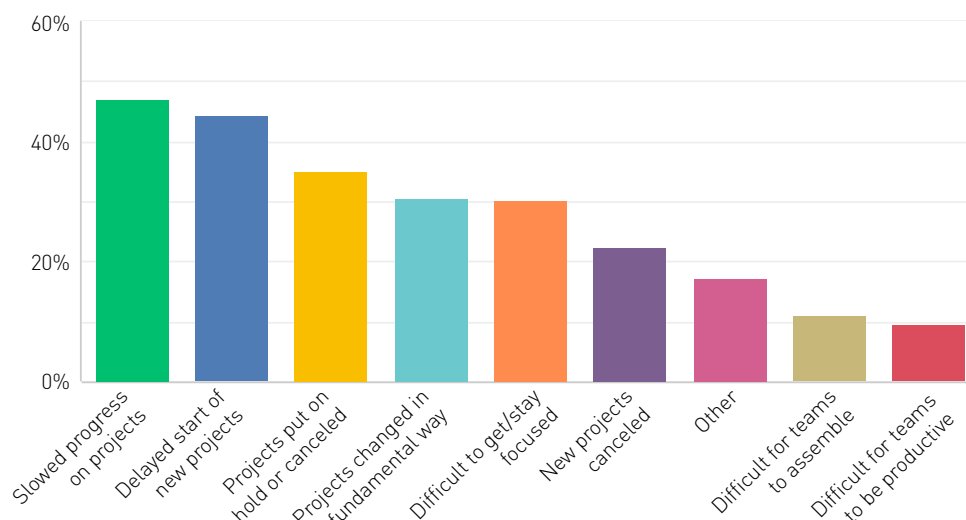
The pivot from live to virtual content delivery benefited those companies and medical communicators who were already adept at creating virtual content and could quickly shift to virtual delivery platforms and provide clients with innovative solutions.

## EFFECTS ON DAY-TO-DAY OPERATIONS

The pandemic’s effects on day-to-day medical writing tasks and processes were reported by 735 respondents (Figure 3). The most commonly reported effect was slowed progress on existing assignments.

Analysis of the write-in answers (the “other” category) revealed additional trends:

- New COVID-19 projects
- Health care professionals writing more or less

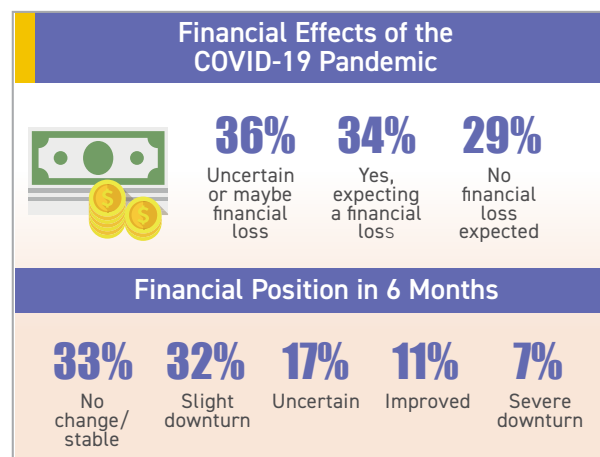


**Figure 3.** Effects on day-to-day medical writing tasks and processes.

- Negative impacts on timelines, workload, and staffing
- Challenges related to abrupt work from home
- Projects pivoting from live to virtual

## FINANCIAL EFFECTS OF THE COVID-19 PANDEMIC

The survey included 2 questions about the pandemic's effects on finances. The first question asked whether respondents expected a financial loss as a result of the pandemic. The second question asked respondents to guess their financial position in 6 months. One would expect the responses to be complementary. For example, those projecting a financial loss should logically report a downturn in financial position in 6 months. That was not the case (Figure 4). As you can see, 29% reported no expected financial loss, but in the follow-up question, 44% reported no change or an improved financial position 6 months from now. Overall, about one third of respondents expected a slight downturn in finances as a result of the pandemic.



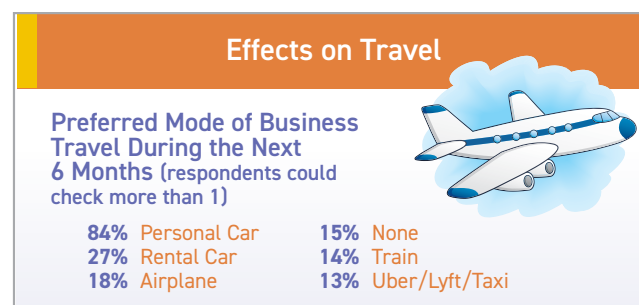
**Figure 4.** Financial effects of the COVID-19 pandemic.

Reduced salaries/benefits and furloughs by employers experiencing or anticipating financial losses this fiscal year, as well as canceled or delayed freelance projects, were the most common reasons for expected financial losses. Financial gains were attributed to more work as researchers had more time to write manuscripts and design protocols.

## EFFECTS ON TRAVEL

Medical communicators reported substantial COVID-19-related effects on travel, as would be expected with a pandemic. A majority (65%) of respondents reported that travel restrictions/reductions had already been enacted or were expected through the end of 2020, and 33% reported that travel expense cuts had been enacted or were expected.

With regard to preferred mode of transportation for business travel during the next 6 months, respondents were most comfortable traveling by personal or rental car (Figure 5).



**Figure 5.** Preferred mode of business travel during the next 6 months (respondents could check more than 1 answer).

Many respondents (35%) were uncertain about when they would feel comfortable traveling for business once stay-at-home orders were lifted; 31% said they would not travel at all until 2021 (Figure 6). The respondent's age, availability of an

### Time to Feel Comfortable Traveling for Business After Stay-at-Home Orders Lifted

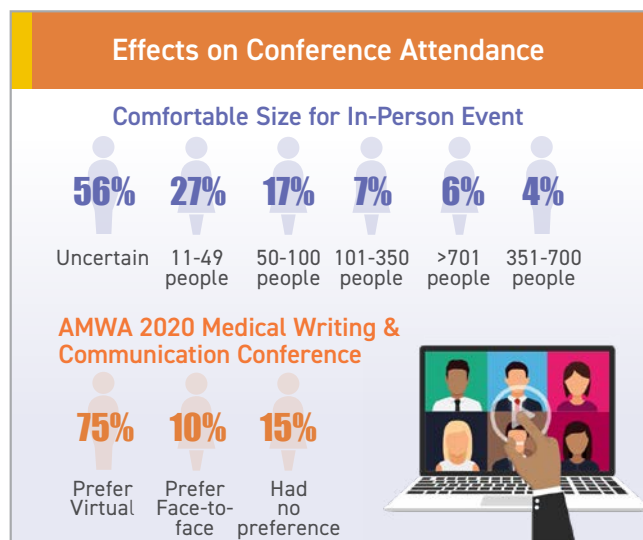
35%	Uncertain	18%	2 to 4 months
31%	No travel until 2021	10%	5 to 7 months
		7%	Immediately

**Figure 6.** Time to feel comfortable traveling for business after stay-at-home orders lifted.

effective vaccine, rate of infection (at their home and their destination), and implementation of virus testing and contact tracing were factors respondents said they would consider before making a decision to travel. The general consensus among those who provided write-in responses was that travel was too risky until we have a vaccine or herd immunity.

## CONFERENCE ATTENDANCE

Respondents were overwhelmingly uncertain when it came to the size of in-person events at which they would be comfortable (Figure 7). Few respondents (4%) were comfortable with large events of 351 to 700 people, which is the average size of AMWA's annual Medical Writing & Communication Conference. The majority (75%) of respondents indicated a preference for experiencing the 2020 AMWA Medical Writing & Communication Conference virtually. The general consensus was that virtual is the safest choice during an ongoing pandemic.



**Figure 7.** Conference attendance.

## LONG-TERM IMPACT ON MEDICAL COMMUNICATORS

We asked respondents to predict what long-term effects the COVID-19 pandemic will have on the medical communication industry. The most common answer was a shift to more work-

ing from home—in some cases permanently. Other common predictions were

- Negative effects (economic downturn, loss of employment)
- Shift from physical to virtual (for meetings, interaction with colleagues, content delivery)
- Increased importance of medical communicators
- Increased workloads
- No impact whatsoever

## WHAT MEMBERS VALUE AND NEED MOST FROM AMWA RIGHT NOW

Respondents indicated that the AMWA offerings of most value to them were professional development or educational programs and opportunities to network with other medical communicators. Consequently, it's not surprising to see that these resources were among the most requested when respondents were asked to identify what they needed most from AMWA now. Respondents' requests fell into several major areas:

- Free or low-cost resources (webinars and online education)
- Reduced membership rates
- More virtual education, resources, and networking events
- Job resources, business advice
- COVID-19-specific content (applying for government funds, writing about pandemic response, maintaining a freelance business during a pandemic)
- Professional and social support, camaraderie, communication

We also received many complimentary responses from AMWA members who told us that we were already meeting their needs.

## IN CONCLUSION

AMWA is committed to meeting the needs of its members, and these survey results help to inform our decisions about the benefits and resources we provide. The AMWA Board of Directors has already used the feedback from this survey to transform the 2020 Medical Writing & Communication Conference from an in-person experience to a virtual event, which will include both educational sessions and networking opportunities. Education remains a top priority, with an emphasis on webinars, online interactive activities, and workshops. As the COVID-19 pandemic evolves, AMWA will continue to monitor its effects on medical communicators to best support its members.



# Editing by the Book: Lessons From Technical Editing Texts

Tom Lang, MA / Principal, Tom Lang Communications and Training International, Kirkland, WA

## ABSTRACT

Medical editors are not necessarily familiar with the conventions of technical editing in the physical sciences and engineering. The 2 traditions developed separately, and most medical editors learn their craft on the job, not through academic programs that might draw on a technical editing curriculum. Accordingly, to see what the technical editing literature could add to medical editing, I reviewed 31 books on the topic. These books were published between 1958 and 2019, 23 are more than 20 years old, and most were written for students in technical writing degree programs preparing for jobs in industry. Collectively, these books use 77 terms for different forms of editing, most of which can be classified as those related to editing content (what is said), presentation (how it is said), correctness (how properly it is said), or formatting (what it looks like). Other terms classify editing by the “level of edit,” by “degree of effort,” by stage in the publication process, or by requested turn-around time. Here, I review several points of interest from these books and propose 23 principles of editing for medical editors that address issues such as the goals of editing, whether to preserve the authors’ “voice” or “style,” editing procedures, common editing pitfalls, and professional advice. I close with a look at the range of opinions authors have held about editors, including the fact that, contrary to popular belief, most authors appreciate skilled, comprehensive editing.

*One of the oldest medical texts in the world is the Papyrus Ebers. Written in Egypt about 1500 BCE, this 21-meter-long scroll describes some 700 magical formulas and treatments for conditions ranging from crocodile bites to diabetes. And, the papyrus was edited. In one case, misplaced text and its correct location were both marked with a cross, in the manner of a footnote.<sup>1</sup>*

After 1500 BCE, almost nothing of interest happened in medical editing until the early 1900s. In 1914, Maud Mellish established the Department of Publications at the Mayo Clinic,<sup>2</sup> and in 1921, Amy Farley Roland established the editorial department at the Cleveland Clinic.<sup>3</sup> By 1927, “freelance medical editing” was suggested as an option for educated women wanting to stay in the workforce while raising a family.<sup>4</sup> Books on preparing medical articles published between 1900 and 1925<sup>5-9</sup> laid the foundations for “author’s editing” in medicine, although the term would not be introduced until the 1960s.<sup>10</sup>

Medical editing developed separately from the technical editing that supports the physical sciences and engineering and that is concerned with a wider range of documents, readers, editorial tasks, working environments, and educational opportunities.<sup>11-13</sup> In addition, many, if not most, medical editors learn their craft on the job and thus are often unaware of developments and resources in the larger field of technical editing.

To see what the technical editing literature could add to medical editing, I reviewed more than 2 dozen books on technical editing. I chose to review books because they tend to describe more established practices than do articles and are less subject to selection bias.

Here, I call attention to some differences between medical and technical editing; describe their most common editing forms, terms, and concepts; propose several principles of editing based on the review; and close with examples of opinions held by authors about editors and editing.

## BOOKS ON TECHNICAL EDITING

*"Just aiming a paper or article at an audience is not enough..."*

—Burr J. French, 1958<sup>14</sup>

As a topic, technical editing is not nearly as well studied as technical writing<sup>13,15-19</sup>—except for the singular comprehensive treatise on the field by Matarese.<sup>20</sup> I identified only 31 books specifically on technical editing and acquired 30.<sup>11,13,16,17,20-46</sup> These books were published between 1953 and 2019, 23 of the 31 are more than 20 years old, and 3 are annotated bibliographies that include publications on technical editing.<sup>44-46</sup>

Most of these books are written for students in technical writing degree programs who expect to work as **technical writer-editors** in research, manufacturing, or technology companies, often in publication departments. Many technical editors work with several other specialists in preparing and managing the production of long, multi-authored, and complex company-sponsored reports. Most also enter the field with some formal training or experience in technical writing or editing.<sup>22,33,39,47,48</sup> In contrast, many (if not most) medical editors are **author's editors** who work primarily with authors in preparing scientific articles. These editors typically work in clinical or research departments or are self-employed and work from home. Thus, medical editors often have different degrees of editorial freedom and autonomy than technical editors have.<sup>20,49</sup>

## EDITING FORMS AND TERMS

*"There is no broadly accepted definition of any of the various forms of editing."*

—Geoff Hart, 2002<sup>50</sup>

This quote doesn't do justice to the number of terms used in the technical editing literature for the various forms of editing.<sup>16,20,39,51,52</sup> The 30 books I obtained use 77 terms (Box 1). Most refer to editing **content** (what is said), **presentation** (how it is said), **correctness** (how properly it is said), or **formatting** (what it looks like).<sup>53</sup> Other terms classify editing by the "level of edit" (see below),<sup>16</sup> by "degree of effort" (light, medium, and heavy), by stage in the publication process (pre-submittal, author's editing, and post-submittal),<sup>20</sup> or by requested turnaround time (rush, urgent, and "you've got to be kidding").<sup>32</sup>

An important concept in technical editing is the **level of edit**, in which different forms

of editing are identified by the types of content involved that, at least in theory, require different skills and amounts of time to evaluate, do not unduly overlap, and may be completed by different specialists, such as managers, copy editors, or production specialists. The concept is widely used in industry to help schedule and budget editing services and priorities.<sup>16,20-22,32,36,39,47,54-58</sup>

Several sets of levels have been proposed,<sup>16,20,32,39,55,59</sup> but most draw from the original 9 levels introduced by the Jet Propulsion Laboratory in 1976 (parenthetical terms are mine): **coordination** (project management), **policy** (company requirements), **integrity** (cross-references are in place), **screening** (light copyediting), **copy clarification** (notes to compositors), **format** (headings and typographic details), **mechanical style** (consistency), **language** (full copyediting), and **substantive** (content and organization).<sup>40</sup>

The forms of editing can also be classified as "passes," in which specific tasks are completed in each beginning-to-end readthrough of the text.<sup>13,16,23,25,29,33,35,36,55,57,60</sup> Predictably, the number, order, and purpose of passes vary by editor.<sup>22,29,33,34</sup> For example, one could edit for organization, conciseness, clarity, and correctness in 4 passes or move from organization to substantive editing to copyediting in 3.

### Box 1. The 77 terms for forms of technical editing identified in 30 books on the topic published since 1958.

1. Accuracy	21. Deliberate	41. Mechanical	61. Screening
2. Analysis-based	22. Developmental	42. Micro-	62. Selective
3. Analytical	23. Didactic	43. Minimal	63. Self-
4. Author's	24. Document	44. Minimum	64. Sentence-level
5. Author	25. Documentation	45. Moderate	65. Situational
6. Automated	26. Editorial	46. Organizational	66. Soft-copy
7. Communications	27. Educational	47. Policy	67. Spec
8. Complexity	28. Electronic	48. Post-acceptance	68. Standard
9. Comprehensive	29. Final	49. Pragmatic	69. Structural
10. Conceptual	30. Format	50. Pre-submission	70. Style
11. Content	31. Full	51. Processing	71. Substantive
12. Contextual	32. Global-level	52. Production	72. Surface
13. Control	33. Heavy	53. Proofreading	73. Supportive
14. Coordination	34. In-depth	54. Quality	74. Technical
15. Copy clarification	35. Integrity	55. Revision	75. Textual
16. Copyediting	36. Language	56. Restructure	76. Typographic
17. Copy-mark	37. Light	57. Rhetorical	77. Usage
18. Correctness	38. Line	58. Rule-based	
19. Crash	39. Literary	59. Rush	
20. Creative	40. Macro-	60. Scientific	

A more functional approach to passes (or levels) is one (modified from Tarutz<sup>39</sup>) that consists of identifying what issues can be found when: **turning pages** (formatting, page design), **skimming** (headings, organization), **scanning and reviewing** (for specific information, consistency), **reading** (copyediting, cross-checking), **analyzing** (substantive editing, rewriting), and **verifying** (fact checking, peer review).

My experience has been that most medical editors generally distinguish only between copyediting and substantive editing, which require fundamentally different perceptual skills. **Copyediting** involves literally “looking at and correcting the ink on the page” and requires a “narrow external focus of attention” on something that can be seen. In contrast, **substantive editing** involves “finding and organizing ideas on the page” and requires a “broad internal focus of attention” on logic and abstract concepts processed cognitively.<sup>61</sup>

## SOME PRINCIPLES OF EDITING

*“In skilled hands, editing is something that is done with sophistication and discrimination and grace.”*

—Lola Zook, 1975<sup>42</sup>

Here, I suggest several principles of medical-technical editing, with a slight bias toward author’s editing and scientific publications.

1. **Remember the goal.** Technical communication is functional communication that helps readers accomplish tasks or make decisions.<sup>62</sup> The goals of editing are to help readers understand, find, remember, and use information.<sup>63</sup> An editor must ensure that the information is relevant, accurate, complete, and accessible and that the writing is clear, organized, concise, and grammatically correct. The information must be necessary and sufficient for its purpose, which means, ideally, that a text should be as long as it needs to be (or is allowed to be) but as short as you can make it.
2. **Understand the assignment.**<sup>13,22,23,29,30,35,36,41,64,65</sup> Before you start, identify the primary audience(s), purpose(s), deadlines, format, expectations, and importance of the text. Audience and purpose determine everything in a technical document. The importance of the text, author or client expectations, and deadlines should guide decisions on how much time to devote to the work and its priority in your workload.
3. **Work efficiently.**<sup>3,24,25,29,33,35,39,41,47,66-70</sup> Editors can have up to 4 clients—readers, authors, employers and publishers—and

balancing their respective needs can be difficult. Employers and clients are paying for our time and expertise, and we owe it to them to work as efficiently as we can.

4. **Consider examining the text first.**<sup>9,13,24,25,29,36,39,53,54,57,68</sup> First checking a long and complicated text for length, headings, topic sentences, lists, and so on may indicate the scope of work by giving you a sense of the topic and organization, identifying tables that need major revisions, figures that were not included, other files with supplemental data, and so on. Alternatively, especially for shorter texts, beginning by editing allows you go through the same sense-making process that readers do without being influenced by an earlier review.
5. **Take care of your authors.**<sup>11,13,22,28,29,33,35,39,41,53,58,66-68,71-74</sup> Editors exist to help authors, so maintaining a collaborative author-editor relationship is highly desirable. Be tactful when suggesting changes and be complimentary when you can<sup>14,26,41,58,64,75</sup>: “sell, don’t tell.”<sup>68</sup> Comments are usually better phrased as questions than as statements. Instead of “The study should have been approved by an IRB,” ask “Did an IRB approve the study?” Remember that the authors’ names go on the publication, not yours.<sup>13</sup>
6. **Put readers first.**<sup>14,19,23,29,31,33,39,47,51,54,59,64,67,70,72,73,76</sup> Meeting the readers’ need for information is one of the defining characteristics of technical editing (Box 2). Determine what readers want to know, need to know, already know, don’t know, and think they know that isn’t so.<sup>63</sup> One challenge of editing is mediating between the authors’ need for ownership of the message and the readers’ need for information.<sup>69</sup> Always, always “Remember the reader.”<sup>77</sup>
7. **Guide and focus attention.**<sup>24,26,28,33,35,39,64,65</sup> The essence of good communication is helping readers attend to the right things without getting distracted by the wrong things. Use the full range of textual, visual, and graphic design conventions to direct readers to information and to emphasize important information in type (with type fonts and size, bolding, lists); in page design (with white space, layout, margins); in graphs (with color, line weight, plotting symbols); and in images (with circles, arrows).
8. **Assume the worst.**<sup>29,39,42,74</sup> Assume the text contains nothing of value until proven otherwise. Ignore the reputations of the authors, their institutions, and the target journal.<sup>63</sup> If you have to recreate the authors’ meaning from a baseline of no meaning and question the authors’ assumptions about their topic and readers, you are more likely to

## Box 2.

Perhaps the most controversial topic in technical editing is whether an editor should try to preserve the author's "style" or "voice."<sup>13</sup> The recommendation to preserve it whenever possible appears to be a holdover from literary editing, where the author's voice is integral to the literary value of the text.<sup>62,66</sup> Although many editors assert that multi-authored texts benefit from having a single, consistent style,<sup>29</sup> other opinions—and emotions—on the topic vary widely, from "To be most helpful, your editing should be constrained and inconspicuous"<sup>24,39,41,47,53,59,67,85</sup> to "I've known at least a few editors who attack a manuscript as if they were mugging some unsuspecting soul in a dark, deserted alley. After giving it quick kick between the paragraphs, they leave it supine and enfeebled."<sup>67</sup>

Despite the above opinions, the defining characteristic of technical writing and editing is meeting the readers' needs for information,<sup>19,29,31,33,39,70,73</sup> not preserving the author's style. Many authorities agree, as do I, that "ruthlessness is essential"<sup>16</sup> in technical editing for the simple reason that it produces the best results.<sup>16,21,24,35,66,69</sup> Ruthless does not mean tactless, however.

identify missing information, discover deeper problems with logic, and find vague or ambiguous meanings.

