



AMA STYLE STAT! FOR RESEARCH PAPERS

American Medical Association Style for Research Papers by Dr Abel Scribe PhD - Fall 2009

AMA Stat! is a quick reference to using the style of the American Medical Association in college research papers—papers drafted for classes and seminars. Papers drafted for review and publication are formatted for copy editors and typesetters, and are in turn reformatted into articles to be read. The requirements for copy manuscripts are featured in the “Instructions to Authors” of the respective journal. Class and conference papers differ in that they are intended to be read in their draft form. *AMA Stat!* adapts the style for these readers. It is based on the most recent 10th edition of the *AMA Manual of Style*, 2007. *AMA Stat!* expanded text revision (ETR) Fall 2009.

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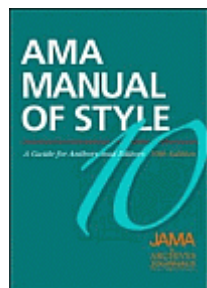
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1.0 AMERICAN MEDICAL ASSOCIATION STYLE AT 10



The *AMA Manual* remains a heavy tome. The last edition weighed 3.0 pounds (to convert to kilograms multiply by 0.45); the new one comes in at 4.2 pounds!^{1,2} This works out to 1032 pages, more even than the *Chicago Manual of Style*.³ Alas, the rules and instructions for preparing research papers are scattered throughout the volume. *AMA Stat!* seeks to capture the most essential features, neither an easy nor certain task with a text so vast.

New with the 10th edition are the manner of presenting conventional clinical measures and the “versioning” of references to online sources. Conventional measures require a conversion factor to SI units (metric system) in the text. The AMA has thoughtfully provided the 18-page table of conversion factors from the *AMA Manual* among the “Instructions for Authors” on their website (AMA spells it *Web site*).⁴ Versioning adds multiple dates to Web references.

Changes readers might notice are the use of 2-letter postal abbreviations for states in references (AMA style had called for old style abbreviations, eg, *Mich.* for Michigan), and the use of lowercase letters in place of symbols in tables (eg, asterisks, daggers, and the like). The old manual allowed numbers other than one to be written out, as in *two-letter* postal abbreviations, but no longer. This simply reflects long-standing practice observed in the pages of *JAMA*, a practice not widely shared by some other major journals, such as the *New England Journal of Medicine*.

AMA style merges into minutiae with obscure rules. For example, the abbreviation for *saint* is followed by a period when used in a person’s name, St. James, but not when used with the name of a place, St. Louis.^{1(p334)} This suggests a style too obscure at the margins to usefully master, a product of evolutionary diversity exploding through 10 generations, overseen by a committee. *AMA Stat!* focuses on main themes, with recourse to the *New England Journal of Medicine*, International Committee of Medical Journal Editors (ICMJE) “Uniform Requirements,”⁵ and *Chicago Manual of Style*³ as circumstances merit.

The *AMA Manual* is vague on some features, notably the format of a title page. *AMA Stat!* improvises. When improvising with any feature not expressly covered it is essential to be consistent. You can also consult the *AMA Manual*, though this is a form of pedantic torture and, as you know, torture is forbidden by US law. I’m not joking!

Expanded Text Revision (ETR). *AMA Stat!* was revised in 2007 with the publication of the latest edition of the *AMA Manual of Style*. Working with that tome proved such a mind-numbing experience that many important issues and features were ignored. These mostly concern the format of research papers, which was not well adapted to the various types of papers that might be written at the college level. The *sine qua non* of medical research, the randomized clinical trial, is not likely in the reach of graduate students. Meta-analyses, clinical reports, systematic reviews, and reviews of medical and health issues are more typical. Style and format merge into method. This is more appropriately addressed in this revision of *AMA Stat!*



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1.1 Expanded Text Revision

■ Refining AMA style for college research papers presents two issues: (1) the difference between *copy manuscripts* submitted for review and publication and *final manuscripts* intended to be read in the form presented, and (2) the different types of papers and research designs that call for differing methodological structures and presentations.

Copy manuscripts intended for publication place tables and figures at the end of the paper, typically with each on a separate page. This is great for typesetters, but tough on readers. Figures also have special requirements for publication that are not needed when using a word processor. These are the papers described in the *AMA Manual* and the *JAMA* "Instructions for Authors." On the other hand, when crafting a paper to be read it is common sense to embed tables and figures in the text where they are first mentioned. The 2003 edition of the *Publication Manual of the American Psychological Association* (APA) referred to these papers as *final manuscripts*.

Copy manuscripts are double-spaced throughout. *Block spacing* presents a more compact format handy for readers and recommended for final manuscripts. Block quotes, headings, captions, tables and table notes, and references are single-spaced within but double-spaced from the rest of the text. A previous edition of the *Publication Manual of the American Psychological Association* recommended this spacing for *final manuscripts*, the term it gave for papers intended to be read in the format presented. An entire chapter was devoted to these papers. This spacing is featured in *AMA Stat!*

Paradigm shift. The strategy adopted by Doc Scribe for *AMA Stat!* and other student oriented style guides was to emulate published articles when a style was not specific about the format. The *AMA Manual*, for example, has no instructions for how a title page should look for any manuscript other than indicating the information it should. It is also vague about the format for headings. A style guide is not useful when it leaves such basic features undefined. The emulation strategy has been abandoned. There is enough agreement among major styles about the hierarchy of headings and other features for these now to guide their presentation in *AMA Stat!* As always, where specific rules are given in the *AMA Manual* they are followed. Note, though, AMA style is far from alone in the fields of medical and public health research.

The International Committee of Medical Journal Editors (ICMJE) was formed to reduce the proliferation of styles in medical publication. The *New England Journal of Medicine* (a charter member along with *JAMA*) follows the style almost exactly, *JAMA* puts the titles of books and the names of journals in references italics but otherwise largely follows the style. Newer journals, such as the CDC's *Emerging Infectious Diseases*, also follow ICMJE style. Many journals (500-600) have agreed to accept papers in ICMJE style, but reformat them in publication. This guide, *AMA Stat!* follows AMA style (1) because they publish the major style manual in the field, and (2) and some features (e.g., italics in references) are widely shared by other styles, including those of the American Psychological Association, the *Chicago Manual of Style*, and Modern Language Association.

Abstract, organization, and research design. Medical research tends to be highly stylized around a handful of basic research designs. This is not unique to medicine; most fields share this characteristic. Each of these research designs has its unique organizational elements which in turn are reflected in the structure and format of the paper and in its abstract. This version of *AMA Stat!* expands the explanation of these features.

Time and resource constraints will likely limit many student papers to the use of secondary data. This does not necessarily mean that such studies are "weaker" or less useful. Empirical research with original data is often so tightly focused that the implications of a study to a broader context can be lost. Case studies, researched topical commentaries, and systematic literature reviews are all useful and legitimate forms of research. When writing in AMA and other medical styles the structure of these papers is to some measure prescribed, as reflected in the organization of abstracts.

1.2 Recurring Features

■ A feature common to all parts of the text is the style of capitalization. Some titles in the text and in references, and some headings, are set in *heading caps*, a term derived from *headline style capitalization* for its origin in newspaper publication. There are no headlines in research writing though titles and headings abound rendering the derived term more meaningful. Instructions as to what to capitalize vary with the style. The specific rules for capitalization in AMA style are covered in section 3.2. The alternative style is *sentence capitalization, which is self-explanatory*. In print, *JAMA* uses full capitalization (every letter is capitalized). This is a bit heavy in draft papers and not shared by other styles. The *Chicago Manual of Style* notes:

Headline style. The conventions of headline style, admittedly arbitrary, are governed by a mixture of aesthetics, . . . emphasis, and grammar. Some words are always capitalized; some are always lowercased (unless used as the first or last word in a title [or heading]); other require a decision.

If you are not sure what grammatical function a word is performing (or even if you are), try reading it aloud: if you would stress the word, capitalize it; if not, lowercase it.

Sentence style. In sentence-style capitalization only the first word in a title [or heading], the first word in a subtitle, and any proper names are capitalized. This style is commonly used in reference lists.

AMA style uses heading caps for the titles of books in references—but not for titles of articles—and for all titles, books and articles and many other titles, noted in the text. Only sentence caps are used in ICMJE style references.

2.0 FORMATTING RESEARCH PAPERS

Research papers. The first major distinction drawn is that between *original contributions* (in AMA speak) that present original data collected in various ways and those that feature secondary data gathered by others. The source of the data does not necessarily reflect the complexity of the analysis. The randomized double-blind clinical trial is not a particularly complex research design while a meta-analysis consolidating an array of disparate clinical trials can require a level of analysis that is extraordinarily complex and sophisticated. The following types of articles—among the many described in the online version of the *JAMA* “Instructions to Authors”—are suggestive of the studies appropriate with limited resources:

Brief Reports are short reports of original studies or evaluations or unique, first-time reports of clinical case series. A structured abstract is required; for more information, see instructions for preparing structured Abstracts. Recommended length: 1000-1500 words (not including abstract, tables, figures, and references).

Clinical Reviews should include the clinical question or issue and its importance for general medical practice, specialty practice, or public health; description of how the relevant evidence was identified, assessed for quality, and selected for inclusion; synthesis of the available evidence . . . ; and discussion of controversial aspects and unresolved issues. A structured abstract is required Maximum length: 3000 words of text, with no more than a total of 4 tables and/or figures and no more than 50 references.

Commentaries may address virtually any important topic in medicine, public health, research, ethics, health policy, or health law Recommended length: 2000 words—or 1500 words with 1 table or figure—and no more than 25 references. A narrative abstract is appropriate for these papers.

Special Communications describe an important issue in clinical medicine, public health, health policy, or medical research in a scholarly, thorough, well-referenced, systematic or evidence-based manner. A narrative (unstructured) abstract of 200 words or fewer is required. Recommended length: up to 3000 words (not including tables, figures, or references).

Systematic Reviews . . . are systematic, critical assessments of literature and data sources pertaining to clinical topics, emphasizing factors such as cause, diagnosis, prognosis, therapy, or prevention. All articles or data sources should be searched for and selected systematically for inclusion and critically evaluated, and the search and selection process should be described in the manuscript A structured abstract is required Recommended length: 3000-4000 words (not including abstract, tables, figures, and references).

Structured abstracts. “Include a structured abstract of no more than 300 words for reports of original data, [systematic] reviews, and meta-analyses For other major manuscripts, include an unstructured [narrative] abstract of no more than 200 words that summarizes the objective, main points, and conclusions of the article. Abstracts are not required for editorials, commentaries, and some special features.”⁴

Structured abstracts vary with the type of article. The structure is given by the headings in the abstract. Reports of original data require these headings: Context, Objective, Design, Setting, Patients or Other Participants, Intervention(s), Main Outcome Measure(s), Results, Trial Registration(as appropriate).

The *JAMA* “Instructions for Authors” are preoccupied with meta-analyses when addressing the requirements of an abstract for a systematic review. However, the basic structure is appropriate for a literature review as well.

Context: A sentence or two explaining the importance of the review question.

Objective: State the precise primary objective of the review. Indicate whether the review emphasizes factors such as cause, diagnosis, prognosis, therapy, or prevention and include information about the specific population, intervention, exposure, and tests or outcomes that are being reviewed.

Data Sources: Succinctly summarize data sources, including years searched.

Study Selection: Describe inclusion and exclusion criteria used to select studies for detailed review from among studies identified as relevant to the topic. Details of selection should include particular populations, interventions, outcomes, or methodological designs. The method used to apply these criteria should be specified (for example, blinded review, consensus, multiple reviewers). State the proportion of initially identified studies that met selection criteria.

