

Council of State and Territorial Epidemiologist (CSTE) Scientific Writing Toolkit

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I. Introduction to the CSTE Writing Toolkit

Introduction to the CSTE Writing Toolkit

Communication is vital to an epidemiologist's work. The dissemination of applied public health practice occurs through many channels, including written communication. In order to better understand the current practices and needs of applied epidemiologists regarding scientific writing, the Council of State and Territorial Epidemiologists ([CSTE](#)) conducted an assessment of indicators to guide recommendations for how this skill can be improved. The findings were published in the [Applied Epidemiology Scientific Writing Trends, Needs, and Recommendations, 2014](#)¹ and is otherwise referred to as the Scientific Writing Assessment (SWA).

The SWA identified the desired tools and resources for scientific writing by applied epidemiologists. Tools desired by applied epidemiologists to help them increase scientific writing included dedicated time, training to improve scientific writing and publishing skills, dissemination of best practice models of supportive writing resources within health departments, and best practice examples of supportive organizational culture to foster writing and publishing. Templates for general publications were requested by about half of participants. Access to a mentoring network of experienced writers from state and local health departments was also similarly desired, and access to editors (46%) and technical writers (44%) were also suggested as helpful. A journal club to encourage publishing and peer-review was requested by two out of every five respondents.

To fulfill these desires for resources to reduce the barriers to scientific writing, a Request for Proposals (RFP) was developed to solicit applications for funding for a consulting firm to identify existing resources and build a toolkit of existing resources to support scientific writing practices for applied epidemiologists. In spring 2016, Cerus Consulting (cerusconsulting.org) was awarded the contract for the production of this toolkit. The toolkit itself represents hours of input from public health practitioners, policy makers, and librarians, and includes descriptions and links to trainings, tutorials, reference materials, and tools to foster scientific writing. It is hoped that this toolkit will be valuable for applied epidemiologists in all stages of the scientific writing process and will facilitate the dissemination of the important work they are conducting in the field.

II. Acknowledgements

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III. Planning for Scientific Writing

Planning for Scientific Writing

Scientific writing can take many forms and serve many purposes. It can justify an action taken to improve the health of the public, it can fill a gap in the scientific literature such as the effectiveness of a common program or practice, or it can inform public policy. These forms can be very disparate in structure, intent, and audience, but they share a common attribute: they can be broken into smaller steps that can make the task less daunting. In this section, we cover many of the aspects of scientific writing, including types of scientific writing, data procurement, and selecting a target journal (if appropriate). We purposefully omit formulating a research question, as this precedes the scientific writing process. However, after a brief section on the types of writing products, we present an overview of human subjects protections, as this is the ethical foundation of all scientific inquiry. While the line between research and practice can be difficult to recognize, protection of the individuals we serve is paramount. As stated in the [*Belmont Report*](#),² there are “basic ethical principles” that must be adhered to when conducting work for generalized scientific knowledge, and *the underlying purpose of scientific publication is to contribute to scientific knowledge, even if the publication reports public health practices such as needs assessments, surveillance, or program evaluation*. As stated in the *Belmont Report*, “Three basic principles, among those generally accepted in our cultural tradition, are particularly relevant to the ethics of research involving human subjects: the principles of respect for persons, beneficence and justice.”² As such, it’s important to keep these principles in the forefront when beginning the writing process. However, as has been detailed in great length previously,³ the line between research and practice can become blurred very quickly. As such, resources and mentorship can be important at the very onset of the writing project. Even though the seeking and receiving of this guidance may be time consuming, it is important that the applied epidemiologist and other public health practitioners contribute to the literature, since the most valuable scientific publications for the practice of public health are those born of practice. The sections that follow will inform the logistics of starting the writing project, from procuring data to composing the writing team to determining the specific format of the article. By taking what can be a monumental task and breaking it into component parts, what would ordinarily be onerous can be considerably less daunting.

Types of Scientific Writing

In the sections that follow, we provide a brief introduction to describe writing for public and scientific audiences and provide links to resources to guide writing for these disparate groups of readers. Within each section, you will find links to the organizations that provide the resources as well as direct links to particular writing resources. A comprehensive list can be found at the end of the toolkit in the References section of the document.

Writing for Public Consumption

While arguably not scientific writing itself, but rather the communication of scientific writing, communication strategies to reach the general public can be a very important endpoint for the scientific writing process. As such, one of the most critical factors is recognizing to whom are you trying to communicate. Avoid where feasible a one-size fits all message. As in business marketing, customizing communication strategies to smaller sub-groups is recommended. Audiences vary in terms of race/ethnicity, socioeconomic status, age, and educational level. Focus groups can be used to gather information about the suitability of messages for particular subgroups such as adolescents. Recommendations for effective communication⁴:

- Keep messages and language simple
- Recognize the importance of health literacy
- Ensure cultural competency in our diverse society
- Use multiple communication channels (TV, radio, newspapers)

Types of materials for public consumption:

- Brochures
- Fact sheets
- Press releases
- Reports
- Social media
- Websites

Resources

- [Plain Language.gov](http://PlainLanguage.gov)
 - Plain Language.gov⁵ provides guidelines, trainings, examples, tools, and other resources developed by a community of federal employees to promote and improve governmental agencies' written communication to the public.
- Purdue Online Writing Lab (OWL)
 - Purdue OWL provides an overview on [writing a white paper](#).⁶

Writing for Policy Makers

Two basic formats are often used: a memo format or a brief format. Memos are an appropriate tool for epidemiologists or practitioners working in organizations (eg, health departments) to communicate with supervisors or other practitioners within the organizations. Policy briefs can be sent to external parties, including legislators, community groups, and voluntary health organizations. Both formats have similar characteristics. They are concise. They begin with a recommendation, include a summary of the issue, outline various points of view, and provide a rationale for the recommendation. Communication with policy makers is important. These busy individuals have full agendas. They also receive communications from others, including industries, which may have messages in opposition to public health recommendations. Communications from public health officials need to be brief. A policy brief should contain a one-page executive summary that makes the key points. In writing a policy brief, first consider the issue being argued, the audience, stakeholders, and your recommendation. For a coherent policy brief, it is important to include: A) a summary, B) the importance of the issue, C) an explanation of the policy options, D) recommendation for policy with rationale.

Policy Briefs

A policy brief is intended to give the reader a short, informative “briefing” on a topic with recommendations for action based on the available evidence. They are useful for policy makers (both public and private) who may not possess the subject matter depth on all the topics that they must consider. A policy brief is not a comprehensive review, and is not expected to present a detailed comparison of the available options. Policy briefs are expected to present a position and are not usually expected to be an impartial presentation of the evidence. The websites and links below contain a wealth of knowledge that will be helpful when preparing a policy brief.

- The [Johns Hopkins School of Public Health, Women’s and Children’s Health Policy Center](#) has a wonderful suite of [resources](#),⁷ including lectures, examples, and templates for policy briefs.
- The following policy briefs available online can serve as examples to guide the writing of your own policy briefs:
 - The Food and Agriculture Organization of the United Nations policy brief⁸:
 - [The 2007-08 Rice Price Crisis How Policies Drove Up Prices... And How They Can Help Stabilise the Market](#)
 - A series of excellent policy briefs from the Poverty & Economic Policy Research Network on food, economic, and fuel crises in Cambodia, Ghana, and the Philippines⁹⁻¹²:
 - [Impact of Hiked Prices of Food and Basic Commodities on Poverty in Cambodia: Empirical Evidences from Five CBMS Villages](#)
 - [Analysis of the Impact of the Changes in the Prices of Rice and Fuel on Poverty in the Philippines 2009](#)
 - [Effects of Rising Food and Oil Prices on Rural Households in Ghana: A Case Study of Selected Communities in the Dangme West District Using the CBMS Approach](#)
 - [The Impact of the Global Financial and Economic Crisis on Poverty in the Philippines](#)
 - A policy brief on synthesizing research from The Royal Children’s Hospital Melbourne¹³: [Translating Early Childhood Research Evidence to Inform Policy and Practice](#)

Opinion

Editorial/Commentary

- Editorial: Singh and Singh do an excellent job of summing the goal of the editorial when they say, “A good editorial should express an opinion without being opinionated. It should teach without being pedagogic. It should transform without being evangelical. It should engulf without drowning. It should motivate to action without making you dictatorial. It should enlighten without getting you dogmatic, prejudiced and egotistical.”¹⁴
- Commentary: A commentary can take a wider variety of shapes. A commentary may provide expert discussion of a collection of articles or may take a position on an emerging topic. A good commentary should provide perspective for the reader and place the work in context. Peh and Ng provide good overview on writing a commentary.¹⁵
 - [Science Translational Medicine](#) has a guide¹⁶ that contrasts the two types of opinion pieces: [Instructions for Authors of Editorial, Focus, Perspective, and Commentary Articles](#)

Press Releases

The media (TV, radio, newspapers) are flooded with hundreds of news releases each day. Releases that get noticed contain a title and opening paragraph that gets the attention of the editors. Recommendations for preparing a press release:

- Write an attention-grabbing headline
- Be factual and short (preferably one page)
- Write in third-person news style
- Use direct quotes from a trustworthy source such as a public health official
- Write in clear, simple sentences
- At the end of the press release, provide all contact information for a point person

Memorandum

Memoranda are unlike policy briefs in that they are usually intended for an internal audience. For example, one might produce a memorandum to advise the local health director on a course of action. In the example below, note that the opening of the memo is a recommendation, followed by a summary of the issue, a recounting of various viewpoints, and a rationale for the recommendation. A memo is short, rarely exceeding 1-2 single-spaced pages.

Memorandum

From: John Snow
To: Walter Drake, Director, London Department of Health
Subject: Diarrheal illness in London
Date: 9/1/1849

This memo recommends the removal of the handle of the Broad Street pump to counter an ongoing severe illness in the Golden Square area characterized by diarrhea and excessive mortality.

A summary of the issue is that numerous individuals in the area of this pump are becoming ill. My investigation shows a preponderance of the illness is related to a water company. Several companies are supplying water to various parts of the city. Cholera rates are particularly high in those areas supplied by the Lambeth Company and the Southwark and Vauxhall Company. Both of these obtain water at a sewage contaminated point of the Thames River.

A colleague William Farr, Compiler of Abstracts at the General Register Office, attributes this to a miasma with families living in homes at higher altitudes being spared. I do not accept this explanation because of the strong association of the illness with the contaminated water supply. This leads to my recommendation to remove the pump handle.

Writing for the Scientific Community

Writing for the scientific community is a complex process that can take on many forms, some that are standard, and some that are journal or outlet specific. Below is a series of resources that explain each format and give guidance on writing each. The [JAMA instructions for authors](#)¹⁷ is an excellent, exhaustive resource. We cover the scientific writing process in the next section.