**9. Edit aggressively.**<sup>24,74,78</sup> Don't be afraid to recommend numerous or extensive changes or even restructuring or rewriting sections if you think it necessary.<sup>2,16,36,74</sup> Query the authors if you aren't sure about the original meaning or the accuracy of your revision. Changing the meaning, either through carelessness or an incorrect understanding, without acknowledging the change can damage your credibility.<sup>64,75</sup> On the other hand, "If it ain't broke, don't fix it."<sup>39</sup>

**10. Edit everything.**<sup>13,15,16,23,35,39,25,54,58,68</sup> Time permitting, do everything you can to improve the text and advise the authors. (See Principle 5.) For example, verify data from source articles, fact check, suggest highlights to radiographs, create new tables, and propose examples. Especially, shorten and tighten the text. Skilled editing can reduce the length of many texts by up to 30% while maintaining or improving clarity.<sup>14,63,78,79</sup>

**11. Justify every edit.**<sup>15,16,21,23,33,39,47,58,70,71</sup> The more aggressive your edits, the more you may need to explain them. Justifying your edits helps authors accept them, improves your credibility, and requires you to think critically about your editing. (See Principle 23). Be specific.<sup>21,53</sup> Rather than saying "This sentence is vague," explain why it's vague. Cite references, authorities, style manuals, and so on to support your edits.

**12. Insist on understanding.**<sup>22,28,29,47,58</sup> Editors are rarely content experts, but it is often possible to develop "an understanding" of the text sufficient to provide useful insights. If you as an editor can understand the text, readers almost certainly will. If you don't understand part of a text, tell the authors you are unsure of the meaning or ask whether you have understood it correctly.<sup>13</sup> Don't accept the near-universal claim that "My readers will know what I mean."<sup>15</sup> If possible, ask the author to explain it to you.

**13. Don't "read over" or "read in."** "Reading over" means skimming past text you don't understand because you "believe the author is probably correct."<sup>16</sup> "Reading in" means (usually unconsciously) filling in missing information from your own experience—information you assume readers have but don't. "Reading over" and "reading in" are 2 reasons authors need editors. Both problems can be prevented by reading more closely. A related problem is "getting caught in the authors' narrative." Texts written by skilled authors can sometimes lull you into editorial complacency, making it easy for you to stop editing and start reading.

**14. Eliminate ambiguity.**<sup>13,28,42,60,76</sup> If readers cannot be sure they have understood the text correctly, it may be of no use to them. However, meaning and ambiguity often depend on context: "She had a solution" means something different to a chemist than to a mathematician. Likewise, plausible alternative interpretations create ambiguity; for example, "Prostitutes appeal to the Pope" or "I like cooking my family and my pets." So, "Do not write so that you may be understood; write so that you cannot be misunderstood."<sup>14</sup> (However, Wally Clements and Bob Waite,<sup>13</sup> who helped train me as a technical editor at Lawrence Livermore Laboratory in the mid-1970s, wisely cautioned me that, "When we clarify the meaning, we sometimes coincidentally reveal it.")

**15. Look for what's missing.**<sup>49,53,66-68</sup> Errors of omission (eg, how sample size was determined) are harder to detect than errors of commission (misspellings). Ask: if a statement is true, what must have been true before and what must be true after?<sup>63</sup> Look for missing data, references to key claims, cross-references, eligibility criteria, table and figure citations, definitions of endpoints, and gaps in descriptions, explanations, or justifications.

**16. Stay visually aware.**<sup>11,13,22,23,41,42,48,63</sup> Editors need to be visually literate—to be as comfortable communicating with visuals as they are with words. In addition to designing slides and posters,<sup>63</sup> editors should be able to, for example,



enlarge, crop, and label a photomicrograph; draw flow-charts; create tables; and know when a line drawing will be more effective than photograph.<sup>63</sup>

**17. Check the math.** Editors have warned about numerical and arithmetic errors in scientific publications for decades.<sup>49,60,69,80</sup> Numerical errors were found in two-thirds of 32 consecutive manuscripts submitted for editing at a major medical center<sup>81</sup> and in two-thirds of 157 articles from 20 radiology journals.<sup>82</sup> The most common errors are in rounding,<sup>83</sup> sums, percentages, and missing or incorrect numbers.<sup>60</sup>

**18. Raise ethical concerns.**<sup>11,20,73,84</sup> Editors “serve science as well as clients”<sup>63</sup> and should advocate for transparency, accuracy, and accountability in their work. Concerns that may need to be raised with authors or others include obviously biased or even deceptive issues with authorship (including guest and ghost authorship), plagiarism, duplicate publication, copyright violations, visual distortions in graphs and images, and misleading explanations and interpretations.

**19. Beware of unintentional messages.** Don’t let *how* something is written overshadow *what* is written.<sup>29,51,52</sup> This principle is the reason **Chalkduster** typeface and “ain’t” aren’t found in scientific articles. Short sentences with too many simple words may appear to be condescending; sentences with many uncommon abbreviations or unfamiliar terms may appear presumptuous; and sentences with contractions, exclamation marks, and slang terms may be inappropriately informal.<sup>17,23,55</sup>

**20. Don’t fixate on wording.**<sup>16,29,36,39,51,52,57,68</sup> Most editing is related to language, so it’s easy to stay focused on the wording. It’s also important to evaluate the entire text and images for their clarity and organization, effectiveness and usefulness to readers, compatibility with standards in the scientific literature, and adherence to the house style of a sponsoring organization.

**21. Proofread one element at a time.**<sup>28,34</sup> Trying to verify or correct specific features of a text in the same pass can divide your attention and lead to mistakes. Separate passes may be necessary to check for consistency in terms, numbers, and design features (paragraph spacing, levels of headings) and to confirm cross-references, facts, and sequences (eg, reference numbers).<sup>75</sup> Checklists of features to reconcile can be useful.<sup>34</sup>

**22. Guard against grammar gremlins.** It’s common knowledge that grammar gremlins add, delete, or rearrange parts of a text and then conceal these changes with spells that keep them invisible from editors. However, these changes are visible to the next reader, such as clients. Only putting the text aside for several hours—overnight is best—will break the spell and allow you to see and correct these changes.

**23. Reflect on your work.**<sup>29,33,39,47,48,73,74,85</sup> Learning can be defined as a change in knowledge or skill as a result of study, instruction, or experience.<sup>86</sup> Much of that study and experience comes from thinking about what you do, reflecting on how and why you do it, and answering questions that arise in your work. The technical editing literature is clear that if you have, say, 10 years of experience, make sure it’s not 1 year of experience 10 times.

## THE AUTHOR-EDITOR RELATIONSHIP

*“The editors pride themselves on being ‘language police’ and eagerly swing their billy clubs against the proudly crafted prose of oversensitive authors.”*

—Donald W. Bush, 1995<sup>24</sup>

Most of the reviewed books emphasize the author-editor relationship, especially 2 points of contention. Pejorative terms reflect authors’ distain for what they see as trivial or irritating or unwanted edits: “grammar janitors,”<sup>35</sup> “comma jockeys,” “human spell checkers,”<sup>39</sup> and “malign creatures wielding blue pencils.”<sup>33</sup> Other comments reflect annoyance at what authors see as infringements on their rights as authors: editors “too often confine their expertise to . . . the pronouncements of the style manual”<sup>24</sup> or they “legislate the rights and wrongs of a paper on behalf of ‘the audience.’”<sup>67</sup> Editors can address both these points by being able to explain, tactfully, how each edit contributes to the effectiveness of the manuscript.

However, and contrary to popular belief, most authors appreciate skilled and comprehensive editing.<sup>33,66</sup> Authors learn to respect editors when thoughtful queries are framed constructively and when creative options are discussed. Under these conditions, authors have been known to say that “Editors can work miracles.”<sup>24</sup>

## CONCLUSIONS

Given the principles and practices described here for technical writing, the question is what, if anything, medical editors need to do to improve their skills and to advance the craft.<sup>87</sup> As far as I know, the only credit-bearing courses specifically on medical copyediting and substantive medical editing are offered by the University of Chicago’s Medical Writing and Editing Certificate

Program (<https://grahamschool.uchicago.edu>). Perhaps identifying the cognitive processing differences between writers and editors would be useful, as might identifying the characteristics of successful editors. In any event, assuming that H. G. Wells is correct—that “No passion in the world is equal to the passion to alter someone else’s draft”—editing will likely be around as long as writing, and we should make the most of that opportunity.

**Author declaration and disclosures:** The author has no commercial conflicts of interest in relation to this article.

**Author contact:** [tomlangcom@aol.com](mailto:tomlangcom@aol.com)

## References

- Breasted J. *The Edwin Smith Surgical Papyrus: Published in Facsimile and Hieroglyphic Transliteration with Translation and Commentary in Two Volumes*. Vol. 1. The University of Chicago Press; 1930.
- Hewitt R. The division of publications at the Mayo Clinic. *Bull Med Libr Assoc*. 1936;25(1-2):133-138. Accessed March 18, 2020. <https://www.ncbi.nlm.nih.gov/pmc/articles/PMC234111>
- Taylor JS. The Cleveland Clinic Quarterly: The first fifty years. *Clev Clin Quart*. 1982;49(4):149-158.
- Olson AL. *Free-lance Writing as an Occupation for Women; Suggestions from Two Hundred Editors and Writers, Compiled for the Institute for the Co-ordination of Women's Interests*. Smith College; 1927. Accessed March 9, 2020. <https://catalog.hathitrust.org/Record/001675502>
- Gould GM. *Suggestions to Medical Writers*. The Philadelphia Medical Publishing Company; 1900.
- Albutt TC. *Notes on the Composition of Scientific Papers*. Springer-Verlag, Inc.; 1904.
- Bett W. *The Preparation and Writing of Medical Papers for Publication*. Menley & James, Ltd.; 1923.
- Mellish MH. *The Writing of Medical Papers*. W. B. Saunders Company; 1922.
- Simmons G, Fishbein M. *The Art and Practice of Medical Writing*. American Medical Association; 1925.
- Forscher BK. Principles of manuscript editing. *Bull Am Med Writers Assoc*. 1968;18:1-5.
- Kemnitz C. *Technical Editing: Basic Theory and Practice*. Society for Technical Communication; 1994.
- Zook L. Training the editor: skills are not enough. In: Zook L, ed. *Technical Editing: Principles and Practices*. Society for Technical Communication; 1975:12-16.
- Clements W, Waite R. *Guide for Beginning Technical Editors*. Lawrence Livermore National Laboratory, US Department of Energy; 1983.
- French B. Internal editing of technical papers and articles. In: Weil B. *Technical Editing*. Reinhold Publishing Co.; 1958:31-40.
- Wall F. Requirements and responsibilities of a technical editor. *J Chem Edu*. 1953;30(10):516-521.
- Farkas DK. *Teaching Technical Editing*. Society for Technical Communication; 1986.
- Flanagan S, Albers M. *Editing in the Modern Classroom*. Routledge; 2019.
- Wager E. W(h)ither technical editing? *Sci Editor*. 2005;28(6):183-184.
- Eaton A. Conducting research in technical editing. In: Murphy A, ed. *New Perspectives on Technical Editing*. Routledge; 2017:7-28.
- Matarese V. *Editing Research: The Author Editing Approach to Providing Effective Support to Writers of Research Papers*. Information Today, Inc.; 2016.
- Alley M. *The Craft of Editing: A Guide for Managers, Scientists, and Engineers*. Springer-Verlag, Inc; 2000.
- Amare N, Nowlin B, Weber JH. *Technical Editing in the 21st Century*. Pearson; 2010.
- Bennett J. *Editing for Engineers*. Wiley-Interscience; 1970.
- Bush DW, Campbell CP. *How to Edit Technical Documents*. Oryx Press; 1995.
- Coggin W, Porter L. *Editing for the Technical Professions*. Macmillan Publishing Company; 1993.
- Dragga S, Gong G. *Editing: The Design of Rhetoric*. Baywood Publishing Company, Inc.; 1989.
- Eisenberg A. *Guide to Technical Editing*. Oxford University Press; 1992.
- Hargis G, Carey M, Hernandez A, et al. *Developing Quality Technical Information: A Handbook for Writers and Editors*. 2nd ed. IBM Press; 2004.
- Mancuso J. *Technical Editing*. Prentice Hall; 1992.
- McGuire P, Putzell S. *A Guide to Technical Writing*. Harcourt, Brace, Janovich; 1988.
- Murphy A. *New Perspectives on Technical Editing*. Routledge; 2017.
- Nadziejka D. *Levels of Technical Editing*. Council of Biology Editors; 1999.
- Rew L. *Editing for Writers*. Pearson; 1998.
- Riley K, Campbell K, Manning A, Parker F. *Revising Professional Writing in Science and Technology, Business, and the Social Sciences*. Parlay Press; 1998.
- Rude C. *Technical Editing*. 4th ed. Pearson; 2006.
- Samson D Jr. *Editing Technical Writing*. Oxford University Press; 1993.
- Shaw J, ed. *Teaching Technical Writing and Editing: In-House Programs That Work*. Society for Technical Communication; 1966.
- Sides C. *Technical and Business Communication: Bibliographic Essays for Teachers and Corporate Trainers*. National Council of Teachers of English, Society for Technical Communication; 1989.
- Tarutz J. *Technical Editing: The Practical Guide for Editors and Writers*. Hewlett-Packard Press; Addison-Wesley Publishing Company; 1992.
- Van Buren R, Buehler M. *The Levels of Edit*. 2nd ed. Jet Propulsion Laboratory, California Institute of Technology; 1980.
- Weil B. *Technical Editing*. Reinhold Publishing Company; 1958.
- Zook L. *Technical Editing: Principles and Practices*. Society for Technical Communication; 1975.
- Cunningham DH, Malone EA, Rothschild JM. *Technical Editing: An Introduction to Editing in the Workplace*. Oxford University Press; 2019.
- Philler T, Herch R, Carlson H. *An Annotated Bibliography on Technical Writing, Editing, Graphics, and Publishing, 1950-1965*. Society for Technical Communication; 1966.
- Carlson H. *An Annotated Bibliography on Technical Writing, Editing, Graphics, and Publishing, 1966-1980*. Society for Technical Communication; 1983.
- Speck B. *Editing. An Annotated Bibliography*. Greenwood Press; 1991.
- Charlton M. ETC 408/508: Technical editing. *Comp Studies*. 2013;41(1):101-116.
- Cox A. The editor as generalist as well as specialist. In: Zook L, ed. *Technical Editing: Principles and Practices*. Society for Technical Communication; 1975:7-11.
- Boettger R. Types of errors used in medical editing tests. *AMWA J*. 2012;27(3):99-104.
- Hart A. *What English Majors Need to Know to Find Careers in Project Management, Corporate Communications, Grant Proposal Writing, & Technical Editing*. Independently published. April 30, 2018.
- Bush D. Semantics (words are chameleons). In: *Technical Editing: Principles and Practices*. Society for Technical Communication; 1975:33-37.
- Flanagan S. The current state of technical editing research and the open questions. In: Flanagan S, Albers M, eds. *Editing in the Modern Classroom*. Routledge; 2019:15-46.

53. Enquist A. Substantive editing versus technical editing: how law review editors do their job. *Stetson Law Review*. 2000;30(2):451-474. Accessed March 23, 2020. <https://digitalcommons.law.seattleu.edu/faculty/502/>
54. Bao F. Nine steps to improve technical editing skills. Society for Technical Communication; 2014. Accessed March 23, 2020. <https://www.stc.org/notebook/2014/08/08/nine-steps-to-improve-technical-editing-skills/>
55. Albers M, Flanagan S. Editing in the modern classroom: an overview. In: Flanagan S, Albers M, ed. *Editing in the Modern Classroom*. Routledge; 2019:109-127.
56. Hewitt R. Medical editors and their work. *J Lancet*. 1952;72(3):144-149.
57. Rainey K. Technical editing at the Oak Ridge National Laboratory. In: Kemnitz C, ed. *Technical Editing: Basic Theory and Practice*. Society for Technical Communication; 1994.
58. Grove L. The editor as ally. In: Kemnitz C, ed. *Technical Editing: Basic Theory and Practice*. Society for Technical Communication; 1994.
59. Buehler M. Patterns for making editorial changes. In: Zook L, ed. *Technical Editing: Principles and Practices*. Society for Technical Communication; 1975:1-6.
60. Davidson H. *Guide to Medical Writing*. The Ronald Press Co.; 1957.
61. Nideffer R, Sharpe R. A.C.T., *Attention Control Training: How to Get Control of Your Mind Through Total Concentration*. Simon and Schuster; 1978.
62. Lang T. Who me? Ideas for faculty who never expected to be teaching public health students to write. *Public Health Rep*. 2019;134(2):206-214.
63. Lang T. *How to Write, Publish, and Present in the Health Sciences: A Guide for Clinicians and Laboratory Researchers*. American College of Physicians; 2010.
64. Winniger P. Foundations: the role of the technical editor. TechWhirl. Posted June 2013. Accessed March 9, 2020. <https://techwhirl.com/foundations-the-role-of-the-technical-editor/>
65. Connelly J. Training the internal technical editor. In: Weil B, ed. *Technical Editing*. Reinhold Publishing Company; 1958:80-88
66. Albers M, Flanagan S. Editing in the modern classroom: an introduction. In: Flanagan S, Albers M, ed. *Editing in the Modern Classroom*. Routledge; 2019.
67. Briggs N. Editing by dialog. In: Zook L, ed. *Technical Editing: Principles and Practices*. Society for Technical Communication; 1975:56-61.
68. Hollis Weber J. Working with a technical editor. TechWhirl. Accessed March 18, 2020. <https://techwhirl.com/working-with-a-technical-editor/>
69. Stilwell G. Panel on medical book selection: the editor. *Bull Med Libr Assoc*. 1962;50(4):656-659.
70. Stevens G. 1942. Cited in: Weil B, ed. *Technical Editing*. Reinhold Publishing Company; 1958:233.
71. Mackiewicz J, Riley K. The technical editor as diplomat: linguistic strategies for balancing clarity and politeness. *Tech Comm*. 2003;50(1):83-94.
72. Stephens I, Reyling P. Editing technical reports. In: Weil B, ed. *Technical Editing*. Reinhold Publishing Company; 1958:19-30
73. Tacker M. The code of an author's editor. *Med Comm*. 1977;5:7-9.
74. Dukes E. The art of editing. In: Zook L, ed. *Technical Editing: Principles and Practices*. Society for Technical Communication; 1975:62-66.
75. Cortelyou E. Some qualifications of a technical editor author(s). *STWE Rev*. 1958;5(2):5-9.
76. Stratton C. Ambiguity: an exercise in practical semantics. In: Zook L, ed. *Technical Editing: Principles and Practices*. Society for Technical Communication; 1975:47-52.
77. Rickard T. *Technical Writing*. John Wiley & Sons, Inc.; 1920.
78. Osborne H. Criticism and creativity. In: Zook L, ed. *Technical Editing: Principles and Practices*. Society for Technical Communication; 1975:17-19.
79. Lang T. How to shorten a text by up to 30% and improve clarity without losing information. *Med Writing*. 2017;26(1):21-25.
80. Lang T. *How to Report Statistics in Medicine*. American College of Physicians; 2010.
81. Ancker J. Frequency of selected arithmetic and reporting problems in medical manuscripts: a descriptive study. *AMWA J*. 2000;15(3):24-27.
82. Karadeniz P, Uzabaci E, Kuyuk S, et al. Statistical errors in articles published in radiology journals. *Diagn Interv Radiol*. 2019;25(2):102-108.
83. Lang T. Response to "The significance of digits in scientific research." *AMWA J*. 2013;28(3):141-142.
84. AMWA Code of Ethics. American Medical Writers Association. Revised June 2008. Accessed March 21, 2020. [https://www.amwa.org/page/Code\\_of\\_Ethics](https://www.amwa.org/page/Code_of_Ethics).
85. Clements W. Jargon and the technical writing. In: Zook L, ed. *Technical Editing: Principles and Practices*. Society for Technical Communication; 1975:38-41.
86. Learning. Merriam-Webster. Accessed March 31, 2020. <https://www.merriam-webster.com/dictionary/learning>
87. Lang T. The intentional search for meaning: developing technical editing skills. *Eur Sci Edit*. Forthcoming 2020.

# MACROEDITING

Save over 15% when purchasing as a package!

# MICROEDITING

LEARN ONLINE



AMWA EDUCATION  
Write better. Write now.





# Sepsis and Septic Shock: Knowns and Known Unknowns

Paul C. Dolber, PhD / Dolber Writing and Consulting, LLC, League City, TX

## ABSTRACT

Infections progress to sepsis in about 1.7 million people/year in the United States. The principal difference between infection and sepsis is not in the pathogen but in the excessive response of the host, which results in multiple organ dysfunction. Sepsis may proceed to septic shock, which features circulatory failure and thus severely reduced tissue oxygen delivery; this requires the use of vasopressors to elevate arterial pressure. In high-income countries, the mortality rates for sepsis and septic shock are about 10% and 40%, respectively; mortality is estimated to be considerably higher in low- to middle-income countries. These perilous conditions are complex, heterogeneous, plagued by comorbidities, incompletely understood, and beset with therapeutic difficulties. Moreover, the trouble is not over when the patient leaves the hospital. This article reviews the basic pathobiological and clinical features of sepsis and septic shock, discussing some of the many known unknowns that make treatment so difficult.

A small percentage of the many people who acquire infections will go on to develop sepsis, defined as “life-threatening organ dysfunction *caused by a dysregulated host response to infection*”<sup>1</sup> (italics added for emphasis). As emphasized by this definition, patients with sepsis are not threatened by a particularly dangerous microbe but by their own disproportionate response. These patients will require hospitalization, generally in an intensive care unit (ICU). About one-third of patients with sepsis will go on to develop septic shock, defined as “a subset of sepsis in which particularly profound circulatory, cellular, and metabolic abnormalities are associated with a greater risk than with sepsis alone.”<sup>1</sup> As for all patients in shock, rapid aggressive treatment is required to raise their blood pressure enough to maintain organ function.

In-hospital death is common, with the mortality rate depending on the patient’s age and comorbidities as well as on hospital quality. Together, sepsis and septic shock account for ~35% of all US in-hospital deaths. If sepsis were on the list of causes of death in the United States, it would rank at #3 with 270,000 deaths/year (pre-coronavirus disease 2019 [COVID-19]). Moreover, many survivors remain chronically ill and many die within 2 years. Apart from these dire personal costs, the estimated annual fiscal cost in the United States alone is estimated at more than \$20 billion.

Sepsis and septic shock are complex diseases that, despite their prevalence, are not well known. This article illuminates basic aspects of the development, progression, and treatment of sepsis and septic shock in adults. There have been great advances in our understanding of the molecular details of sepsis and septic shock that will profoundly influence the development of future therapies, perhaps soon. Nonetheless, the focus in this article is resolutely on the diagnosis and treatment of the patients and the many challenges faced by their physicians, with the discussion of sepsis management limited to present-day therapies.