Data Extraction: Describe guidelines used for abstracting data and assessing data quality and validity (such as criteria for causal inference). The method by which the guidelines were applied should be stated (for example, independent extraction by multiple observers).

Results: State the main results of the review, whether qualitative or quantitative, and outline the methods used to obtain these results.

Conclusions: The conclusions and their applications (clinical or otherwise) should be clearly stated, limiting interpretation to the domain of the review.

2.1 TITLE PAGE & ABSTRACT

Figure 1. Title Page With a Structured Abstract from the ICMJE “Uniform Requirements for Manuscripts”

	<p>Title Page With a Structured Abstract Abel Scribe, PhD Ganja College of Traditional Medicine April 1, 2010</p> <p>Abstract</p> <p>[Introduction - Context]</p> <p>The text of observational and experimental articles is usually (but not necessarily) divided into sections with the headings Introduction, Methods, Results, and Discussion. This so-called “IMRAD” structure is not simply an arbitrary publication format, but rather a direct reflection of the process of scientific discovery. Long articles may need subheadings within some sections (especially the Results and Discussion sections) to clarify their content. Other types of articles, such as case reports, reviews, and editorials, are likely to need other formats.</p> <p>Method [Design, Setting, and Participants]</p> <p>An abstract (requirements for length and structured format vary by journal) should provide the context or background for the study and should state the study’s purposes, basic procedures (selection of study subjects or laboratory animals, observational and analytical methods), main findings (giving specific effect sizes and their statistical significance, if possible), and principal conclusions. It should emphasize new and important aspects of the study or observations.</p> <p>Results</p> <p>Present your results in logical sequence in the text, tables, and illustrations, giving the main or most important findings first. Do not repeat in the text all the data in the tables or illustrations; emphasize or summarize only important observations. Extra or supplementary materials and technical detail can be placed in an appendix where it will be accessible but will not interrupt the flow of the text; alternatively, it can be published only in the electronic version of the journal.</p> <p>Discussion [Conclusions]</p> <p>Emphasize the new and important aspects of the study and the conclusions that follow from them. Do not repeat in detail data or other material given in the Introduction or the Results section. For experimental studies it is useful to begin the discussion by summarizing briefly the main findings, then explore possible mechanisms or explanations for these findings, compare and contrast the results with other relevant studies, state the limitations of the study, and explore the implications of the findings for future research and for clinical practice.</p>	
	1	

Title page with a structured abstract in generic IMRAD format. The heading “Introduction” is usually assumed and not shown.


 **Organization.** Although abstracts can be quite elaborate in AMA style, it is satisfactory to organize the paper around the familiar IMRAD format: *Introduction, Method, Results, [and] Discussion*. The ICMJE “Uniform Requirements” note that “[t]his so-called ‘IMRAD’ structure is not simply an arbitrary publication format, but rather a direct reflection of the process of scientific discovery.”^{5(p11)} The ICMJE explanation is abstracted in Figure 1.

Table 1. Reporting Guidelines for Specific Study Designs

Initiative	Type of study	Source
CONSORT	Randomized controlled trials	http://www.consort-statement.org/
STARD	Studies of diagnostic accuracy	http://www.stard-statement.org
PRISMA	Systematic reviews/meta-analyses	http://www.prisma-statement.org
STROBE	Observational epidemiology	http://www.strobe-statement.org/
MOOSE	Meta-analyses in epidemiology	http://www.consort-statement.org/Initiatives/MOOSE/moose.pdf

2.2 TEXT PAGES WITH HEADINGS & LISTS

■ **Page parameters.** Final manuscripts differ from those submitted for review or publication (copy manuscripts) in that (1) formal disclosure statements and permissions tend to become brief notes added to the end of the text, before the references; (2) the text is consolidated with abstracts, acknowledgments, tables, and figures embedded rather than leading or trailing the text on separate pages; and (3) block paragraph spacing is used for abstracts, tables, notes, quotes, and references.

- *Margins.* One inch margins are required around the text. Leave the right margin unjustified (ragged).
- *Line Spacing.* Block paragraph spacing is recommended for final manuscripts. Single space within the abstract, notes, titles and headings, block quotes, tables and figures, and references (everything but the main text), double space before and after each single spaced block.
- *Fonts.* JAMA specifies a 10-point to 12-point font. There is no requirement for the typeface. A *serif* typeface is commonly used in publication (eg, Times Roman). A *sans serif* typeface is then used with tables and figures.
- *Indents.* Half-inch indents are standard.
- *Page Numbers.* Every page of a research paper is numbered consecutively starting with the title page. Do not change numbering systems through the text, even with lengthy data sets or appendixes.
- *Page Headers.* A short title header goes at the top of the page, aligned with the page number or left margin. This takes the place of the “running head” required of copy manuscripts.

Headings or subheadings. “Headings reflect the progression of logic or the flow of thought in an article and thereby guide the reader. Headings also help break up the copy, making the article more attractive and easier to read.”^{1(p26)} Three levels usually serve (Fig. 2). “When a section of text is subdivided, there should ordinarily be at least two subsections.”

Main Title and First Level Heading: Heading Caps with a Bold Font Single-Spaced and Centered on the Page

The heading is single-spaced when it runs to more than one line. The heading should be less than half the width of the page, running to two or three lines as needed. The bold font is optional—be consistent.

Second-Level Headings: Heading Caps at Left Margin

This type of heading is referred to as a *sidehead*. Blank lines go before and after the heading. The bold font is optional—be consistent.

Third-level headings with sentence capitalization. Third-level headings (also known as *run-in*, *run-on*, or *paragraph headings*) follow this form as do titles of articles in references. The heading is indented as a paragraph; need not be a complete sentence; must end with a punctuation mark. The text immediately follows the heading (no blank line). A bold font or italics are optional—be consistent through the paper.

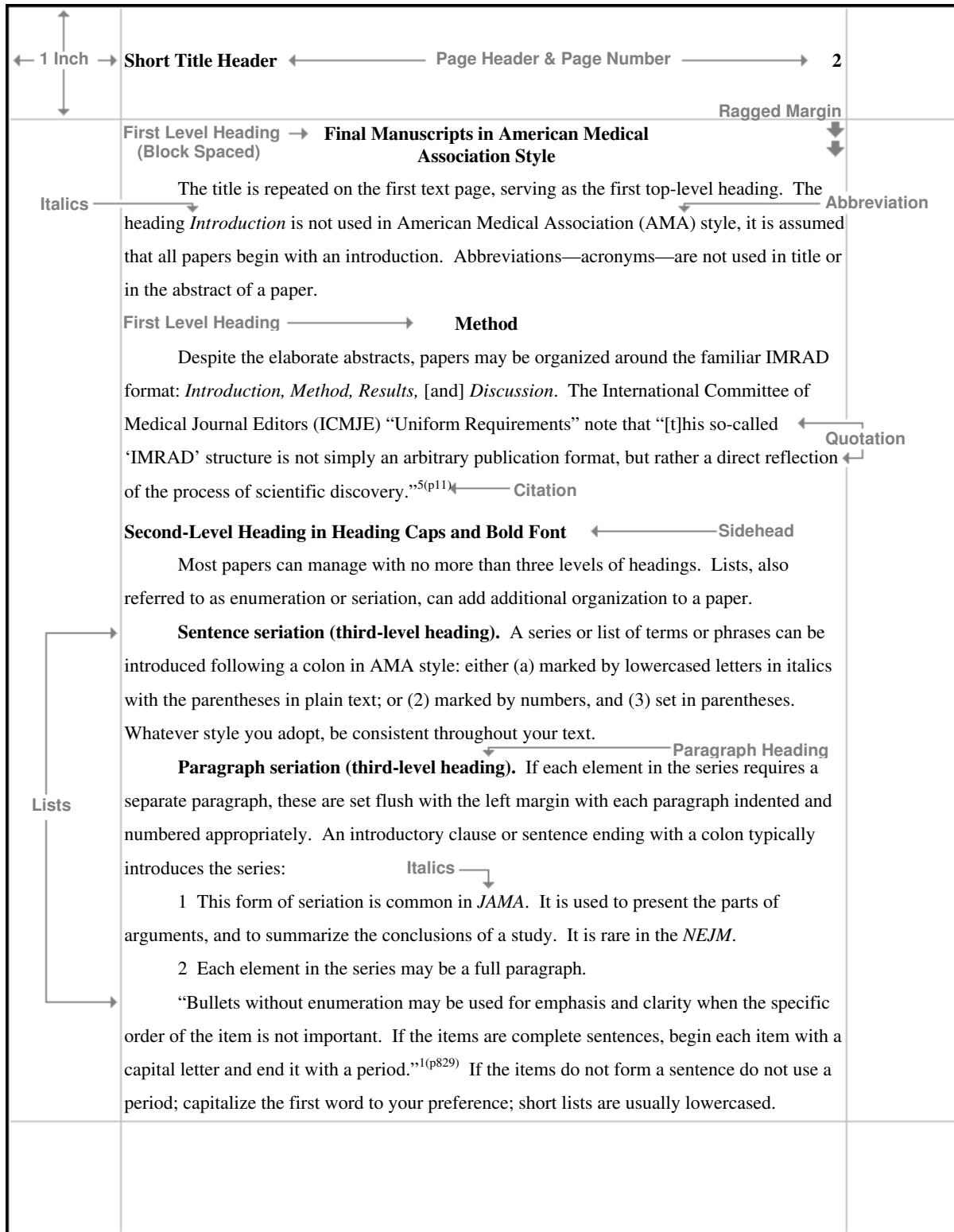
The Turabian (Chicago) *Manual* observes: “In general, subheads are more prominent when centered, in boldface or italic type, or capitalized headline style than when flush left, in regular type, or capitalized sentence style.” 398

Lists (seriation). Seriation is the itemization or enumeration of the parts to a series or an argument. The Chicago, APA, and AMA styles refer to this as the process of *enumeration*. “Enumerate elements in a series to prevent misreading or to clarify the sequence or relationship between elements, particularly when they are lengthy or complex.”^{6(pp115–116)}

1. *Sentence seriation.* A series or list of terms or phrases can be introduced following a colon in AMA style: either (a) marked by lowercased letters in italics with the parentheses in plain text; or (2) marked by numbers, and (3) set in parentheses. Whatever style you adopt, be consistent throughout your text.
2. *Paragraph seriation.* If each element in the series requires a separate paragraph, these are set flush with the left margin with each paragraph indented and numbered appropriately. An introductory clause or sentence ending with a colon typically introduces the series. Italics are optional—be consistent.

“Bullets without enumeration may be used for emphasis and clarity when the specific order of the item is not important. If the items are complete sentences, begin each item with a capital letter and end it with a period.”^{1(p829)} If the items do not form a sentence do not use a period; uppercase or lowercase the first word to your preference; short lists are usually lowercased.

Figure 2. First Text Page with Headings and Lists



The heading style shown is shared by the influential American Psychological Association style and featured in the *Chicago Manual of Style*. The *AMA Manual of Style* is curiously silent about the topic.

2.3 TEXT PAGES WITH TABLES & FIGURES

■ Tables presented in papers for publication now must be formatted using the table creation feature your word processor. Published styles vary greatly from journal to journal, and yours may too, as long as you are consistent in using the same format throughout the text. The style shown is classic *JAMA*. Complex tables require some forethought in their construction; study the *AMA Manual*, chapter 4, “Visual Presentation of Data” for guidance.