- Types of scientific articles:
 - Case report
 - The [CARE Guidelines](#)¹⁸ provide an overview on what should be included in a case report, formatting guidance, and templates in [Case Report Writing](#).¹⁹
 - Research article
 - Research articles adhere to the traditional form of the scientific article, a format that is probably most familiar to potential authors. Below are links to instructions for authors

that describe the different styles of research articles, specifically the Practice Brief Report, Research Brief Report, and the full Research Article:

- [American Journal of Preventive Medicine](#)
 - [Instructions to Authors](#)²⁰
- [American Journal of Health Promotion](#)
 - [Instructions to Authors](#)²¹
- [American Journal of Public Health](#)
 - [Instructions to Authors](#)²²
- [Journal of Public Health Management and Practice](#)
 - [Instructions to Authors](#)²³
- Research letter
 - The journals [Epidemiology](#) and [JAMA](#) both provide good examples of resources on writing a research letter:
 - [Epidemiology](#)²⁴
 - [JAMA](#)²⁵
- Rapid review
 - This document from the Agency for Healthcare Research and Quality ([AHRQ](#)) explains the rapid review article and provides a very deep dive into methodology with resources on writing this type of article²⁶:
 - [EPC Methods: An Exploration of Methods and Context for the Production of Rapid Reviews](#)
- Narrative review/Systematic review/Meta-Analysis
 - This link from the Centre for Evidence Based Dentistry ([CEBD](#)) provides a nice, [quick overview](#)²⁷ of these three types of research syntheses with many useful links at the end.
 - The [Centre for Reviews and Dissemination](#) maintains [PROSPERO](#),²⁸ the international prospective register of systematic reviews.
 - This link from the [American Psychological Association](#) provides [ten tips](#)²⁹ geared at graduate students, but it provides clear guidance on what a meta-analysis should be and additional resources to help authors write this type of scientific article.
 - Haidich³⁰ provides a good overview of the meta-analysis:
 - [Meta-analysis in Medical Research](#)
- **Government Serial Publications**
 - The [Morbidity and Mortality Weekly Report \(MMWR\)](#) instructions for authors^{31,32} have very detailed guidance that will be useful for formatting for similar outlets:
 - [Standards for writing an MMWR Weekly](#)
 - [Writing for Recommendations and Reports / Surveillance Summaries](#)

Human Subjects Protections

Before the data procurement, analysis, or writing process begins, human subjects protections should be considered and a plan of action finalized. As previously stated, novice writers can mistakenly determine that institutional review board (IRB) approval is unnecessary, assuming that their work isn't research (as classically defined), only to have a manuscript rejected by numerous scientific journals for lack of IRB approval or official notice of 'exemption.' An IRB is instrumental in establishing and administering human subjects protections, but how do you obtain an IRB if your agency does not have an IRB office? There are several methods that can be used by small health departments or other organizations without an IRB capacity. State health agencies (SHAs) with this IRB capacity can make this type of review available to local health departments. In both 2010 and 2012, state health agencies were queried by ASTHO if they had a direct responsibility for an IRB. In 2010, 67% responded yes, while in 2012, 63% responded yes. It is not known how many SHAs make this capacity available to local health departments (R. Liss-Levinson, personal communication, March 2016).

Another method is an Academic Health Department. An Academic Health Department is a “teaching health department... a formal affiliation between an academic institution and a public health practice organization.”³³ An Academic Health Department is formed through a memorandum of understanding (MOU) between a health department and a local institution. An example is the MOU between the University of Tennessee at Knoxville and the Knox County Health Department (see Appendix C). The MOU contains the following clause: “The Department of Public Health’s Institutional Review Board Committee can be the mechanism for reviewing and recommending for approval research projects, including those initiated by either party.”

Five other partnership agreements and characteristics of these partnerships [are available](#) on the Public Health Foundation website.³⁴ Simpler agreements for just the IRB function between local health departments and academic entities are also possible. Another, less preferable option is the use of a commercial IRB. A [list of commercial IRBs](#)³⁵ is available on the Citizens For Responsible Care and Research website. Commercial IRBs are not a preferred option to use because most of these are oriented to drug trials and not to the work of applied epidemiologists. In addition, commercial IRBs can be cost-prohibitive. For example, review for IRB exemption can be upwards of \$500. This price covers only the cost of evaluation of a protocol for exemption; if the study is not exempt, cost applies for further review. Further review for studies of “minimal risk” may incur fees of another \$500-\$1000, with costs for studies of “more than minimal risk” costing considerably more. [IntegReview](#) is another commercial IRB option that can provide turnaround on IRB documentation within 3-4 business days or less for Exempt or Expedited Review.

Understanding Appropriate Scientific Conduct

While appropriate scientific conduct includes human subjects protections, the full scope of appropriate conduct is much broader and encompasses data security (especially with sensitive data such as those related to HIV or sexually transmitted infections) and plagiarism. Fortunately, excellent resources exist to provide training and guidance on appropriate scientific conduct and data security. Employees of governmental public health agencies should always consult with their supervisors, who may be aware of agency standards that supersede those below.

- Collaborative Institutional Training Initiative
 - The Collaborative Institutional Training Initiative ([CITI](#)) provides web-based trainings and certifications on human subjects research, IRB, and responsible conduct of research. These in-depth trainings are a good resource for authors needing a refresher or reliable source to reference on research ethics and conduct. Affiliation with a [subscribing organization](#) is required in order to set up an account as an [independent learner](#) and [access trainings](#). Alternatively, [published guides](#)³⁶⁻³⁸ that cover these topic areas can be purchased online. Consider these online courses:
 - [Human Subjects Research](#)
 - [IRB Administration](#)
 - [Responsible Conduct of Research](#)
- Data security
 - Within its [Health IT for HIV/AIDS Care Toolbox](#),³⁹ [HRSA](#) provides a thorough discussion of data security with a comprehensive list of resources⁴⁰:
 - [How Do I Ensure Security on our System?](#)
 - The Office of the National Coordinator for Health Information Technology has a more clinically focused guide on security of Electronic Health Information that may provide useful information⁴¹:
 - [Guide to Privacy and Security of Electronic Health Information](#)
- Plagiarism
 - [Harvard College](#) provides a comprehensive overview of everything you should know about plagiarism⁴²:
 - [Avoiding Plagiarism](#)
 - The Health and Human Services [Office of Research Integrity](#) has a guide to help scientific writers avoid plagiarism⁴³:
 - [Avoiding plagiarism, self-plagiarism, and other questionable writing practices: A guide to ethical writing](#)

Many applied epidemiologists have access to large datasets which they can analyze to produce scholarly works. However, there may be times when external datasets are useful to answer research questions relevant to public health policy or practice. This requires identification of an appropriate dataset, and once identified, preparing the data for analysis. As with any dataset (primary or secondary), ‘data cleaning’ steps should be completed before analyses commence. Overviews of Web-based data query systems and open data resources, which can be excellent tools for authors, can be found elsewhere.⁴⁴⁻⁴⁶ The links below provide useful resources to help in both of these tasks, especially data use agreements (DUA), which are “contractual documents used for the transfer of nonpublic data that is (sic) subject to some restriction on its use.”⁴⁷ DUA may be familiar to those in corporate settings but foreign to many in public health organizations. However, many public health organizations may have DUAs in place, so applied epidemiologist should check within their organization to ensure that they are not already in place.

Identifying Existing Data Sources

- This excellent guide from the [National Institutes of Health Office of Management](#) contains resources for “finding, using, and analyzing health and population data.”⁴⁸:
 - [Health Data Resources](#)
- A regularly updated [list of existing resources](#) from the [University of Minnesota Biomedical Library](#)⁴⁹:
 - [Health Statistics and Data Sources](#)
- [Partners in Information Access for the Public Health Workforce](#) has a wonderful list⁵⁰ of available data, especially at the state and local level:
 - [Health Data Tools and Statistics](#)

Data Use Agreements

- The CDC provides data sharing standards based upon the Ten Guiding Principles for Data Collection, Storage, Sharing, and Use to Ensure Security and Confidentiality⁵¹:
 - [Standards to Facilitate Data Sharing and Use of Surveillance Data for Public Health Action](#)
- A number of data use agreement templates and examples are available. For example:
 - From [Harvard Catalyst](#)⁵²:
 - [Sample Data Use Agreement](#)
 - From the [Office of Sponsored Research](#) at the University of North Carolina at Chapel Hill⁵³:
 - [Data Use Agreement Guidance](#)
 - From [Capacity Plus](#)⁵⁴:
 - [Creating a Data Sharing Agreement](#)

Composing the Writing Team

Once the decision has been made to pursue a scientific writing project, the first step is to assemble a scientific writing team, unless the author wishes to complete all the work alone. Comprising the scientific writing team should start with a process familiar to many applied epidemiologists, the needs assessment. While this assessment is not formal in nature, it does require considerable introspection. Few authors bring all the skills they need to the table, as writing projects can require diverse skills. For example, an exemplary manuscript might require a conceptual model, data cleaning and analyses, a comprehensive literature review, and a careful synthesis of the literature in light of the findings of the new analyses. While completing these tasks alone is completely possible, their completion is undoubtedly easier with a cohesive and comprehensive writing team. The lead author should begin the process by identifying these “required skills” and try to match these needs to colleagues who can provide them. While there is no set way to do this, it is wise to approach individuals who possess these skills, have time to commit to the project, and have a track record of meeting deadlines.

Determining Authorship

The senior author is responsible for overseeing the writing process. Typically, in epidemiology, the senior author is the last author on the author line. Either the lead author or the senior author is usually identified as the “corresponding author” (eg, “Please address all correspondence to...”). There are a number of guides to help the senior author determine authorship. One widely accepted collection of resources is the recommendations of the [International Committee of Medical Journal Editors](#). Within their recommendations are those [Defining the Role of Authors and Contributors](#). In brief, authors need to qualify for authorship by making substantial contributions to the manuscript: (1) conception, design, analysis, or interpretation of data; (2) drafting or revising the article; (3) final approval of the version submitted for publication; and (4) agreement to be accountable for all aspects of the work.⁵⁵ All four conditions should be met. The order of authors is important, and can vary by discipline. For example, schools of medicine often reserve the last author in the author list as the “senior author” if he/she isn’t first. Schools of public health may use this convention or may designate the corresponding author as the senior author. This individual, if not the first author, may take the second or last position in the author list. Regardless of the convention adhered to, the order of authors should be decided very early in the process through an explicit discussion by the writing team. As the manuscript progresses as individual efforts become more evident, discussions to change the order of the authors may be appropriate.

Selecting a Target Journal

Selecting the correct journal for submission can be the most important factor that predicts how long it will take to go from a manuscript to a published article. It should be noted that measures of prestige, either informal or formal (eg, impact factor) shouldn’t deter an author from considering a journal as an outlet. A manuscript that is a good fit for a prestigious journal (however defined) may get a warm reception by the editors while a manuscript that is a poor fit for a journal may get rejected by a fledgling or less highly esteemed journal. It should be noted however that many of the journals that seek to inform a broad audience will often be reluctant to publish studies of regional or local interest, and this should be considered when selecting an outlet. There are a number of guides that can help authors select the best journal for the content of their manuscript based upon obvious indicators like keywords or association affiliation, and upon less obvious information, such as topic areas of articles recently published in the journal.

Links to online guides

- [JournalGuide Database](#)
 - JournalGuide was developed at Research Square, by a group of software developers, former researchers, and others professionals familiar to the process of scholarly publication. This free tool combines multiple data sources and measures into a single resource for authors to simplify their search for choosing the best journal for their manuscript. The interface is user-friendly for simple searches with detailed filtering to find journals and governmental publications (eg, *MMWR*) that meet authors’ needs based on manuscript content or keywords, journal topic or category, publisher, or specific journal metrics.
- [Jane](#)
 - Journal/Author Name Estimator (Jane) is a free search tool that will provide a list of suggested journals for publication based on the name of your title, the content of your abstract, or keywords. It will also allow you to search for results by article or author, which can be helpful when looking for additional sources or related content to cite in your manuscript.
- [SCImago Journal & Country Rankings](#)
 - SCImago Journal Rank indicator (SJR) is a journal metric that shows the visibility of the journals included in the Scopus database since 1996. The SCImago portal can be used to search for journals based on journal- and country-scientific indicators that were developed from information in the Scopus database, as well as other journal metrics.
- [Virginia Tech directory of databases](#)

- Virginia Tech libraries provides an overview of resources and tools for selecting a journal in which to publish.
- [Duquesne University Journal Search Tools](#)
 - A listing, provided by Duquesne University, of additional resources to help identify potential journals to publish your research.