## WHAT CAUSES SEPSIS?

### The Pathogen

Because sepsis and septic shock are secondary to infection, it is natural to ask what organisms are responsible for these infections. This turns out to be a difficult question to answer. Only 60% to 80% of cultures from septic patients yield presumptive causative organisms, those most often being bacteria.<sup>2,3</sup> This situation is further complicated for several reasons: the primary infected site may be relatively isolated from the systemic circulation, samples are sometimes not taken until after antimicrobial treatment begins, cultures may become positive only after days of waiting, later cultures may represent second-



ary infections acquired in the hospital after sepsis-induced immunosuppression, and special testing that is not often done would generally be required to detect viruses.<sup>2,3</sup>

Bacteria, fungi, parasites, and viruses are all able to induce sepsis, with bacteria being the most common. Some studies suggest that viruses are rarely causative; however, adequate testing for viruses shows that they are often viable candidates.<sup>3,4</sup> This is certainly better appreciated today, with severe COVID-19 now recognized as viral sepsis.<sup>5,6</sup> Fungal infections have become more common, particularly in the immunosuppressed, now causing ~10% of cases.<sup>2</sup> In the United States, ~90% of sepsis cases are acquired in the community, but as many as half of sepsis cases are acquired in the hospital in some countries.

### The Host

Microbes express motifs called *pathogen*-associated molecular patterns (PAMPs) on their surface. Cells of the innate immune system and endothelial cells have pattern-recognition receptors that bind to the PAMPs, thereby activating an inflammatory response.<sup>7</sup> Additionally, host cells damaged during inflammation release *damage*-associated molecular patterns (DAMPs) that also bind to pattern-recognition receptors, thereby maintaining the inflammatory response. Activation induces the production and systemic dissemination of cytokines and other mediators that promote inflammation.<sup>8-10</sup> At the vascular endothelium, the consequences include not only vascular injury but also activation of the coagulation and complement cascades.<sup>8,11</sup> At the same time, exposure to PAMPs and DAMPs potentially attracts a variety of innate immune cells.<sup>11</sup>

Ordinarily, these responses are necessary and beneficial. Unfortunately, a dysregulated host response of largely unknown provenance creates havoc, leading to multiple organ dysfunction. It should be noted that pathogens seldom travel to multiple organs and that most dysfunctional organs are therefore not themselves infected.<sup>11</sup> Their dysfunction arises instead from the unresolved hyperinflammation with its systemic spread of inflammatory mediators, known as a “cytokine storm.” Early sepsis mortality with multiple organ dysfunction is probably the consequence of this situation.<sup>12</sup>

Although this extreme activation was once considered the hallmark of sepsis, it turns out to be invariably paired with the development of profound immunosuppression that is also of largely unknown provenance, with the time courses and amplitudes of both the cytokine storm and immunosuppression being variable.<sup>11</sup> The immunosuppressed state includes both exhaustion and drastic loss of lymphocytes (lymphopenia); increased generation of poorly functional immune cells (immature neutrophils, myeloid-derived suppressor cells, and regulatory T cells) that inhibit immune function; and reduced ability

of macrophages and dendritic cells to activate other immune cells.<sup>11</sup> All of these changes predict poor outcomes and mortality.<sup>11</sup> The magnitude of lymphopenia at admission to the ICU is associated with initial sepsis severity; its persistence is associated with increased secondary infections and mortality.<sup>13</sup> An important consequence of this continuing immunosuppression is that patients with sepsis fall prey to infection by opportunistic organisms, both in hospital and after discharge, and infections may smolder long term rather than resolving. Interestingly, some patients' immune cells display increased surface expression of molecules associated with lymphocyte exhaustion; similar changes occur in many cancers and may present a therapeutic opportunity.<sup>13</sup>

### ORGAN DYSFUNCTION IN SEPSIS AND SEPTIC SHOCK

The systemic barrage of inflammatory mediators is itself enough to induce organ dysfunction, but 3 other features of sepsis pathophysiology contribute to the promotion of organ dysfunction: complement activation, vascular endothelial dysfunction, and coagulation. Complement activation immediately follows exposure to PAMPs and DAMPs, stimulating the release of cytokines and chemokines that promote marked blood vessel dilation (vasodilation).<sup>11</sup> The vascular endothelium then becomes extremely leaky, leading to movement of blood proteins and plasma from the vasculature to the interstitium (extracellular space). Together, the vasodilation and endothelial leakage throughout the microcirculation result in poor tissue perfusion and organ damage,<sup>11</sup> creating the conditions for shock. Finally, sepsis promotes a hypercoagulable state resulting in deposition of microthrombi, decreased microvascular perfusion, and often the pathologic condition known as disseminated intravascular coagulation, in which blood clots develop throughout the bloodstream and block small blood vessels.<sup>11</sup>

Organ dysfunction is presumed to be secondary to a combination of hypoxia arising from the poor perfusion and hypercoagulability with the release of inflammatory mediators into the circulation.<sup>9,11</sup> Any organ can be affected in sepsis, with single-organ dysfunction being rare. Because patient outcomes are affected by the specific set of failing organs,<sup>14</sup> it is essential to determine which organs are dysfunctional and to what extent. This is assessed using the Sequential Organ Failure Assessment (SOFA) score, which averages individual scores (ranging from 1 to 4 each) for 6 organ systems:

- a *cardiovascular* score that increases as mean arterial pressure decreases and increasingly requires pharmacological support,
- a *renal* score that increases as serum creatinine increases or as urine output decreases,

- a *respiration* score that increases with decreases in (roughly) the amount of oxygen in arterial blood relative to room air,
- a *central nervous system* score that increases as the Glasgow Coma Score decreases,
- a *coagulation* score that increases as the number of platelets decreases, and
- a *liver* score that increases as serum bilirubin increases.<sup>15</sup>

A *change* in SOFA score of  $\geq 2$  reflects a mortality risk of  $>10\%$ <sup>9</sup> and can be followed over time to track the patient's progress. It is the change in SOFA score, rather than the absolute score, that is relevant because comorbidities are frequent in patients with sepsis and their SOFA score is thus often  $>0$  before they develop sepsis.

### Specific Organ Dysfunctions<sup>11,14,16</sup>

**Cardiovascular:** Increased vascular endothelial permeability, vasodilation, and cytokine output result in reduced intravascular volume, hypotension, and cardiac depression that increase mortality.

**Kidney:** Dysfunction progressing to failure is a major cause of morbidity; more than half of patients with sepsis develop acute kidney injury and thereby a 62% higher risk of in-hospital mortality.

**Lungs:** Damage to lung alveoli causes edema and hypoxemia (decreased arterial oxygenation), resulting in increased respiratory rate and respiratory muscle fatigue. Acute respiratory distress syndrome occurs in 40% of patients, increasing mortality.

**Neurologic:** Insufficient brain perfusion results in altered mental state (lethargy, disorientation, confusion, delirium, coma), resulting in increased mortality and prolonged cognitive dysfunction in survivors.

**Hematologic:** Excess platelet consumption and depletion of coagulant factors induce thrombocytopenia and/or disseminated intravascular coagulation in about 60% of patients, increasing mortality.

**Liver:** Hemodynamic alterations, including endothelial dysfunction and formation of microthrombi, reduce liver perfusion, leading to dysfunction and higher mortality in 50% of patients with sepsis.

**The gut and its microbiome as a seventh organ:** The gut microbiome maintains the gut barrier and positively modulates immune function. It is severely perturbed in sepsis, with reduced diversity, overgrowth of opportunistic pathogens, and release of toxic mediators that cause distant organ dysfunction.<sup>14,17</sup> Additionally, the microbiome affects the efficacy of the same immunotherapy used in cancer patients that is now being assessed in clinical trials on patients with sepsis. Because both sepsis and antibiotics alter the gut

microbiome, they may both compromise immunotherapeutic efficacy.<sup>18</sup>

### The Nature of Septic Shock

In all forms of shock, the key feature is markedly impaired oxygen delivery that cannot match cellular oxygen demand, resulting in profound and quickly irreversible organ dysfunction.<sup>19</sup> Septic shock is classified as distributive, with systemic vascular resistance being reduced secondarily to vasodilation and to transfer of intravascular fluid into the interstitium. Both blood pressure and intravascular fluid volume are reduced so much that blood flow to vital organs is insufficient to maintain their function.<sup>20</sup> Intravenous (IV) fluid infusion is used to quickly improve tissue perfusion.<sup>19</sup> Because IV fluids are always lost from the vasculature within a few hours,<sup>2</sup> an effect magnified in septic shock patients with their leaky vascular endothelium, these patients further require administration of a vasopressor to induce vasoconstriction and improve the rate and strength of cardiac contraction, thereby elevating blood pressure.

## TREATMENT BASICS

### Protocolized Care

Every 4 years, the International Guidelines for the Management of Sepsis and Septic Shock<sup>21</sup> issues their recommendations for the care of patients with sepsis. An expert panel studies the current clinical trial literature and formulates management recommendations that are designated as strong or weak and as being based on evidence whose quality ranges from high to very low. The guidelines suggest that most clinicians should follow strong recommendations most of the time but that situations will arise in which the clinical characteristics make the recommendation inapplicable: "a strong recommendation does not imply standard of care."<sup>21</sup>

Care "bundles" are derived from the lengthy guidelines and much more briefly specify what should quickly be done for the patient. The current 1-hour bundle recommends specific actions in the first hour, with recommendation strength and evidence quality noted:

- measure lactate and remeasure if  $>2$  mmol/L (weak/low quality),
- obtain blood cultures before antibiotic administration (best practice statement),
- administer broad-spectrum antibiotics (strong/moderate quality),
- rapidly administer 30 mL/kg crystalloid if the patient is hypotensive or lactate is  $\geq 4$  mmol/L (strong/low quality), and
- apply vasopressors if the patient is hypotensive during or after fluid resuscitation to maintain mean arterial pressure at  $\geq 65$  mmHg (strong/moderate quality).<sup>22</sup>

Although this 1-hour bundle is composed of recommendations, the similar elements of the SEP-1 Quality Measure bundle developed by the Centers for Medicare and Medicaid Services (CMS) are closer to requirements. CMS requires US hospitals to report compliance rates with SEP-1, which “*mandates* that patients meeting criteria for SEP-1 *must* receive the bundle of care”<sup>23</sup> (italics added for emphasis). Moreover, CMS measures not mortality but adherence to SEP-1; if a hospital’s adherence is poor, it risks payment of penalties and loss of accreditation no matter how its patients fare.<sup>23</sup> Bundles like SEP-1 improve survival, but many physicians argue that its elements should be flexible guidelines permitting the exercise of physician judgment without bureaucratic oversight.<sup>9,24</sup> Debate, often heated, focuses on antibiotic administration and delivery of IV fluids.

**Bundles like SEP-1 improve survival, but many physicians argue that its elements should be flexible guidelines permitting the exercise of physician judgment without bureaucratic oversight.**

### Antibiotics

The first thing to be done after a patient with sepsis arrives at the hospital is to assess whether they have an infection. This can be difficult given that there may be no definitive sign of infection; even fever is often absent, particularly in elderly patients. If the patient is in shock—a medical emergency—it is necessary to quickly discover which type of shock it is to be able to treat it properly. Antibiotics are widely agreed to be the standard of care for patients in septic shock; it simply is not possible to wait for definitive proof of infection—which may *never* come—because every hour’s delay in administration of antibiotics increases mortality.<sup>18</sup> It is when the patient is in sepsis without shock that opinions differ regarding the requirement to administer broad-spectrum antibiotics within 1 hour. The Infectious Diseases Society of America (IDSA) and several other groups believe that SEP-1 promotes antibiotic overuse because sometimes the prospective diagnosis of infection is wrong or the infection is nonbacterial<sup>18</sup>; this promotes the development of antibiotic-resistant bacteria.<sup>25</sup> Noting the similarity of the dire prospects facing pneumococcal pneumonia patients before penicillin and severe COVID-19 patients today—in both cases with no specific antimicrobial

agent available—Coz Yataco and Simpson offer the chilling prospect that the rise of antimicrobial resistance attending inappropriate use of antibiotics could make bacterial sepsis as deadly in the future as it was in the preantibiotic past.<sup>26</sup> Moreover, antibiotics are not harmless, and apart from their better-known risks, they may exhibit mitochondrial toxicity (promoting organ failure) and alterations to the gut microbiome.<sup>18</sup> In response to the IDSA, CMS argued that “If there is no compelling evidence that SEP-1 has actually resulted in excessive and unwarranted antibiotic administration, policymakers will see no reason to alter SEP-1 ... IDSA has the burden of proof to properly make this case ...”<sup>27</sup> In a field in which clinicians sometimes must follow recommendations with low-quality evidence, the requirement to prove that no one has been harmed by overprescribing antibiotics seems extreme.

### Fluid Resuscitation

Intravenous fluid administration is necessary in hypotensive patients with sepsis to increase blood pressure and prevent the inadequate transport of nutrients, especially oxygen, that would otherwise result in irreversible organ failure and death.<sup>28,29</sup> Because approximately two-thirds of administered IV fluid will move from the vasculature into the interstitium within 60 minutes, repeated IV fluid administration is often used. This results in edema, which is generally well tolerated but less so for the lungs because oxygen delivery is compromised as the lungs fill with fluid. Unfortunately, administration of IV fluids to hypovolemic patients can be very dangerous, particularly in older patients, because the therapeutic window is narrow. The physician is faced with the dilemma that under-resuscitation fails to resolve hypovolemia so that mortality and morbidity increase, whereas over-resuscitation reduces oxygen transport and causes edema.<sup>30,31</sup> Indeed, fluid resuscitation greater than required to resolve hypovolemia is associated with longer hospital stays, increased morbidity, and increased mortality.<sup>29,32,33</sup>

It is thus not surprising that many physicians object to the SEP-1 provision for 30 mL/kg fluid for all patients with sepsis or septic shock. As written in one review, “In our opinion as well as many other thought leaders in the USA and abroad, the continued enforcement of the SEP-1 protocol is scientifically, morally, and ethically unacceptable.”<sup>34</sup> Help in defining how much fluid to administer and when to stop should come from dynamic assessments, such as passive leg raise-induced stroke volume change<sup>35</sup> and careful assessment of capillary refill time,<sup>36</sup> which improve upon static assessments, such as change in mean arterial pressure (which may not even change in response to fluid resuscitation) and the periodic measurement of serum lactate.

## Source Control, Vasopressors, and Respiratory Support

Other treatment basics<sup>9,11</sup> are less contentious. When possible, source control to physically remove sources of infection—such as draining of abscesses, removal of necrotic material, and removal of infected devices such as catheters—is a core treatment modality. For patients in septic shock whose blood pressure cannot be sufficiently restored by fluid resuscitation, vasopressors are required to increase blood pressure and thereby increase organ perfusion; norepinephrine is the most common. Finally, respiratory support in the form of either supplemental oxygen or artificial ventilation is often required.

## DEATH AND LIFE AFTER SEPSIS

### Death From or With Sepsis

Many patients die every day *with* sepsis, but do they die *of* sepsis? That they might not be judged to have died of sepsis has several potential explanations. First, sepsis is not precisely defined, particularly when many patients cannot be shown to have had an infection. In a study of 4 methods of assessment, sepsis incidence varied more than threefold between methods.<sup>11</sup> Second, the majority of patients with sepsis are elderly, frail, and have serious comorbidities such as cancer; one study found that 40% of patients with sepsis had a hospice-qualifying condition on admission.<sup>37</sup> It has been suggested that sepsis-related deaths in such patients should not be attributable to sepsis.<sup>9,38</sup> (This issue has arisen with respect to COVID-19-associated deaths as well, in which assignment of cause of death is regarded by some as a political exercise.) Third, patients with sepsis often develop acute respiratory distress syndrome or acute kidney injury, either of which can be taken as the cause of death. Finally, coding the patient's ailment as sepsis may have favorable financial consequences for the hospital.<sup>38</sup>

### Life After Sepsis

Hospital discharge is often less than a cure. “Half of patients recover [from septic shock], one-third die during the following year, and one-sixth have severe persistent impairments including functional limitations, a 3-fold increase in moderate to severe cognitive impairment ... and a high prevalence of mental health problems including anxiety, depression, or posttraumatic stress disorder.”<sup>39</sup> Moreover, 40% of patients are back in hospital within 3 months.<sup>39</sup> Only a minority return to a fully functional lifestyle, most going to long-term nursing or rehabilitative facilities. Patients often suffer from post-ICU syndrome, which includes insomnia, depression, and loss of cognitive function and may last indefinitely.<sup>11</sup> The cause, other than as the residuum of sepsis-induced damage, may be chronic critical illness associated with a compromised and immuno-

suppressive immune system, referred to as persistent inflammation, immunosuppression, and catabolism syndrome.<sup>40</sup>

## LOOKING FORWARD

There is a vast amount of preclinical and clinical research being done to improve our understanding of sepsis and septic shock, and the number of prospective treatments is growing swiftly. As with cancer immunotherapy and targeted therapy, one gets the sense that big things may happen any day. These matters are only touched upon lightly here, but the references cited, many of which are excellent reviews, provide abundant detail.

Meanwhile, physicians must deal with these complex, heterogeneous, and dangerous disorders today. The diagnosis and management of sepsis and septic shock is so difficult that physicians should ideally have abundant specific experience.<sup>9,11</sup> Because not all physicians have such training, protocolized care is of great value in ensuring that all physicians and their teams will operate effectively.

Even so, morbidity and mortality remain high. One path for improvement may be to include artificial intelligence (AI) tools—certainly not to replace physicians but to profit from the incredible volume of patient data available, both streaming in from monitors and being entered manually. One such tool, the Artificial Intelligence Clinician, has outperformed physicians in making decisions about fluid resuscitation,<sup>41</sup> and many other AI tools are being developed.

Another route for making use of AI is in dealing with the crucial problem of patient heterogeneity<sup>42</sup> arising from variables such as pathogen, patient age, comorbidities, and past history. Heterogeneity in the patient's evolving immunophenotype—all those factors making the patient hyper-inflamed or immune-suppressed—is sure to be especially important because it is likely that some treatments that failed in clinical trials of heterogeneous patients would have shown positive results for selected and more homogeneous subsets. In both the pathophysiologic and immunologic realms, pretreatment separation of patients into more homogeneous groups is being very actively pursued. Thus, we can look forward to marked improvements in outcomes with both existing and future tools, especially as the number of known unknowns is reduced.

**Author declaration and disclosures:** The author notes no commercial associations that may pose a conflict of interest in relation to this article.

**Author contact:** paul.dolber@gmail.com

## References

1. Singer M, Deutschman CS, Seymour CW, et al. The Third International Consensus Definitions for sepsis and septic shock (Sepsis-3). *JAMA*. 2016;315(8):801-810. <https://doi.org/10.1001/jama.2016.0287>



## Introduction to New Science Series Section Editor: Paul C. Dolber, PhD

I am currently a freelance writer and editor. After I earned my PhD in pathology, I spent 35 years at Duke University and Durham VA Medical Centers doing research in cardiology, neurology, urology, and oncology, then 5 years at the University of Texas Medical Branch doing research in oncology. Throughout, I spent much of my time writing papers, progress reports, and grant applications.



I look forward to reading your manuscripts for the Science Series Section. The focus will continue to be on overviews of anatomic and physiologic topics, diseases, diagnostic methods, and treatments. With our readership having widely differing backgrounds, your writing should focus on a tale well told, enlighten those new to your area, and provide useful background for those wanting to investigate further. Because some fascinating topics are inherently complex, I would not impose a requirement that every paper be immediately comprehensible to every reader; that said, it is important to avoid an overly scholarly style and perhaps instead aim for something like Thomas and Turner's classic style.