Figure 3. Tables and Figures

<p>Final Manuscripts in AMA Style</p> <p style="text-align: right;">3</p> <p>There is no one consistent format for presenting tables in AMA journals. The format suggested draws on features widely used in other styles, and is consistent with the official requirements of the <i>AMA Manual</i> and table presentation in <i>JAMA</i>. A sans serif font (e.g., arial or helvetica) may be used in tables and figure caption to add contrast.</p> <hr/> <p>Table 3. Exercise and Body Weight by Educational Level: US 2002</p> <table border="1" style="width: 100%; border-collapse: collapse; text-align: center;"> <thead> <tr> <th rowspan="2">Education level</th> <th colspan="3">Physical Exercise^a %</th> <th colspan="3">Body Weight %</th> </tr> <tr> <th>Active</th> <th>Some</th> <th>Inactive</th> <th>Healthy</th> <th>Heavy</th> <th>Obese</th> </tr> </thead> <tbody> <tr> <td>Less than 12 years</td> <td>33.8</td> <td>20.5</td> <td>45.7</td> <td>33.6</td> <td>36.7</td> <td>29.7</td> </tr> <tr> <td>High school graduate</td> <td>43.1</td> <td>26.4</td> <td>30.5</td> <td>36.6</td> <td>35.9</td> <td>27.5</td> </tr> <tr> <td>Some college</td> <td>47.5</td> <td>31.5</td> <td>21.0</td> <td>37.8</td> <td>36.4</td> <td>25.8</td> </tr> <tr> <td>College graduate</td> <td>51.9</td> <td>35.0</td> <td>13.1</td> <td>45.3</td> <td>37.3</td> <td>17.4</td> </tr> </tbody> </table> <p>^a <i>Active</i> is 20 minutes of vigorous physical activity 3 times a week; <i>Some</i> is less than active but more than <i>Inactive</i>. <i>Healthy</i> body weight is a body mass index (BMI) less than 25; <i>Heavy</i> is 25 or more but less than 30; <i>Overweight</i> is 30 or more. Data from the <i>Statistical Abstract of the United States: 2005</i>.⁹</p> <p>Tables and figures are numbered independently and consecutively through the manuscript, appearing close <i>after</i> their first mention in the text. Table notes are no longer referenced with symbols. Notes now require superscript lowercase letters. <i>Figures</i> include graphs, diagrams, and images.</p> <hr/> <p>Figure 4. Cases of Hantavirus Pulmonary Syndrome¹⁰ Reported in the Four Corners States (Arizona, Colorado, New Mexico, Utah): 1994-2001</p> <p>Cases are reported by the calendar quarter of onset of symptoms.</p> <p>All figures require a title and a caption or <i>legend</i>, an explanation of the scale or axes of a graph set below or to the side of the figure. Internal footnotes are not practical for most figures, although circles and arrows can be explained in the legend.</p>	Education level	Physical Exercise ^a %			Body Weight %			Active	Some	Inactive	Healthy	Heavy	Obese	Less than 12 years	33.8	20.5	45.7	33.6	36.7	29.7	High school graduate	43.1	26.4	30.5	36.6	35.9	27.5	Some college	47.5	31.5	21.0	37.8	36.4	25.8	College graduate	51.9	35.0	13.1	45.3	37.3	17.4	
Education level		Physical Exercise ^a %			Body Weight %																																					
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College graduate	51.9	35.0	13.1	45.3	37.3	17.4																																				

Tables and figures published in the pages of *JAMA* are set beneath a heavy line or rule. Table notes are now referenced with superscript lowercase letters. Figures require separate titles and captions.

Table parameters. Place tables in the text close after where they are first mentioned. Number tables consecutively. The table number is followed by a label or title in heading caps. "Each table should have a brief, specific, descriptive title, usually written as a phrase rather than as a sentence, that distinguishes the table from other data displays in the article."^{1(p84)}

Tables should be spaced for clarity. A contrasting font is also suggested, for example a sans-serif typeface (eg, arial, helvetica) in a table with a serif typeface (eg, Palitino or Times Roman) in the text. Abbreviations may be used in column headings or row studs.

Table 2. Title in Bold Heading Caps: The Basic Parts of a Table^a

Stubhead	Column head	Column spanner	
		Decked head	Decked head
(Rule)	Age, mean (%), y		
[Row] Stub	Data.0(50)	Data Cell	Data Cell
[Row] Stub	Data.0(50)	[Table body or field]	
Age, mean (SD), y	Mean.0(SD)		

(Rule)

^aNotes indicated by superscript letters.

"The field or body of the table presents the data. Each data entry point is considered a cell, which is the intersection of a column and a row. Table cells may contain numerals, text, symbols, or a combination of these . . . Similar types of data should be grouped. Numbers that are added or averaged should be placed in the same column. Text in field cells should be capitalized sentence style (ie, the first word is capitalized and all that follow in the cell are lowercased)."^{1(p87)}

- *Units of measure* should not change within columns unless the change is noted in the row stub and is congruent with the column data; all numbers should be presented to the same number of decimal places. *See the section on numbers for rules on presenting significant digits and rounding in tables.*
- *Missing data* and blank space in the table field (ie, and empty cell) may create ambiguity and should be avoided . . . An ellipsis (. . .) may be used to indicate no data are available [or applicable]."^{1(p87)}
- *Units of measure.* "In tables, units of measure, including the variability of the measurement if reported, should follow a comma in the table column heading or stub."^{1(p95)}
- *Percentages* in a column or row must add to 100 or a note of explanation is required.
- *Significance.* "All *P* values should be reported as exact numbers to 2 digits past the decimal point, regardless of significance, unless they are lower than .01, in which case they should be presented to 3 digits. Express any *P* values lower than .001 as $P < .001$. *P* values can never equal 0 or 1."^{8(pE1)}

 Footnotes are indicated by superscript lowercase letters; the old symbols are no longer used.

Figures include graphs, charts, photographs, illustrations, diagrams, and images. The *AMA Manual* and *JAMA's* "Instructions for Authors" have a lot to say about the requirements for figures for publication.

Figure 4. *Peromyscus maniculatus* (deer mouse)⁶



The image is about half scale.

Number all figures in the order of their citation in the text followed by a title (a brief phrase, preferably no longer than 10 to 15 words).

- *Placement.* The figure is cited in the text when first mentioned, for example, Figure 2 shows the deer mouse, carrier of the hantavirus Sin Nombre virus (SNV) in the United States.
- *Caption.* Include a legend (caption) for each photograph, graph, and illustration (maximum length, 40 words). For photomicrographs, include the type of specimen, original magnification or a scale bar, and stain. For gross pathology specimens, label any rulers with units of measure.

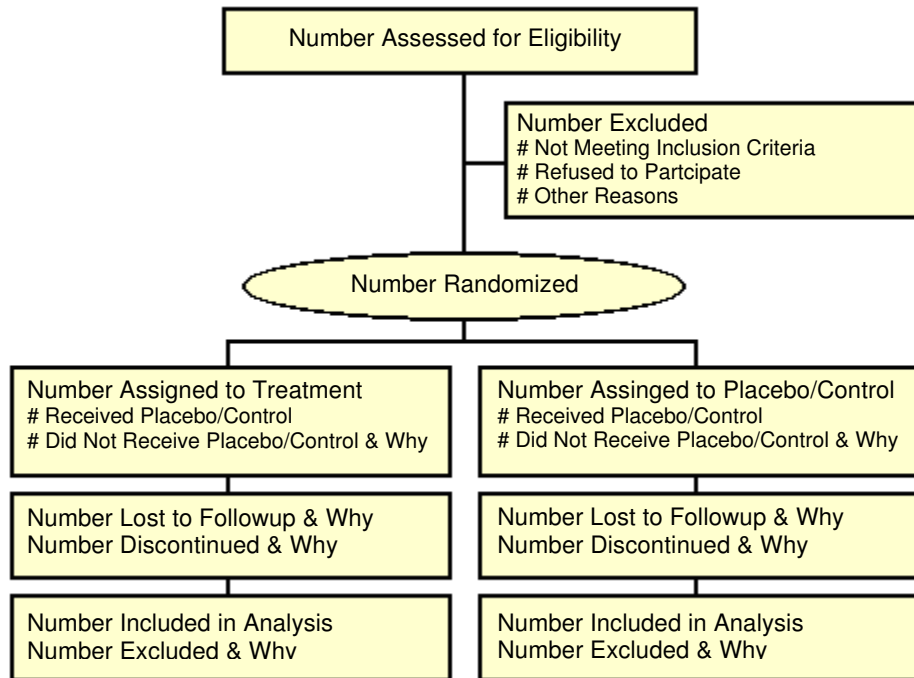
A citation is required when the figure is adapted from another source.¹¹

Note. The "JAMA Instructions for Authors" advise that "Digital photographs are most frequently unsuitable for print publication because of inadequate resolution.

- **Resolution:** Minimal resolution: approximately 350 ppi. For reference, the resolution of most Web images is 72 ppi.
- **File Formats.** Preferred File Formats (raster files): EPS, JPG (highest quality, least compression), PSD, TIF (no compression enabled). . . .

Images imported or copied/pasted into wordprocessing programs such as Word or into presentation software such as PowerPoint are not acceptable, except when accompanied by a raster file in a preferred file format."^{9(E1)}

Figure 5. Proforma Flow Chart for a Randomized Clinical Trial



A flow chart documenting the progression through a research study is required for clinical trials, studies of diagnostic tests, and meta-analyses.

2.4 TEXT PAGES WITH QUOTATIONS

■ Quotations must be placed within quotation marks or indented as a block quote. All quotations must include a citation referring the reader to the source document. Quotations should be integrated into the flow of your text, and may be edited to do so. Quotations must be exact replicas of the original subject to the editing options noted below. Citations in the original should be reproduced in the quote but are not included in the list of references.

Run-on quotes. Shorter quotes, less than four lines of text, continue with the text inside quotation marks. These are referred to as *run-on* quotations in AMA style.

- *Commas, colons.* Put closing quotation marks outside commas and periods, but *inside* colons and semicolons.
- *Terminal punctuation.* Put question marks, dashes, and exclamation points inside quotation marks when they are part of the quote.

Block quotes. “If material quoted from text or speeches is longer than 4 lines of text, the material should be set off in a block, ie, in reduced type and without quotation marks. Paragraph indents are generally not used unless the quoted material is known to begin a paragraph. Space [blank lines] is often added both above and below these longer quotations.”^{1(p365)}

- *Quotation marks.* Quotations marks are not used around block quotes, but the block is usually set off from the text by additional spacing above and below the block.
- *Block Indent.* Block quotes are typically set 1/2 inch from the left margin in manuscripts, or the same distance as a paragraph indent. An additional paragraph indent is used on the first line only if it is found in the original.
- *Spacing.* Block quotes may be single spaced in research papers (double spaced before and after the quote). This block paragraph spacing may also be applied to references.

Edit quotations. An unusual word choice, concept, term, or wrong spelling is quoted faithfully followed by the Latin term *sic* (thus), in italics and in brackets, immediately following. This example was found in the last (9th) edition of the AMA manual: “Each reference should be cited in the text, tables, or figures in consecutive numerical order by means of superscript arabic numerals [*sic*].”^{2(p30)}

- *Brackets* are required to indicate material or emphasis added to a quote. For example, write “They [the Irish Republican Army] initiated a cease fire” or “[The Irish Republican Army] initiated a cease fire.”
- A change in capitalization to merge a quotation into the flow of your text must be indicated with brackets.^{1(p365)} “[M]erge a quotation into the flow of your text.”
- “The first word after the end punctuation mark and the ellipsis should use original capitalization”^{1(p365)}
- Italics may be used to add emphasis to words or phrases within a quotation, or to the entire quotation. When this is done a note is added to the quote in brackets at the *end of the sentence* [italics added].