Understanding Journal Metrics

There are no universally accepted metrics to determine the importance of a journal or value of a published article. While some indices such as journal impact factor or the number of citations that an article garners are often highly touted, they, like other indices, capture only one facet of the importance of a scientific product. For example, a journal that exclusively publishes review articles (which are often highly cited), may have a high impact factor, but the content may be esoteric and of little use to the broader public health community. Similarly, articles that report national surveillance data may be highly cited and useful, but may not provide insight into solutions to public health problems that improve the health of the population. As such, alternative metrics should be considered that give insight into the reach, adoption, and implementation of scholarly works. Below, we provide resources that detail and give context to metrics that are of potential interest to applied epidemiologists.

Traditional journal metrics

- [Elsevier: Measuring a Journal's Impact](#)
 - Provides a comprehensive explanation⁵⁶ for those metrics supported by Elsevier publisher, which are based on data contained in the Scopus database. These are followed by an overview of metrics published by Thomson Reuters.
- [Elsevier SNIP & SJR Reference Guide](#)
 - Describes⁵⁷ Source-Normalized Impact per Paper (SNIP), which measures a source's contextual citation impact and SCImago Journal Rank (SJR), a measure of the scientific prestige of scholarly sources.
- [Taylor & Francis Metrics Guide](#)
 - An overview of metrics⁵⁸ supported by this publisher.
- [University of Missouri: Commonly Used Rankings](#)
 - Definitions and explanations for commonly used metrics⁵⁹ and an additional tab that reviews international and modern journal metrics.
- [Johns Hopkins University: Scholarly Metrics Guides](#)
 - A comprehensive guide⁶⁰ that reviews metrics used for journals, articles, authors, books. They also include information on Altmetrics, data metrics, and additional author tools.

Alternative journal metrics

Alternative metrics stretches the scope of metrics for scholarly impact, focusing less on citation-based indicators and more on social/behavioral-based indicators such as page views, downloads, social media use, etc.

- [Virginia Tech comprehensive guide on altmetrics**](#)
 - This detailed overview⁶¹ provided by Virginia Tech libraries describes current and emerging alternative metrics. Everything you need to know, understand, and use, as it relates to these new and emerging metrics, is provided in the sub-topic menu links on the left-hand side of the page. Specific sources and developers of alternative metrics can be found under the "Resources" link on the left. **Note: This resource uses the term "altmetrics" as an abbreviation when generally referring to alternative metrics, which should not be confused with the organization named Altmetric. According to a recent article in *Learned Publishing*, "altmetrics" can also be used as a catchall term for alternative metrics that do not measure traditional citations. In the case of this definition, altmetrics "seek to judge the impact of a research output by examining the number of times

that it is viewed, downloaded, saved, discussed by the scientific community, and recommended to others."⁶²

- Sites that provide altmetrics:
 - [Altmetric](#)
 - [ImpactStory](#)
 - [Publish or Perish](#)
 - [PlumX](#)
 - [ReaderMeter](#)

Table 1. Scientific Journals Relevant to Applied Epidemiologists

Table 1. Scientific Journals Relevant to Applied Epidemiologists

Title	Acceptance				Time to Decision*	About the Journal**	Instructions to Authors	Editor-in-Chief
	SJR	H index	IF	Rate*				
AIDS and Behavior	1.733	64	3.728	NR	44 days	AIDS and Behavior provides an international venue for the scientific exchange of research and scholarly work on the contributing factors, prevention, consequences, social impact, and response to HIV/AIDS. The journal publishes original peer-reviewed papers addressing all areas of AIDS behavioral research including: individual, contextual, social, economic and geographic factors that facilitate HIV transmission; interventions aimed to reduce HIV transmission risks at all levels and in all contexts; mental health aspects of HIV/AIDS; medical and behavioral consequences of HIV infection - including health-related quality of life, coping, treatment and treatment adherence; and the impact of HIV infection on adults children, families, communities and societies. The journal publishes original research articles, brief research reports, and critical literature reviews.	http://www.springer.com/public-health/journal/10461?detailsPage=ptcl_649262	Sech C. Kalichman Center for HIV Prevention & Intervention 2006 Hillside Road, Unit 1248 University of Connecticut Storrs, CT 06269 Email: aidsandbehavior@yahoo.com (no phone listed)
American Journal of Epidemiology	2.511	190	5.230	NR	NR	The American Journal of Epidemiology is the premier epidemiological journal devoted to the publication of empirical research findings, opinion pieces, and methodological developments in the field of epidemiological research. It is a peer-reviewed journal aimed at both fellow epidemiologists and those who use epidemiological data, including public health workers and clinicians.	http://www.oxfordjournals.org/our_journals/aje_for_authors/general.html	Moyses Szklo, MD, DRPH American Journal of Epidemiology Editorial Office 111 Market Place, Ste 840 Baltimore, MD 21202-6709 USA (no email listed) (no phone listed)
American Journal of Infection Control	0.984	77	NR	NR	NR	AJIC covers key topics and issues in infection control and epidemiology. Infection control professionals, including physicians, nurses, and epidemiologists, rely on AJIC for peer-reviewed articles covering clinical topics as well as original research. As the official publication of the Association for Professionals in Infection Control and Epidemiology (APIC), AJIC is the foremost resource on infection control, epidemiology, infectious diseases, quality management, occupational health, and disease prevention. AJIC also publishes infection control guidelines from APIC and the CDC. AJIC is included in Index Medicus and CINAHL.	http://www.ajicjournal.org/content/authorinfo	Elain L. Larson, RN, PhD, FAAN, CIC American Journal of Infection Control, Columbia University School of Nursing 630 W 168th St New York, NY 10032 Email: ajic@columbia.edu Phone: +1 212 305-0723
American Journal of Preventive Medicine	2.55	141	4.527	NR	NR	The American Journal of Preventive Medicine is the official journal of the American College of Preventive Medicine and the Association for Prevention Teaching and Research. It publishes articles in the areas of prevention research, teaching practice and policy. Original research is published on interventions aimed at the prevention of chronic and acute disease and the promotion of individual and community health. Of particular emphasis are papers that address the primary and secondary prevention of important clinical, behavioral and public health issues such as injury and violence, infectious disease, women's health, smoking, sedentary behaviors and physical activity, nutrition, diabetes, obesity, and alcohol and drug abuse. Papers also address educational initiatives aimed at improving the ability of health professionals to provide effective clinical prevention and public health services. Papers on health services research pertinent to prevention and public health are also published. The journal also publishes official policy statements from the two co-sponsoring organizations, review articles, media reviews, and editorials. Finally, the journal periodically publishes supplements and special theme issues devoted to areas of current interest to the prevention community.	http://cdn.elsevier.com/promis_misc/AMEPRE_fa.pdf	Matthew J. Boulton, MD, MPH University of Michigan School of Public Health 1415 Washington Heights Ann Arbor MI 48109-2029 USA Email: ajpm@umich.edu Tel: 734-936-1591
American Journal of Public Health	1.987	183	4.552	18.54%	Initial screening results in rejection of the majority of manuscripts within 2 weeks to 30 days of submission. For those papers that are selected for review, the time to first decision is about 3 months. Overall time from submission to acceptance, which includes revisions by the authors, is about 4.8 months.	The American Journal of Public Health (AJPH) is dedicated to publication of original work in research, research methods, and program evaluation in the field of public health. The Journal also regularly publishes editorials and commentaries and serves as a forum for health policy analysis. The mission of the Journal is to advance public health research, policy, practice, and education. Each month, national and international public health professionals turn to AJPH for the most current, authoritative, in-depth information in the field. The goals of both the online and the print versions of the Journal, published monthly by the American Public Health Association, are To publish the best scientific research in the field of public health, To serve as a forum for diverse viewpoints on major public health issues and policies, To promote diverse public health practice models, To increase public and professional understanding of public health problems and their solutions through delivery channels relevant to different audiences and their needs, and To work in concert with the 3 main priorities of the American Public Health Association, namely to develop universal coverage, eliminate health disparities, and rebuild the public health infrastructure.	http://ajph.aaphublications.org/page/authors.html	Alfredo Morabia, MD, PhD (no address listed) (no email listed) (no phone listed)
Annals of Epidemiology	1.095	90	2.000	NR	NR	Annals of Epidemiology is a peer reviewed, international journal devoted to epidemiologic research and methodological development. The journal emphasizes the application of epidemiologic methods to issues that affect the distribution and determinants of human illness in diverse contexts. Its primary focus is on chronic and acute conditions of diverse etiologies and of major importance to clinical medicine, public health, and health care delivery. Annals encourages the use of epidemiology in a multidisciplinary approach to understanding disease etiology. Review articles, reports from U.S. Federal and International sources, Editorials, Commentaries, Brief Communications, Letters to the Editor, Book Reviews, and selected papers from major symposia are also published.	http://www.annalsofepidemiology.org/content/authorinfo	Richard Rothenberg, MD, MPH (no address listed) Email: annalsofepidemiology@gsu.edu (no phone listed)
BMC Public Health	1.139	71	2.264	NR	NR	BMC Public Health is an open access journal publishing original peer-reviewed research articles in the epidemiology of disease and the understanding of all aspects of public health. The journal has a special focus on the social determinants of health, the environmental, behavioral, and occupational correlates of health and disease, and the impact of health policies, practices and interventions on the community.	http://bmcpublichealth.biomedcentral.com/submission-guidelines	Martin Caraher (no address listed) (no email listed) (no phone listed) Naoki Kondo (no address listed) (no email listed) (no phone listed) David Stieb (no address listed) (no email listed) (no phone listed) Cornel Vandelanotte (no address listed) (no email listed) (no phone listed) For inquiries, contact: (no address listed) Email: bmcpublichealth@biomedcentral.com (no phone listed) Laragh Gollgoly (no address listed) (no email listed) (no phone listed)
Bulletin of the World Health Organization	2.014	113	5.089	NR	NR	The Bulletin of the World Health Organization is an international journal of public health with a special focus on developing countries. Since it was first published in 1948, it has become one of the world's leading public health journals. In keeping with its mission statement, the peer-reviewed monthly maintains an open-access policy so that the full contents of the journal and its archives are available online free of charge. As the flagship periodical of the World Health Organization (WHO), the Bulletin draws on WHO experts as editorial advisers, reviewers and authors as well as on external collaborators. Anyone can submit a paper to the Bulletin, and no author charges are levied. All peer-reviewed articles are indexed, including in ISI Web of Science and MEDLINE.	http://www.who.int/bulletin/volumes/94/1/16-990116/en/	For inquiries, contact: Email: bulletin@who.int OR Email: bulletin.submit.ask@who.int
Cancer Epidemiology Biomarkers and Prevention	2.413	150	4.125	NR	NR	Cancer Epidemiology, Biomarkers & Prevention publishes original peer-reviewed, population-based research on cancer etiology, prevention, surveillance, and survivorship. The following topics are of special interest: descriptive, analytical, and molecular epidemiology; biomarkers including assay development, validation, and application; chemoprevention and other types of prevention research in the context of descriptive and observational studies; the role of behavioral factors in cancer etiology and prevention; survivorship studies; risk factors; and the science of cancer health disparities. Besides welcoming manuscripts that address individual subjects in any of the relevant disciplines, CEBP editors encourage the submission of manuscripts with a transdisciplinary approach.	http://www.aacrjournals.org/site/InstAuthors/ifa_ora.xhtml	Timothy R. Rebbeck CEBP Editorial Office American Association for Cancer Research, Publications Division 615 Chestnut Street, 17th Floor Philadelphia, PA 19106-4404 Email: cebp@aacr.org Phone: (215) 440-9300
Community Dentistry and Oral Epidemiology	0.901	70	2.025	NR	NR	The aim of Community Dentistry and Oral Epidemiology is to serve as a forum for scientifically based information in community dentistry, with the intention of continually expanding the knowledge base in the field. The scope is therefore broad, ranging from original studies in epidemiology, behavioral sciences, and health services research through to methodological reports in program planning, implementation and evaluation. Reports dealing with people of all age groups are welcome, including those relating to research in geriatric dentistry and care provision for the elderly. The aim of Community Dentistry and Oral Epidemiology is to serve as a forum for scientifically based information in community dentistry, with the intention of continually expanding the knowledge base in the field. The scope is therefore broad, ranging from original studies in epidemiology, behavioural sciences related to dentistry, and health services research, through to methodological reports in program planning, implementation and evaluation. Reports dealing with people of any age group are welcome. The journal encourages manuscripts which present methodologically detailed scientific research findings from original data collection or analysis of existing databases. Preference is given to new findings. Confirmation of previous findings can be of value, but the journal seeks to avoid needless repetition. It also encourages thoughtful, provocative commentaries on subjects arising from research methods to public policies. Purely descriptive reports are not encouraged, and neither are behavioural science reports with only marginal application to dentistry.	http://onlinelibrary.wiley.com/journal/10.1111/j.1539-1600.0528/homepage/ForAuthors.html	W. Murray Thomson University of Otago Division of Health Sciences PO Box 56 Dunedin 9054 New Zealand (no email listed) (no phone listed)
Emerging Infectious Diseases	2.943	165	6.75	25%	NR	Emerging Infectious Diseases represents the scientific communications component of CDC's efforts against the threat of emerging infections. However, even as it addresses CDC's interest in the elusive, continuous, evolving, and global nature of these infections, the journal relies on a broad international authorship base and is rigorously peer-reviewed by independent reviewers from all over the world.	http://wwwnc.cdc.gov/eid/page/author-resource-center	D. Peter Drotman, MD, MPH (no address listed) (no email listed) (no phone listed)