2. Marini JJ, Dries DJ. *Critical Care Medicine: The Essentials and More, Fifth Edition*. Wolters Kluwer; 2019.
3. Lin GL, McGinley JP, Drysdale SB, Pollard AJ. Epidemiology and immune pathogenesis of viral sepsis. *Front Immunol*. 2018;9:2147. <https://doi.org/10.3389/fimmu.2018.02147>
4. Gu X, Zhou F, Wang Y, Fan G, Cao B. Respiratory viral sepsis: epidemiology, pathophysiology, diagnosis and treatment. *Eur Respir Rev*. 2020;29(157):200038. <https://doi.org/10.1183/16000617.0038-2020>
5. Odabasi Z, Cinel I. Consideration of severe coronavirus disease 2019 as viral sepsis and potential use of immune checkpoint inhibitors. *Crit Care Explor*. 2020;2(6):e0141. <https://doi.org/10.1097/ccx.0000000000000141>
6. Xie P, Ma W, Tang H, Liu D. Severe COVID-19: a review of recent progress with a look toward the future. *Front Public Health*. 2020;8:189. <https://doi.org/10.3389/fpubh.2020.00189>
7. Owen J, Punt J, Stranford S. *Kuby Immunology, Seventh Edition*. W. H. Freeman; 2013.
8. Mahapatra S, Heffner AC. Septic shock (sepsis). In: *StatPearls*. StatPearls Publishing; 2020. Accessed September 10, 2020. <https://www.ncbi.nlm.nih.gov/books/NBK430939/>
9. Tidswell R, Singer M. Sepsis—thoughtful management for the non-expert. *Clin Med*. 2018;18(1):62-68. <https://doi.org/10.7861/clinmedicine.18-1-62>
10. Takeuchi O, Akira S. Pattern recognition receptors and inflammation. *Cell*. 2010;140(6):805-820. <https://doi.org/10.1016/j.cell.2010.01.022>
11. Hotchkiss RS, Moldawer LL, Opal SM, Reinhart K, Turnbull IR, Vincent JL. Sepsis and septic shock. *Nat Rev Dis Primers*. 2016;2(1):16045. <https://doi.org/10.1038/nrdp.2016.45>
12. van der Poll T, van de Veerdonk FL, Scicluna BP, Netea MG. The immunopathology of sepsis and potential therapeutic targets. *Nat Rev Immunol*. 2017;17(7):407-420. <https://doi.org/10.1038/nri.2017.36>
13. Monneret G, Gossez M, Aghaepour N, Gaudilliere B, Venet F. How clinical flow cytometry rebooted sepsis immunology. *Cytometry A*. 2019;95(4):431-441. <https://doi.org/10.1002/cyto.a.23749>
14. Lelubre C, Vincent JL. Mechanisms and treatment of organ failure in sepsis. *Nat Rev Nephrol*. 2018;14(7):417-427. <https://doi.org/10.1038/s41581-018-0005-7>
15. Vincent JL, Moreno R, Takala J, et al. The SOFA (Sepsis-related Organ Failure Assessment) score to describe organ dysfunction/failure. *Intensive Care Med*. 1996;22(7):707-710. <https://doi.org/10.1007/bf01709751>
16. Caraballo C, Jaimes F. Organ dysfunction in sepsis: an ominous trajectory from infection to death. *Yale J Biol Med*. 2019;92(4):629-640.
17. Rubio I, Osuchowski MF, Shankar-Hari M, et al. Current gaps in sepsis immunology: new opportunities for translational research. *Lancet Infect Dis*. 2019;19(12):e422-e436. [https://doi.org/10.1016/s1473-3099\(19\)30567-5](https://doi.org/10.1016/s1473-3099(19)30567-5)
18. Klompas M, Calandra T, Singer M. Antibiotics for sepsis—finding the equilibrium. *JAMA*. 2018;320(14):1433-1434. <https://doi.org/10.1001/jama.2018.12179>
19. Massaro AE. Chapter 296: Approach to the patient with shock. In: Jameson JL, Fauci AS, Kasper DL, Hauser SL, Longo DL, Loscalzo J, eds. *Harrison's Principles of Internal Medicine*. 20th ed. McGraw Hill; 2018:2039-2044.
20. Smith N, Lopez RA, Silberman M. Distributive shock. *StatPearls*. StatPearls Publishing; 2020. Accessed September 10, 2020. <https://www.ncbi.nlm.nih.gov/books/NBK430939/>
21. Rhodes A, Evans LE, Alhazzani W, et al. Surviving sepsis campaign: international guidelines for management of sepsis and septic shock: 2016. *Intensive Care Med*. 2017;43(3):304-377. <https://doi.org/10.1007/s00134-017-4683-6>
22. Levy MM, Evans LE, Rhodes A. The surviving sepsis campaign bundle: 2018 update. *Crit Care Med*. 2018;46(6):997-1000. <https://doi.org/10.1097/ccm.00000000000003119>
23. Faust JS, Weingart SD. The past, present, and future of the Centers for Medicare and Medicaid Services Quality Measure SEP-1: the early management bundle for severe sepsis/septic shock. *Emerg Med Clin North Am*. 2017;35(1):219-231. <https://doi.org/10.1016/j.emc.2016.09.006>
24. Pepper DJ, Sun J, Cui X, Welsh J, Natanson C, Eichacker PQ. Antibiotic and fluid-focused bundles potentially improve sepsis management, but high-quality evidence is lacking for the specificity required in the Centers for Medicare and Medicaid Service's Sepsis Bundle (SEP-1). *Crit Care Med*. 2019;47(10):1290-1300. <https://doi.org/10.1097/ccm.00000000000003892>
25. Rhee C, Chiotos K, Cosgrove SE, et al. Infectious Diseases Society of America position paper: recommended revisions to the National Severe Sepsis and Septic Shock Early Management Bundle (SEP-1) sepsis quality measure. *Clin Infect Dis*. 2020:ciaa059. <https://doi.org/10.1093/cid/ciaa059>
26. Coz Yataco AO, Simpson SQ. Coronavirus disease 2019 sepsis: a nudge toward antibiotic stewardship. *Chest*. Published online July 21, 2020. <https://doi.org/10.1016/j.chest.2020.07.023>
27. Townsend SR, Rivers EP, Duseja R. CMS measure stewards' assessment of the Infectious Diseases Society of America's position paper on SEP-1. *Clin Infect Dis*. 2020:ciaa458. <https://doi.org/10.1093/cid/ciaa458>

28. Van der Mullen J, Wise R, Vermeulen G, Moonen PJ, Malbrain M. Assessment of hypovolaemia in the critically ill. *Anaesthesiol Intensive Ther.* 2018;50(2):150-159. <https://doi.org/10.5603/AIT.a2017.0077>
29. Legrand M, Payen D. Understanding urine output in critically ill patients. *Ann Intensive Care.* 2011;1(1):13. <https://doi.org/10.1186/2110-5820-1-13>
30. Varadhan KK, Lobo DN. A meta-analysis of randomised controlled trials of intravenous fluid therapy in major elective open abdominal surgery: getting the balance right. *Proc Nutr Soc.* 2010;69(4):488-498. <https://doi.org/10.1017/s0029665110001734>
31. Bajwa SS, Kulshrestha A. Diagnosis, prevention and management of post-operative pulmonary edema. *Ann Med Health Sci Res.* 2012;2(2):180-185.
32. Seccombe A, Sapely E. What is the evidence base for fluid resuscitation in acute medicine? *Clin Med.* 2018;18(3):225-230. <https://doi.org/10.7861/clinmedicine.18-3-225>
33. Payen D, de Pont AC, Sakr Y, Spies C, Reinhart K, Vincent JL. A positive fluid balance is associated with a worse outcome in patients with acute renal failure. *Crit Care.* 2008;12(3):R74. <https://doi.org/10.1186/cc6916>
34. Marik PE, Malbrain M. The SEP-1 quality mandate may be harmful: how to drown a patient with 30 mL per kg fluid! *Anaesthesiol Intensive Ther.* 2017;49(5):323-328. <https://doi.org/10.5603/AIT.a2017.0056>
35. Douglas IS, Alapat PM, Corl KA, et al. Fluid response evaluation in sepsis hypotension and shock: a randomized clinical trial. *Chest.* Published online April 27, 2020. <https://doi.org/10.1016/j.chest.2020.04.025>
36. Hernández G, Castro R, Bakker J. Capillary refill time: the missing link between macrocirculation and microcirculation in septic shock? *J Thorac Dis.* 2020;12(3):1127-1129. <https://doi.org/10.21037/jtd.2019.12.102>
37. Rhee C, Jones TM, Hamad Y, et al. Prevalence, underlying causes, and preventability of sepsis-associated mortality in US acute care hospitals. *JAMA Netw Open.* 2019;2(2):e187571. <https://doi.org/10.1001/jamanetworkopen.2018.7571>
38. Singer M, Inada-Kim M, Shankar-Hari M. Sepsis hysteria: excess hype and unrealistic expectations. *Lancet.* 2019;394(10208):1513-1514. [https://doi.org/10.1016/s0140-6736\(19\)32483-3](https://doi.org/10.1016/s0140-6736(19)32483-3)
39. Prescott HC, Angus DC. Enhancing recovery from sepsis: a review. *JAMA.* 2018;319(1):62-75. <https://doi.org/10.1001/jama.2017.17687>
40. Hawkins RB, Raymond SL, Stortz JA, et al. Chronic critical illness and the persistent inflammation, immunosuppression, and catabolism syndrome. *Front Immunol.* 2018;9:1511. <https://doi.org/10.3389/fimmu.2018.01511>
41. Komorowski M, Celi LA, Badawi O, Gordon AC, Faisal AA. The Artificial Intelligence Clinician learns optimal treatment strategies for sepsis in intensive care. *Nat Med.* 2018;24(11):1716-1720. <https://doi.org/10.1038/s41591-018-0213-5>
42. Seymour CW, Kennedy JN, Wang S, et al. Derivation, validation, and potential treatment implications of novel clinical phenotypes for sepsis. *JAMA.* 2019;321(20):2003-2017. <https://doi.org/10.1001/jama.2019.5791>

# AMWA 2019

## Medical Communication Compensation Report

[www.amwa.org/compensation\\_report](http://www.amwa.org/compensation_report)

## Two Easy, Essential Proscriptions in the COVID-19 Era: Locking Down Clarity and Respect

**Mary E. Knatterud, PhD** / Independent Writer-Editor, St. Paul, MN; Retired Faculty/Staff Member, University of Minnesota Department of Surgery, Minneapolis, MN

- (1) the term “elderly”
- (2) the use of any form of “manage” applied to patients
- (3) the empty crib in my home office

I can't do anything (for who knows how long) about that third item; for most of this past year, I delightfully babysat my great-nephew up to 5 days/nights per week—until mid-March, when the impact of the coronavirus disease 2019 (COVID-19) pandemic hit home here in Minnesota. With their workplaces upended, my niece and her husband began sheltering in place with their son, practicing physical distancing for the safety of all of us.

But I CAN try to do something about those first 2 items, which I touched on years ago in my dissertation-turned-book<sup>1</sup> and in several previous *AMWA Journal* articles.<sup>2,3</sup> Those 2 bugbears remain persistent and are particularly damaging in this daunting new world of isolation and unrest. So I renew my recommendation to all medical communicators to help further the use of precise and empathetic language by (1) banning the term “elderly” in our own work and by (2) never applying any form of “manage” to patients. Let's lock down clarity and respect, rather than allow wording that enshrines looking down on certain groups.

This winter, when public-health and government officials started warning that the “elderly” constituted an especially at-risk subgroup for the direst effects of COVID-19, I had no idea what age range they were purportedly pinpointing—certainly not MINE. Nor did my fellow 60-something friends. We were astonished when someone clarified what was now usually meant: people 60 and older, with or without serious comorbidities. To us, “elderly” conjured *our parents'* cohort of octogenarians, nonagenarians, and centenarians.

I always advised the surgeon-authors of manuscripts I edited during my long (and much-missed) career to simply and objectively *specify the age range*, rather than deploy

the amorphous, too often pejorative term “elderly.” It takes just a few more characters—and a lot more character, in my view—to instead write “patients ≥65” or “people ≥80” or whatever the cutoff is within a given context. To illustrate with just 1 now-jarring example of the ever-shifting age range of this vague term, “elderly primigravida” was common as recently as a few decades ago for first-time mothers ≥35!

Tolerating labels like “elderly” sets the stage for mockery and devaluation of an entire set of diverse humans on the sole basis of a fuzzily defined age bracket. I was appalled to read in a recent *New Yorker* about a standup comic blithely mentioning, as reported by the author of that article, “a certain demographic whose members were struggling to navigate Zoom”<sup>4</sup>; the comic followed up her condescending, ageist stereotype about techie prowess with this superficially pitying, decidedly unfunny quip: “I was trying to say boomers, but I couldn't bring myself to say it. ... I feel bad making fun of them, given the coronavirus. They're having a tough time!”<sup>4</sup>

**In a field like medicine that's supposed to be all about caring, I similarly find it imprecise and disrespectful to posit patients as inanimate things or unruly kids or hapless subordinates to be managed by the powers-that-be.**

(I would never contemptuously counter with “oKAY, millennial,” knowing how multifarious *every* artificially demarcated age group is, knowing how cruel it is to taunt slow or late learners of *any* generation with regard to any subject

matter, knowing how little we as a society can afford *any* pretense for more divisiveness.)

In a field like medicine that's supposed to be all about caring, I similarly find it imprecise and disrespectful to posit patients as inanimate things or unruly kids or hapless subordinates to be managed by the powers-that-be. Manage patients' care, yes; their symptoms, of course; their treatment plan, by all means—but don't manage patients themselves. I object to the objectification inherent in phrases like these: “the way we isolate, treat, and manage patients” and “the way we manage patients, hospitals, and populations.”<sup>5</sup> Those phrases, in the same *New Yorker* issue cited above, were penned by a physician whose acclaimed books I deeply respect, Siddhartha Mukherjee, and who I know deeply respects patients. Then why not write instead “the way we isolate, treat, and *care for* patients” and “the way we *care for* patients, *run* hospitals, and *advise* populations”? Those rewrites not only are clearer but also make it clear that most *caregivers* in the health arena truly do live up to that title, skillfully *giving* top-drawer *care* and not superciliously imposing top-down management.

In conclusion, these 2 changes in diction (again, scrapping the term “elderly” and never slapping “manage” onto patients

themselves) are simple to make—and profoundly important. When vulnerable populations don't realize that “elderly” encompasses them, its use is downright dangerous; when coronavirus patients are subsumed under a corporate buzzword like “manage,” their already-eroding dignity becomes even more marginalized. Specific, compassionate public-health communication is crucial as we continue to grapple with the new threat of the pandemic and the old threat of ageism and other forms of inhumanity.

**Author declaration and disclosures:** The author notes no commercial associations that may pose a conflict of interest in relation to this article.

**Author contact:** knatt001@umn.edu

#### References

1. Knatterud ME. *First Do No Harm: Empathy and the Writing of Medical Journal Articles*. Routledge; 2002.
2. Knatterud ME. Writing with the patient in mind: don't add insult to injury. *AMWA J*. 1991;6(1):10-17.
3. Knatterud ME. With respect to patients and readers: deadly terms to excise. *AMWA J*. 2008;23(3):113-117.
4. Barasch A. Making do dept.: remote. *The New Yorker*. April 6, 2020:17.
5. Mukherjee S. The one and the many: we've counted the viral spread across peoples; we need to count it within people. *The New Yorker*. April 6, 2020:18-22.

## Introduction to New Members Matters Section Editor: Govindi (Jaya) Samaranayake, PhD

I joined AMWA in 2018 and have not looked back since! As an officer for the AMWA Florida Chapter, I have always enjoyed interacting with the AMWA membership at both the local and national levels. I now look forward to serving as editor for the Members Matters section to give back to this wonderful community of medical communicators who have been so critical in shaping my medical writing career. My sincere thanks goes to my friend and colleague Melory Johnson, VN—the previous section editor and, more importantly, the founder of this section—for her fabulous work in getting this section up off the ground and running. If you have a topic being discussed at a local level within your chapter that you would like to share on a national platform in this section, please reach out to me at gjayanikasa@gmail.com.

A brief background on my professional journey: I completed my Master's degree in cancer immunology in the United Kingdom and obtained my PhD in cancer biology at the University of Miami, Florida. I presently work as a regulatory medical writer at Trilogy Writing & Consulting in Durham, North Carolina. My therapeutic areas of expertise, garnered over my many years as a bench scientist, are in oncology, immunology, epigenetics, and ocular diseases.





# Free Advice for Freelancers: Become the Medical Writer Your Client Needs

Jen LiMarzi / Director, Medical Writing, Answers in CME

**T**he modern gig economy, in combination with increased awareness of medical writing as a viable and valuable profession, has allowed medical writing to become a career path for those with a multitude of experiential backgrounds. Whatever a person's work or educational experience may be, when it comes to freelance medical writing, "*fake it till you make it*" may not be best the approach to success.

Fortunately, many of the common missteps made by newer or less-experienced freelancers can be easily remedied by following some best practices to aid in aligning the skills of a freelancer with the needs of their client.

## Recognize Why Your Client Needs You

For the most part, clients seek out freelancers in periods of heavy work volume or to handle tasks they cannot accommodate with in-house staffing. This means they are likely already pushed to the limit with workload and are looking for a freelancer to be an extension of the team by producing work that is on time and requires as little in-house modification as possible.

Nothing can start a collective team groan about a freelancer more than a deliverable showing up late, incomplete, or off target. Therefore, when accepting an assignment as a freelancer, it is important to make sure to

- **Agree on a feasible deadline.** If there is any doubt, ask for an extra day or two up front when negotiating the deadline rather than on the day a project is due. Clients usually have internal reviews you may not be privy to, and a delay on your part should not cause an emergency on theirs.
- **Review and clarify all received materials, samples, and direction.** Even if you won't be starting a project for several days, take a quick skim of the materials you receive as soon as you receive them so you have ample time to ask

any questions and can inquire if files are missing, corrupt, or otherwise inaccessible. You want to convey to your client that they are a high priority on your list, not make them panic that you only looked at the project the day before it was due.

- **Set aside time to complete revisions.** Although one hopes one's work is just what the client was looking for, even the best of writers can expect to receive some feedback and requested revisions. To ensure you manage client expectations, when you submit your work, let them know when you are available to complete any revisions and inquire when they expect to provide feedback.
- **Promptly communicate unforeseen delays or issues and propose resolutions.** Emergencies don't just happen to full-time employees; they can happen to freelancers too. However, unless you're dealing with a long-time client with whom you have built up a relationship, they may be less sympathetic to a freelancer's sudden need to be out of the office, as this puts them in a jam to get work done. When situations do arise, communicate them to your client as soon as possible to determine if there is any flexibility with a deadline. Also, if possible, provide a solution to complete the work in your absence. Perhaps offer the services of a fellow medical writer you know who may be able to help, or provide all the background research you may have started to make the project easier. At the very least, offer to provide a financial discount on a future or not-yet-billed project to accommodate the issue.

## If You Don't Know, Ask

There are many different types of medical writing, and not all medical writers are adept or familiar with all types. For example, regulatory writing and medical publications follow

very specific rules and formulas, whereas writing for medical communication and education may blend science with storytelling. Beyond the types of projects, each agency or client will have their own specific way of presenting information, even if it isn't the way you would choose to do it. Asking questions up front when accepting an assignment isn't a sign of inexperience: it is likely the best way to align your writing with the client's expectations. Common points to inquire about include

- **Samples.** From needs assessments to slide decks and sales aids, your client will have past samples that they can and should share with you so that you can produce documents with a voice, format, and flow that reflect their particular style. Remember you are not trying to stand out; you are trying to blend in as an extension of their team. Mimicking a client's prior work is the easiest way to do this. If they don't provide samples and guidelines, ask for them. If they do, read them carefully and follow their lead.
- **Content direction.** Although your client will likely be relying upon you for research and writing, if you dive into a project and find it could be approached in several different ways, it is extremely important to touch base with your contact before proceeding. It is better to check in to ensure your research and writing are aligning with their goals than to guess, go down the wrong path, and face lengthy revisions.
- **Templates.** In most cases, clients should be providing you with templates to insert your work into so that the fonts, graphics, referencing, etc. align with how they typically present their information. If you are provided with a template, use it and match up your formatting with what is given to you. If you are not provided with a template, ask if one exists or how the client would like you to complete the work.
- **Invoicing instructions.** Once the project is complete and both parties are satisfied with the work, check in with your client contact about any specific invoicing instructions. Accounts payable, particularly for large organizations, will be processing lots of invoices from many different vendors, and ensuring you have any project or reference numbers on your invoice may be the key to getting your invoice paid in a timely manner.

### Remember to Put the Writer in Medical Writer

Although there may be situations in which clients are looking for a rough outline or data dump, unless this is specified

by your client, producing an accurate and readable document is generally what clients are looking for. In my experience, this tends to be the area in which newer medical writers tend to struggle most. Ongoing education, such as that provided by AMWA and university-level courses, can aid in increasing essential medical writing skills. That said, although education can be valuable, continued work-related practice is needed to hone and refine those skills. Some general points to remember:

- **Use recent and primary sources.** Review articles are a great way to quickly get up to speed on a topic and point you in the direction for further research, but rehashing a review article is not what your client is paying you to do. Make sure you are using the latest sources and primary references to make fact-checking easy for your client and ensure all the information you are providing is current.
- **Provide your client with all the details you would want to be provided to you.** Although thoroughly referencing with page numbers may be tedious or looking up that *P* value you forgot to include on your first pass may be annoying, the fact is that that is the job. You are being tasked with providing your client a document that they can run with. If they have to spend hours rewriting or digging for information on their own, they will definitely think twice about using you for a future project.
- **Read your document over before sending it to your client.** Everyone eventually hits a wall with a document and can no longer see the most obvious mistakes. Prior to sending it to your client, set it aside for an hour, take a walk, work on something else, and then give it a full read through. Ensure it makes sense, there are no typos, you've used transitional sentences and phrases where applicable, and there is an appropriate flow to it.

Ensuring you're clear on direction up front, asking questions to make sure you're aligning with client goals, and providing a deliverable that reflects the best of your abilities are key steps bridging gaps between freelancers and clients. Although these practices may seem obvious to some, for those newer to medical writing or freelancing, I hope they provide a framework to improve relationships with clients and build a successful career as a freelance medical writer.

*Author declaration and disclosures:* The author notes no commercial associations that may pose a conflict of interest in relation to this article.

*Author contact:* [jenlimarzi@gmail.com](mailto:jenlimarzi@gmail.com)

## FREELANCE FOCUS



Brian Bass



Lori De Milto



Gail V. Flores



Phyllis Minick

Q

**What do you feel will be the long-term consequences for freelancers as a result of coronavirus disease 2019 (COVID-19)?**

A

In my opinion, the post-pandemic world will hold the same great opportunity for freelance medical communicators as before COVID-19 assaulted our shores. Pharmaceutical research has been adversely affected to differing degrees in response to shelter-at-home requirements and the need for social distancing. But the need for the new treatments this research will ultimately yield has not disappeared. If anything, the human and economic toll COVID-19 has already taken, and will continue to take in the United States and globally, may spark renewed interest (and economic viability) in vaccine development to prevent, as well as new treatments to cure, the next pandemics.

For treatments that are already on the market or for which the research has been completed and for which approvals are pending, the opportunities for medical communicators—freelance and otherwise—are as strong as ever. In fact, I feel like I'm even busier than usual. Clients have realized that while working from home is new and uncomfortable for them, we freelancers have been training for this moment for years.

I would much prefer that COVID-19 never was. But because it is, I'm glad to say that I don't think it will harm the business of freelance medical communicators in the long term. It may actually open up new opportunities, and we should all be watching for them!

— Brian Bass

In this time under COVID-19, many hospitals, universities, public-health agencies, health-maintenance organizations, and pharma/biotech companies (ie, prospective clients), are allowing at-home work by employees. Obviously, this saves the companies money on overhead and, if they choose to use part-timers, it also saves the companies the costs of perks and benefits as well. For the true "freelancer" this could cut into your business, as many companies prefer using *part-time W2 contractors* over freelance writers and editors (W9/1099 consultants or corporations). However,

if you don't mind being a W2 contractor or "transient employee," rather than a self-employed consultant/freelancer, then opportunities are likely to increase after COVID-19.

I think the demand is likely to increase for writers and editors of (1) blogs and webpage copy; (2) educational material of all types for patients, physicians, pharmacists, and therapists on COVID-19, virology, immunization, and related subjects; and (3) protocols, investigator brochures, and clinical study reports (CSRs) for clinical trials in these areas.

The World Health Organization ([www.who.int](http://www.who.int)) and the Pharmaceutical Research and Manufacturers of America (<http://phrma.org/>) report that hundreds of relevant clinical trials are ongoing as of June 2020. Thus, now could be a great time to market differently—eg, *focus* on virology, immunization, public health, managed care, or nursing-home care. If you choose to focus on the pharma/biotech industry, stay connected via the DIA ([www.diaglobal.org](http://www.diaglobal.org)), MedCom agencies, or contract research organizations (<https://ichgcp.net/cro-list>)—from these you can get leads/contacts for possible projects.