Figure 6. Format for Block and Text Quotations

	Final Manuscripts in AMA Style	6
	<p>Transmission of H1N1 Swine Flu</p> <p>Influenza H1N1 (2009), “Swine Flu,” has become a global pandemic. An important question is the mode of transmission. Airborne transmission would result in a more rapid and wider propagation of the virus, seriously impacting the effectiveness of public health measures to contain the epidemic. In June 2009 an outbreak in small tour group (n = 30) visiting China provided an opportunity to investigate this question. The investigators related:</p> <p style="padding-left: 40px;">[w]hen we evaluated the contact patterns of the tour group with the index case-patient, we found that for the 16 tourists who had talked with the index case-patient from close range (<2 m) for >2 minutes, the attack rate was 56%, whereas none of the 14 tourists who did not talk with her became ill. Members of the tour group who had talked with the index case-patient for >10 minutes were almost 5× as likely to become ill than those who had talked with her for 2–9 minutes.⁷⁽⁴⁾</p> <p>The study argued in conclusion “this outbreak . . . was caused by transmission during coughing or vocalization The virus spread by droplet transmission when the index case-patient was talking with her fellow tourists.”⁷⁽⁵⁾ This finding was reassuring. This and other studies have subsequently influenced public health strategies for containing the epidemic of H1N1 Swine Flu in the United States.</p>	


When a quotation runs to more than four lines in the text it is indented as a block quote. When writing for publication block quotes must be double-spaced like the rest of the text. It is appropriate to single space the block quote in final manuscripts.

Delete text from a quotation. Ellipsis points are used to indicate text omitted from a quotation. But unless clarity demands it, do not use ellipsis points to begin or end a quotation.

- *Within a sentence.* Three ellipsis points (periods with a single space before, between, and after each period) indicate material has been omitted within a sentence. For example, “The creature . . . walks like a duck, and swims like a duck.”
- *Between sentences.* A period and three ellipsis points are used to indicate material omitted between two sentences, or at the end of a sentence when the quote continues to a following sentence. “If a creature flies like a duck, quacks like a duck, walks like a duck. . . . It is, therefore, likely to be a duck.”
- *Beginning a sentence?* In run-on quotes, the leading portions of a sentence opening a quotation, or the trailing portions of a sentence ending a quotation, may be excluded from a quotation without indicating an omission. “When a quoted phrase is an incomplete sentence, readers understand that something precedes and follows; therefore ellipses are not used.”^{1(p365)}
- *Beginning a sentence?* In block quotes, “If the initial word(s) of the first sentence or [a] paragraph being quoted is omitted, begin that paragraph with a paragraph indentation and ellipses to indicate that this is not the beginning of that paragraph.”^{1(p365)}

3.0 AMA TEXT RULES

The English language is sometimes ambiguous. For example, do you write *twentieth century*, *Twentieth Century*, *20th century*, or *20th Century*? Two rules converge to answer this question, (1) the rule governing ordinal numbers and (2) the rule for capitalization. Ordinal numbers above *ninth* are written as numerals, and historical periods are capitalized. The style prefers *20th Century*, unless the term comes at the beginning of a sentence when it is written *Twentieth Century*. However, because the number is part of a series the below 10 rule is forgone to write *5th Century*, not *Fifth Century*.


 **Be consistent!** The style can get too complex to be useful for other than editors; sometimes it appears to be overly concerned with trivia. Examples abound, even in this short text (see sec 1.0 “AMA style merges into minutiae,” sec 3.2 “Words following a colon,” sec 3.5 “AMA rounding rule”). When in doubt do what makes sense but be sure to *be consistent* in your usage throughout the document.


3.1 ABBREVIATIONS & ACRONYMS

■ “The editors of the AMA’s scientific publications discourage the use of abbreviations, acronyms, and initialisms in their journals, with the exception of internationally approved and accepted units of measure and some well-recognized clinical, technical, and general terms and symbols.”^{1(p442)} Note, *acronyms* are sounded as words, like NASA, while *initialisms* are sounded character by character, like CDC or FBI.

“Authors . . . should use good judgment, flexibility, and common sense when considering the use of abbreviations. Abbreviations that some consider universally known may be obscure to others. Author-invented abbreviations should be avoided.”^{1(p442)}

- *Expanded at first use.* Acronyms/initialisms should be expanded at first use (written out in full) followed by the abbreviation in parentheses. Subsequently only the abbreviation is used. “Note: The expanded form . . . is given in lowercase letters, unless the expansion contains a proper noun, is a formal name, or begins a sentence (capitalize the first word only).”^{1(p444)}
- *Familiar acronyms.* Some groups are better known by their acronym than their full name, for example, WHO (World Health Organization) or CDC (Centers for Disease Control). But, “to avoid confusion, the names of all organizations should be expanded at the first mention in the text . . . with the abbreviation following immediately in parentheses.”^{1(p458)}
- *Lower cased.* “The expanded form of an abbreviation is given in lowercase letters, unless the expansion contains a proper noun, is a formal name, or begins a sentence (capitalize first word only).”
- *Beginning a sentence.* “Avoid using abbreviations at the beginning of a sentence unless the expansion is cumbersome.”^{1(p501)} That is, write “AIDS research has demonstrated . . .” in preference to “Acquired immune deficiency syndrome research has demonstrated . . .”
- *Headings, subheadings.* “Do not use an abbreviation as the sole term in a subheading. Also avoid introducing an abbreviation in a subheading.”^{1(p501)} Instead, write the term out and repeat it in the following text to introduce the acronym.
- *Plurals.* Write the plural form of an acronym without an apostrophe. For example, write “the Master of Business Administration (MBA) program is popular because MBAs command high starting salaries.”
- *Possessives.* If the full term is possessive, the acronym in parentheses should also be possessive. For example: “The American Medical Association’s (AMA’s) style manual has a mass of 1.9 kg.”
- *Places, States, and Addresses.* “Names of US states, territories, and possessions should be spelled out in full when they stand alone.”^{1(p451)} “At first mention in the text the names of the appropriate country should follow the name of a city whenever clarification of location is thought to be important for the reader.”^{1(p453)}
- *States (Addresses & References).* “Use 2-letter abbreviations for US state and Canadian province names in addresses (with US ZIP Codes and Canadian postal codes) and in *references* . . . but not in the text [emphasis added].”^{1(p451)}
- *Scholarly and Latin Abbreviations.* Latin abbreviations such as *etc*, *eg*, and *ie* may be used only in parenthetical notes or references, otherwise spell out the equivalent term. For example, “Authorities support this rule (*eg*, the *Chicago Manual of Style*).” Do not use periods in these abbreviations.

 **AMA “style for abbreviations rarely calls for the use of periods.”**^{1(p442)} Punctuation is not used with any AMA abbreviations other than initials in names, or when quoted from another source!


 **Medical journals.** “Abbreviate and italicize names of journals. Use capital letters. Abbreviate according to the listing in the PubMed Journals database.”^{1(p48)} This was the *List of Journals Indexed by Medline*, formerly the *Index Medicus*, both no longer published by the National Library of Medicine. An old edition of the *List of Journals Indexed by Medline* is listed on the AMA style page at www.docstyles.com with a link to the document. There is a separate volume for online journals.

3.2 CAPITALIZATION & SPACING

■ “Words are capitalized sparingly but conventionally in the scientific publications of the AMA.”^{2(p231)} The common rule is to capitalize terms when they refer proper nouns or to specific things: the East Coast, the Congressional Budget Office, the Beck Depression Inventory. But when these terms are generalized, they are lowercased: the coast, the budget office, a depression inventory.

Special words. “Do not capitalize the following words, even when used as specific designations unless they are used as part of a heading or title.”^{1(p379)}

axis	control	fraction	level	paragraph	section	type
case	day	grade	method	part	series	volume
chapter	edition	grant	month	patient	stage	wave
chromosome	experiment	group	notes	phase	step	week
column	factor	lead	page	schedule	stub	

 **Words following a colon.** If a formal statement follows a colon, capitalize the first word. But, “in the case of a question, capitalization of the first word can be left to the author’s personal style.”^{2(p241)} In *book titles* the first word after a colon is capitalized. But, “for journal articles the subtitle begins with a lowercase letter.”^{2(p34)} For example, Krause RM. The origin of plagues: old and new. *Science*. 1992;257:1073-1078.

Heading caps. “Capitalize [in the text] major words in titles, subtitles, and headings of publications, parts of publications, musical compositions, plays (stage and screen), radio and television programs, movies, paintings and other works of art, software programs, Web sites, electronic systems, trademarks and names of ships, airplanes, spacecraft, awards, corporations, and monuments.”^{1(p372)} Titles of some publications are formatted differently in references (see sec 4.3).

- “Do not capitalize a coordinating conjunction, article, or preposition of 3 letters or less, except when it is the first or last word in a title or subtitle.”
- But, “in titles and headings, capitalize 2-letter verbs, for example, *go, do, am, is, be.*”

Sentence caps capitalize just the first letter of the first word, the first word after a colon, and proper nouns in a title, label, or phrase. For example, *Breaking ground, breaking through: The strategic plan for mood disorders research of the National Institute of Mental Health*. AMA style does not capitalize the first word after a colon in article titles in references.

Compound Words? “In titles, subtitles, table heads, centerheads, sideheads, and line art, do not capitalize the second part of a hyphenated compound in the following instances:”^{1(p373)}

- Do not capitalize “if either part is a hyphenated prefix or suffix.” For example, Anti-infective Drugs.
- Do not capitalize “if both parts together constitute a single word.” For example, X-ray films (check a dictionary to determine if the compound is recognized as a single word).

Capitalize both parts in all other circumstances. For example, “Client-Centered Therapy,”

Geographical names. Capitalize geographic names when they refer to specific places.

- “Capitalize names of cities, towns, counties, states, countries, continents, islands, airports, peninsulas, bodies of water, mountains and mountain ranges, streets, parks, forests, canyons, dams, and regions.”^{1(p374)}
- Do not capitalize generic nouns used in the plural. For example, write “the Suez Canal” in the singular, but write “the Suez and Panama *canals* . . .” in the generalized plural.
- “Compass directions are not capitalized unless they are generally accepted terms for regions.”^{1(p375)} For example, “although he lives in the *West*, and has adopted the mannerisms of a *westerner* right down to his cowboy boots, he grew up *east* of Rochester, New York.”

Historical events, awards, and legislation. Capitalize the names of historical events and periods, significant awards, and the titles of enacted legislation. For example: Battle of the Bulge, Great Depression, 20th Century, Medal of Freedom, Nobel Prize, Americans with Disabilities Act.

Names with prefixes. “Surnames that contain certain prefixes or particles (eg, von, de, La, van) are spelled and capitalized according to the preference of the persons named.”^{1(p45)}

Seasons and holidays. “Do not capitalize the names of the seasons. . . . Capitalize the recognized holidays and calendar events.”^{1(p377)} For example, the last day of *fall* ends with the *winter* solstice closely followed by *Christmas*.