Environmental Health Perspectives	2.775	194	7.980	13%-15%	The average time from submission to final decision is 33 days for all papers and 89 days for papers that are peer reviewed.	Environmental Health Perspectives (EHP) is a monthly open-access journal that publishes peer-reviewed research and news concerning human health and the environment. One of the overarching principles of the journal is to provide a forum for the objective and balanced presentation of scientifically credible information. Although EHP is sponsored by the National Institute of Environmental Health Sciences (NIEHS), its editorial policies are independent of the institute.	http://ehp.niehs.nih.gov/instructions-to-authors/	Sally Perreault Darney, PhD (no address listed) (no email listed) (no phone listed)
					The environmental health sciences include many fields of study and increasingly comprise multi-disciplinary research areas. EHP publishes articles from a wide range of scientific disciplines encompassing mechanistic research, experimental and observational human studies, and in vitro and in vivo animal research with a clear relationship to human health effects. Studies involving exposure science, climate change, ecologic issues, or effects on wildlife populations are welcome, but the relevance of the findings to human health should be made clear. EHP also addresses ethical, legal, social, and policy issues related to environmental public health. Because children are uniquely sensitive to their environments, EHP devotes a research section specifically to issues surrounding children's environmental health.			
					EHP provides additional information on environmental health issues through its News and Editorials. Although EHP welcomes ideas for News and Editorials, the journal does not accept unsolicited manuscripts of these types. Please contact the Editor-in-Chief for further information.			
Epidemiology	2.596	128	NR	NR	Epidemiology publishes original research from all fields of epidemiology. The journal also welcomes review articles and meta-analyses, novel hypotheses, descriptions and applications of new methods, and discussions of research theory or public health policy. We give special consideration to papers from developing countries.		http://edmgr.ovid.com/epid/accounts/fauth.htm	Timothy L. Lash 2897 N. Druid Hills Rd NE, #279 Atlanta, Georgia 30329-3924 Email: timothy.lash@epidemiology-journal.com (no phone listed)
Ethnicity and Health	0.604	39	1.667	NR	Ethnicity & Health is an international academic journal designed to meet the world-wide interest in the health of ethnic groups. It embraces original papers from the full range of disciplines concerned with investigating the relationship between 'ethnicity' and 'health' (including medicine and nursing, public health, epidemiology, social sciences, population sciences, and statistics). The journal also covers issues of culture, religion, gender, class, migration, lifestyle and racism, in so far as they relate to health and its anthropological and social aspects.	The journal aims to: Deal with practice and policy in a thoughtful and critical way. Present empirical material in a way that considers theoretical issues in addition to implications for policy and practice, given the contested nature of both 'ethnicity' and 'health'. Address the methodological problems that face both qualitative and quantitative studies in multi-cultural societies.	http://www.tandfonline.com/action/authorSubmission?journalCode=ceth20&page=instructions#Vv_OOpMrJE4	Keith E. Whitfield (no address listed) (no email listed) (no phone listed)
								Tamara A. Baker (no address listed) (no email listed) (no phone listed)
								Sarah Stanton (no address listed) (no email listed) (no phone listed)
Journal of Epidemiology and Community Health	1.658	119	3.501	12%	20 days	Journal of Epidemiology and Community Health is a truly international journal that encompasses all aspects of epidemiology and public health. It publishes original research, opinions and materials concerned with the study and improvement of communities worldwide.	http://jech.bmj.com/site/about/guidelines.xhtml	Martin Bobak Email: jech@bmj.com (no phone listed)
								James R. Dunn Email: jech@bmj.com (no phone listed)
Journal of Exposure Science and Environmental Epidemiology	1.388	64	3.185	NR	42 days	Journal of Exposure Science and Environmental Epidemiology (JESE), a peer-reviewed publication, is published six times a year. The journal publishes research important to exposure assessment for toxic substances, environmental epidemiology that includes a strong exposure analysis component and related disciplines that advance the exposure assessment process. JESE also publishes original research presenting significant advances in exposure analysis such as measurements, modeling, instrumentation, and questionnaires; mechanisms of exposure via pathways that lead to routes of exposure; development of molecular biomarkers of exposure; health effects, and susceptibility; genomic, proteomic, and metabolomics approaches and studies that assess exposure in the context of health effects; studies on chemical, biological, and physical principles required to analyze human exposure from single and multiple media and routes; occupational exposure studies that enhance the understanding of environmental exposure; and, population-based studies of exposure to toxic substances.	http://www.nature.com/jes/for_authors.html	Morton Lippmann, PhD Department of Environmental Medicine, NYU Langone Medical Center 57 Old Forge Road Floor 2, Room 2668, Sterling Forest Tawees, NY 10987 E-mail: morton.lippmann@nyumc.org (no phone listed)
						Types of work considered are original research; feature articles on emerging issues significant to exposure analysis and assessment; and, reviews on subjects of importance to exposure assessment.		
Journal of Immigrant and Minority Health	0.549	33	1.482	NR	65 days	Journal of Immigrant and Minority Health is an international forum for the publication of peer-reviewed original research pertaining to immigrant health from contributors in many diverse fields including public health, epidemiology, medicine and nursing, anthropology, sociology, population research, immigration law, and ethics. The journal also publishes review articles, short communications, letters to the editor, and notes from the field.	http://www.springer.com/public-health/journal/10903	Sana Loue, JD, PhD, MPH Department of Epidemiology and Biostatistics Case Western Reserve University School of Medicine 10900 Euclid Avenue Cleveland, Ohio 44106-4945 Email: Sana.Loue@case.edu Phone: (216) 368-3743
Journal of Public Health	1.157	55	2.039	NR	NR	The Journal of Public Health invites submission of papers on any aspect of public health research and practice.	http://www.oxfordjournals.org/our_journals/public_health/for_authors/general.html	Eugene Milne (no address listed) (no email listed) (no phone listed)
						We welcome papers on the theory and practice of the whole spectrum of public health across the domains of health improvement, health protection and service improvement, with a particular focus on the translation of science into action.		
						Papers on the role of public health ethics and law are welcome. We aim to promote the highest standards of public health practice internationally through the timely communication of current, best scientific evidence.		
						Our main criteria for grading manuscripts are scientific originality and impact, as well as relevance to public health practice		
								Ted Schrecker (no address listed) (no email listed) (no phone listed)
								For inquiries, contact: (no address listed) Email: JPH.editorialoffice@oup.com (no phone listed)
Journal of Public Health Management and Practice	0.622	35	1.396	20%	<10 days	Journal of Public Health Management and Practice publishes articles which focus on evidence based public health practice and research. The journal is a bi-monthly peer-reviewed publication guided by a multidisciplinary editorial board of administrators, practitioners and scientists. Journal of Public Health Management and Practice publishes in a wide range of population health topics including research to practice; emergency preparedness; bioterrorism; infectious disease surveillance; environmental health; community health assessment; chronic disease prevention and health promotion, and academic-practice linkages. Recognized as the leading practice based public health journal, the Journal of Public Health Management and Practice has recently published focus issues defining the public health workforce, performance management and bridging the research to practice gap.	http://edmgr.ovid.com/jphmp/accounts/fauth.htm	Lloyd F. Novick, MD, MPH (no address listed) lnovick@ecu.edu (no phone listed)
								For inquiries, contact: Justin B. Moore, PhD, MS jusmoore@wakehealth.edu (no phone listed)
Journal of Rural Health	0.652	38	1.453	NR	NR	The Journal of Rural Health, a quarterly journal published by the NRHA, offers a variety of original research relevant and important to rural health. Some examples include evaluations, case studies, and analyses related to health status and behavior, as well as to health work force, policy and access issues. Quantitative, qualitative and mixed methods studies are welcome. Highest priority is given to manuscripts that reflect scholarly quality, demonstrate methodological rigor, and emphasize practical implications. The journal also publishes articles with an international rural health perspective, commentaries, book reviews and letters.	http://online.library.wiley.com/journal/10.1111/ISSN1748-0361/homepage/ForAuthors.html	Tyrene F. Borders, PhD, F.A.C.E. (no address listed) (no email listed) (no phone listed)
Journal of the American Medical Association	5.197	522	35.3	9.5%	In 2015, the median time for an initial editorial decision for submitted manuscripts was 3 days; the median time from submission to acceptance for all articles was 17 days and 34 days from acceptance to publication	JAMA's Key and Critical Objectives Key Objective To promote the science and art of medicine and the betterment of the public health Critical Objectives To maintain the highest standards of editorial integrity independent of any special interests To publish original, important, valid, peer-reviewed articles on a diverse range of medical topics To foster responsible and balanced debate on important issues that affect medicine, health, health care, and health policy To provide physicians with continuing education in basic and clinical science to support informed clinical decisions and ongoing career development To enable physicians to remain informed in multiple areas of medicine, including developments in fields other than their	http://jama.jamanetwork.com/public/instruction/forAuthors.aspx	Howard Bauchner, MD (no address listed) (no email listed) (no phone listed)
								For inquiries, contact: JAMA 330 N Wabash Ave Chicago, IL 60611-5885, USA; email: jama@jamanetwork.org telephone: (312) 464-4444 or (312) 464-2402
Morbidity and Mortality Weekly Report	4.672	143	NR	NR	NR	The Morbidity and Mortality Weekly Report (MMWR) series is prepared by the Centers for Disease Control and Prevention (CDC). Often called "the voice of CDC," the MMWR series is the agency's primary vehicle for scientific publication of timely, reliable, authoritative, accurate, objective, and useful public health information and recommendations. MMWR readership predominantly consists of physicians, nurses, public health practitioners, epidemiologists and other scientists, researchers, educators, and laboratorians. The data in the weekly MMWR are provisional, based on weekly reports to CDC by state health departments.	http://www.cdc.gov/mmwr/author_guide.html	Sonja A. Rasmussen, MD, MS Director, Division of Public Health Information Dissemination Editor-in-Chief, Morbidity and Mortality Weekly Report Center for Surveillance, Epidemiology, and Laboratory Services Office of Public Health Scientific Services Centers for Disease Control and Prevention (CDC) Email: mmwrq@cdc.gov Phone: 404-498-1150