Physically, of course, face-to-face meetings will be reduced substantially—a great boon, as it not only saves the client money but saves us the inconvenience of flying or driving to a client's office for a meeting.

— Cathryn D. Evans

In the long term, I think the US economy will rebound from the COVID-19 pandemic and the resulting recession, and there will be more demand for freelancers than ever. But in the short term and the medium term, there will be more competition for less freelance work.

Some freelancers, including me, are as busy as or busier than ever. If you're not, there are things that you can do to survive—and even thrive—during the recession. But you'll need to believe in yourself, grow your grit, and be resilient. And you'll need to work really hard.

The hard work is mostly marketing to attract steady, high-paying clients. Develop marketing (eg, a LinkedIn profile, AMWA Freelance Directory listing, and website) that focuses on the needs of your target clients and how you meet those needs. This will help you stand out in a sea of

competing freelancers. Then consistently market your freelance business. Doing these things when I started my freelance business enabled me to attract stable, high-paying clients who continued to have lots of work for me during the last 2 recessions.

— Lori De Milto

All evidence suggests that the best-ever opportunities for experienced medical-writing/editing freelancers exist *right now!* At no other time has every day/all day been dominated by health care news. In this COVID-19 era, the research, laboratory testing, hospital reporting, and statistics assessment have relied as never before on documentation and distance reporting. Predictions indicate that the follow-up will continue for at least the next 10 years.

The careers of most, or at least many, freelance medical communicators already include working at home or off-site from company offices. Pharmaceutical companies, research organizations, university science departments, and others who depend on experts to prepare their communication are likely to rely increasingly on freelance writers, illustrators, and project planners. Employers benefit by no longer needing to provide office space or equipment. Even during a travel ban, the skilled freelancer is available and equipped on day 1 of a new job, ready for literature review, statistics infusion, physician-author interaction, accurate write-up, advice on graphics, and final polishing of the assignment for the widest possible range of communication tasks.

Moreover, the current rise of online distance meetings via apps such as Zoom, Slack, Teams, and Google Meet has reformed modes of information transfer in ways that beg for precise presentation. From these relatively new media, plus TV, we hear daily of new vaccines, drugs, medical equipment, and therapies. Newcomers to the medical-communication field have the opportunity to recognize and add a landslide of new technologies to their “toolkit.” For freelancers with well-honed skills and a diversity of experience, even our current dark days include a horizon of burgeoning opportunity.

— Phyllis Minick

**Q Have you had to implement measures to bolster your income until corporate clients adjust to the effects of COVID-19?**

**A** Yes. A nice contract was in progress in early March, but after the shelter-in-place request, my client and colleagues had to take their work home—and then my contact left the company. This put a halt on the project, which may or may not appear again. Other work has not been flowing

**For freelancers with well-honed skills and a diversity of experience, even our current dark days include a horizon of burgeoning opportunity.**

— Phyllis Minick

in abundance since the shutdown. Thus, it has been necessary to expand the types of freelance services I provide—beyond medical writing and beyond the health care field. Today, I also offer/provide (1) mentoring services; (2) editorial review/critique and editing of college and legal papers/theses; (3) quality assurance for clinical protocols, CSRs, and other regulatory documents; (4) writing standard operating procedures (for pharma/biotech, managed care, and public-health agencies); and (5) editorial services for authors in any field (eg, I recently edited and critiqued a children’s book). I must admit here that—except for items 1 and 3—my rates are considerably lower for these services. I am also considering auditioning to “read aloud” audiobooks and have signed up for the Coursera course to provide contacting and tracing for those who test positive for COVID-19.

— Cathryn D. Evans

One potentially big, steady project related to clinical trials that was about to start when the pandemic occurred was postponed, and I agreed to accept later payments from another client, as their clients are paying them more slowly now. Other than these things, I’ve been busier since the pandemic started, followed by the recession. My income is up.

The measures that help me make my business recession-proof are things that I normally do. On every project, for every client, I always do more than expected. And when I’m actively looking for work, I turn to my current clients first.

Here are 2 examples from this year. When a medical-practice client was closed down except for emergencies, and the doctors were stuck at home with little to do, I offered to work on a bunch of articles for their e-newsletter in advance. That gave me some extra work and led to a new assignment from the client for another newsletter.

Another client asked me to do a rush job on a blog post related to how doctors can help their patients remotely during the pandemic. As I worked on this, I saw an opportunity to

help my client by writing a case study about 1 of the programs featured in the blog post. She agreed that this was a good idea and also assigned me a blog post to promote the new case study.

Satisfied clients are a great source of more freelance work. Doing more than expected makes you stand out from other freelancers. This makes it more likely that clients will choose you for other projects, give you referrals to their colleagues, and hire you to work on projects you suggest to them.

— Lori De Milto

## Q What are some changes or trends that you have seen in your freelance business opportunities as projects are delayed/postponed/reworked?

A Since COVID-19 came to visit, I've noticed a number of ways in which it has impacted the opportunities for freelance medical communicators. (Spoiler alert: all of them are good!) In no particular order:

- Face-to-face events such as advisory board meetings are being reimaged for virtual delivery. This may mean the same amount of work as usual, but done differently. Or it may mean opportunities for you to do more work because virtual meetings are a lot (and I mean A LOT) less expensive to conduct than live events, so clients can afford to do more of them.
- Companies that were about to expand their medical-writing and medical-editing pools to handle heavy workloads probably weren't allowed to hire, but they still have all that work to get done. That means more work for freelancers!
- Most staff workers have never worked from home before, at least on a prolonged basis. It's going to take a while for them to come up to speed, learn how to avoid distractions, and become as productive as freelancers. Freelancers are already outfitted, already focused, and already producing at optimal efficiency!
- More face-to-face contact with clients than ever! Virtually, that is. Our corporate clients seem to be scheduling more virtual meetings. These meetings used to be simple teleconferences, or Web conferences with screen sharing. Now

they're video conferencing, which gives clients who might rarely if ever see you in person the chance to see you at every call. This added familiarity can help you build and strengthen your client relationships. Seeing people as they speak can also make it easier for you to understand what they're saying, and the ability to see their facial expressions might even help you better understand the meaning behind what they're saying. Better relationships, better communication, better outcomes!

— Brian Bass

The biggest change has been how I've needed to just *be there* more than ever for my clients. I primarily write sales training materials; my direct clients are medical communications agencies, and their clients are biotech/pharma companies. Their business hasn't stopped, so mine hasn't either—and thankfully, my personal situation has allowed me to continue to work full-time and then some. I've experienced delays due to clients shifting their efforts to higher-priority projects (such as converting onsite sales meetings to virtual meetings), an uptick in work due to other writers and client staff having reduced availability due to unexpected childcare or home-schooling needs, and constantly shifting project timelines due to changing circumstances beyond my control, such as the need for all to work from home. I'm trying to support my clients as well and as much as I can during their time of crisis, so am breaking some of my own freelance business rules and have been attending early-morning meetings, doing late-night or weekend work, and being patient as timelines continuously morph.

A silver lining of this crisis has been some unique opportunities. I've been enjoying attending Zoom meetings, finally seeing the faces of clients I've been working with for months or even years for the first time. Connecting in videoconferences has also helped balance the isolation associated with sheltering in place. I also took on a new type of project—a virtual advisory board—that hadn't existed (as far as I know) prior to the outbreak, and I enjoyed attending the meeting from the comfort of my own home over the high travel-to-meeting ratio usually associated with advisory boards. Above all else, I hope to look back at this period in the future and think I did the best I could and learned a little something along the way.

— Gail V. Flores



## The Rise of the Messy CV: Are Life Sciences Companies Finally Starting to Value Professionals With Diverse and Nontraditional Career Paths?

Rosalie Harrison / Borderless, Brussels, Belgium

A few months ago, I was retained to find a medical executive for a growing biotechnology company. The hiring manager set forth all of the expected criteria during our briefing, and then something extraordinary happened. “You don’t need to find me a pretty CV,” she instructed. “I am happy with a messy one. You know, it’s ok if you find someone with diverse experiences or who took some time off or traveled the world or whatever.” Many of my entrepreneurial biotechnology clients seek out and need a set of competencies that can only be achieved by a wide variety of experiences and educational backgrounds. As the proud owner of a messy curriculum vitae (CV) (also known as a nontraditional career path), I was ecstatic about this instruction.

Understanding my joyous response probably requires a little background. You see, 30 years ago, I applied to law school with a pharmacy degree and 2 years of pharmaceutical industry experience under my belt. I still remember the sting of reading my Harvard Law School rejection letter, which expressly declared my 5-year pharmacy degree to be “vocational training” unsuited for legal studies. Luckily, I have always been the type to persevere and received my law degree despite these narrow-minded rejections—performing quite well, thank you, despite my alleged lack of educational foundation. I then survived the interviewers who told me that I appeared professionally “unstable” and landed a job at a top international law firm. I spent the next 14 years pursuing a legal career, even reaching that coveted partnership milestone.

The next decade, however, involved more wonderful mess: expatriate living in 2 different European countries as a trailing spouse and mom and my current (perhaps third) career evolution to being a Partner in a boutique (female owned and operated) executive search firm. While I was a trailing expatriate spouse, I worked as a freelance medical

and technical writer doing things like editing drug package inserts that had been translated from German to English and writing the user manual for a laboratory on a chip microfluidic device. The project nature of these types of writing assignments, while varied and deeply satisfying, was nonetheless “messy.” Presenting a “messy” CV is always difficult because it carries with it the bias that someone is a job hopper, lacks commitment, and is in some way unstable. Now, when I walk someone through my professional history, the most common word that comes back at me is *impressive*. And, more importantly, in my current role, literally all of my life experiences are professionally relevant. Given the historical response to my nontraditional career path, the current response to my messy CV always makes me smile.

---

In an environment where change is a constant and lots of flexibility and curiosity are needed, the owners of nontraditional CV experiences suddenly have attributes that are recognizable as being valuable to business success.

---

So, what has changed exactly to give a boost to the credibility of the nontraditional CV? The answer is simple: the life sciences business trends are creating working environments that are increasingly dynamic (ie, a nice word for *messy*), shifting the types of competencies needed for business success. Pressure to boost pipeline innovation and speed to market—while preserving efficacy, safety, and quality—is creating a business model in which cross-functional collaboration and external alliances are the norm. Big Data,

digitalization, and artificial intelligence are drastically changing the scope and impact of products, services, and operations. Precision and personalized medicine are creating health care delivery models that are literally dismantling established treatment norms. Sustainability of health care ecosystems with limited resources are requiring that patient access to treatments be value driven. And changes in global patient demographics, emerging market demands and opportunities, and an increasingly female talent pool are presenting the industry with diversity demands that benefit from cross-cultural understanding and inclusion.

In an environment where change is a constant and lots of flexibility and curiosity are needed, the owners of nontraditional CV experiences suddenly have attributes that are recognizable as being valuable to business success. Messy CV owners have proven an ability to challenge the status quo, an attribute that is needed to drive and/or embrace creative and innovative ways of working. Flexibility and change-management resilience are derived from both personal and professional life choices. Living and working internationally supports multicultural understanding. Engaging in cross-functional roles or educational experiences enhances contribution and collaboration.

So, what is my advice? If you are a professional with a non-traditional career path, take a look at the competencies you've gained as a result of your varying professional and life experiences and display them confidently in your messy CV. No apologies needed! Many messy CV owners buy into traditional biases and feel apologetic themselves about their experiences, and this shows in the way they present themselves. When writing your CV, start by bundling together the transferable competencies that you have gained over the course of your career. Then identify the red threads that tie together your experiences—including the red-thread motivators. Use these ideas to define yourself upfront, and you can create a foundational stability that can undercut the bias. You still must be truthful, but create a new lens through which the reader of your CV can view your experiences and draw the inferences you want them to see. Also, make sure you have an updated LinkedIn profile with all of your experiences so hiring managers can easily find you.

Finally, if you are hiring manager, don't be afraid of messy CVs. Nontraditional candidates might just have all of the competencies that are needed for success in your challenging and dynamic global environment.

**Author declaration and disclosures:** *The author notes no commercial associations that may pose a conflict of interest in relation to this article.*

**Author contact:** *rosalie.harrison@borderless.net*

## CALENDAR OF MEETINGS

*Please confirm with individual meeting hosts*

2020  
AMWA

### Medical Writing & Communication Conference

OCTOBER 20-22, 2020

Coming to a device near you

*Trends and Opportunities for Medical Communicators*

[www.amwa.org/conference](http://www.amwa.org/conference)

#### American Public Health Association

October 24–28, 2020

Virtual

<https://www.apha.org/events-and-meetings/annual>

#### European Medical Writers Association

November 1–30, 2020

Virtual

<https://www.emwa.org/conferences/future-conferences/>

#### DIA Japan Annual Meeting

November 8–10, 2020

Virtual

<https://www.diaglobal.org/en/conference-listing/meetings/2020/11/17th-dia-japan-annual-meeting-2020>

#### Alliance for Continuing Education in the Health Professions

January 13–16, 2021

Virtual

<http://www.acehp.org/p/cm/ld/fid=22>

#### American Association for the Advancement of Science

February 8–11, 2021

Virtual

<http://meetings.aaas.org>

#### DIA Europe 2020

March 17–19, 2021

Basel, Switzerland

<https://www.diaglobal.org/en/flagship/dia-europe-2021>

# Catching the Wave of Lifestyle Medicine

**Maria Carolina Rojido** / Freelance Medical Writer, Ségoufielle, France

*This article was originally published in Medical Writing, 2019;28(3):12-19.*

## Abstract

Noncommunicable diseases (degenerative chronic diseases) are wreaking havoc on human health, causing 70% of deaths worldwide, but lifestyle medicine is ready to tackle them by helping people change the habits behind them. A new medical specialty, lifestyle medicine, can help relieve strained healthcare systems globally and is backed by a solid body of evidence. Moreover, there are massive research, educational, and medical communication needs for all audiences, from laypersons to experts. Interested medical writers may have abundant opportunities to work on this rising medical specialty in the near future.

## Fertile Ground for a New Trend

### *Modern Medicine and the Reductionist Approach*

Medicine is complex and is continuously evolving. Through history, it has gone through several paradigms that have dominated the way healers thought about diseases and how to cure them. At present, modern medicine follows a mostly reductionist paradigm. This “divide and conquer” approach, where processes are reduced into simpler units to understand them, has allowed for amazing advances in diagnosing, treating, and preventing diseases. It is possible to explore biological processes underlying a disease at the molecular level, but sometimes the complex interactions between these processes result in effects different from those that might be expected. In other words, the whole is greater than the sum of its parts.<sup>1</sup>

Non-communicable diseases (NCDs) are good examples of this. Together, they cause 86% of all deaths in Europe<sup>2</sup> and 70% globally.<sup>3</sup> They include cardiovascular disease, chronic neurologic disorders (e.g. dementia), chronic respiratory



diseases, diabetes, cancer, musculoskeletal diseases, and autoimmune disorders. Their prevalence and incidence are growing, and most are not curable or reversible by traditional means. These NCDs are the result of a combination of genetic, physiologic, environmental, and behavioural factors that are very often shared between them. Their aetiologies, pathophysiology, and treatments are well known, but they are still the world's biggest killers. Why? It may be because, although we know them well, we don't understand them completely. We use reductionism to understand them since they are so complex, but we underestimate their root causes and how they interact with each other. Also, although medicine offers fairly effective treatments for many of them, it does not properly address their risk factors: the reasons why people get these diseases in the first place are most often environmental and behavioural factors which affect physiological processes and gene expression, among other things.<sup>4</sup> Studies showing dramatically increased rates of cardiovascular disease and cancers of people migrating from low-risk to high-risk countries have shown that environmental/behavioural factors are the primary determinants of chronic diseases, not genetic ones.<sup>5</sup> And other studies, including twin studies, have shown that only 10 to 30 % of chronic diseases are due to genetic factors.<sup>6</sup>

It is far easier for healthcare professionals to prescribe drugs or recommend surgery and for patients to accept these often expensive and risky treatments than to change lifelong habits reinforced by a consumerist society. This is not helped by the fact that we are cared for by physicians that don't fully understand nutrition and fed by companies that don't care about health. The problem starts in medical school, where education on nutrition, exercise, addictive substance avoidance, and other lifestyle interventions is notoriously deficient. As a consequence, physicians who recommend lifestyle changes as a first line of prevention and disease management may feel unprepared to provide counselling in

behavioural changes.<sup>7</sup> To make matters worse, the companies that sell animal products and ultra-processed foods (e.g. packaged baked foods, fizzy drinks, sugary cereals, ready meals, reconstituted meat products) are more interested in their profits than in the healthiness of their offerings.<sup>1</sup>

### Human Lifestyle Changes and Diseases

*Homo sapiens* appeared about 315,000 years ago.<sup>8</sup> And, in the last 10,000 years, our lifestyle habits have changed considerably. Our diet has seen some of the biggest changes. The advent of dairy products, refined plant derivatives (cereals, sugars, vegetable oils), fatty meats, and salt critically and fundamentally altered the glycaemic load, macronutrient content, fatty acid composition, micronutrient density, acid-base balance, sodium-potassium ratio, and fibre content of our diet.<sup>9</sup> Moreover, recent studies have linked ultra-processed foods with weight gain and cancer.<sup>10, 11</sup> This shift, plus other changes like an increasingly sedentary lifestyle, chronically inadequate sleep, high stress, and use of addictive substances (tobacco, alcohol, other drugs), is very recent relative to our evolutionary history and underlies many of our degenerative chronic diseases. Such diseases are rarer in populations that haven't much changed their traditional lifestyles. The most notable examples of these are the inhabitants of the "blue zones": five places in the world that "not only have high concentrations of individuals over 100 years old, but also clusters of people who have grown old without health problems like heart disease, obesity, cancer, or diabetes."<sup>12</sup>

In the last century, there have been gains in the fight against communicable diseases and child and maternal mortality, but they are still major problems in developing countries. At the same time, rates of non-communicable diseases increased by almost 30% between 2000 and 2015, causing more than 50% of the disease burden in lower-middle income countries and affecting more younger people than in wealthier countries.<sup>13</sup> This negatively impacts the economies of lower-middle income countries. Meanwhile, NCDs cause 77% of the disease burden in Europe.<sup>2</sup> And although premature mortality from NCDs has decreased, there is a significant gap between life expectancy and healthy life expectancy (the number of years that a person is expected to live without an activity limitation or disability),<sup>14</sup> with men spending a fifth of their life in poor health and women nearly a quarter.<sup>15</sup>

The above changes have all happened at an unprecedented pace that never seems to wane, as NCDs reach pandemic proportions

and disproportionately affect disadvantaged populations that do not have proper access to treatment.<sup>13</sup>

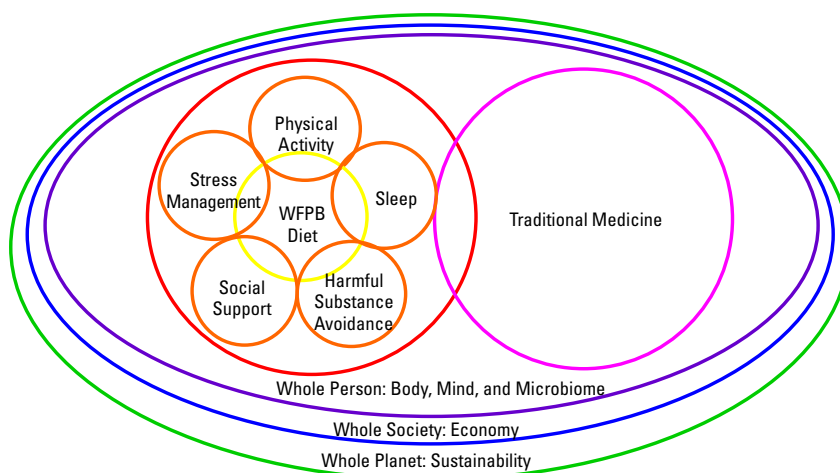
## The "New" Trend of Lifestyle Medicine

### What Is It?

Lifestyle changes have been a part of healthcare recommendations for decades, but they have traditionally only been considered helpful measures and are often still considered optional. First mentioned as a medical discipline in 1999,<sup>16</sup> lifestyle medicine is the logical response to our chronic disease pandemic. The Lifestyle Medicine Global Alliance (an organisation that unites national lifestyle medicine professional associations from around the world under a single banner) defines it as "the evidence-based medical specialty that uses lifestyle therapeutic approaches, such as a predominantly whole food plant-based diet, regular physical activity, adequate sleep, stress management, avoidance of risky substance use, and other non-drug modalities, to prevent, treat, and, oftentimes, reverse non-communicable diseases (NCD), sometimes referred to as degenerative chronic diseases."<sup>17</sup> Lifestyle medicine uses a thoroughly holistic approach, where whole plant-based foods work synergistically and, together with exercise, stress reduction, sleep, harmful substance avoidance, and social support, help the whole person (body, mind, and microbiome). Prolonged healthy life expectancy allows individuals to be more productive in their professional and personal lives. These changes can also help societies thrive by reducing the overall disease burden and healthcare costs. Last but not least, they are aligned with the changes humanity needs to implement for the sustainability of life on our planet, including our own as a species (Figure 1).<sup>18</sup>

### Key Elements?

Lifestyle medicine uses lifestyle interventions involving



**Figure 1.** How lifestyle medicine works, according to the author.



behavioural, environmental, medical and motivational principles to prevent, treat, and sometimes reverse NCDs that share risk factors and underlying mechanisms. It is complementary to traditional medicine, acting as an adjuvant to clinical and surgical interventions.<sup>19</sup> It is low cost and causes few, if any, side effects.

The central element is a whole food plant-based diet that emphasises the consumption of minimally processed and nutrient-dense vegetables, fruits, whole grains, legumes, nuts, and seeds. It minimises or eliminates meat, poultry, fish, eggs, dairy products, and processed foods of animal (sausages and cured meats) or plant origin (refined grains, added refined sugars and oils, artificial ingredients). It differs from veganism in its emphasis on whole foods; because despite their deleterious health effects,<sup>10,11</sup> highly processed plant foods are accepted in veganism. It also differs in that it encompasses a spectrum of eating patterns that are predominantly plant-based but that, like vegetarianism, may include some animal products. However, its therapeutic effects appear to be more significant the closer it is to 100% plant-based.<sup>20-23</sup>

Together with other lifestyle interventions, this diet is anti-inflammatory, modifies gene expression, and changes our microbiome, thereby helping reverse the chemical processes behind NCDs.<sup>4</sup>

### *The Growing Body of Evidence*

The modern Western lifestyle is responsible for the global increase in NCD burden. Changing that lifestyle could help

prevent, treat, and even reverse most NCDs: eliminating NCD risk factors can prevent 75% of heart disease, stroke, and type 2 diabetes and 40% of cancer.<sup>24</sup>

The body of evidence supporting lifestyle interventions is growing. Research studies related to lifestyle medicine have greatly increased in number in the last 30 years. In ClinicalTrials.gov, studies with the words lifestyle (factors, changes, interventions), plant-based (diet, dietary, or food), sleep, exercise (or physical activity), and stress management under the search field “Other Terms” increased on average 25-fold between 1990-1999 and 2000-2009 and 4-fold between 2000-2009 and 2010-2019 (Table 1). By comparison, oncology studies increased on average 8-fold between 1990-1999 and 2000-2009 and 2-fold between 2000-2009 and 2010-2019 (Figure 2).