Sociocultural designations. “Capitalize the names of languages, nationalities, ethnicities, political parties, religions, and religious denominations. Do not capitalize political doctrines (conservative, progressive). Do not capitalize white or black as a designation of race.”^{1(p375)} Do not hyphenate compound terms, either as nouns or adjectives, for example, Anglo American, Hispanic American, Serbo Croation, and so forth.

Tests. The word *test* is not usually capitalized except when it is part of the official name of the test. Always verify exact names of any tests with the author or with reference sources.^{1(p377)} Specific forms are capitalized, eg, the *Beck Depression Inventory*; generic terms are not capitalized when the generalized form is used: the *Beck inventory*. Statistical tests are not capitalized except for proper nouns: a goodness-of-fit test, the Fischer exact probability test.


3.3 COMPOUND WORDS


■ Compound words are two or more words that work together in a specified order. This order cannot be reversed or rearranged without destroying the compound word’s meaning. Many compounds are hyphenated when used as adjectives, but not as nouns. A dictionary is the best guide to spelling and usage. If it is not in the dictionary it is not likely a hyphenated compound.

Full-time compound words are hyphenated whatever their role in a sentence--as an adjective or a noun. These are called *orthographic* compounds. “The court-martial hearing is set for 1000 hours. The hearing will determine whether a court-martial is warranted.” *Court-martial* is a full-time compound word (as is *full-time*). Consult a dictionary.

Conditional compounds are hyphenated as **adjectives**, but not when used as nouns.

1. **Adjectival compound.** “The counselor suggested a *role-playing* technique to reduce the stress of encounters, but cautioned that *role playing* alone would not solve the problem.” *Role playing* is a compound adjective, but not a compound noun. He was reading at the *ninth-grade* level in the *sixth* grade.
2. **Add a hyphen** to any prefix attached to a proper noun, capitalized abbreviation, or number. For example, the *post-Freudian* era, the *pre-1960s* civil rights movement, the *pro-HMO* lobby.^{1(p347)}
3. **Fractions.** “Common fractions are expressed with hyphenated words, whether the fraction is used as an adjective or a noun. Mixed fractions [ie, common fractions greater than 1, such as 3½] are typical expressed in numerals.”^{1(p824)}
4. **Made-up compound.** A *made-up-for-the-occasion* compound is hyphenated as a modifier, but not when used in the predicate. The compound word was *made up for the occasion*. But when the term is “commonplace and familiar in everyday usage” [the hyphens are retained whatever the position of the term in the sentences].^{1(p345)} For example, “the drug index was *up-to-date*.”
5. **Numbers.** “Hyphenate compound numbers from 21 to 99 and compound cardinal and ordinal numbers when written out, as at the beginning of a sentence.”^{1(p347)} Twenty-seven nurses were recognized for outstanding service.
6. **Serial compounds.** When two or more compound modifiers have a common base, this base is sometimes omitted in all but the last modifier, but the hyphens are retained. Long- and short-term memory, 2-, 3-, and 10-min trials. When not used as modifiers the hyphen is dropped, for example, trials of 2, 3, and 10 minutes.^{1(p347)}

 **AMA exception.** A prefix may not stand alone before a contrasting unhyphenated prefix, eg, *pre- and postoperative* care. Write *preoperative and postoperative* care.^{1(p347)}

 **Use sparingly.** “When not otherwise specified, hyphens should be used only as an aid to the reader’s understanding, primarily to avoid ambiguity.”^{1(p344)}

Prefixes. Through long usage most common prefixes do not require a hyphen: *aftereffect, antifreeze, cofounder, Internet, microwave, oversight, preempt, reexamine, supermarket, unbiased, underground*. There are many exceptions. When in doubt check a dictionary. Note the following exceptions:

1. **Ambiguous terms.** Add a hyphen if the unhyphenated word or phrase would have a different meaning. For example, does a “small bowel obstruction” refer to a small obstruction of the bowel, or an obstruction of the small bowel? If the latter it is a *small-bowel* obstruction. Words easily confused include re-creation, re-treat, un-ionized.
2. **Same two letters.** If the prefix puts the same two letters together, a hyphen is sometimes inserted. For example, write: anti-industrial, co-op, non-native, post-trial. But also write: cooperative, coordinate, nonnegotiable, overrate, overreach, overrule, reelect, unnamed.
3. **Superlatives-diminutives.** Some prefixes, *best-, better-, ill-, lesser-, little-, well-*, are hyphenated when they precede the noun they modify, but are not hyphenated when preceded by a modifier, or when used as a predicate adjective. The *ill-advised* attack failed, the strategy was *ill advised*.

The following prefixes *always* require a hyphen:

Prefix	Example	Prefix	Example	Prefix	Example
all-	all-powerful leader	great-	great-grandfather	self-	self-reliant person
ever-	ever-faithful friend	half-	half-baked plan	still-	still-active volcano
ex-	ex-president	much-	much-loved pastor		


The following common prefixes are not joined by hyphens except when they precede a proper noun, a capitalized word, or an abbreviation:^{1(p349)}

Prefix	Example	Prefix	Example	Prefix	Example
ante	antedated check	intra	intracranial	re	readminister
anti	antibiotic	micro	microvascular	semi	semicomatose
bi	bisexual	mid	midterm	sub	subcutaneous
co	copayment	non	noninflammatory	super	superciliary
contra	contraindicated	over	overweight	supra	supraorbital
counter	countersuit	pre	prenatal	trans	transnational
de	detoxify	post	postoperative	tri	tricycle
extra	extraorbital	pro	proactive	ultra	ultramicrotome
infra	inframaxillary	pseudo	psuedomorphoc	un	untreated
inter	interscapular			under	underrepresented

3.4 ITALICS (EMPHASIS) & QUOTATION MARKS

■ **Italics.** Titles of books and the names of journals are placed in italics when noted in the text; article and chapter titles are placed in quotation marks (only). Place words used as words in italics (e.g., the heading *Introduction* is not used in research papers), as well as foreign words or terms not likely to be familiar, (e.g., the name of the city *Addis Ababa* literally means “New Flower”).

- Binomial species names are placed in italics according to special rules (see sec. 3.6 Terminology).
- Emphasis may be added to a word or phrase in a quotation by placing it in italics. When this is done the note [italics added] must be inserted in brackets next to or near the word or phrase emphasized.
- Emphasize a keyword or phrase in your text by placing it in italics. The next time an emphasized term or phrase is used it should be in plain text.


 Use this technique sparingly. It is generally not appropriate to place an entire sentence in italics nor to follow a sentence with an exclamation point.

Quotation marks. “Do not use quotation marks when emphasizing a word, when using a non-English word, when mentioning a term [word] as a term, or when defining a term. In these instances, italics are preferred.”^{1(p360)}

- *No Quotes.* “Quotation marks used around words to give special effect or to indicate irony are usually unnecessary.”^{1(p360)}
- *But if you must. . .* “Coined words, slang, nicknames, and words or phrases used ironically or facetiously may be enclosed in quotation marks at first mention. Thereafter omit quotation marks.”^{1(p360)} For example, “versioning” is the practice of noting several dates in references to online sources in AMA style.
- *Common words used in a special sense.* “Enclose in quotation marks a common word used in a special technical sense when the context does not make the meaning clear.”^{1(p361)} For example, a “ragged-right” margin is preferred in manuscripts.
- *Foreign words.* Use quotation marks for the literal translation or definition of non-English words. The non-English term itself is placed in italics the first time it is used. For example, the name of the capital of Ethiopia, *Addis Ababa*, literally translated means “new flower.”
- *Titles.* “In the text, use quotation marks to enclose titles of short poems, essays, lectures, radio and television programs, songs, the name of an electronic file, parts of published works (chapters, articles in a periodical), papers read at meetings, dissertations, theses, and parts of the same article (eg, the “Results” section).”^{1(p361)}

3.5 NUMBERS & MEASUREMENTS

■ “Numerals should be used to express numbers in most circumstances. Exceptions are numbers that begin a sentence, title, subtitle, or heading; common fractions, accepted usage such as idiomatic expressions, numbers used as pronouns, and other uses of the number “one” in running text; ordinals *first* through *ninth*; and numbers spelled out in quotations or published titles.”^{1(p823)}

 **Note.** The AMA penchant for using numerals for all numbers under 10 is not followed by other major journals, such as the *New England Journal of Medicine*.

- “*The word one* should be spelled out when used as a pronoun or noun.”^{1(p824)}
- *Ordinal numbers.* “The numerical expression of commonly used ordinals (1st, 2nd, 3rd, 4th, etc) may appear jarring and interrupt the flow of text. For this reason ordinals *first* through *ninth* are spelled out.”^{1(p825)}
- *Beginning a sentence.* Write out numbers that begin a sentence, heading, title, or column heading in a table. If possible, rewrite the sentence or heading to avoid this problem.
- *Consecutive numbers.* When two numbers must be presented together write one with words or rewrite the sentence. For example write: “There were twelve 16-year-olds in the clinical trial.” Do not write “There were 12 16-year-olds. . . .”
- *Measures & units must agree.* When writing out numbers, accompanying units of measure must also be written out (and vice versa). For example, write: “Twenty degrees centigrade was the maximum temperature at which the vaccine could be stored.” Or write: “The maximum temperature at which the vaccine could be stored was 20 °C.” Do not write twenty °C, or 20 degrees centigrade.
- *Decimal fractions.* Numbers less than 1.0 must have a leading 0 before the decimal point, as with 0.6 kg (not .6 kg). An exception is made when a number cannot be greater than 1 or less than zero, as in the probability $P < .001$.
- *Full dates* when written in the text or in references are written in US format--month, day, year; “ August 21, 2001.” Other date formats follow the general rules for numbers. For example, write “applications were accepted from the 3rd to 23rd of August” or, “from the third to sixth of April.”
- *Rounded large numbers.* Large rounded numbers usually combine numerals and words. “About 8 million people were affected by the drought.”

- *Compound numbers.* Hyphenate compound written numbers from twenty-one to ninety-nine, and compounds with a number as the first element. For example, “We tested twenty-five 50 g samples.” (Note, a hyphen is *never* used in SI units, “50 g samples,” even when the number is an adjective.)
- “*Common fractions* are expressed with hyphenated words, whether the fraction is used as an adjective or a noun. Mixed fractions [ie, common fractions greater than 1, such as 3½] are typically expressed in numerals.”^{1(p824)}
- *Plurals.* Form the plurals of numbers by adding s or es, without an apostrophe, to words or figures. “The gambler rolled several sixes in a row.” “The 1960s taught a generation about war first hand.”


Clinical measurements (New!). “Most physicians and other health care professionals [in the US] use conventional units for many common clinical measurements (eg, blood pressure), and many clinical laboratories report most laboratory values by means of conventional units. Accordingly, some biomedical publications, including *JAMA* and the *Archives Journals*, have adapted an approach for reporting units of measure that includes a combination of SI units and conventional units.”^{1(p794)}

“Laboratory values are expressed using conventional units of measure, with relevant *Système International (SI)* conversion factors expressed secondarily (in parentheses) only at first mention. . . . In tables and figures, a conversion factor to SI should be presented in the footnote or legend.”^{1(p795)} For example, the *AMA Manual* weight 4.2 pounds (to convert to kilograms multiply by 0.45). An exhaustive table of conversion factors is available in the “Instructions for Authors” at the *JAMA* website and at www.docstyles.com.


Significant digits. Implicit in any number is that it is accurate to the degree of precision shown. “When numbers are expressed in scientific and biomedical articles, they should reflect the degree of accuracy of the original measurement. Numbers obtained from mathematical calculations should be rounded to reflect the original degree of precision.”^{1(p851)} For example, “for a scale accurate to 0.1 kg a weight [*sic*] should be expressed as 75.2 kg not 75.23 kg.”