New England Journal of Medicine	12.155	757	55.87	NR	NR	The <i>New England Journal of Medicine</i> (NEJM.org) is dedicated to bringing physicians the best research and key information at the intersection of biomedical science and clinical practice, and to presenting the information in an understandable and clinically useful format. A career companion for physicians, NEJM keeps practicing physicians informed on developments that are important to their patients and keeps them connected to both clinical science and the values of being a good physician.	http://www.nejm.org/page/author-center/publication-process	Jeffrey M. Drazen, MD (no address listed) (no email listed) (no phone listed)
Nicotine and Tobacco Research	1.555	75	3.296	NR	NR	Nicotine & Tobacco Research is the official journal of the Society for Research on Nicotine and Tobacco. The papers in the journal focus primarily on the neurobiology, psychology, epidemiology, and issues concerned with tobacco policy and public health related to tobacco use and dependence. The journal also focuses on clinical aspects of the subject particularly with regard to interventions employed in tobacco cessation.	http://www.oxfordjournals.org/our_journals/nic_tob_for_authors/general.html	Marcus Munafò, PhD (no address listed) Email: marcus.munaf0@bristol.ac.uk (no phone listed)
Preventing chronic disease	1.089	41	2.123	NR	NR	<i>Preventing Chronic Disease (PCD)</i> is a peer-reviewed electronic journal established by the National Center for Chronic Disease Prevention and Health Promotion. The mission of PCD is to promote the open exchange of information and knowledge among researchers, practitioners, policy makers, and others who strive to improve the health of the public through chronic disease prevention. The vision of PCD is to be the premier forum where practitioners and policy makers inform research and researchers help practitioners and policy makers more effectively improve the health of the population. Articles focus on preventing and controlling chronic diseases and conditions, promoting health, and examining the biological, behavioral, physical, and social determinants of health and their impact on quality of life, morbidity, and mortality across the life span.	http://www.cdc.gov/pcd/for_authors/	Samuel Posner, PhD (no address listed) Email: PCDeditor@cdc.gov (no phone listed)
Preventive Medicine	1.487	122	NR	NR	NR	Founded in 1972 by Ernst Wynder, <i>Preventive Medicine</i> is an international scholarly journal that provides prompt publication of original articles on the science and practice of disease prevention, health promotion, and public health policymaking. <i>Preventive Medicine</i> aims to reward innovation. It will favor insightful observational studies, thoughtful explorations of health data, unsuspected new angles for existing hypotheses, robust randomized controlled trials, and impartial systematic reviews. The ultimate goal of <i>Preventive Medicine</i> is to publish research that will have an impact on the work of practitioners of disease prevention and health promotion, as well as of related disciplines.	https://www.elsevier.com/journals/preventive-medicine/0091-7435/guide-for-authors	Eduardo L. Franco, MPH, DrPH, FRSC, FCAHS Preventive Medicine Editorial Office Department of Oncology, McGill University 546 Pine Avenue West, Montreal, QC, Canada H2W1S6 (no email listed) (no phone listed)
Public Health Reports	0.837	65	NR	NR	NR	PHR is a peer-reviewed journal published on a bi-monthly basis. The six regular issues produced annually offer articles in three main areas: public health practice, research, and viewpoints/commentaries. Each issue offers recurring guest columns such as Local Acts, Global Health Matters, ASPH "From the Schools and Programs of Public Health", Law and the Public's Health, Public Health Chronicles, NCHS Dataline, and the Surgeon General's Perspectives.	http://www.publichealthreports.org/Authors.cfm	Frederic E. Shaw, MD, JD (no address listed) (no email listed) (no phone listed)
						We have focused upon such topics as tobacco control, teenage violence, occupational disease and injury, immunization, drug policy, lead screening, health disparities, and many other key and emerging public health issues. In addition to the six regular issues, PHR produces supplemental issues approximately 2-5 times per year which focus on specific topics that are of particular interest to our readership. The Journal's contributors are on the front line of public health and they present their work in a readable and accessible format.		For inquiries, contact: Public Health Reports c/o Association of Schools and Programs of Public Health 1900 M Street NW, Suite 710 Washington, DC 20036 Email: publichealthreports@gmail.com (no phone listed)
Sexually Transmitted Diseases	1.545	81	NR	NR	NR	Sexually Transmitted Diseases, the official journal of the American Sexually Transmitted Diseases Association, publishes peer-reviewed, original articles on clinical, laboratory, immunologic, epidemiologic, behavioral, public health, and historical topics pertaining to sexually transmitted diseases and related fields. Reports from the CDC and NIH provide up-to-the-minute information. A highly respected editorial board is composed of prominent scientists who are leaders in this rapidly changing field. Included in each issue are studies and developments from around the world.	http://journals.lww.com/stdjournal/Pages/informationforauthors.aspx	William C. Miller, MD, PhD, MPH (no address listed) Email: miller.8332@osu.edu Phone: 614-292-2516
Tobacco Control	2.346	86	5.933	24%	27 days	<i>Tobacco Control</i> aims to study the nature and consequences of tobacco use worldwide: tobacco's effects on population health, the economy, the environment, and society; efforts to prevent and control the global tobacco epidemic through population level education and policy changes; the ethical dimensions of tobacco control policies; and the activities of the tobacco industry and its allies.	http://tobaccocontrol.bmj.com/site/about/guide_lines.html	Ruth Malone (no address listed) Email: Ruth.Malone@ucsf.edu (no phone listed)
Trauma, Violence, and Abuse	1.445	42	2.676	NR	NR	Trauma, Violence, & Abuse (TVA), peer-reviewed and published quarterly, is devoted to organizing, synthesizing, and expanding knowledge on all forms of trauma, abuse, and violence. TVA is practitioner oriented, dedicated to professionals and advanced students in clinical training who work with any form of trauma, abuse, and violence, and is intended to compile knowledge that clearly affects practice, policy, and research.	https://us.sagepub.com/en-us/nam/trauma-violence-abuse/journal200782#submission-guidelines	Jon R. Conte, PhD (no address listed) email: contej@u.washington.edu (no phone listed)

*These data are averages reported by the journal, unless otherwise specified.

**Reported from journal website

SJR (SCImago Journal Rank Indicator) - It expresses the average number of weighted citations received in a specific year (these data are 2014) by the documents published in the journal in the three previous years.

H Index - A journal's number of articles (h) that have received at least h citations over the whole period.

IF (Impact Factor) - A measure of the frequency with which the average article in a journal has been cited in a particular year. It is used to measure the importance or rank of a journal by calculating the times it's articles are cited. The Impact Factor is calculated by dividing the number of citations in the JCR year by the total number of articles published in the two previous years.

NR - Not reported on journal website.

IV. The Process of Scientific Writing

The Process of Scientific Writing

The scientific writing process is best broken into steps that can be completed in sequence by a single author, or in parallel with a writing team. Regardless of the size and composition of the writing team, there are a number of steps that must be completed in a specific temporal order. For example, one must have a research question or hypotheses to initiate the writing process; one would have difficulty writing an introduction without knowing what concepts should be introduced or which gaps in the existing literature should be highlighted. Similarly, one would find it difficult to design tables for the results section without knowing what types of analyses are being run since an ANOVA table is different from a linear regression table. That said, one need not wait for the final results of the analyses to start writing the methods section, as the measures used or the data sources accessed or the population sampled have already been determined. In this section, we describe a very simple, pragmatic approach to writing that enhances accountability and facilitates progress by outlining deliberate steps for the writing process. This section also includes many existing tools to facilitate the writing process.

Introduction to the Scientific Writing Process

Applied epidemiologists are busy working on real problems of surveillance and outbreak investigation in health departments and other settings. They are advantaged in ongoing support for their work completed in shorter timeframes with demonstrable real world outcomes. Publications can be based on these everyday endeavors. Communication of work products can be improved by engaging in the publication process. Actual activities of collecting data, using scientific methods, and implementing programs form the basis for potential publications. Academic researchers will work for years to receive grant funding, develop research, and then wait years for results. While applied epidemiologists do write grants and seek external funding, resources for epidemiologic investigations are commonly financed by local, state, or federal public health agencies as part of their basic mission. Thus, epidemiologists in these agencies can benefit from available external or internal funding for their daily activities. These same activities can provide a basis for publications in the peer-reviewed literature. As such, the applied epidemiologist and the academic researcher can share a similar goal, specifically to increase the scientific knowledge base. Therefore, the goal of a scientific article is to convey information to the reader that⁶³:

- evaluates the observations,
- allows replication of the methods, and
- determines whether the conclusions are justified by the findings.

Epidemiologists in health departments do face barriers in publishing, such as time constraints in their busy schedules. A few other common perceptions about creating a publishable document:

- Too formidable an undertaking
- Requires writing skills beyond their capacity
- Exceeds time available in their schedules
- Something they have never or rarely done
- Nobody is really asking for this (i.e., it's not part of their job description)
- Lack of organizational support or clear, explicit agency process

This section provides advice on beginning the publication process. Topics should be selected from everyday work. Information on a topic needs to be available, but the essential tests are the questions:

- Will publishing on this topic add to general knowledge in the field and be of use to my peer group and others?
- What is the benefit of a publication in this area?
- Will it document a public health problem?
- Will it add to the further understanding of this public health issue?
- Will the intervention described possibly add to public health evidence for future programs?

Editors will not publish articles in areas that repeat a number of already available publications. Focus on the contribution of additional knowledge for your field. Discuss this topic selection with a small group of colleagues. The answers to the questions above need not be momentous. The standard is not groundbreaking; rather it is significant or interesting, worthy of documentation, or conveys additional information. Once you have decided to proceed with your topic, the next step is to work with a small group of your colleagues. The core group is two to four individuals; one of these may have more experience in publication and serve as a mentor. The eventual publication may have more than four authors, but you need a small core group of the major authors at the onset. Before you actually get started with the writing, it is recommended that you select the journal(s) you may submit to, visit their websites, and review the author guidelines.