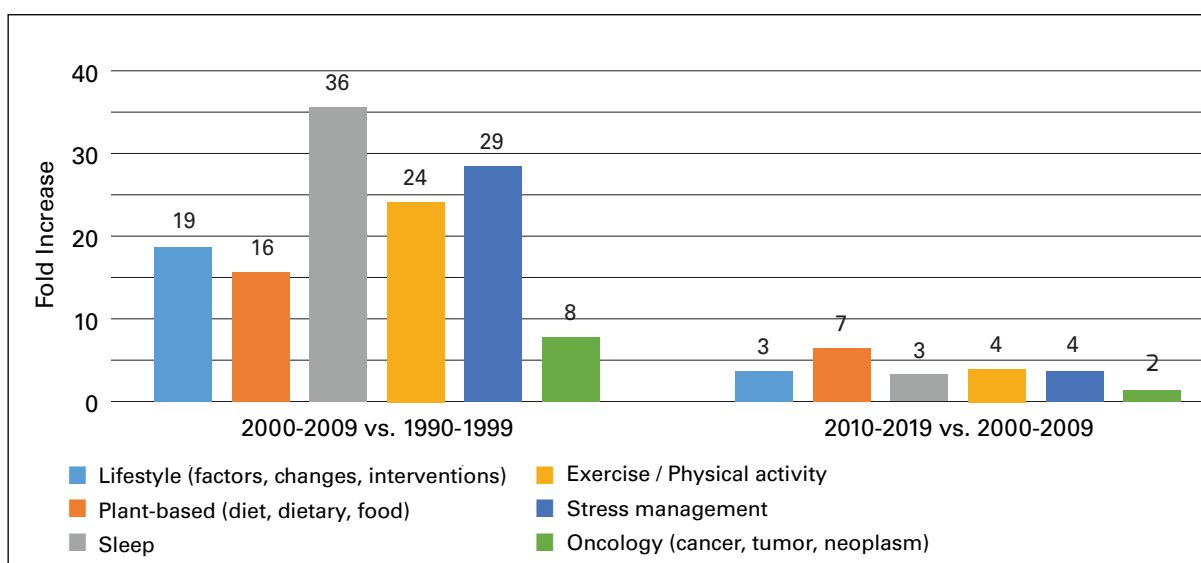
In terms of individual studies, the Nurses’ Health Study (in which 75,521 women aged 38 to 63 years old were followed for 10 years) concluded that >80% of all heart disease and >91% of all diabetes in women could be eliminated if they were to adopt a cluster of positive practices (healthy body weight, regular physical activity, avoiding tobacco products, consuming more whole grains, fruit, and vegetables, and consuming no more than one alcoholic beverage per day).<sup>25</sup> The US Health Professionals Study<sup>26</sup> (in which 42,847 men aged 40 to 75 years old were followed for 16 years) found similar results in men. Elsewhere, the American Institute for Cancer Research and the International Agency for Research on Cancer concluded that there is sufficient evidence to link 13 human malignancies to

**Table 1.** ClinicalTrials.gov search for studies related to lifestyle medicine with start dates from January 1, 1990 to June 25, 2019. The keywords used under the search field “Other Terms” were:

1. “lifestyle factors OR lifestyle changes OR lifestyle interventions” (plus the synonyms “interventional” and “procedures”);
2. “plant-based diet OR plant-based dietary OR plant-based food”;
3. “sleep”;
4. “exercise” (plus the synonym “physical activity”); and
5. “stress management”

Search term(s)	Jan 1, 1990 - Dec 31, 1999	Jan 1, 2000 - Dec 31, 2009	Fold increase (2000-2009 vs. 1990-1999)	Jan 1, 2010 - June 25, 2019	Fold increase (2010-2019 vs. 2000-2009)
1. Lifestyle (factors, changes, interventions)	43	829	19	2,849	3
2. Plant-based (diet, dietary, food)	0	16	16	106	7
3. Sleep	75	2,702	36	8,598	3
4. Exercise/physical activity	172	4,138	24	16,890	4
5. Stress management		324	29	1,172	4
Sum (1 to 5)	301	8,009	27	29,615	4
Average (1 to 5)			25		4
Oncology (cancer, tumor, neoplasm)	2,725	21,923	8	42,536	2
All studies registered	6,443	88,478	14	194,696	2

For comparison, “oncology” (plus the synonyms “neoplasm”; “cancer”; “tumor”; “malignancy”; “neoplasia”; “neoplastic syndrome”; “oncologic”; and “neoplastic disease”) was searched for under the search field “Conditions or disease”. Each of these sets of keywords was searched three times, for the periods January 1, 1990 to December 31, 1999, January 1, 2000 to December 31, 2009, and January 1, 2010 to June 25, 2019. All study types and results were included.



**Figure 2.** Fold increases in studies listed in ClinicalTrials.gov related to lifestyle medicine from 1990-1999 to 2000-2009 and from 2000-2009 to 2010-2019. Oncology studies are included for reference.

excess body fat.<sup>27</sup> Smaller studies have shown that a whole food plant-based diet can help treat and reverse cardiovascular disease and diabetes and that it can help treat cancers.<sup>20,21,23,28,29,30</sup>

In spite of these findings, the well-known statement “more research is needed” could not be more relevant than when it comes to studies looking at the effects of whole food plant-based nutrition. Most of the research has been done under the reductionist paradigm, looking at the effects of single foods or components. Fortunately, the effects of dietary and other lifestyle interventions are increasingly being studied, even in the context of randomized studies, but much more research is still needed.

## Where Is It Going?

### *Education and Training*

Many medical universities are starting to incorporate more education on nutrition and lifestyle medicine because their current curriculums are deficient in these aspects and medical students are demanding it. Harvard Medical School incorporated a Division of Nutrition in 1996,<sup>31</sup> and a residence program is currently being piloted in four American universities.<sup>32</sup> In Europe, Cambridge University is creating a new curriculum on public health with a focus on nutrition, physical activity, and sleep,<sup>33</sup> and the University of Surrey offers a Master's in Nutritional Medicine.

Many medical organisations offer national and international board certification programs. Several lifestyle medical associations are supporting licensed physicians wanting to train themselves on lifestyle medicine. The first was the American College of Lifestyle Medicine, which founded the Lifestyle Medicine Global Alliance in 2015 “in response to

the need for lifestyle solutions in low- and middle-income countries and for coordination between lifestyle medical professional organizations around the world.” It includes organisations based in the United States, Australasia, the United Kingdom, Lithuania, Albania, Portugal, Iran, and Korea.<sup>17</sup> Other lifestyle medicine associations and organisations include the European Lifestyle Medicine Organization, the Institute of Lifestyle Medicine, and the Plantrician Project.

### *Funding and Policy Changes*

Calls for grants related to lifestyle medicine are abundant. The NIH's National Center for Complementary and Integrative Health is requesting grant applications, as is the European Commission's Steering Group on Health Promotion, Disease Prevention, and Management of NCDs.<sup>34</sup> The American College of Lifestyle Medicine and many other foundations (such as the Ardmore Institute of Health, the Weil Foundation, and the Osher Center for Integrative Medicine) and organisations (such as ProVeg, an international food awareness organisation that aims to improve human health, animal welfare, the environment, food justice, and public opinion on plant-based food) offer grants as well.

Policy changes are starting to take place, as hospitals and schools add more plant-based options and businesses (e.g. Nestlé, Danone, Unilever, Cargill) try to improve the quality and sustainability of their offerings.<sup>35</sup> Earlier this year, the Canadian government changed its dietary recommendations by eliminating the dairy section to simply encouraging people to consume 50% vegetables and fruit, 25% whole grains, and 25% protein foods (meats, dairy, beans, nuts or seeds). That is, it is now recommending a plant-based diet.<sup>36</sup>

Following the lead of Kaiser Permanente, a large managed care organisation in the US that advises its physicians to recommend an active lifestyle and plant-based diet to their patients, lifestyle counselling is starting to be reimbursed in the US.<sup>37</sup>

#### *The Evidence Translates into...*

Similar to the ClinicalTrials.gov study trends mentioned above, numbers of PubMed articles with the words lifestyle (factors, changes, and interventions), plant-based (diet, dietary, or food), sleep, exercise (or physical activity), and stress management in their titles have increased greatly. A simple search of the number of articles for the periods 1990-1999, 2000-2009, and from 2010 to 06/25/2019 shows the trend. Studies related to lifestyle topics increased on average 4-fold between 1990-1999 and 2000-2009 and 3-fold between 2000-2009 and 2010-2019 (Table 2). By comparison, oncology studies increased on average 2-fold between 1990-1999 and 2000-2009 and between 2000-2009 and 2010-2019 (Figure 3).

The increased number of publications has translated into new and clearer guidelines and recommendations in terms of what measures should be put in effect (or not):

- The 2017 ACC/AHA/AAPA/ABC/ACPM/AGS/APhA/ASH/ASPC/NMA/PCNA Guideline for the Prevention, Detection, Evaluation and Management of High Blood Pressure in Adults recommends the plant-based DASH (Diet Approaches to Stop Hypertension) diet as one of the basic steps to fight hypertension.<sup>38</sup>

- The World Cancer Research Fund recommendations regarding lifestyle changes for preventing and surviving cancer include basic concepts underpinning whole food plant-based diets<sup>39,40</sup>
- The 2013 AHA/ACC/TOS Guideline for the Management of Overweight and Obesity in Adults includes plant-based diets in its recommended strategies to achieve caloric deficits.<sup>41</sup>
- Preventing Cancer, Cardiovascular Disease and Diabetes: A Common Agenda for the American Cancer Society, the American Diabetes Association, and the American Heart Association emphasises the benefits of whole-grain foods, legumes, vegetables and fruits and recommends limitations on red meat, full-fat dairy products, and items high in added sugars.<sup>42</sup>

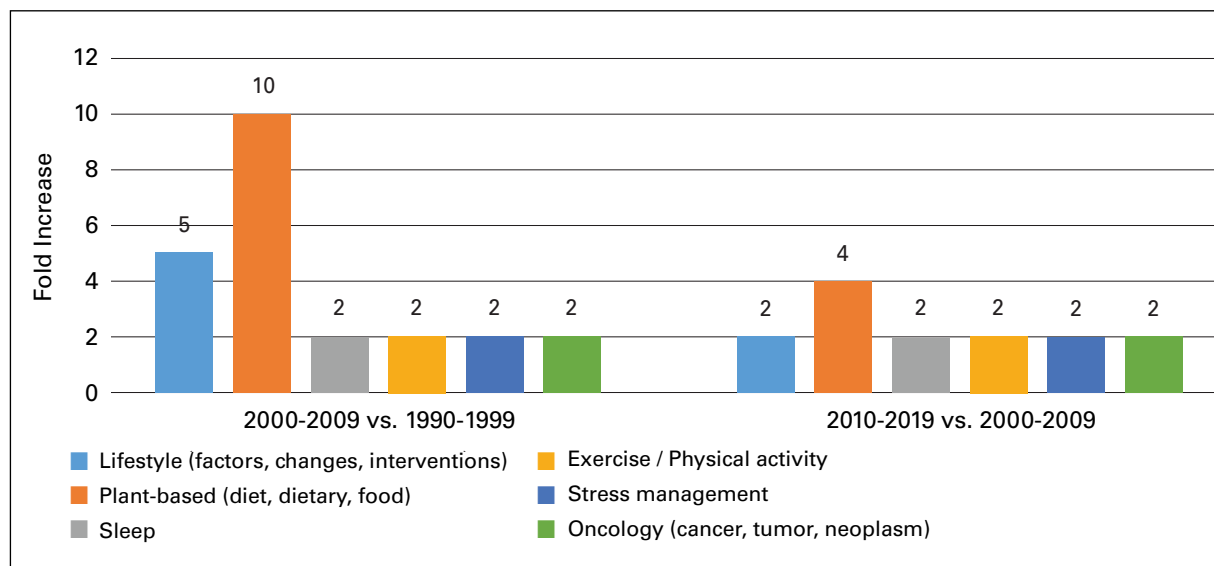
Moreover, lifestyle medicine is increasingly being addressed by major medical journals. *The Lancet* established the “Food in the Anthropocene” commission, a scientific consensus of what constitutes a healthy and sustainable diet and the actions needed to support the accelerated transformation of our food system for the sake of our health and our planet,<sup>18</sup> and launched *The Lancet Planetary Health* open access journal in April of 2017. *BMJ Nutrition, Prevention and Health*, which launched on July 2018, publishes on the impact of nutrition and lifestyle factors on individual and population health. Other noteworthy journals dedicated to the subject are the *American Journal of Lifestyle Medicine* and the *International Journal of Disease Reversal and Prevention*. Congresses and conferences

**Table 2.** PubMed search for articles related to lifestyle medicine with publication dates from January 1, 1990 to June 25, 2019. Titles were searched for the following keywords:

1. “lifestyle interventions OR lifestyle factors OR lifestyle changes”;
2. “plant-based diet OR plant-based dietary OR plant-based food”;
3. “sleep”;
4. “exercise OR physical activity”;
5. “stress management” and
6. “oncology OR cancer OR tumor OR neoplasm OR malignancy”

Search term(s)	Jan 1, 1990 - Dec 31, 1999	Jan 1, 2000 - Dec 31, 2009	Fold increase (2000-2009 vs. 1990-1999)	Jan 1, 2010 - June 25, 2019	Fold increase (2010-2019 vs. 2000-2009)
1. Lifestyle (factors, changes, interventions)	213	1,006	5	2,382	2
2. Plant-based (diet, dietary, food)	3	30	10	134	4
3. Sleep	10,269	19,453	2	40,062	2
4. Exercise/physical activity	18,261	31,310	2	64,917	2
5. Stress management	285	526	2	917	2
Sum (1 to 5)	29,031	52,325	2	108,412	2
Average (1 to 5)			4		3
Oncology (cancer, tumor, neoplasm, malignancy)	147,014	281,357	2	564,168	2

Each of these sets of keywords was searched three times, for the periods January 1, 1990 to December 31, 1999, January 1, 2000 to December 31, 2009, and January 1, 2010 to June 25, 2019, by adding the following to the search string: AND (“1990/01/01”[PDate] : “1999/12/31”[PDate]), AND (“2000/01/01”[PDate] : “2009/12/31”[PDate]), AND (“2010/01/01”[PDate] : “2019/06/25”[PDate])). No other filters were applied.



**Figure 3.** Fold increases in articles published in PubMed related to lifestyle medicine from 1990-1999 to 2000-2009 and from 2000-2009 to 2010-2019. Oncology studies are included for reference.

on lifestyle medicine and whole food plant-based nutrition are also increasing in number and attendance.

### Relevance to Medical Writers

Even if lifestyle medicine were to become a global phenomenon, people would still get sick and need drugs or surgery for acute and chronic life-threatening conditions. However, traditional medicine's effectiveness can be greatly increased if lifestyle changes are encouraged as a real part of prevention and treatment. Healthcare systems are collapsing under the weight of NCDs and developing countries' economies are failing in part due to the double burden of diseases (communicable and non-communicable) and lack of resources they suffer.

The body of evidence behind lifestyle medicine is now so large that it comes down to honouring the Hippocratic oath and its most essential "First do no harm" concept. Many medical writers are healthcare professionals of some kind, and healthcare professionals have an ethical duty to inform their patients about the lifestyle and dietary changes that can help them avoid suffering, disability, and early death. Some might say that medical writers are not qualified to give such advice. But we know smoking makes people sick, so all types of physicians have a duty to tell smokers to stop. If food can literally be the poison or the medicine people take every time they eat or drink, why not say so? Recommendations should not be watered down under the assumption that people won't change their habits. Other lifestyle changes are clearly very important, and depending on socioeconomic circumstances they may be harder or easier to implement. But one thing we are sure of: everybody eats and drinks many times a day, and most of us have at least some say over what we consume. We can be sure

we'll all die someday, but what if we can stay healthy longer and die much later?

Medical writers should be aware of lifestyle medicine, as sooner or later they may be asked to work on documents related to it. The demand for regulatory documents will rise. But it is medical communications that will likely see the most activity, because of the huge need to fill knowledge gaps at all levels. Perhaps some medical writers will seek opportunities to write on this subject because they are interested in it for the benefit of their health or that of the environment. Some of those grants, studies, articles, books, websites, or conferences may come knocking on our doors sooner than expected. So, be ready!

### Acknowledgements

The author would like to thank Stephen Gilliver for his invaluable expertise and dedication, Laura Collada Ali for her encouragement and wisdom, and Helen Spottiswoode and Julia James for their assistance.

**Conflicts of Interest:** The author declares no conflicts of interest.

### References

1. Campbell TC. The China Study: The Most Comprehensive Study of Nutrition Ever Conducted and the Startling Implications for Diet, Weight Loss and Long-Term Health. Campbell TM, editor. Kent Town, S. Aust: Wakefield Press; 2007.
2. World Health Organization. European Office for NCDs. 2019 [cited 2019 May 30]. Available from: <http://www.euro.who.int/en/health-topics/noncommunicable-diseases>.
3. World Health Organization. Non-communicable diseases. 2018 [cited 2019 May 30]. Available from: <https://www.who.int/news-room/fact-sheets/detail/noncommunicable-diseases>.
4. Bodai BI, Nakata TE, Wong WT, Clark DR, Lawenda S, Tsou C, et al. Lifestyle medicine: a brief review of its dramatic impact on health and survival. Perm J. 2018;22:17-025.



5. Willett WC KJ, Nugent R, et al. In: Jamison DT BJ, Measham AR, et al., editors. *Disease Control Priorities in Developing Countries*. 2nd ed. Washington (DC): The International Bank for Reconstruction and Development / The World Bank; 2006.
6. Rappaport SM, Smith MT. *Epidemiology. Environment and disease risks*. Science. 2010;330(6003):460-1.
7. Polak R, Pojednic RM, Phillips EM. *Lifestyle medicine education*. Am J Lifestyle Med. 2015;9(5):361-7.
8. Tuttle RH. *Human evolution: Encyclopaedia Britannica*; 2019 [cited 2019 July 4]. Available from: <https://www.britannica.com/science/human-evolution>.
9. Cordain L, Eaton SB, Sebastian A, Mann N, Lindeberg S, Watkins BA, et al. Origins and evolution of the Western diet: health implications for the 21st century. Am J Clin Nutr. 2005;81(2):341-54.
10. Fiolet T, Srour B, Sellem L, Kesse-Guyot E, Alles B, Mejean C, et al. Consumption of ultra-processed foods and cancer risk: results from NutriNet-Sante prospective cohort. BMJ. 2018;360:k322.
11. Hall KD, Ayuketah A, Brychta R, Cai H, Cassimatis T, Chen KY, et al. Ultra-processed diets cause excess calorie intake and weight gain: an inpatient randomized controlled trial of ad libitum food intake. Cell Metab. 2019;30(1):67-77.e3.
12. National Geographic. 5 “blue zones” where the world’s healthiest people live. 2017 [cited 2019 May 30]. Available from: <https://www.nationalgeographic.com/books/features/5-blue-zones-where-the-worlds-healthiest-people-live/>.
13. The Next Pandemic? Non-communicable Diseases in Developing Countries. The Economist Intelligence Unit Limited. 2017.
14. Eurostat. Number of healthy years of life: countries compared. 2019 [cited 2019 July 4]. Available from: <https://ec.europa.eu/eurostat/web/products-eurostat-news/-/DDN-20190204-1>.
15. EPHA E, NCDA. Joint paper: towards an EU Strategic Framework for the Prevention of Non-communicable Diseases (NCDs). Brussels, Belgium: European Public Health Alliance, 2019.
16. Rippe JM, editor. *Lifestyle Medicine*. 1st ed. New York: Blackwell; 1999.
17. Lifestyle Medicine Global Alliance. About. 2019 [cited 2019 May 31]. Available from: <https://lifestylemedicineglobal.org/about/>.
18. Willett W, Rockstrom J, Loken B, Springmann M, Lang T, Vermeulen S, et al. Food in the Anthropocene: the EAT-Lancet Commission on healthy diets from sustainable food systems. London, England: Lancet, 2019;393:447-92.
19. Sagner M, Katz D, Egger G, Lianov L, Schulz KH, Braman M, et al. Lifestyle medicine potential for reversing a world of chronic disease epidemics: from cell to community. Int J Clin Pract. 2014;68(11):1289-92.
20. Ornish D, Scherwitz LW, Billings JH, Brown SE, Gould KL, Merritt TA, et al. Intensive lifestyle changes for reversal of coronary heart disease. JAMA. 1998;280(23):2001-7.
21. Ornish D, Weidner G, Fair WR, Marlin R, Pettengill EB, Raisin CJ, et al. Intensive lifestyle changes may affect the progression of prostate cancer. J Urol. 2005;174(3):1065-9.
22. Allen KE, Gumber D, Ostfeld RJ. Heart failure and a plant-based diet. A case-report and literature review. Front Nutr. 2019;6:82.
23. Barnard ND, Cohen J, Jenkins DJ, Turner-McGrievy G, Gloede L, Green A, et al. A low-fat vegan diet and a conventional diabetes diet in the treatment of type 2 diabetes: a randomized, controlled, 74-wk clinical trial. Am J Clin Nutr. 2009;89(5):1588-96.
24. World Health Organization. Non-communicable diseases, fact file. 2013. [cited 2019 May 30]. Available from: [http://www.who.int/features/factfiles/noncommunicable\\_diseases/en/](http://www.who.int/features/factfiles/noncommunicable_diseases/en/).
25. Liu S, Stampfer MJ, Hu FB, Giovannucci E, Rimm E, Manson JE, et al. Whole-grain consumption and risk of coronary heart disease: results from the Nurses’ Health Study. Am J Clin Nutr. 1999;70(3):412-9.
26. Chiuve SE, McCullough ML, Sacks FM, Rimm EB. Healthy lifestyle factors in the primary prevention of coronary heart disease among men: benefits among users and nonusers of lipid-lowering and antihypertensive medications. Circulation. 2006;114(2):160-7.
27. Egger GJ, Binns AF, Rossner SR. The emergence of “lifestyle medicine” as a structured approach for management of chronic disease. Med J Aust. 2009;190 (3):143-5.