AMA rounding rule. AMA style likes even numbers. “If the digit to the right of the last significant digit is less than 5, the last digit is not changed. If the last digit is greater than 5, the last significant digit is rounded up. . . . If the digit immediately to the right of the last significant digit is 5, with either no digits or all zeros after the 5, the last significant digit is rounded up if it is odd and not changed if it is even. . . 47.7500 becomes 47.8; 47.65 becomes 47.6.”^{1(p851)}

Inclusive numbers. When expressing an inclusive range of numbers in your text do not use a dash or hyphen, write *to* or *through* instead, unless the use of the hyphen is absolutely clear. Write: “The IQ range of the first group was 86 to 112.” In measurements, a hyphen can be mistaken for a minus sign.

 “Digits should not be omitted when indicating a span of years or page numbers in the text.”^{1(p827)} For example, some journals drop digits from the second number in a range: 1134-39. AMA writes 1134-1139.

Le *Système International d’Unités (SI)* is the governing international standard for measurement in the sciences. The National Institute of Standards and Technology (NIST) publishes their *Guide for the Use of the International System of Units (SI)*, available online at: <http://physics.nist.gov/Document/sp811.pdf>. The current link is also available at www.docstyles.com.

	SI numbers have three parts: the numerical value, the prefix or multiplier, and the unit symbol or abbreviation (e.g., 25.3 kg). Numbers are <i>always</i> formatted in plain text (no italics), there is <i>always</i> a space after the value (<i>never</i> a hyphen), there is <i>never</i> a period after the units (except at the end of a sentence).
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Numerical values are presented without commas in SI notation. For example, the distance between Chicago and Denver is 1600 km (not 1,600 km). The *km* stands for kilo-meters. The prefix *kilo* indicates the units are multiplied by 1000. There are about 1.6 kilometers to a mile. If it is important for clarity you can note the conventional US measure in parentheses after the SI number: 1600 km (1,000 miles).

- There is *always* a space after the numerical value, and *only* a space (eg, the temperature was 25 °C, or about 77 °F today).
- SI numbers are not subject grammatical conventions other than those of the SI. Only a space may follow a numerical value, no hyphens, no exceptions! Do not hyphenate a measure used as an adjective, as for example, “a 5-mg dose” is incorrect.
- Units of measure are always abbreviated when presented with numerical values, but written out when noted in the text *without* a numerical value. For example, a **liter** is about a quart; “It took 22 L to top off the gas tank.”
- Numerical values less than one are preceded by a zero. For example, one yard is 0.91 m, or about three inches short of a meter. An exception is made for statistical values that by definition cannot be greater than one, for example a probability statistic such as $p < .05$.

3.6 TERMINOLOGY

■ “Authors should avoid words and phrases that are unnecessarily elaborate, trendy, tautologic, or euphemistic.”^{1(p381)} Conciseness is a virtue in medical writing. Many journals restrict the length of manuscripts; papers are evaluated for their brevity and clarity.

Age. The *AMA Manual* provides these definitions: *Neonates* or *newborns* are persons from birth to 1 month of age; *infants* are *children* from 1 month to 1 year; *children* are persons from 1 year to 12 years; adolescents from 13 to 17 years; and adults are persons over 18.^{1(p410)}

Designation of persons. Language in its careless use can dehumanize people. “The careful writer avoids generalizations and stereotypes and is specific when choosing words to describe people.”^{2(p265)}

- **Aged/Elderly.** “Because the term elderly connotes a stereotype, avoid using it as a noun.”^{1(p416)} Refer to *older persons, elderly patients, the elderly population* not *the old* or *the elderly*.
- **Case/Patient/Subject.** “A *case* is evaluated, documented, [managed], and reported. A *patient* is examined, undergoes testing, [is cared for], and is treated. A *research subject* is recruited, selected, sometimes subjected to experimental conditions, and observed.”^{1(p389)}
- **Disabilities.** “Avoid labeling (and thus equating) people with their disabilities or diseases (eg, the blind, schizophrenics, epileptics). Instead, put the person first.”^{1(p416)} Instead of referring to diabetics, refer to persons with diabetes; the disabled as persons with disabilities; the crippled, lame, or deformed are the physically disabled or persons with physical disabilities.

Drugs. “Use nonproprietary names of drugs, devices, and other products, unless the specific trade name of a drug is essential to the discussion.”^{1(pp567-569)} “[O]nly 1 drug name, the nonproprietary name, is regulated internationally to ensure consistent usage and no duplication with other drugs. Once a drug has been assigned a nonproprietary name, the nonproprietary name should always be used to refer to the drug.”^{1(p565)}

Microorganisms. A distinction is made between taxonomic classification and nomenclature. This is especially relevant in medicine where many microorganisms use taxonomic nomenclature that does not reflect the phylogenetic relationships or evolutionary descent of a taxonomic system.

“Stylistic hallmarks of biological nomenclature differentiate scientific names from vernacular names. These hallmarks are latinization, italics, and a 2-word term for species; the binomial, also called binary or binominal, eg, *Homo sapiens*.

According to the international codes, initial capitals are used for all taxa, except for the second portion of the binomial. (That portion is called the specific name in the zoological code and the specific epithet in the botanical and bacteriological codes.) Italics are always used for the genus and species components of the binomial. Diacritical marks (accents) and ligatures (eg, æ) are not used.

“All codes capitalize scientific names of taxa but differ in italicizing higher taxa. The bacterial code recommends italicizing all scientific names but recognizes that journals may wish to style all organism names similarly. In *JAMA* and the *Archives Journals*, taxa above genus are not italicized. The following examples . . . illustrate the style in *JAMA* and the *Archives Journals*.”^{1(p742)}

Table 5. Taxonomic Classification Systems

Animal		Bacteria		Fungi	
Rank	Taxon	Rank	Taxon	Rank	Taxon
kingdom	Animalia	kingdom	Prokaryotae	kingdom	Fungi (Mycota)
phylum	Chordata	division	Firmicutes	phylum	Ascomycota
class	Mammalia	class	Firmibacteria	class	Ascomycetes
order	Primate	order	(not applicable)	order	Onygenales
family	Hominidae	family	Bacillaceae	family	Onygenaceae
genus	<i>Homo</i>	genus	<i>Staphylococcus</i>	genus	<i>Ajellomyces</i>
species	<i>Homo sapiens</i>	species	<i>Staphylococcus aureus</i>	species	<i>Ajellomyces capsulatus</i>

The binomial is usually all that is noted in a text; the higher levels of the taxonomic classification are generally inferred unless describing a new species, new classification, or the phylogenetic relationship between two or more species.

- “After first mention of the binomial species name, abbreviate the genus portion of the name. (*JAMA* and the *Archives Journals* do not use a period.) Do not abbreviate the specific name. Do not begin a sentence with an abbreviated genus name [or any abbreviation unless unavoidable]; either expand or reword.”^{1(p743)}
- When the genus is shared with a second organism do not abbreviate the genus until it is mentioned in full with both species. For example, “*Staphylococcus aureus* and *Staphylococcus epidermidis* may be components . . . in clinically significant infections, although *S aureus* is the more serious pathogen of the two.”^{1(p743)}

Do not abbreviate the specific name [eg, *aureus* and *epidermidis* in the example above], and do not abbreviate the genus name when used alone.¹⁽⁷⁴³⁾ For example, “*Staphylococcus* bacteria are a common source of hospital-acquired infections.”

Viruses. “Although the viral nomenclature code recommends italicizing all scientific virus names (ie, species through order) codes for other organisms differ on using italics for names of higher taxa. For reasons of internal consistency, *JAMA* and the *Archives Journals* do not italicize names of viral taxa above genus. . . . [though the journals] do italicize formal viral genus and species names^{1(p757)} Vernacular names are never italicized.

Binomial Proposal. Formal virus species names do not currently [2007] follow the binomial style of other organisms, . . . which include the genus and specific epithet. Confusion exists between terms for abstract virus species and actual virus entities, which are often distinguished only typographically. Virologists have indicated a preference for a binomial style.^{1(p759)}

World Wide Web & Internet terminology. There are differences of opinion on what to capitalize and what to hyphenate. The *British Medical Journal* truncates or closes just about everything. American conventions tend to be conservative (linked to the publication cycle of style guides!).

- **e-mail.** The hyphenated form is found in the AMA, APA, and CMS manuals. The *e* is never uppercased except at the beginning of a sentence.
- **home page [homepage].** This is spelled open in the *Chicago Manual*.
- **Internet [Net].** Internet is a proper noun.
- **Web** This is a proper noun. When Web is used in an open compound term (or with a hyphen when used as an adjective), as in Web page design, *Web* is uppercased. When the compound term is closed, *Web* is usually spelled lowercased, as in webmaster.
- **Web page, Web site.** These terms are still spelled open in AMA style.
- **webmaster, web.** . . . Most other Web terms (except Web ring) are spelled lowercased and closed (without a hyphen)--webcam, webcast, webhead, webmail, webzine, webmaster, etc.

4.0 RESEARCH DOCUMENTATION

4.1 TEXT CITATIONS

■ “Each reference should be cited in the text, tables, or figures in consecutive numerical order [as presented in the text] by means of superscript arabic numerals.^{1(p42)} “Authors should always consult the primary source and should never cite a reference that they themselves have not read.”^{1(p40)}

1. **Placement.** In the text, a superscript citation number should appear after a comma or period, but before a colon or semicolon. While citations may be placed within a sentence, it is preferable to place them at the end of a sentence unless accuracy and clarity demands otherwise.
2. **Multiple citations.** Multiple references can be cited by listing each in order in the superscript citation, separated by a comma. An inclusive range of references can be cited by separating the range with a hyphen. For example, “Profuse bleeding is generally indicative of an injury.”^{1,2-5,8,12}
3. **Page numbers.** Specific page numbers within a source can be cited by placing the page reference in parentheses after the citation number. Several sources may be cited in a single superscript.^{1(p44), 2(p9)}
4. **Table & figures.** References in table and figures are cited in sequence with those in the text. The numbering shifts to the table or figure after it is first mentioned in the text. All references in the table or figure are cited in sequence. The numbering of citations then returns to the text and continues for subsequent citations.
5. **Numbers & measures.** “Avoid placing a superscript reference citation immediately after a number [numeral] or an abbreviated unit of measure to avoid any confusion between the superscript reference citation and an exponent.”^{1(p43)}
6. **Authors noted.** *When mentioned in the text*, only surnames of authors are used. For a 2-author reference list both surnames; for references with more than 2 authors or authors and a group, include the first author’s surname followed by “et al,” “and associates,” “and coworkers,” or “and colleagues.” For example: Smith⁷ observed, Smith and Jones⁹ reported, Jones et al¹⁰ determined.
7. **Titles noted.** When titles are presented in the text they are place in heading caps (see 3.2, “Heading caps”), titles of books and similar publications are placed in italics; titles of articles are placed in quotation marks.

Parenthetical citations. Unretrievable sources and news articles are cited in the text in parentheses. These sources are not included in the reference list. For example: “Newspapers reported HMOs were routinely denying basic care (eg, *New York News*, September 31, 2003:12; *Washington Star*, February 29, 2003:G1), and the *Chicago Times* (December 1, 2003;§2:2)” “Robert Smith, MD, found the paperwork requirements of his HMO exasperating (personal communication, April 2007).”