Getting Started: “Writing in Boxes”

“Writing in Boxes” is a technique that jump-starts a manuscript and has been used successfully in academic writing courses. Drafting an entire article is indeed a formidable undertaking and one listed above as a common restraining perception. We are suggesting that an article can be divided into a series of elements or boxes. Construction of the article is accomplished by (1) completing the boxes (first in concise format and later expanded) and (2) linking them. This is a helpful and proven strategy for beginning to develop scientific articles. This approach is particularly amenable to a small group of core actors. The structure of a scientific article is

denoted by the acronym IMRAD: (1) Introduction – What is the question? (2) Methods – How was it studied? (3) Results – What was found? and (4) Discussion – So What? Based on the IMRAD principle⁶³ (Table 2), the boxes can be listed as follows:

- Topic sentence or hypothesis
- Abstract
- Introduction
- Method
- Results
- Discussion

Table 2. IMRAD* Structure of a Scientific Article

Introduction	<ul style="list-style-type: none"> • The research question • The importance of the study • Begin with a topic sentence (inverted pyramid) • Brief summary of the issue or public health problem • Concise review of pertinent literature • Study approach (one sentence) • What will your article add? • Keep this brief with front-loading
Methods	<ul style="list-style-type: none"> • How you address your study question • Who, what, when, and where • Recipe that others can repeat • Type of study design: describe the intervention • Data sources • Outcomes to be measured • Describe analysis • Statistical tests • Ethical approval
Results	<ul style="list-style-type: none"> • Detail individuals included and excluded • Demographic characteristics of study groups • Results of analyses • Statistical significance, point estimates, and variability (e.g., confidence intervals) • Tables and figures • Consider supplemental digital content for online posting • Report, but do not interpret the results or editorialize
Discussion	<ul style="list-style-type: none"> • The point or “so what” of the study • Summary • Compare findings with previous literature • Implications • Limitations: possible problems with the methods used • Recommendation for action • Recommendations for further study • Conclusions

*IMRAD- Introduction, Methods, Results and Discussion

The text is formatted under the following headings: **Introduction**, **Methods**, **Results**, and **Discussion**. In some cases, a **Background** section can follow the introduction to more fully describe the setting of the study. Also **Recommendations** may be presented in a bulleted list after the discussion. A concise **Conclusion** is optional. **Acknowledgments** are optional. Other sections include **References** and finally **Tables** and **Figures**.

For purposes of this discussion, we will assume that our core group of authors consists of three individuals. Later, we will provide additional guidance and detail about the various sections of an academic article. But at the start, all three authors discuss their topic. A single topic sentence expressing the essence of the article to be

constructed is decided up-front. This is, in effect, the hypothesis of the article--the outbreak investigation; surveillance issue; or program intervention. A next step at one of the initial meetings is to draft an abstract for the article. In this case, one can also refer to the abstract as a summary, but it is important that it can be expressed in one page not to exceed 200 words.

Following this initial meeting(s), homework assignments are handed out to the core authors. Each core author is assigned one of the following elements to work on: introduction, method, or results. Later in this tool kit, we will go into more depth about the construction of these sections. But initially, each of the core authors works on drafting a concise version, not to exceed 200 words, and brings his or her work back to the group.

This method is designed to remove many of the barriers to initiating the writing for a scientific article. The task is changed to a finite achievable assignment. Core authors have scheduled meetings and now have the accountability to show up with their product. Further meetings expand the length of the sections. This endeavor does not require actual findings to write the results section. But as the hypothesis and methods are explicated, the format and tables shells for the results can be constructed. The discussion section is not assigned or completed at this stage. At more final stages, when results or findings are available, the boxes are sewn together in an integrated document. A discussion is added, which summarizes the findings and compares them to previously reported work.

This approach also helps avoid two of the most common problems in articles received by editors of peer-reviewed journals:

- Rambling manuscript--many pages of introduction and background before the topic sentence or hypothesis is evident.
- Lack of organization--no clean demarcation between the content in the various sections of the manuscript (introduction, method, results, or discussion). Authors insert discussion or editorial type contents in various sections before the discussion or conclusion.

Writing the Title

In selecting a title, use plain English, terms that are likely to be used by colleagues searching for articles, a concise expression of the essence of the paper and a provocative and enticing heading. Do not over-promise, employ jargon, or be too cute.

Writing the Abstract

A well-written abstract can be thought of as a sales pitch to answer the question: Why should I read your article when there are so many others to read? That said, journals have varying requirements for abstracts, even when they follow a pre-specified format, such as AMA or APA style. For example, a journal editor may prefer that you not include statistics in the abstract while another may require them, although most epidemiology journals include statistics in the abstract. Abstracts can range in structure and length from a 200-word unstructured (i.e., no headings) format to a 350-word structured abstract. The headings of a structured abstract can vary as well. The best practice is to read the instructions for authors at the journal you've selected as well as recently published articles with similar research designs as the one you're employing. Below are a few helpful links to describe the content and presentation of the abstract:

- The [Writing Center](#) at [University of North Carolina – Chapel Hill](#) has a very good handout about [abstracts](#).⁶⁴
- The [Texas A&M University College of Veterinary Medicine & Biomedical Sciences](#) has a thorough presentation⁶⁵ on [constructing various kinds of abstracts](#).

Selecting Keywords

When submitting an article, the authors must provide keywords that will be used to “index” the article so that it can be entered into various databases for later query. Below are some resources to understand this process and the procedure to maximize effectiveness for your articles. For more information, see the following links:

- From [American Journal Experts](#), tips for [choosing keywords](#).⁶⁶
- From [Editage Insights](#), writing a [title, abstract, and keywords](#).⁶⁷

Writing the Introduction

The introduction states the question and the importance of the study. This should be concise. Authors should construct a first sentence that offers the reader the gist of the article. This is similar to a newspaper article in which the journalist leads off with a sentence that tells the story. In journalism, this method of starting with your conclusion is called the Inverted Pyramid style. Sometimes referred to as Front-Loading, it means you should put your most important information first. The introduction should provide a brief summary of the issue with a very concise review of the literature that pertains to your question. A full review of the literature is not appropriate. But show that you are aware of previous studies, that all statements of fact are appropriately cited, and that you have read the references cited (and they truly say what you are claiming them to say). Again, end with the question you are addressing and what your article will provide. A one-sentence description of your study approach is also recommended. Explain what your article adds. Be careful not to include the methods or results in your introduction.

Writing the Methods

The methods section describes how you addressed your study question or hypothesis. It is similar to a cookbook recipe. For example, what steps do you follow in making lasagna? Can another individual follow your steps and achieve the same result? The methods section should state the hypothesis, research question, or objective of the project. It should answer who, what, why, when and where.⁶³ Include a description of data sources and how the outcomes were measured. (Include case definitions). Then describe how the study was carried out or the study design. This description is brief. Include recruitment of participants and those excluded. Specify the intervention. Identify the groups in the study. Describe the approach- prospective or retrospective cohort; randomized trial; case-control or cross-sectional. Consider a diagram for a complex design.

Refer to the statistical tests you will use in your analysis to test the hypothesis or answer the research question. State how small the probability (P-value) has to be to disprove the null hypothesis.⁶³ Consider the possibility that your methods will not detect a true difference because the power of your study is not sufficient to avoid a false negative result (type II error). Ideally, a full power analysis will precede data collection, in the design phase, but lack of statistical power should be considered in the absence of a power analysis. Finally, include a reference to the tests used to analyze your data and the software, including the version used.

Scientific journals require ethical approval for publication. In the methods section, describe your IRB (Institutional Review Board) approval or waiver. Do not include background information or results in the methods section. References (citations) to the methods used may be appropriate.

Writing the Results

Objectively report the findings of the study. Report data that will bear on the rejection or non-rejection of your null hypothesis. Describe the individuals enrolled in the study, including those excluded or who withdrew. What is the final population included in the analysis?

Provide a description of the outcomes. Each paragraph begins with a topic sentence describing the data set that will be covered. This paragraph can refer to a table or figure. Check the directions to authors of the intended journal for the number of tables or figures that are permitted. The journal may allow supplemental digital content where additional tables or figures can be submitted. Data in the tables and figures need not be repeated in the text. Sentences in the text can summarize the findings and direct the reader to the appropriate exhibit (table or figure).

Tables consist of a title, body, and footnotes. The title should be concise and may include the number of subjects and date. The body consists of columns and rows of cells, each of which should contain a value. A column that lists individual P values for comparisons can be a good way to display the results. Figures or illustrations can display results as graphs, charts, or pictures. Permissions are required to use figures from other publications. Style in expressing the results is important. A useful reference document is the “Epidemiology Bulletin Format and Style Guidelines” supplied by Alaska Department of Health and Social Services, which can be found in Appendix C.

Results are to be interpreted in the discussion section, *not* the results section. Do not add the following to the results section: data from external sources, discussion points, editorial comments, or citations to the literature. For further guidance, we recommend prospective authors read *How to Write a Paper*⁶³ edited by Hall or *How to Write and Publish a Scientific Paper*⁶⁸ by Day and Gastel.

Reporting conventions

It is important for reproducibility that scientific papers have standardized reporting of investigations with common research designs. Below are widely accepted guidelines for two common research designs:

- This [CONSORT website](#) is a dedicated resource to authors about understanding and using CONSORT for the transparent reporting of clinical trials.
- The CDC provides a statement and overview on Transparent Reporting of Evaluations with Nonrandomized Designs ([TREND](#)) group, along with a [22-item checklist](#).⁶⁹

Data Visualization and Social Math

As part of an excellent introduction to data visualization, the SAS Institute describes the process thusly:

*Data visualization is the presentation of data in a pictorial or graphical format. It enables decision makers to see analytics presented visually, so they can grasp difficult concepts or identify new patterns. With interactive visualization, you can take the concept a step further by using technology to drill down into charts and graphs for more detail, interactively changing what data you see and how it's processed.*⁷⁰

Social math is a subset of data visualization more focused on the presentation of data in a graphical format in the popular press for public consumption. For an overview of data visualization generally, see this introduction to data visualization and why you should care about it⁷⁰ from the [SAS Institute \(Data Visualization: What it is and why it matters\)](#). For a very good specific overview⁷¹ from the [Berkley Media Strategies Group](#), see [Using Social Math to Support Your Policy Issue](#). Below is a short collection of useful tools and resources for data visualization that can be used to produce social math:

- [Community Commons](#)
 - Community Commons is an online resource where multi-level data, tools, and individuals converge and provide a unique environment for collaboration and creation of data visualization. This site provides access to thousands of data paired with GIS capabilities, allowing for layering to create maps and reporting capabilities with ease. The site provides a directory for online tours and guides on how to use Community Commons, as well as instructional tutorials on how to utilize specific features of Community Commons.
 - Guidebooks and tutorials include:
 - [Getting Started](#)
 - [Mapping](#)
 - [Reporting and the CHNA](#)
 - [Commons Data](#)
 - [Webinars](#)
 - [Hubs on the Commons](#)
 - [Being an Administrator](#)
 - [Uploading Local Data](#)
- [Environmental Public Health Tracking \(EPHT\)](#)

- EPHT is a CDC funded project, and an ongoing collection, integration, analysis, interpretation, and dissemination of data from various monitoring and surveillance programs. The National EPHT Network (Tracking Network) is a system of integrated public health data from a variety of national, state, and city sources. This resource allows users to view or create layered maps, tables, and charts. The CDC also provides an online handbook to help get acquainted or optimize your work.
 - For more information about the EPHT, please see their [About](#) page.
 - The EPHT provides a directory⁷² of [states and cities that are part of the Tracking Network](#)
- [Creative Blog](#)
 - Creative Blog is a general resource for global design and provides a nice list of data visualization tools⁷³: [The 38 Best Tools for Data Visualization](#)

Writing the Discussion

The discussion answers the “so what” of the study. It blends or compares the results or findings with what has been previously reported in the literature. The implications of your findings with their significance and recommendations are enumerated in this section. How has our understanding of this public health problem improved as a result of this study? Recommendations for future interventions or study can be added. Limitations and strengths of your methods should be described in this section. Avoid excess length in the discussion section or data not presented in the results. Only comparisons with relevant literature should be included. Begin the discussion with a concise summary of the implications, the “take home message.”