## Author Information

Carolina Rojido is a physician with certification for plant-based nutrition and a Master’s degree in health administration. She has 7 years of experience as a medical writer, and one of her areas of expertise is nutrition and environmental sustainability.



28. Esselstyn CB, Jr, Gendy G, Doyle J, Golubic M, Roizen MF. A way to reverse CAD? J Fam Pract. 2014;63(7):356-64b.
29. Li WW, Li VW, Hutnik M, Chiou AS. Tumor angiogenesis as a target for dietary cancer prevention. J Oncol. 2012;2012:879623.
30. Liu RH. Health benefits of fruit and vegetables are from additive and synergistic combinations of phytochemicals. Am J Clin Nutr. 2003;78(3):517-20.
31. Harvard Medical School. Division of Nutrition. 2018 [cited 2019 June 6]. Available from: <http://nutrition.med.harvard.edu/>.
32. American College of Lifestyle Medicine. Education. 2019 [cited 2019 May 31]. Available from: <https://www.lifestylemedicine.org/ACLM/Education/ACLM/Education/Education.aspx?hkey=bec27dc0-9da5-4e38-b7da-8b7b090cfd7e>.
33. Sayburn A. Lifestyle medicine: a new medical specialty? BMJ (Clinical research ed). 2018;363:k4442.
34. European Commission. Funding and tender opportunities. 2017 [cited 2019 May 31]. Available from: <https://ec.europa.eu/info/funding-tenders/opportunities/portal/screen/opportunities/topic-details/pj-01-2017>.
35. Gustafson DI, Edge MS, Griffin TS, Kendall AM, Kass SD. Growing progress in the evolving science, business, and policy of sustainable nutrition. Curr Dev Nutr. 2019;3(6):nzz059.
36. BBC. Is milk healthy? Canada’s new food guide says not necessarily. 2019 [cited 2019 June 30]. Available from: <https://www.bbc.com/news/world-us-canada-46964549>.
37. Jensen LL, Drozek DS, Grega ML, Gobble J. Lifestyle medicine: successful reimbursement methods and practice models. Am J Lifestyle Med. 2019;13(3):246-52.
38. Whelton PK, Carey RM, Aronow WS, Casey DE, Collins KJ, Himmelfarb CD, et al. 2017 ACC/AHA/AAPA/ABC/ACPM/AGS/APHA/ASH/ASPC/NMA/PCNA guideline for the prevention, detection, evaluation, and management of high blood pressure in adults: a report of the American College of Cardiology/American Heart Association Task Force on Clinical Practice Guidelines. Hypertension. 2018;71(6):e13-e115.
39. World Cancer Research Fund. Cancer prevention recommendations. 2019 [cited 2019 May 31]. Available from: <https://www.wcrf.org/dietandcancer/cancer-prevention-recommendations>.
40. World Cancer Research Fund. Recommendations during and after cancer. 2019 [cited 2019 May 31]. Available from: <https://www.wcrf.org/dietandcancer/recommendations/during-after-cancer>.
41. Jensen MD, Ryan DH, Apovian CM, Ard JD, Comuzzie AG, Donato KA, et al. 2013 AHA/ACC/TOS guideline for the management of overweight and obesity in adults. Circulation. 2014;129(25 Suppl 2):S102-S38.
42. Eyre H, Kahn R, Robertson RM. Preventing cancer, cardiovascular disease, and diabetes: a common agenda for the American Cancer Society, the American Diabetes Association, and the American Heart Association. CA: Cancer J Clin. 2004;54(4):190-207.

## CREATIVE WRITINGS

### Overhead: “Code Blue at Nursing Station 2! Intubation!”

**Jodi-Ann Edwards, MD** / State University of New York (SUNY) Downstate Health Sciences University, Brooklyn, NY

It is personal.  
Protected how?  
Equipped how?  
*Overhead: “Code Blue at Nursing Station 2!”*

Losses were fast, abrupt.  
Eyes widening as they gasped for air.  
Still, for many, their time would be up.  
The essential touch of consolation was barely there.  
Impenetrable; layers of protection and fear.  
*Overhead: “Code Blue at Nursing Station 4! Intubation!”*

A number in the chart.  
Heart-piercing lamentations of a loved one.  
The not being there; being apart.  
And the grief, stifling.  
Where to start?  
*Overhead: “Code Blue at Nursing Station 1!”*

*Overhead: “COVID Team to the Emergency Room!”*  
*“We have four more.”*  
Mask.  
*“He was intubated in the field.”*  
Shield.  
*“Any questions, just ask.”*  
Gown.  
*“Team, ready to round?”*  
Gloves.  
*“She was found down.”*

Orders placed.  
Food. Thank goodness, after all.  
Nurses fast-paced.  
Notes.  
*“Code status?”*  
Another phone call.  
The spouse is the proxy.  
*Overhead: “Code Blue in the lobby!”*

*Overhead: “Code Blue at Nursing Station 4! Intubation!”*  
DNR. DNI.  
Time of death: 14:01.  
Patient is...  
Backspace.  
Patient was a 65-year-old female with...  
Backspace.  
Patient was my colleague  
Backspace.  
Patient was my family  
Backspace.  
Patient was me.  
Backspace.  
Patient was...

*Overhead: “Code Blue at Nursing Station 5. Intubation!”*  
It is personal.  
Black. Face.  
Protection how?  
Black. Face.  
Equipped how?  
Black. Face.  
Mask.  
I can't breathe.  
*Overhead: “Code Blue at Nursing Station 2! Intubation!”*

**Acknowledgment:** A sincere appreciation of those who have lost patients, colleagues, friends, and family members during the COVID-19 pandemic who are finding the strength to carry on while sharing memories of their loved ones.

**Author contact:** [Jodi-Ann.Edwards@Downstate.edu](mailto:Jodi-Ann.Edwards@Downstate.edu)

## Choose the Right Verb, and Don't Smother It

Laurie Endicott Thomas, MA, ELS / Madison, NJ

In previous installments of this column, I have given some important tips for how to use verbs:

- When to avoid the passive voice and expletive constructions (vol. 30, no. 4)
- How to replace some clumsy expletive constructions with sentence adverbs (vol. 28, no. 3)

In this article, I will explain how to choose an expressive verb and how to avoid smothering your verbs.

### Expressive Verbs

Many famous writers have claimed that they hate adverbs. Mark Twain described adverbs as a plague.<sup>1</sup> Stephen King complained that “the road to hell is paved with adverbs.”<sup>2</sup> Some adverbs can be deleted because they mean nothing. For example, *really* and *very* are typically used as meaningless intensifiers. Deleting them would cause no change in meaning (unless the word is part of a technical term, such as *very-low-density lipoprotein cholesterol*). Other adverbs express meanings that are already contained in some verbs. These expressive verbs not only tell you what is happening, but they also describe how it is happening. Often, you can use an expressive verb to replace a verb + adverb construction or a verb + adverbial-phrase construction. The result is a livelier, tighter sentence.

For example, to gaze at something means to look at it steadily and intently, but to glance at something means to look at it briefly:

- ☹️ Sheila **looked briefly** at her mobile phone.
- 😊 Sheila **glanced** at her mobile phone.

Likewise, to jog means to run at a slow, steady pace, whereas to sprint means to run at full speed:

- ☹️ When the fire alarm rang, everyone **ran** out of the building **as fast as possible**.

- 😊 When the fire alarm rang, everyone **sprinted** out of the building.

### Single-Word or Phrasal, Latin or Anglo-Saxon?

If you look up any verb in a thesaurus, you will probably find a list of synonyms. Some of these synonyms will be single words, and some will be phrases. Some verbs are long, fancy words that came from Latin. Others are simple, common words that came from Anglo-Saxon. When choosing which verb to use, think about your audience. You want to choose a verb that will convey your intended meaning to your intended audience. Often, this means choosing a simple Anglo-Saxon verb:

- ☹️ She **consumed** 2 apples.
- 😊 She **ate** 2 apples.

Because of the use of the “sight-word” method of teaching reading, millions of Americans do not know how to sound out the long words that they see in print. In contrast, they can recognize many of the short, common Anglo-Saxon-derived words without having to sound them out. Even if you can sound words out, the short Anglo-Saxon words are easier to read:

- ☹️ The client eloped from the residential mental health center.
- 😊 The client ran away from the group home.

The National Institutes of Health urge medical communicators to use plain language. “When you have a choice between words—especially when writing for nonspecialists—**use the common, everyday word.**”<sup>3</sup> For this reason, writing for a consumer audience can be a good discipline. It can help you learn to write simply and clearly. As a result, your writing for professionals may also become simpler and clearer.

## Uncover Your Smothered Verbs

A smothered verb is an English verb that has been turned into an abstract noun, usually by the addition of a nominal suffix (Table 1). A nominal suffix is an ending that is used to turn a verb or adjective into a noun. For example, we can add the nominal suffix *-ment* to turn the verb *agree* into the noun *agreement*. This linguistic trick enables you to talk about your actions (*act* plus the nominal suffix *-tion* makes *action*). Unfortunately, this trick also allows you to smother your verbs.

Because the nominalized verb has lost its verbal force, the writer must use some meaningless verb to fill out the syntax of the sentence. The resulting sentence may be perfectly grammatical; however, it is bloated and dull, when it could have been short and lively. To solve this problem, find the smothered verb and turn it back into a verb:

- ☹️ After lunch, we will **enter** into a **discussion** of the results.
- 😊 After lunch, we will **discuss** the results.

- ☹️ The patients **had** a **preference** for the cherry-flavored syrup.
- 😊 The patients **preferred** the cherry-flavored syrup.

- ☹️ The patient made an **overpayment** of \$50.
- 😊 The patient **overpaid** \$50.

- ☹️ The statistician **made** an **analysis** of the efficacy data.
- 😊 The statistician **analyzed** the efficacy data.

**Author declaration and disclosures:** The author notes no commercial associations that may pose a conflict of interest in relation to this article.

**Author contact:** [www.nottrivialbook.com](http://www.nottrivialbook.com)

## References

- Twain M. Reply to a Boston girl. *Atlantic Monthly*. June 1880.
- King S. *On Writing: A Memoir of the Craft*. Pocket Books; 2002.
- National Institutes of Health. Plain language: connecting with your readers. National Institutes of Health website. Accessed July 12, 2020. <https://www.nih.gov/institutes-nih/nih-office-director/office-communications-public-liaison/clear-communication/plain-language/connecting-your-readers>

**Table 1.** Nominal Suffixes Applied to Verbs

Suffix	Meaning	Examples
-age	action, state, or process	breakage, marriage, package
-al	condition or quality	approval, denial
-ance/-ence	action, state, condition, or quality	acceptance, preference
-ation/-tion/-sion	an action or instance of doing that verb	determination, action, decision
-ery	a business or trade, behavior, or condition	brewery, tannery
-ing	action, state, or process	blessing, ending, writing
-ment	state, act, or condition	agreement, payment
-ure	action or resulting state	departure, failure





# Coming to a Device Near You—AMWA's First Ever Virtual Annual Conference

**Elise Eller, PhD** / Chair, Annual Conference Program Committee

**T**he coronavirus disease 2019 pandemic has changed how we do things, and AMWA's premier event, the annual Medical Writing & Communication Conference, is no exception. In a member survey conducted over the summer, respondents overwhelmingly stated they were hesitant to travel or attend a large conference in 2020. Because of this feedback, this year, our annual conference will be held virtually, with conference dates of Tuesday, October 20, through Thursday, October 22. Although I am disappointed that I won't be able to see friends and colleagues in person, I am excited about the opportunities a virtual event provides.

A virtual conference provides a greener, more accessible event for more of our members while allowing us to continue to deliver the same outstanding professional development opportunities for medical communicators and editors. AMWA has worked hard to identify a virtual conference platform that supports the valued components of our traditional conference: education and networking.

Educational opportunities will include concurrent education sessions (which are analogous to our traditional open sessions) and plenary sessions (which are analogous to our traditional general sessions). I applaud our presenters, who have had to adjust to a new format, new logistics, and new technology. I am looking forward to these sessions.

Networking opportunities will include real-time ("live") discussion groups, which will encompass both educational/informative discussions (which are similar to our traditional roundtables) and networking groups. These live discussion

groups are your opportunities to connect with your peers and chat about topics of interest to you all. In addition, you will be able to access the virtual conference platform approximately 1 week before the conference to set up a networking profile—your calling card, if you will. Use it to connect with others.

The week before the conference, you will be able to access welcome videos and bonus educational content. Conference registrants will be able to access sessions after the conference.

If you can't decide which educational session to attend during a given time slot, you won't miss it entirely—the content will be recorded and available for on-demand viewing later.

The schedule (see [https://www.amwa.org/general/custom.asp?page=at\\_a\\_glance](https://www.amwa.org/general/custom.asp?page=at_a_glance)) was developed to support participation across time zones in the United States as well as the United Kingdom and Europe. It was designed to be consistent each day so attendees can manage their schedules more easily, whether they plan on taking time off to attend the conference or will be alternating between working and attending sessions.

Even though online delivery of educational content is not new to AMWA, with the 2020 Medical Writing & Communication Conference, we are preparing to expand our virtual presence while continuing to deliver outstanding content. Although the format of the conference will be different, we again have an excellent lineup of presenters and programming. Please join me as we enter this brave new world of virtual conferencing. Registration information is available at <https://www.amwa.org/event/2020annualconf>. See you online!

Conference registrants will be able to access sessions after the conference.

# 2020 McGovern Award Recipient: Lisa Sanders, MD, FACP

Ann M. Winter-Vann, PhD / 2019–2020 AMWA President

*The John P. McGovern Award is named in honor of John P. McGovern and is presented to a member or nonmember of AMWA to recognize a preeminent contribution to any of the various modes of medical communication. The McGovern Award is presented during AMWA's Medical Writing & Communication Conference.*

I'm honored to announce that, in recognition of her work to bring the process of medical diagnosis to the public in a fascinating and extremely approachable way, Lisa Sanders, MD, FACP, is our 2020 John P. McGovern Award recipient. Dr Sanders is a physician in general internal medicine and an Associate Professor of Medicine at the Yale University School of Medicine, but this is merely one piece of a remarkable career that includes a substantial contribution to the field of medical communication.

After graduating from William & Mary with a degree in English, Dr Sanders went to work at ABC's *Good Morning America*, starting a nearly 10-year career as a journalist.<sup>1</sup> She won an Emmy award for Outstanding Coverage of a Breaking News Story for her coverage of Hurricane Hugo's impact on her hometown of Charleston, South Carolina.<sup>2</sup> However, according to a 2019 article in the *New York Times*, she chose to pursue a career in medicine after witnessing another journalist save a woman during a whitewater rafting competition. This incident made her realize that "I'm not a person who wants to just sit around and watch."<sup>3</sup>

Dr Sanders enrolled at Columbia University in a post-baccalaureate premedical program, after which she enrolled at the Yale School of Medicine. She remained at the Yale School of Medicine for her residency in internal medicine, followed by a year as chief resident. Dr Sanders joined the Yale School of Medicine as a clinician and teacher in the Department of General Internal Medicine.<sup>1</sup>

However, she was not done with journalism. Since the early 2000s, Dr Sanders has written the *Diagnosis* column for the *New York Times Magazine*.<sup>4</sup> This column served as the inspiration for the TV show *House*, for which Dr Sanders was a technical consultant. It also served as the source of her recent anthology, *Diagnosis: Solving the Most Baffling Medical Mysteries*, and the 2019 Netflix TV series *Diagnosis*.<sup>3</sup>



Anna Bauer, photographer

Dr Sanders has written several other books, including *Every Patient Tells a Story: Medical Mysteries and the Art of Diagnosis* (2010), *The Perfect Fit Diet: Combine What Science Knows About Weight Loss with What You Know About Yourself* (2004), and *The Perfect Fit Diet: How to Lose Weight, Keep It Off, and Still Eat the Foods You Love* (2005), along with the *New York Times* blog column, *Think Like a Doctor*.<sup>5</sup> Most recently, Dr Sanders presented a TEDMED talk promoting the need for a specialty in diagnostic medicine.<sup>6</sup>

## References

1. Lisa Sanders, MD, FACP. Yale School of Medicine biography. Accessed July 11, 2020. [https://medicine.yale.edu/profile/lisa\\_sanders/](https://medicine.yale.edu/profile/lisa_sanders/)
2. "Dr. Lisa Sanders, the Star of Netflix's New 'Diagnosis,' Inspired the Show 'House.'" *Women's Health*. August 16, 2019. Accessed July 12, 2020. <https://www.womenshealthmag.com/health/a28720010/dr-lisa-sanders-netflix-diagnosis/>
3. Gardiner A. "For 'Diagnosis' Show, Dr. Lisa Sanders Lets Times Readers Around the World Join in the Detective Work." *New York Times*. August 16, 2019. Accessed July 11, 2020. <https://www.nytimes.com/2019/08/16/reader-center/diagnosis-tv-netflix.html>
4. Sanders L. "Diagnosis." *New York Times*. Accessed July 11, 2020. <http://www.nytimes.com/column/diagnosis>
5. Sanders L. "Think Like a Doctor." *New York Times*. Accessed July 11, 2020. <https://www.nytimes.com/column/think-like-a-doctor>
6. Sanders L. "Why we need medical diagnosis detectives." TEDMED 2020. Accessed July 11, 2020. <https://www.tedmed.com/talks/show?id=771251>

# 2020 President's Award Recipient: Joan Affleck, MBA, ELS

Ann M. Winter-Vann, PhD / 2019–2020 AMWA President

*The President's Award is given by the AMWA president to a member of AMWA who has made distinctive contributions to the association at the chapter or national level. The nominee must have been an AMWA member for 10 years and cannot have served on the Executive Committee.*

It is my great privilege to present this year's President's Award to Joan Affleck, MBA, ELS. Joan will receive the award this fall in conjunction with the 2020 Medical Writing & Communication Conference.

Joan is an Associate Vice President and Head of Medical Writing at Merck. She has 20 years of experience in the biopharma industry and has served as an advisor to the TransCelerate Common Protocol Template Initiative and the recent COVID-19 Clinical Study Report guidance working group. Joan has been an AMWA member for 25 years; during that time, she has been an active volunteer in many capacities. In addition to teaching workshops and leading roundtables at

the annual AMWA Medical Writing & Communication Conference, Joan helped organize and host the inaugural Executives Forum at the 2018 Medical Writing & Communication Conference, which brought together medical writing executives from across the nation to discuss workforce trends and advancements in medical writing. Joan returned to host the second Executives Forum in 2019, and she will host our third annual event later this year. Additionally, Joan is the current chair of AMWA's Medical Writing Executives Council, which was established in 2018 to coordinate the annual Executives Forum, identify additional trends and challenges for medical communication teams, and recommend priorities for education and resources to address challenges and issues identified at the Forum.

Please join me in congratulating Joan on this well-deserved honor.



---

## AMWA Names Fellows for 2020

Karen Potvin Klein / 2014–2015 AMWA President and Chair, Member Recognition Committee

*Fellowships are presented to members of AMWA to recognize their significant contributions to the goals and activities of AMWA as well as their other professional accomplishments. Candidates must have been active members in good standing for at least 5 consecutive years immediately before Fellowship nomination.*

This year, things are being done differently worldwide—and of course, some of those changes are reflected in AMWA. Given the many challenges competing with our members' ability to volunteer on committees, the Member Recognition Committee did not convene this year. However, the Board of Directors reviewed the activities of qualified candidates based on information provided by AMWA HQ. Scores for each activity at the chapter and/or national level were allotted by using a standardized scoring scheme. The Board then reviewed the scoring results and arrived at a consensus regarding selection.

In summer 2020, the Board of Directors approved 3 nominees as Fellows of AMWA.

Among this year's many changes, fortunately, some things remain the same: our Fellows' noteworthy professional accomplishments and dedicated service to AMWA. Congratulations to the following individuals for their recognition as our newest AMWA Fellows:

**Katrina R. Burton, BS**, an AMWA member since 2010, is a Program Manager in the Public Relations office at The University of Texas MD Anderson Cancer Center in Houston, Texas. Katrina has more than 17 years of experience in health care marketing, communication, and public relations. She currently manages



communication and media relations for the MD Anderson Children's Cancer Hospital, working with health and science reporters, producers, editors, and others to coordinate online, television, print, and radio stories. She also writes stories about cancer patients and survivors as well as research and clinical programs.

Katrina has 10 years of service volunteering in varied positions within the AMWA organization. She currently serves as Secretary and Chair of the Constitution and Bylaws Committee. She has served on the Board of Directors since 2017 and chaired the Chapter Advisory Council from 2017 to 2019. Katrina also was a member of the Communications and Marketing Committee (2012-2013). Within the Southwest Chapter, she has served as Communications Director/Chair since 2013 and previously was its Publications Chair (2017-2018), President (2016-2017), President-Elect (2015-2016), Program Chair (2015-2016), Assistant Program Chair (2014-2015), and Director-at-Large (2012-2013) and a Chapter Delegate to the Board (2015-2017). She has led 2 roundtables, a webinar, and a presentation at the Southwest Chapter Regional Conference and has served as a roundtable facilitator (2012, 2013) and open session speaker (2013, 2017, 2019) at AMWA's annual conference.

**Jennifer Minarcik, MS**, is a biomedical communicator, artist, and social media enthusiast. After years of scientific research at The Children's Hospital of Philadelphia, Jennifer began her freelance career in 2011. She specializes in writing about cutting-edge technologies used in early drug discovery models and works with medical communication companies to develop sales training and promotional materials.



Jen has been a member of AMWA since 2011 and began volunteering in the organization in 2013. She has led the Delaware Valley Chapter as President-Elect, President, and Immediate Past President and further supported the chapter as Treasurer, Webinar Chair, Freelance Workshop Co-chair, and LinkedIn Group Moderator. She is currently the Delaware Valley Chapter Advisory Council Representative.

At the national level, Jen has been a member of the *AMWA Journal's* Editorial Board since 2018 and is currently the Section Editor of the Social Media section. In 2017, she chaired the Chapter Advisory Task Force. Jen has also served AMWA as a member of the Communications and Marketing Committee, the ENGAGE Committee Task Force, and the Annual Conference Committee.