4.2 “VERSIONING” ONLINE SOURCES


■ AMA style now makes provision for referencing online sources that may change over the course of their posting on the Internet. The *AMA Manual* calls this “versioning” [the quotes are in the original, p. 64]. The *Manual* offers this block format for references:^{1(p64)}

Author(s). Title. Journal Name [using National Library of Medicine abbreviations--see 14.10, Abbreviations, Names of Journals]. Year;volume(issue No.):inclusive pages.
URL [provide the URL in this field; no need to use “URL:” preceding it].
Published [date]. Updated [date]. Accessed [date].

The last line is particularly interesting. It is what the *AMA Manual* calls “versioning” [the quotes are in the original, p. 64]. They are three distinct elements or dates, used as available and appropriate. Since the access date is always known it is always a part of the reference. The other two dates are included when relevant and/or available, as in this example:

International Committee of Medical Journal Editors. Uniform requirements for manuscripts submitted to biomedical journals: sample references. Bethesda, MD: United States National Library of Medicine Web site. http://www.nlm.nih.gov/bsd/uniform_requirements.html.
Published July 9, 2003. Updated April 25, 2007. Accessed September 5, 2007.

The problem with this reference is that we have no idea what has changed. Without documentation of the change (as is required in print journals) you have no way of assessing the importance of the revision. If the original reported the correct dose was “10 g” and latter corrected it to “10 mg” the consequences may be grave. But if the correction was for a minor spelling error the effect would be insignificant.

 A paper that relies on ephemeral sources becomes a fleeting conjecture grounded in undocumented and changing content. This is too vague to be credible in scientific publication.

4.3 REFERENCE LIST

“Reference to information that is retrievable is appropriately made in the reference list. This includes but is not limited to (1) articles published or accepted for publication in scholarly or mass circulation print or electronic journals, magazines, or newspapers, (2) books that have been published or accepted for publication, (3) papers presented at professional meetings, (4) abstracts, (5) theses, (6) CD-ROMs, films, videotapes and audiofiles, (7) package inserts or a manufacturer’s documentation, (8) monographs, (9) official reports, (10) databases and Web sites, (11) legal cases, (12) patents, and news releases.”^{1(p41)}

- **Authors & Editors.** List up to six authors or editors. If there are more, list the first three, plus et al. Invert all names—authors, editors, translators, compilers—first & middle initials trailing without periods. If the author(s) represent a group, add the group name after the authors (follow the rule for using *et al.*).
- **Article Titles.** Titles of articles, chapters, Web pages, and entries in reference works are set in sentence caps; in plain text without quotation marks or italics. Note, “for journal articles the subtitle begins with a lowercase letter.”^{1(p47)}
- **Book Titles.** Titles of books, volumes, reference works, reports & bulletins, theses & dissertations are formatted in heading caps and set in italics.
- **Journal Names.** The names of journals are set in italics and abbreviated according to the *List of Journals Indexed for Medline* (formerly *Index Medicus*) published by the National Library of Medicine.^{1(p19)} A link is available at www.docstyles.com.
- **City: State.** Include the 2-letter abbreviation for the state with all US cities and Canadian provinces, eg, New York, NY; Toronto, ON. Add the country with all other cites, eg, Paris, France; London, England. Do not list the state if it is part of the publisher’s name.^{1(p55)}
- **Page Numbers.** Do not omit digits from inclusive page numbers.^{1(p48),2(p35)}
- **Volume(Number).** *JAMA* has taken to citing the issue number in a volume in references even when each issue in a volume is paged consecutively.
- **Uniform Resource Locators (URLs).** “Use the URL that will that will take the reader most directly to the article, not a long search string and not a short, more general URL (one to the publisher’s home page, for example)’ if a URL is provided, as close as possible to publication verify that the link still works”^{1(p64)}


4.4 ARTICLES IN PERIODICALS


One to Six Authors (Commentary, Online)

Krause RM. The origin of plagues: old and new. *Science*. 1992;257:1073-1078.

Barry JM. The site of origin of the 1918 influenza pandemic and its public health implications [Commentary]. *J Translational Med*. January 20, 2004;2(3):1-4. <http://www.translational-medicine.com/content/2/1/3>. Accessed November 18, 2005.

Mokdad AH, Bowman BA, Ford ES, Vinicor F, Marks JS, Koplan JP. The continuing epidemics of obesity and diabetes in the US. *JAMA*. 2001;286(10):1195-1200.

 According to the *AMA Manual*, "When citing an electronic document that also exists in print form, you should cite the version you consulted."^{2(p44)} There are no examples of references to pdf facsimiles of print articles in the *AMA Manual* or in recent issues of *JAMA*. Cite as print?

 Most journals are paged continuously through a volume. Nonetheless, *JAMA* now cites the issue number in the volume in all references (in parentheses, when available).

More than Six Authors

McGlynn EA, M. Asch S, Adams J, et al. The quality of health care delivered to adults in the United States. *N Engl J Med*. June 26, 2003;348(26):2635-2645.

Authors Representing a Group

Moher D, Schulz KF, Altman D; for the CONSORT Group. The CONSORT statement: revised recommendations for improving the quality of reports of parallel-group randomized trials. *JAMA*. 2001;285(15):1987-1991.

Group/Corporate Author

Centers for Disease Control and Prevention. Plan and operation of the Third National Health and Nutrition Examination Survey, 1988-94. *Vital Health Stat*. 1994;1:1-307.

Hypericum Depression Trial Study Group. Effect of *Hypericum perforatum* (St. John's Wort) in major depressive disorder: a randomized controlled trial. *JAMA*. 2002;287(14):1807-1814.

Jr. & III (Editorial)

Pope HG Jr, Ionescu-Pioggia M, Pope KW. Drug use and life style among college undergraduates: a 30-year longitudinal study. *Am J Psychiatry*. 2001;158(9):1519-1521.

Chambers HF III, Winston LG. Mupirocin prophylaxis misses by a nose [editorial]. *Ann Intern Med*. 2004;140(6):484-486.

No Author

Annual smoking attributable mortality, years of potential life lost and economic costs: United States 1995-1999. *MMWR Morb Mortal Wkly Rep*. 2002;51:300-303.

Abstract / Commentary / Department / Letter

Lofwall MR, Strain EC, Brooner RK, Kindbom KA, Bigelow GE. Characteristics of older methadone maintenance (MM) patients [abstract]. *Drug Alcohol Depend*. 2002;66(suppl 1):S105.

Alexander, GC, Werner, RM, Ubel, PA. The costs of denying scarcity [commentary]. *Arch Intern Med*. 2004;164:593-596.

Coyle JT. Use it or lose it--do effortful mental activities protect against dementia? [Perspective]. *N Engl J Med*. 2003;348(25):2489-2490.

Tor M, Turker H. International approaches to the prescription of long-term oxygen therapy [letter]. *Eur Respir J*. 2002;20(1):242.

Annual Reviews

Visscher TL, Seidell JC. The public health impact of obesity. *Annu Rev Public Health*. 2001;22:355-375.

Book Reviews

Yager J, reviewer. *Am J Psychiatry*. 2004;161:1137. Review of: Crawshaw R. *Compassion's Way: A Doctor's Quest into the Soul of Medicine*.

Erratum / Corrections

- Curfman GD, Morrissey S, Drazen JM. Notice of duplicate publication of [Park S-J, Shin WH, Ho DS, et al. A paclitaxel-eluting stent for the prevention of coronary restenosis. *N Engl J Med.* 2003;348(22):1537-1545]. *N Engl J Med.* 2003;348:2254.
- Hyman DJ, Pavlik VN. Characteristics of patients with uncontrolled hypertension in the United States [erratum, *N Engl J Med.* 2002;346:544]. *N Engl J Med.* 2001;345:479-486.
- Mansharamani M, Chilton BS. The reproductive importance of P-type ATPases [published correction appears in *Mol Cell Endocrinol.* 2002;188(1-2): 22-5]. *Mol Cell Endocrinol.* 2001;183(1-2):123-126.

Newspapers & Magazines

- Gottlieb M. A free-for-all in swapping Medicaid for managed care. *New York Times.* October 2, 1995:A1, A4.
- Markoff J. Voluntary rules proposed to help insure privacy for Internet users. *New York Times.* June 5, 1996. <http://www.nytimes.com/library/cyber/week/yo5dat.html>. Accessed April 1, 1998.
- Relman AS, Angell M. America's other drug problem. *The New Republic.* December 16, 2002:27-41.
- Undisclosed settlement reached out of court in Michigan Biodyne civil suit. *Psychiatric Times.* March 1, 1992:16.

Parts & Supplements

- Bodenheimer T. The Oregon Health Plan--lessons for the nation: first of two parts. *N Engl J Med.* 1997;337:651-655.
- Bodenheimer T. The Oregon Health Plan--lessons for the nation. *N Engl J Med.* 1997;337(pt 2):720-723.
- Flanagin A, Winker MA, eds. Global health. *JAMA.* 2004;291(21, theme issue):2511-2664.
- Ward P, Small I, Smith J, Suter P, Dutkowski R. Oseltamivir (Tamiflu) and its potential for use in the event of an influenza pandemic. *J Antimicrob Chemother.* 2005;55(suppl 1):i5S-i21S.

4.5 BOOKS & CHAPTERS

- Goldstein H. *Multilevel Statistical Models.* 2nd ed. New York, NY: Wiley; 1995.
- Congressional Budget Office. *Changes in the Living Arrangements of the Elderly: 1960-2030.* Washington, DC: US Government Printing Office; 1988.
- Iverson C, Flanagin A, Fontanarosa PB, et al. *American Medical Association Manual of Style: A Guide for Authors and Editors.* 9th ed. Baltimore, MD: Lippincott Williams & Wilkins; 1997.
- Kuhn, Thomas S. *The Structure of Scientific Revolutions.* 2nd ed. Chicago, IL: University of Chicago Press; 1970.

Edited Book (Editors as Authors/Online)

- Beers MH, Berkow R, eds. *The Merck Manual of Diagnosis and Therapy.* 17th ed. 1999. <http://www.merck.com/pubs/mmanual/>. Accessed January 17, 2003.
- Breedlove GK, Schorfheide AM. *Adolescent Pregnancy.* 2nd ed. Wiczorek RR, ed. White Plains, NY: March of Dimes Education Services; 2001.
- Wassenaar JD, Thran SL, eds. *Physician Socioeconomic Statistics.* 2000-2002 ed. Chicago, IL: American Medical Association; 2001.

Chapters in Edited Books (Volume & Edition)

- Davey Smith G, Egger M. Going beyond the grand mean: subgroup analysis in meta-analysis of randomised trials. In: Altman DG, ed. *Systematic Reviews in Health Care: Meta-analysis in Context.* 2nd ed. London, England: BMJ Publishing; 2001:143-156.
- Mills S. Herbal medicine. In: Lewith G, Jonas WB, Walach H, eds. *Clinical Research in Complementary Therapies.* Edinburgh, Scotland: Churchill Livingstone; 2002:211-227.
- Reynolds RC, Stone J. On doctoring: the making of an anthology of literature and medicine. In: Issaacs SL, Knickman JR, eds. *To Improve Health and Health Care.* San Francisco, CA: Jossey-Bass Publishers; 2002:chap 8. *The Robert Wood Johnson Foundation Anthology;* vol 5. <http://www.rwjf.org/publications/publicationPdfs/anthology2002/chap8.html>. Accessed June 26, 2003.
- Stephan WG. Intergroup relations. In: Lindzey G, Aronson E, eds. *The Handbook of Social Psychology.* Vol. 2. 3rd ed. New York, NY: Random House; 1985:599-658.