Scientific Writing Resources

For an explanation of styles commonly employed for scientific writing, try these resources:

- From [Meharry Medical College](#) a guide⁷⁴ to understanding citation styles
 - [AMA vs. APA](#)
- [Purdue OWL](#) provides workshops and online guides^{75,76} for several formatting styles:
 - [APA Style Workshop](#)
 - [Citation Style Chart](#)
- Tools for collaborating with colleagues in scientific writing:
 - [Google Docs](#)
 - Google Docs [Cheat Sheet](#)
 - Directory of [Google Docs tutorials](#)
 - Google Docs Guide to [Getting Started](#)
- [Office 365](#) (requires paid subscription but integrates with Outlook)
- [Asana](#)
 - Directory of Asana [guides and tutorials](#)

Tutorials and tip sheets for conducting literature searches:

- East Carolina University library guide on [conducting literature reviews](#)
- PubMed [search strategy video](#)
- Tutorials on utilizing search engines:
 - [PubMed](#)
 - [Google Scholar](#)
 - [Cochrane](#)
 - [Part I. Intro to Cochrane library](#)
 - [Part II. Browsing and searching the Cochrane Library](#)
 - [Cochrane Reference Guide](#)
 - From [Purdue University](#), Searching the Cochrane Library [video](#)
 - [Schedule](#) for live online workshops/webinars from Wiley Online Library
- Reference management software can be especially helpful when formatting a large number of references and when sections of writing are rearranged. Below are links that give brief overviews of available software and information on procurement:

- Overviews of citation software:
 - A guide⁷⁷ from [East Carolina University](#)
 - [Choosing a Citation Manager](#)
 - A guide⁷⁸ from the [Massachusetts Institute of Technology](#)
 - [Overview of citation software at MIT](#)
- Software:
 - [Refworks](#)
 - [Refworks Directory of Tutorials](#)
 - [EndNote \(Basic or X7\)](#)
 - EndNote [training videos](#)
 - [Zotero](#)
 - Zotero Video ([Basic](#) or [Advanced](#))
 - [Mendeley](#)
 - [Directory of videos and tutorials](#) and [user guides](#)

V. Submitting a Manuscript to a Scientific Journal

Submitting a Manuscript to a Scientific Journal

Congratulations, you have a manuscript! Now what?

In this section, we provide an overview of the submission process and give novice authors an idea of what they can reasonably expect. This process has already started with the selection of an outlet for publication, which should happen early in the writing process since many journals have very (very) specific requirements for formatting of the manuscript and reporting of results. Having stated that, the actual submission process can be equally daunting, as it can be comprised of many components that are time-consuming and rote (eg, copyright forms) or time-consuming and byzantine (eg, writing a cover letter). In this section, we present a number of helpful resources to address common challenges to novice writers, such as procurement of technical editing services and proofreading, and providing helpful comments to co-authors on early drafts of the manuscript. We also invest considerable time in describing the development of the cover letter. Many inexperienced writers view the cover letter as a form letter that contains necessary information (eg, human subjects assurances, conflict of interest disclosures) but adds little to the success of the manuscript submission. Experienced authors use the cover letter to introduce the manuscript to the editor, potentially increasing the likelihood for peer review and ultimate acceptance. In this section, we also discuss responding to reviewers and provide resources to help in this regard.

Contacting the editor

Many authors will reach out to the editor of a journal for guidance regarding the suitability of a manuscript for a journal. Some journals actually require this in the form of a 'pre-submission' (eg, American Journal of Health Promotion). If done when appropriate, this can be a time-saving step. So when is appropriate? It is appropriate to contact an editor if you truly are unsure if the topic is a fit for the journal. Not all journals do a good job of describing the topics and methods of inquiry they prefer to publish, or sometimes a manuscript may cover a topic that is rarely written about. This might necessitate contacting the editor for feedback. A short email that includes the abstract of the manuscript, in the format of the journal, with a specific question about appropriateness of the topic and/or methods is the way to go. One should not contact the editor to determine if the manuscript is "good enough" for the journal, nor should an author contact the editor to ask if the journal publishes on a specific topic (you can look this up yourself). Finally, do not send the manuscript to see if an editor will give it a look to see if he or she might be interested in publishing the manuscript. This will happen once the manuscript is submitted. One may find that the review process is taking considerably longer than one might reasonably expect (>90 days). In this case, it is acceptable to contact the journal office with a polite inquiry into the status of the review process.

Technical editing

Technical editing can be a good idea if you don't have a lot of colleagues willing to give the manuscript a thorough, critical read before submission, or if English is not your first language. Below are links to a number of editing services recommended by prominent publishers:

- [Wolters Kluwer](#):
 - [Editage](#)
- [Springer](#):
 - [Edanz](#)
- [Nature Publishing Group](#):
 - [NPG Language Editing](#)

Writing a cover letter

A cover letter should accompany a manuscript submission to a scientific journal ([Bioscience Writers](#) provides a [tutorial](#)). The letter should be addressed to a specific person (editor) and provide full contact information for the corresponding author (all authors in some specific cases). This letter brings your work to the editor's attention. The letter contains the title of the manuscript and describes the importance of the work to be published. The letter should indicate the gap in the field that is addressed by your study. The appeal of the submission should be described. Journals may have categories of submissions: scientific articles, commentaries, practice or research briefs. The cover letter needs to identify the particular category for the submission. Refer to the journal's information for authors to find out the required information. Attest that your manuscript:

- contains original unpublished material that is being submitted solely to the specific journal;
- has not been previously published, either in whole or in part, nor have the findings been posted online;
- indicates if an abstract has been published related to an earlier presentation or if the current submission bears a relationship to other work being considered for publication by another journal;
- confirms that the article will not be submitted elsewhere until a decision has been made concerning its suitability for publication by the specific journal;
- indicates the funding source for the study;
- declares any conflicts of interest or their absence; and
- confirms all authors have approved the manuscript and agree with submission to the specific journal.

While ethical considerations and IRB approval or waiver should be indicated in the methods section of the article, describing these in the cover letter can be helpful. Use letterhead for cover letters. If you are reproducing any copyrighted material, state that you have or you will request the necessary permissions.⁷⁹

Submitting to the journal

Once the materials have been assembled, you'll need to create an account in the online submission system. Many journals use one of two systems for submission, Editorial Manager and Scholar One, although there are notable exceptions (eg, the [JAMA Network](#)). These platforms can be challenging to navigate for the novice author, so author tutorials have been made available, often linked on the submission portal website. Examples of these are provided from [Editorial Manager](#), [Scholar One](#), and the [JAMA Network](#).

Responding to reviewers

If the overall decision is acceptance with revisions or revise and resubmit:

- Rarely do reviewers recommend acceptance of an article without any requested changes.
- Reviewers' comments are generally specific and contain helpful recommendations on how to improve your article.
- Reviewers' comments can be extensive and critical (even highly critical). Recognize that this is an inherent characteristic of peer-review and then proceed step-wise as outlined below.
- Authors need to respond to each comment made by the reviewer.
- As there are multiple reviewers assigned to an article, reviewer recommendations can contradict each other. The best course of action is to develop the preferred response and indicate why. Contacting the editor for requesting clarification is another possibility but should be done sparingly.
- A recommended format for the author response is to develop a chart: the first column has a number for each reviewer comment, the second column lists each reviewer comment, and the third column lists the authors' response, referring by number to other responses as needed.
- The authors should not be dismissive of reviewers' comments, but they do not have to accept each recommendation. In some cases, reviewers will ask for data that is not available or a major alteration of the study that is not feasible. The authors' response should explain why they cannot comply with the reviewer's suggestion.
- If the review has been helpful to you in strengthening your article, thank the editors and the reviewers when you resubmit your revision.

If the overall decision is rejection:

- A rejection with comprehensive recommendations from the reviewers enables a reworking of the article with resubmission to another journal.
- Some authors informally appeal this decision or some journals may have formal appeal processes. Appeal is not recommended, even if you believe a particular reviewer did not do an objective appraisal because reviewers often provide confidential comments to the editors that an author isn't privy to, and as such, the author isn't always in possession of all the information used to arrive at the editorial decision. It is better to rework and resubmit to another publication.

How to Become a Reviewer for a Journal

One of the best ways to understand how to write effectively is to critically review the work of others. The most formal way to engage in this process is to serve as a peer reviewer. There is no official path to becoming a reviewer. The “easiest” is to publish an article in a peer review journal. As it is the duty of published authors to serve as a peer reviewer for future manuscripts, editors will usually reach out to former authors for a peer review. However, the advent of online journal submission portals has created another avenue. Specifically, becoming a peer reviewer can be as simple as emailing an editor with one’s resume and a request to be considered as a reviewer. Other journals will allow unsolicited reviewers to register in their online systems for inclusion in the reviewer pool. This practice is becoming less widely practiced as fraudulent authors have begun to “game” the system by registering bogus reviewers in online systems, only to then request those reviewers or otherwise have them selected for their own peer review (effectively reviewing their own manuscripts). As such, the best process is to contact the editor-in-chief directly or the managing editors with evidence of topical expertise (eg, a resume). Many journals now have instructions for those seeking to serve as a reviewer.

Performing peer review

The Nature Publishing Group provides an excellent overview of the peer review process and resources for future reading. The entire document can be found [here](#). From the site:

The primary purpose of the review is to provide the editors with the information needed to reach a decision. The review should also instruct the authors on how they can strengthen their paper to the point where it may be acceptable. As far as possible, a negative review should explain to the authors the weaknesses of their manuscript, so that rejected authors can understand the basis for the decision and see in broad terms what needs to be done to improve the manuscript for publication elsewhere. This is secondary to the other functions, however, and referees should not feel obliged to provide detailed, constructive advice to authors of papers that do not meet the criteria for the journal (as outlined in the letter from the editor when asking for the review). If the reviewer believes that a manuscript would not be suitable for publication, his/her report to the author should be as brief as is consistent with enabling the author to understand the reason for the decision. Confidential comments to the editor are welcome, but it is helpful if the main points are stated in the comments for transmission to the authors.⁸⁰

Building upon the list⁸⁰ that [Nature](#) presents, the following is a list of questions that the ideal review should answer:

- Would public health scientists, policy makers, or practitioners be interested in reading the paper, and why?
- What are the primary findings of the manuscript, and how meaningful are they? Will they likely change the way public health policies are written or practices are conducted?
- How does the paper stand out from others in its field? Are the claims novel?
- If the findings are not novel, is the methodology more stringent than previous studies?
- Are the claims convincing? If not, what further evidence is needed?
- Are the claims appropriately discussed in the context of previous literature?
- If the manuscript is unacceptable, is the study sufficiently promising to encourage the authors to revise and resubmit?
- If the manuscript is unacceptable but promising, what specific work is needed to make it acceptable?
- Is the manuscript clearly written? If not, how could it be made more clear or accessible to non-specialists?
- Could the manuscript be shortened?
- Should the authors be asked to provide supplementary methods or data to accompany the paper online? Are existing tables/figures superfluous or non-essential so that they can be deleted or designated as supplemental digital content and stored online?
- Have the authors oversold their claims? Are they being too modest?
- Have they been fair in their treatment of previous literature?
- Have they provided sufficient methodological detail that the experiments could be reproduced?
- Is the statistical analysis of the data sound, and does it conform to the journal's guidelines?

- Are there any special ethical concerns arising from the use of human or other animal subjects?

Other thoughts

- Don't feel that you have to edit the manuscript for clarity. Although the authors surely appreciate being told where they missed punctuation, it's not your job as a reviewer.
- If you're not a statistical expert, don't feel obligated to comment on the analyses. However, if you feel that the analyses might be amiss, don't be afraid to recommend additional review by a statistician.