**Qing Zhou, PhD, ELS, CMPP**, is a medical writer and publication manager with 14 years of experience in the medical device and pharmaceutical industry.

Growing up in China, Qing learned English as a second language and was drawn to its clarity and universality in communicating science. After obtaining a bachelor's degree in Biochemistry in China and a PhD in Molecular Pharmacology from Purdue University, Qing decided



to pursue medical writing as a career. She was a Scientific Communications Scientist and Publication Team Lead at Cook Research Incorporated and is now an Associate Director of Publications Management at Regeneron Pharmaceuticals. Qing's main expertise lies in developing, managing, and executing publication plans for company-sponsored clinical studies. In this role, she works with external and internal authors and stakeholders to develop publications according to good publication practices. She has coauthored 15 peer-reviewed papers in journals such as the *Journal of Vascular Surgery*, *Journal of Vascular and Interventional Radiology*, *Oncogene*, *Gene Therapy*, and *Journal of Biological Chemistry*.

Qing is a certified editor in life sciences (ELS) and a certified medical publication professional (CMPP). As an active member and volunteer of AMWA since 2006, Qing has served various roles at the chapter and national levels. She was chair of the National Annual Conference Student Scholarship Committee (and a former recipient of that scholarship in 2007). She has also chaired the Medical Book Award Committee (public category), served as treasurer of the Empire State Metro New York Chapter, and was the Board of Directors delegate for that chapter. Currently, Qing is the President of the AMWA Empire State Metro New York Chapter and a member of the *AMWA Journal's* Editorial Board, currently serving as the Section Editor of the Practical Matters section.



## FROM THE PRESIDENT

# The Year of the Samba

Ann Winter-Vann, PhD / 2019–2020 AMWA President



If you heard my inaugural address, you learned that I am an amateur ballroom dancer and heard my wish for this year to be a smooth, elegant foxtrot. Well, 2020 has held surprises for all of us, and I find myself in the midst of something akin to a samba: challenging, unpredictable, and exhausting. Nevertheless, as I look back on a long list of accomplishments (both planned and unplanned), I count this year as a success.

### 2020 Medical Writing & Communication Conference

Registration is now open for AMWA's 2020 Medical Writing & Communication Conference. As much as we all wanted to be able to meet in person, it was clear back in June that it would not be possible. The results of the Impact Survey highlighted that a vast majority of our members would not be comfortable traveling to or attending a face-to-face conference.

Fortunately, the timing of this shift allowed us to plan what we hope will be an outstanding virtual event, taking advantage of the experiences and feedback we have heard from other virtual conferences. For example, the daily conference schedule has been shortened to improve accessibility across time zones and incorporates breaks to minimize "Zoom fatigue." Some of the content will be available to registrants ahead of time, and educational sessions will remain available through December to enable you to watch all of the sessions that interest you—regardless of when they are scheduled. The conference program includes roundtables and small group networking sessions every day. I'm particularly excited about these, as the personal connection among members is a critical component of AMWA. Although I am heartbroken that I will not see you in person in October, I anticipate a wonderful virtual event, and I look forward to the day when we can once again attend the Medical Writing & Communication Conference in person.

### Supporting Our Community

In early January, new and proposed legislation to limit the ability of individuals to work as independent contractors was a clear concern for our freelance members. In response, AMWA issued a statement opposing legislation that would impinge on the rights of individuals to choose a freelance work model. I followed that statement by reaching out directly to legislators and to leaders in other organizations that support freelance workers. Although legislators across the country are focusing

on other priorities right now, we know this issue has not been resolved. AMWA will continue to monitor the situation.

More recently, racial injustice has been at the forefront of our national conversation. Susan Krug, AMWA's Executive Director, and I released a statement on racial inequality that was well received by our community. We strive to make AMWA a warm and welcoming community for all of our members. If there is more that we could or should be doing toward that goal, please reach out and let me know. Feedback is a gift.

### Online Education

We know that online education is more important than ever before, and AMWA continues to produce exciting new content. From topics such as an *Overview of the New AMA Manual of Style, 11th Edition* to *Writing Considerations for a Transparent World*, AMWA's webinars are topical and relevant—and affordable: the special rate of \$20 for members has found an enthusiastic audience, and I'm pleased to announce that this rate has been extended through 2021. Meanwhile, AMWA continues to make one previously recorded webinar available to members for free each month; be sure to watch for those!

In addition to our existing catalog of online education courses, AMWA has recently introduced a new category of on-demand education: Knowledge Builders. Each interactive activity is created by a subject matter expert who presents an in-depth discussion of a specific topic. These activities are reasonably priced and timely and include such topics as time management and demonstrating presence while working remotely.

Finally, I hope that you have had the chance to read our new career development resources, both of which are available free to members. *A Professional's Guide to Advancing Your Career* was created for the midcareer professional, with suggestions on skills that can help you ascend the corporate ladder. Our other new guide, *The Recommended Training Outline for Regulatory Writers*, is equally valuable for managers who train new regulatory writers and for individuals looking to break into the field.

### AMWA Cares

Although we know that many of you are working harder than ever right now, we also know that some of you are struggling with the financial consequences of the coronavirus disease

2019 pandemic. Layoffs, furloughs, and job transitions make education and networking more important than ever. This spring, AMWA implemented a hardship policy to reduce dues for our loyal professional members who find themselves in significant need. If it is time to renew your membership and you have extenuating circumstances that would make it difficult to afford your professional dues, please contact us at

membership@amwa.org. We are happy to provide more information on AMWA's new hardship policy.

In true samba fashion, this year continues to be challenging and filled with surprises. I am grateful to be partnered with the outstanding AMWA staff, Board of Directors, and our amazing volunteers as we work together to support our members. You make it all worthwhile.

## Slate of Candidates for 2020–2021 Election

**Gail V. Flores, PhD** / 2019–2020 AMWA President-Elect

Each year, the slate of AMWA officers is chosen by the Nominating Committee, which consists of the President-Elect (who serves as chair of the committee) and 6 voting members (appointed by the President-Elect and approved by the Board of Directors [BOD]). I'd like to thank the members of this year's Nominating Committee for contributing their time and consideration to this important task: Esther Brooks-Asplund, PhD, RAC; Erik MacLaren, PhD; Jill Roberts, MS; Theresa Singleton, PhD; Barbara Snyder, and Dikran Toroser, PhD. Susan Krug (Executive Director of AMWA) was an ex officio nonvoting member of the committee.

The Board Interest Form is available on request following announcement to the AMWA membership (included this year in the AMWA Updates on May 13 and May 27). This form provides candidates with the opportunity to express their interest in and qualifications for serving in an elected officer or at-large director position. Members of the Nominating Committee discuss the potential officer candidates and select one qualified candidate for each position. The names of these candidates are then presented to the BOD for approval.

The following candidates were selected by the Nominating Committee and subsequently approved by the BOD in June 2020:

- **President-Elect: Katrina R. Burton, BS**
- **Secretary: R. Michelle Sauer Gehring, PhD, ELS**
- **Treasurer: Julie Phelan, MD, MBA**

### President-Elect

**Candidate: Katrina R. Burton, BS**, an AMWA member since 2010, currently serves as secretary of the BOD and chair of the Constitution and Bylaws Committee. She has served on the BOD since 2017 and was the inaugural chair of the Chapter Advisory Council (2017-2019). Katrina has previously been a member of the Communications and Marketing Committee

(2012-2013). At the chapter level, she has served as Communications Director/Chair for the Southwest Chapter since 2013 and previously served as Director-at-Large (2012-2013), Assistant Program Chair (2014-2015), Program Chair (2015-2016), President-Elect (2015-2016), President (2016-2017), and Publications Chair (2017-2018) in addition to serving as a Chapter Delegate to the Board (2015-2017). In addition, she has led 2 roundtables, a webinar, and a presentation at the Southwest Chapter Regional Conference and has served as a roundtable facilitator (2012, 2013) and open session speaker (2013, 2017, 2019) at AMWA's annual Medical Writing & Communication Conference. Katrina is a Program Manager in the Public Relations office at The University of Texas MD Anderson Cancer Center in Houston, Texas, where she currently manages communication and media relations for the MD Anderson Children's Cancer Hospital. With more than 17 years of experience in health care marketing, communication, and public relations, she enjoys sharing health care and human-interest stories through her own writing and in coordination with media outlets across the country.



### Secretary

**Candidate: R. Michelle Sauer Gehring, PhD, ELS**, an AMWA member since 2009, is in her second year on the BOD and currently serves as Liaison to the *AMWA Journal*. Previously, she served on the Annual Conference Planning Committee from 2013 to



2018 and chaired the committee for the 2019 Medical Writing & Communication Conference in San Diego. At the chapter level, Michelle served the Southwest Chapter as the Treasurer (2012-2016), Program Chair/President-Elect (2016-2017), and President (2017-2018) in addition to serving as Chapter Conference Committee Chair from 2015 to 2018. Michelle has taught the Ethics for Science and Medicine workshop for AMWA. She has led open session presentations on grantsmanship, research development, copyright laws, and professional development in the academic and freelance sectors at the national and chapter levels. She has authored or contributed to *AMWA Journal* articles as well as provided webinars and led roundtables. Michelle is the Senior Research Scientist for The University of Texas Health Science Center at Houston's Center for Advanced Heart Failure and Co-owner of RnAEditing, LLC. She is the Copyeditor of *PURSUE* and the Managing Editor of the *VAD Journal*. She also teaches Citations and References for Medical Writing and Ethics for Medical Writers at the University of California-San Diego Extension.

### Treasurer


**Candidate: Julie Phelan, MD, MBA,** an AMWA member since 2009, is in her fourth year as Treasurer on the BOD and as chair of the Budget & Finance Committee (2016-2020). She has previously been a member of the Online Community and Social Media Committees (2012-2014), Communications Committee (2014-2015), 2015 Salary Survey Task Force, and Budget & Finance Committee (2015-2016). At the chapter level, she served the Greater Chicago Area Chapter as Membership Chair (2011-2015), President-Elect (2012-2013), and President (2013-2016) in addition to serving as a Chapter Delegate to the Board (2013-2016). She has written articles for the *AMWA Journal* and currently serves as AMWA's Registered Agent. She was awarded an AMWA fellowship in 2017. Julie is President of Biomedisys, Inc.



### Procedure for Additional Nominations


According to AMWA's Bylaws (Article IV.2e-f), additional nominations for President-Elect, Secretary, or Treasurer may be made by any member whose dues 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. Such nominations must meet the criteria set forth by the BOD, 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. As required by the bylaws, these nominations were announced to the AMWA community by email more than 60 days before the annual business meeting. A nominee who is unopposed for any office is declared automatically elected at the annual business meeting.



**Harness the Power of EndNote:**  
Manage Your Library's Data

[LEARN MORE](#)



AMWA EDUCATION  
Write better. Write now.

# AMWA Education at Your Fingertips

**Lori L. Alexander, MTPW, ELS, MWC** / AMWA Education Director, Rockville, MD

As we continue to stay home and adjust our lives to accommodate a pandemic, we need ways to stimulate our professional development. There's no better way to keep up your medical communication knowledge and skills than with AMWA Online Learning.

Even before the pandemic hit, AMWA had been enhancing its online learning options, as this type of education is the most convenient for learners. Our efforts have been focused on adding educational activities in a strategic manner and ensuring the relevancy of content. We've also been working to improve the Online Learning catalog so that terms are consistent, making searching more effective and efficient.

## Strategic Addition of Activities

Our focused approach to adding educational activities is based on AMWA's content strategy, which was developed in late 2019. The overarching goal of AMWA's content strategy is to align all our content with the primary professional focus areas of our members and the leading medical communication topics as identified by AMWA. By taking a holistic view and mapping content to member interests and organizational goals, we created a content strategy that helps us provide the value that members seek.

AMWA's content strategy also helped inform the development of an AMWA learner-centered curriculum that aligns with members' professional focus areas. The curriculum outline is ordered according to member demographics, with priorities set for regulatory writing, scientific publications, and health communication, as most members work in these professional focus areas (Box 1).

## Relevancy of Content

The relevancy and quality of educational content are of paramount importance, and AMWA has established a process to ensure the regular review of educational activities so that content remains current and of value to medical writers and editors. Out-of-date content has been eliminated or revised. We're also adding learning assessments to each educational activity to bring the activities more in line with continuing education standards.

Currently, AMWA offers 88 different educational activities in the Online Learning catalog (Box 2), including a new type of educational activity, Knowledge Builders, and a rebranded resource document, Mini Tutorials (formerly Pocket Trainings). AMWA's live webinars continually feed the catalog, as the webinars are archived and made available as on-demand videos.

### Box 1. AMWA Curriculum Outline

- **Regulatory writing**  
Development of documents required by regulatory agencies in the approval process for drugs, biologic agents, and medical devices
- **Scientific publications**  
Writing and editing of manuscripts, posters, abstracts, oral presentations on medical topics, summaries of conference sessions, and news and feature articles in medical trade publications
- **Health communication**  
Writing and editing of an array of materials (in a variety of formats) for lay audiences, including patient education, decision aids, public health communication, medical/health news, news releases, and public relations/communication
- **Writing and editing mechanics**  
Fundamental writing and editing skills essential for medical communicators across all professional focus areas
- **Core knowledge and skills**  
Knowledge and skills essential for medical communicators across all professional focus areas; includes ethics, visual communication, scientific research and methodology (including statistics), working with the scientific literature, terminology, and technology skills (Word, document management systems, artificial intelligence tools, etc)
- **Career development**  
Skills to enhance professional success across medical communication settings; includes soft skills, collaborating with teams, networking, emerging career opportunities, leadership/management, and business aspects of a freelance career
- **Education for professionals**  
Creation of educational resources, including continuing education for physicians, nurses, and other health care professionals and training materials for staff in pharmaceutical and biotech settings
- **Promotional writing**  
Marketing and advertising materials that promote diagnostic or therapeutic products or medical/health institutions and organizations; corporate communication
- **Grantsmanship**  
Writing and developmental editing of grant proposals for funding of scientific research



**Box 2. AMWA Online Learning Offerings**

Knowledge Builders: 2  
 FIT (Fast, Interactive Training) activities: 7  
 Resource documents: 8  
 Interactive learning: 11  
 On-demand videos: 60

**Knowledge Builders**

AMWA's newest type of online educational activity is the Knowledge Builder. This online activity is a blend of technology and tradition, with a multimedia presentation supplemented by print documents and pencil-and-paper interactivity. You can enhance your knowledge of a specific topic through a variety of elements designed to create an engaging learning experience, including a narrated slide set, a worksheet for answering questions or completing exercises, a handout that highlights key points, and a list of recommended reading (Box 3).

To date, 2 Knowledge Builders are available, one on working remotely and one on making more memorable slides. Additional Knowledge Builders will address such topics as patient authorship, time management, and tips for Word (both Windows- and Mac OS-based). Look for these and other Knowledge Builders to be added.

**Box 3. Learn With AMWA's New Knowledge Builders**

- L**isten to a narrated slide set
- E**ngage in exercises to better understand the topic
- A**ccess the handout with a summary or key points
- R**evue the list of recommended reading to explore more deeply
- N**ote what you learned with the Knowledge Check

**Mini Tutorials**

Originating in 2011, AMWA Pocket Trainings were designed as high-level overviews on focused topics that are free to members as a member benefit. We reviewed all the Pocket Trainings to ensure that the content remains relevant, updated 5 identified as top priority, and rebranded them as Mini Tutorials:

- Best Practices for Writing CME Needs Assessments
- Conversance with Fundamentals of Health Economics
- Editing and Organizing References in EndNote
- Mind Your Own Business with a Year-End Review
- Telling It Like It Is: Informed Consent in Plain Language

We will continue to review and update Mini Tutorials over the coming year.

**Webinars**

Live webinars are the cornerstone of AMWA's online educational activities. AMWA has been offering 1 webinar per month for several years now, and this year, we doubled up in some months to bring you as much online education as we can during these challenging times. As a bonus, AMWA has been celebrating 2020 with a substantial member discount on webinars, with each webinar costing just \$20 (a \$35 savings). The most popular webinar this year was the overview of the 11th edition of the *AMA Manual of Style*. Also popular were webinars on searching the scholarly and grey literature and the TransCelerate CSR (clinical study report) template. You can still access the on-demand videos of these webinars—or any others you missed this year—still for just \$20 (Box 4). We are delighted to announce that because of the popularity of this offer, this special member pricing on AMWA webinars will continue into 2021.

**Box 4. 2020 Webinars**

January	Metrics: Proving Our Value
February	Overview of <i>AMA Manual of Style</i> , 11th Edition
March	Communicating Real-World Evidence in the Medical Literature
	Communicating Effectively During a Crisis: The Coronavirus Outbreak and Lessons for the Future
April	Searching for Scholarly and Grey Literature: Librarian Tips and Tricks
May	Plain and Simple: Tools for Writing Plain Language Summaries—Free!
June	Ask the Expert: How to Be Successful Working Remotely
July	Checking Consistency: How to Use PerfectIt for Faster and Better Results
	Writing Compliant CSRs With Ease: The TransCelerate Common CSR Template
August	Writing for Equity and Inclusion
September	Invisible Ink: Writing Considerations for a Transparent World
November	Enforcing Styles in PerfectIt
December	Ask the Expert: What Do Hiring Managers Look For?

**Looking to the Future**

As AMWA continues its development of new Knowledge Builders and live webinars, we are also exploring new ideas. We are piloting the development of virtual workshops, with plans to roll out the first ones in the beginning of 2021. Keep up to date with AMWA Online Learning at [https://www.amwa.org/Online\\_Learning](https://www.amwa.org/Online_Learning).



# Instructions for Contributors »

For a more detailed version of the Instructions for Contributors, including detailed content and formatting instructions, please visit [www.amwa.org](http://www.amwa.org).

Unless otherwise noted, submit manuscripts and suggestions for content to the Journal Editor at [JournalEditor@amwa.org](mailto:JournalEditor@amwa.org).

## FEATURE-LENGTH ARTICLES

Feature-length articles include Topical Features, Original Research, and Science Series articles. Authors should submit an abstract of 250-300 words for use in the online Table of Contents and in social media/marketing; visual abstracts are welcome.

### Topical Features

The *AMWA Journal* invites 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 *AMWA 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:** 2,500-3,000 words (plus abstract).

### Original Research

The *AMWA Journal* invites manuscripts reporting original research on written communication, publication trends, and medical communicators' productivity and value added. **Word Count:** 2,500-3,000 words (plus abstract).

### Science Series

The Science Series accepts manuscripts that provide an overview of a specific anatomic or physiologic topic (eg, body system), disease or condition, diagnostic method (eg, laboratory tests, imaging systems), or type of treatment (eg, devices). **Word Count:** 2,500-3,000 words (plus abstract).

## OTHER TYPES OF ARTICLES

Authors should submit 1 or 2 sentences (25 to 35 words) describing their article for use in the online Table of Contents and in social media/marketing.

### Around the Career Block

This section accepts manuscripts that provide advice on career-related issues, profiles of professional organizations, and first-person accounts of educational experiences. **Word Count:** 750-2,000 words.

#### Career-related Articles

These articles address topics 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, and performance goals.

#### 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.

### Everyday Ethics

This section features discussion of ethical situations encountered by medical communicators and professional approaches to their management. Publication preference is given to those topics that are particularly timely. **Word Count:** 750-2,000 words.

### Freelance Focus

This section provides original content and expert commentary from seasoned contributors on topics of interest to freelance medical communicators. **Word Count:** 750-2,000 words.

### Media and Technology

This section includes reviews of books, websites, other media, and technology (tools of the trade) that are of practical value or topical interest to medical communicators. **Word Count:** 750-2,000 words.

### Members Matters

Members Matters is a member-focused, member-generated section in which topics of interest that were discussed on the local level can be shared nationally through the *AMWA Journal*. Content may be original (ie, written specifically for the section) or shared (eg, repurposed from an article in a chapter newsletter). **Word Count:** 750-2,000 words for a feature article; 500-600 words for a brief report.

### Practical Matters

This 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:** 750-2,000 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

This section includes articles that provide guidance to medical communicators for developing a professional online presence and effectively integrating social media into their work environment. The section will also explore the impact social media currently has on the health care industry. **Word Count:** 750-2,000 words.

### Statistically Speaking

This section covers statistical concepts and developments in clinical research of interest to medical communicators. **Word Count:** 750-2,000 words.

## OTHER SECTIONS

### 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 2 issues. **Word Count:** 300-400 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 email note to the Journal Editor ([JournalEditor@amwa.org](mailto:JournalEditor@amwa.org)).

## COPYRIGHT POLICY

The authors of manuscripts published in the *AMWA Journal* grant to AMWA exclusive worldwide first publication rights and further grant a nonexclusive license for other uses of the manuscripts for the duration of their copyright in all languages, throughout the world, in all media. Copyright ownership of these articles remains with the authors. Authors must complete and sign a copyright form (available on request) and submit it with their manuscript to the *AMWA Journal* Editor by email ([JournalEditor@amwa.org](mailto:JournalEditor@amwa.org)).



AMWA EDUCATION  
Write better. Write now.

# AMWA Member Resource Library

Over 200 resources specific to your  
career as a medical communicator

**LEARN MORE**

[www.amwa.org/resource\\_library](http://www.amwa.org/resource_library)

## Apply Yourself. Apply Now.

Earn the only credential designed  
specifically for you, the medical  
communication professional.



*Apply by October 19 for December 2020 exam.*  
Review our applicant handbook, candidate guide,  
and study tips to help you prepare.

[www.amwa.org/mwc](http://www.amwa.org/mwc)



# MEET THE MASTERS OF MEDICAL WRITING

---

We believe medical writing can move people to feel something, to do something, to roll up their sleeves, get behind an idea, and push with everything they've got.

**TRILOGY WRITING** is built around the idea that every medical piece should be written in a crisp, concise, captivating, insightful way.

**We write as if lives depend on it** – because they do.

Our goal is challenging – to lead the crusade against medical writing mediocrity, one well-written piece at a time. Guided by our core values and the support of our team of writers, we will meet the challenge. Join us!

If you are interested in joining our team of writers, **let's talk.**  
**[writers@trilogywriting.com](mailto:writers@trilogywriting.com)**

**[www.TrilogyWriting.com](http://www.TrilogyWriting.com)**

Frankfurt, Germany ▪ Cambridge, UK ▪ Durham, NC, USA