Understanding Copyright, Open Access, and Intellectual Property

Copyright and open access can be very difficult to understand by those without formal legal training. Many authors do not understand that traditional publication models require them to sign over intellectual property rights to the publisher who then sells the intellectual property (i.e., the manuscript) as an article in the published journal. These agreements limit the use of the final published paper (eg, restrict circulation, reposting, circulation) and are non-negotiable in most situations. Many common sharing practices are actually illegal under these agreements (eg, posting the final article on a personal website or [ResearchGate](#)), but enforcement, as with much intellectual property misuse, varies. With a growing interest in finding alternative financial models for publishing and democratizing information, models that allow the author to retain copyright, in whole or part, have been developed. These are considered under the umbrella term “Open Access.” Open Access can take on many forms, analogous to mineral rights that may or may not be transferred with the purchase of land. The following resources provide a comprehensive treatment of this complex topic:

- Copyright
 - The following links provide authors a comprehensive overview on copyright and related issues, in formats that are easy to digest:
 - A tutorial⁸¹ on [Copyright and Scholarly Communication](#) from [East Carolina University](#)
 - A [Copyright Crash Course](#)⁸² from the [University of Texas at Austin](#)
- Intellectual Property
 - Stanford University Libraries provides an overview⁸³ for authors about intellectual property issues related to scientific writing
 - [Overview of Intellectual Property Laws](#)
- If you wish to retain copyright, you can publish in any number of reputable open access journals, but these journals will require payment to retain copyright. This fee can vary considerably, from \$1000 - \$4000 USD.
 - The website, [Directory of Open Access Journals](#), provides a list of reputable open access publishers.
 - List of predatory publishers⁸⁴ to avoid from [Scholarly Open Access](#):
 - [Beall's List of Predatory Publishers](#)

VI. The Culture of Writing/Publishing

Introduction to the Culture of Writing/Publishing

Scientific writing by applied epidemiologists can be supported by creating a “publishing culture” within the workplace. A publishing culture is an environment that fosters and rewards the writing of scientific articles and the rigor of submission for publication in peer-reviewed journals, *MMWR*, or other scientific reports. This culture provides positive encouragement and direct benefits to epidemiologists. Published scientific articles increase the quality of work and offer opportunities for recognition and possible promotion. There may also be long-term career benefits in seeking other employment, particularly in academic settings. Agencies employing epidemiologists also reap benefits from the establishment of a publishing culture—the actual work product is improved through the documentation of evidence-based policies, and visibility for agency accomplishments can be achieved.

Building a Culture of Scientific Writing/Publishing in Health Departments

Positive factors to support a “publishing culture” are summarized in Table 3. These data were gathered from the CSTE “Applied Epidemiology Scientific Writing Trends, Needs, and Recommendations, 2014,”¹ “CSTE Scientific Writing Assessment Focus Group Summary Analysis,”¹ a recent publication on this topic,⁸⁵ and a series of interviews with epidemiologists/public health officials (personal communications, spring 2016, with Benedict I. Truman, Centers for Disease Control and Prevention, formerly of the New York State Health Department, formerly Monroe County Health Department; John Marr, formerly Virginia State Health Department, formerly New York State Health Department, New York City Department of Health; Guthrie Birkhead, University of Albany School of Public Health, formerly New York State Department of Health; Leslie M. Beitsch, Florida State University, formerly Florida State Department of Health, formerly Oklahoma Department of Health; Marcelle Layton, New York City Department of Health; Hannah Gould, New York City Department of Health; Gretchen Wye, New York City Department of Health, formerly Centers for Disease Control and Prevention). All agreed that the most important factor supporting a writing and publishing environment is encouragement by senior epidemiologists for this activity. This encouragement not only includes mentorship but also the encouragement of more senior or supervisory epidemiologists in their own writing activity. The supervisory epidemiologist sets the standard that it is important to document work activity by preparing publishable documents. Daily activities of epidemiologists in outbreak investigation or identifying and remediating health problems are fertile ground for publication. This improves skills and brings recognition. One participant interviewed for this toolkit recalled his employment at a local health department where the supervisor preached that writing is evidence of accomplishment and every effort should be considered for potential as a future publication.

Table 3. Factors with Positive Influence on an Organization Publication Culture

Factor	Strategy
Encouragement of publishing	<ul style="list-style-type: none"> • Supervising or Senior Epidemiologist • Public health agency official • Job expectation or description • Considered in promotion or advancement
Availability of Mentorship	<ul style="list-style-type: none"> • Senior Epidemiologists • Academic relationship
Writing Assistance	<ul style="list-style-type: none"> • Workshops • Technical writing or editorial staff
Recognition	<ul style="list-style-type: none"> • Award ceremony • Press release • Other congratulatory mechanism
Collegial Efforts	<ul style="list-style-type: none"> • Small groups of authors develop articles • Writing “clubs” • Informal peer review • Venues for publication
Presentations	<ul style="list-style-type: none"> • Internal at agency • Scientific meetings
Clearance Procedures	<ul style="list-style-type: none"> • Assure sound methodology • Manage controversial topics
Access to literature	<ul style="list-style-type: none"> • Assure provisions at state level • Collective efforts • Academic relationships
Academic Relationships	<ul style="list-style-type: none"> • Academic Appointments • Formation of Academic Health Departments

While the role of supervisory epidemiologists is most important, the overall public health agency director plays a part in establishing a supportive environment by recognizing the benefits accrued to the agency and justifying the time that needs to be invested in a writing culture. One participant interviewed for this toolkit reported that a state health department did not have a publishing culture until a new state health director made this a performance expectation (two publications annually for certain personnel). Several other respondents spoke of the late David Axelrod, former Commissioner of the New York State Health Department, who encouraged scientific writing and had weekly meetings featuring scientific presentations.

A second major supportive factor in fostering publication is the realization that scientific writing flourishes where it is not a sole endeavor of individuals. Small groups of colleagues stimulate the preparation of articles by working on them together. Again, the role of senior epidemiologists is important in suggesting topics for publication and serving as a mentor or senior author of the publication. In addition, a number of the respondents spoke of clubs or larger groups within their departments that held presentations or discussions about writing topics. These internal presentations can lead to external presentations at scientific meetings that can later lead to scientific

publications. Another aspect of this group activity is the availability of informal peer review from colleagues before actual submission to a peer-reviewed journal.

Mechanisms to Encourage and Recognize Publications

Recognition mechanisms reinforce writing and publication. The Centers for Disease Control and Prevention offers several awards for scientific writing. The New York City Department of Health and Mental Hygiene has an annual recognition ceremony and has an updated list of authored publications. Others reported congratulatory notes from the department director and issuance of press releases following publications. Other supportive mechanisms include writing workshops, employment of technical writers, and statistical assistance. Relationship with an academic institution is a positive influence and can provide access to the published literature.

The respondents did not generally see the publication of controversial information with potential political overtones as a potential impediment. Controversial information can be published with supervisors who recognize the importance of the content and framing the presentation in an objective manner using a proper outlet. A clearance mechanism in a department is recommended to facilitate this. Advance deliberation and construction of protocols on issue management is recommended. Articles with any authors from the Centers for Disease Control and Prevention include a disclaimer: “The findings and conclusions in this report are those of the authors and do not necessarily represent the official position of the CDC.” One participant interviewed for this toolkit recommended this disclaimer for other articles emanating from public health agencies, but the majority of those interviewed believed that no disclaimer was necessary. [Epidemic Intelligence Service](#) (EIS) training was reported to encourage publication by individuals.

Outlets and venues for publication are covered elsewhere in this report. However, several respondents interviewed for this toolkit talked about the opportunity to publish in state medical journals like those published by [Florida](#), [New York](#), [North Carolina](#), [Oklahoma](#), [South Carolina](#), and [Texas](#).

The most common barrier to publication was time. Epidemiologists in public health agencies are busy with daily demands. For example, since 2015, the New York City Department of Health and Mental Hygiene has been occupied with Legionnaires’ Disease, Zika, and prevention of Ebola. These activities are ripe for important publication opportunities since authors can identify common challenges and solutions so that readers of the articles have less need to “reinvent the wheel.” How does one find the time? Again, partial answers are found in the orientation of supervision. Protected time for writing should be considered. Another participant interviewed for this toolkit enthusiastically reported that one day a week was scheduled without meetings to provide time for writing. However, many respondents reported working on weekends and evenings to develop publications.

In the last section on recommendations, we identify supportive steps to encourage a publishing culture in all organizations, specifically local health departments. It should be noted that a number of these positive factors might be beyond the capacity of smaller organizations. However, these can be provided centrally as a resource and made available to various entities, including smaller health departments.

Access to the Literature

Regularly identified as a barrier to publishing, accessing the scientific literature can be challenging. The advent of the [NIH Public Access Policy](#), the rise of open access publishing, and other initiatives have addressed this barrier, but access remains a barrier for many. The [National Network of Libraries of Medicine](#) has a promising initiative, [Public Health Information Access project](#), the goal of which “is to provide low-cost access to high-value evidence-based resources needed to improve public health practice at the state level.” While this initiative continues, another promising strategy is to increase access through the formation of an academic health department. The [Public Health Foundation](#) has a number of useful [suggestions and templates](#) that can aid in the development of the Academic Health Department Partnership Agreements.

VII. Gaps in Existing Writing Resources

Gaps in Existing Writing Resources

Currently, there are a number of gaps in the existing resources. Specifically, there are few formal resources to promote a culture of publishing in state or local health departments. Without proper resources, time, mentoring, and training, it is difficult to expect an applied epidemiologist to regularly contribute to the scientific literature. In addition, while this toolkit provides a good overview of the existing resources available online, they are all hosted by other organizations with unknown schedules for updating and are more general in nature. Furthermore, many of the recommendations below are likely going to be difficult to achieve for small, local health departments (eg, mentoring, workshops). It might make the most sense for professional associations to develop virtual workshops that could be made available to state and local health departments where mentoring, technical assistance, software, access to the literature, editing, and other resources (eg, IRB access) could be provided in exchange for the sponsoring health department agreeing to allow time for the writing projects. These workshops could be supported by governmental funding (eg, the CDC) or funding from philanthropic organizations with an interest in workforce development and scholarship (eg, the [de Beaumont Foundation](#), the [William T. Grant Foundation](#)). In summary, while most of the necessary resources exist, the utilization and application of these resources could be better facilitated.

Recommendations for Public Health Leaders

- Public health officials serving as organization directors should recognize and reward publications in their organizations.
- Public health organizations should utilize a clearance process to ensure the scientific quality of potential publications, but not be a barrier to publishing.
- Funds should be made available to support manuscript preparation services (eg, editing), publication fees for high-quality, open access journals, and publication feeds for special themed journal supplements.
- Informal and formal mechanisms for mentorship within agencies should be available.
- Organizations should provide access to the peer-reviewed literature.
- The Centers for Disease Control and Prevention (CDC) should facilitate journal access to all state health departments, which could then provide to local health departments.
- Health departments should develop formal relationships with academic institutions or establish themselves as academic health departments.
- State health departments should recognize publications produced by local health departments.
- Local health departments should develop formal relationships with a commercial or academic IRB.

Suggested Resources to be Developed

- Workshops to provide training in scientific writing.
- Online journal clubs, potentially hosted by the CSTE.
- Collectives of health departments to offer factors enumerated above (including mentorship, workshops, clearance procedures, access to the literature, and statistical consultation).
- Tutorials or webinars on the topics of 1) writing a scientific article, 2) writing a scientific abstract for presentation and publication, 3) reviewing an article, 4) responding to reviewers, and 5) establishing a publishing culture in state and local public health departments.

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IX. Appendix

Appendices

Appendix A: Toolkit Development Methods

Appendix B: Table of Journals

Appendix C: Sample Documents

Appendix D: Archived References and Resources