4.6 MONOGRAPHS, PROCEEDINGS, & REFERENCES

Conferences (Papers Published & Unpublished)

Braveman P, Cubbin C, Marchi KS, Egerter S. An approach to policy-oriented monitoring of equity in health. Paper presented at: The 130th Annual Meeting of the American Public Health Association; November 9-13, 2002; Philadelphia, PA.

Harnden P, Joffe JK, Jones WG, eds. *Germ Cell Tumours V*. Proceedings of the 5th Germ Cell Tumour Conference; September 13-15, 2001; Leeds, UK. New York, NY: Springer; 2002.

Giesecker KE, Miller LA, Bryan R, et al. Occupational exposure to hantavirus: knowledge, risk, behavior: a four-state review [abstract 33]. In: *Program and Abstracts of the 4th International Conference on HFRS and Hantaviruses*. Atlanta, GA: Centers for Disease Control; 1998:72.

Dissertations

Borkowski MM. *Infant Sleep and Feeding: A Telephone Survey of Hispanic Americans* [dissertation]. Mount Pleasant, MI: Central Michigan University; 2002.

Package Insert

Tamiflu (oseltamivir phosphate) Capsules and for Oral Suspension [package insert]. Basel, Switzerland: F Hoffmann-La Roche Ltd; 1999.

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Bureau of the Census. Higher education price indexes: 1965–1991. In: *Statistical Abstract of the United States: 1993*. 113th ed. Table 277. Washington, DC: US GPO; 1993.

Filamin. In: *Dorland's Illustrated Medical Dictionary*. 29th ed. Philadelphia, PA: W. B. Saunders; 2000:675.

Johnson K. Hantaviruses. In: Evans AS, ed. *Viral Infections of Humans: Epidemiology and Control*. 3rd ed. New York, NY: Plenum Press, 1989:341-350.

Merriam-Webster Collegiate Dictionary. 10th ed. Springfield, MA: Merriam-Webster; 1993.

Scientific or Technical Reports

Taylor BN. *Guide for the Use of the International System of Units (SI)*. 1995 ed. Gaithersburg, MD: National Institute of Standards and Technology; April 1995. NIST Special Publication 811. <http://physics.nist.gov/Document/sp811.pdf>. Accessed June 25, 2003.

4.7 WEB PAGES & ELECTRONIC RESOURCES

CD-ROMs

Anderson SC, Poulsen KB. *Anderson's Electronic Atlas of Hematology* [CD-ROM]. Philadelphia, PA: Lippincott Williams & Wilkins; 2002.

Organisation for Economic Co-operation and Development. *OECD Health Data 2004* [CD-ROM]. Paris, France: Organization for Economic Cooperation and Development; 2004.

Database Online

Meta-analysis. In: MeSH Browser [database online]. Bethesda, MD: National Library of Medicine; 2002. <http://www.nlm.nih.gov/mesh/MBrowser.html>. Accessed June 10, 2003.

Who's Certified [database online]. Evanston, IL: The American Board of Medical Specialists, 2000. <http://www.abms.org/newsearch.asp>. Accessed March 8, 2001.

Document Online

Homeland Security Council. *National Strategy for Pandemic Influenza*. Washington, DC: The Whitehouse; November 1, 2005. <http://www.whitehouse.gov/homeland/pandemic-influenza.html>. Accessed November 2, 2005.

Monograph Online

Foley KM, Gelband H, eds. Improving palliative care for cancer [monograph online]. Washington, DC: National Academy Press; 2001. <http://www.nap.edu/books/0309074029/html/>. Accessed July 9, 2002.

Serial Online

Morse SS. Factors in the emergence of infectious diseases. *Emerg Infect Dis* [serial online]. January-March 1995;1(1):7-15. <http://www.cdc.gov/ncidod/EID/eid.htm>. Accessed April 15, 2003.

Software & Manuals

Adobe Systems. *Adobe Acrobat 5.0 User Guide for Windows and Macintosh*. San Jose, CA: Adobe Systems Inc; 2000. <http://www.adobe.com/products/readstep/>. Accessed April 1, 2002.

Epi Info [computer program]. Version 3.3.2. Atlanta, GA: Centers for Disease Control and Prevention; February 9, 2005. <http://www.cdc.gov/epiinfo.html>. Accessed November 20, 2005.

World Wide Web Pages

Association of Cancer Online Resources, Inc. Cancer-Pain [homepage]. New York, NY: The Association, 2001. <http://www.cancer-pain.org/>. Accessed July 9, 2002.

National Center for Complementary and Alternative Medicine. St. John's Wort and the treatment of depression [Web page]. National Institutes of Health Web site. <http://nccam.nih.gov/health/stjohnswort/>. Accessed January 19, 2003.

World Health Organization. Confirmed human cases of avian influenza A(H5N1) since 28 January 2004 [on the Internet]. January 26, 2005. http://www.who.int/csr/disease/avian_influenza/country/cases_table_2005_01_26/en/JE. Accessed November 16, 2005.

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3. *The Chicago Manual of Style*. 15th ed. Chicago, IL: University of Chicago Press; 2003.
4. JAMA instructions for authors. JAMA Web site. September 21, 2009. <http://jama.ama-assn.org/misc/ ifora.dtl>. Accessed November 9, 2009.
5. International Committee of Medical Journal Editors. Uniform requirement for manuscripts submitted to biomedical journals: writing and editing for biomedical publication. Updated October 2008. <http://www.icmje.org/>. Accessed November 7, 2009.
6. Turabian KL, et al. *A Manual for Writers of Research Papers, Theses, and Dissertations*. 7th ed. Chicago, IL: University of Chicago Press; 2007.
7. American Psychological Association. *Publication Manual of the American Psychological Association*. 5th ed. Washington, DC: American Psychological Association; 2001.
8. JAMA instructions for authors: instructions for table creation. *JAMA*. 2007;298(1):E1.
9. JAMA instructions for authors: figures in accepted manuscripts. *JAMA*. 2007;298(1):E1.

STATE & PROVINCIAL POSTAL CODES

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AK Alaska	ID Idaho	MT Montana	RI Rhode Island
AS American Samoa	IL Illinois	NE Nebraska	SC South Carolina
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CA California	KS Kansas	NJ New Jersey	TX Texas
CO Colorado	KY Kentucky	NM New Mexico	UT Utah
CT Connecticut	LA Louisiana	NY New York	VT Vermont
DE Delaware	ME Maine	NC North Carolina	VA Virginia
DC District of Columbia	MD Maryland	ND North Dakota	VI Virgin Islands
FL Florida	MA Massachusetts	OH Ohio	WA Washington
GA Georgia	MI Michigan	OK Oklahoma	WV West Virginia
GU Guam	MN Minnesota	OR Oregon	WI Wisconsin
	MS Mississippi	PA Pennsylvania	WY Wyoming
AB Alberta	NB New Brunswick		
BC British Columbia	NS Nova Scotia	ON Ontario	SK Saskatchewan
MB Manitoba	NT Northwest Terr.	QB Québec (PQ)	YT Yukon Territory

APPENDIX: ABBREVIATIONS FOR CORE CLINICAL JOURNALS

United States

National Library of Medicine

National Institutes of Health

<http://www.nlm.nih.gov/bsd/aim.html>**Abridged Index Medicus: Core Clinical Journals List**

The **Abridged Index Medicus** (AIM) is available online in PubMed® as a search subset limit called "Core clinical journals." The hardcopy publication ceased with the December 1997 issue. The listing of the journals that currently comprise the list can be retrieved from the NLM journals database. The list below appears the same as the listing for November 2009.

AIM Journals (as of January 2007)**JOURNAL TITLE**

1. Academic medicine
2. AJR. American journal of roentgenology
3. American family physician
4. American heart journal
5. The American journal of cardiology
6. The American journal of clinical nutrition
7. American journal of clinical pathology
8. The American journal of medicine
9. The American journal of nursing
10. American journal of obstetrics and gynecology
11. American journal of ophthalmology
12. American journal of pathology
13. American journal of physical medicine & rehabilitation
14. The American journal of psychiatry
15. American journal of public health
16. American journal of respiratory and critical care medicine
17. American journal of surgery
18. The American journal of the medical sciences
19. The American journal of tropical medicine and hygiene
20. Anaesthesia
21. Anesthesia and analgesia
22. Anesthesiology
23. Annals of emergency medicine
24. Annals of internal medicine
25. The Annals of otology, rhinology, and laryngology
26. Annals of surgery
27. The Annals of thoracic surgery
28. Archives of dermatology
29. Archives of disease in childhood
30. Archives of disease in childhood. Fetal and neonatal edition
31. Archives of environmental & occupational health
32. Archives of general psychiatry
33. Archives of internal medicine
34. Archives of neurology
35. Archives of ophthalmology
36. Archives of otolaryngology--head & neck surgery
37. Archives of pathology & laboratory medicine
38. Archives of pediatrics & adolescent medicine
39. Archives of physical medicine and rehabilitation
40. Archives of surgery (Chicago, IL)

ABBREVIATION

- Acad Med
 AJR Am J Roentgenol
 Am Fam Physician
 Am Heart J
 Am J Cardiol
 Am J Clin Nutr
 Am J Clin Pathol
 Am J Med
 Am J Nurs
 Am J Obstet Gynecol

 Am J Ophthalmol
 Am J Pathol
 Am J Phys Med Rehabil
 Am J Psychiatry
 Am J Public Health
 Am J Respir Crit Care Med
 Am J Surg
 Am J Med Sci
 Am J Trop Med Hyg
 Anaesthesia

 Anesth Analg
 Anesthesiology
 Ann Emerg Med
 Ann Intern Med
 Ann Otol Rhinol Laryngol
 Ann Surg
 Ann Thorac Surg
 Arch Dermatol
 Arch Dis Child
 Arch Dis Child Fetal Neonatal Ed

 Arch Environ Health
 Arch Gen Psychiatry
 Arch Intern Med
 Arch Neurol
 Arch Ophthalmol
 Arch Otolaryngol Head Neck Surg
 Arch Pathol Lab Med
 Arch Pediatr Adolesc Med
 Arch Phys Med Rehabil
 Arch Surg

JOURNAL TITLE

ABBREVIATION

41. Arthritis and rheumatism	Arthritis Rheum
42. BJOG (journal of obstetrics and gynaecology)	BJOG
43. Blood	Blood
44. BMJ (Clinical research ed)	BMJ
45. Brain	Brain
46. The British journal of radiology	Br J Radiol
47. The British journal of surgery	Br J Surg
48. CA: a cancer journal for clinicians	CA Cancer J Clin
49. Cancer	Cancer
50. Chest	Chest
51. Circulation	Circulation
52. Clinical orthopaedics and related research	Clin Orthop
53. Clinical pediatrics	Clin Pediatr (Phila)
54. Clinical toxicology	Clin Toxicol (Phila)
55. Clinical pharmacology and therapeutics	Clin Pharmacol Ther
56. CMAJ (Canadian Medical Association journal)	CMAJ
57. Critical care medicine	Crit Care Med
58. Current problems in surgery	Curr Probl Surg
59. Diabetes	Diabetes
60. Digestive diseases and sciences	Dig Dis Sci
61. Disease-a-month: DM	Dis Mon
62. Endocrinology	Endocrinology
63. Gastroenterology	Gastroenterology
64. Geriatrics	Geriatrics
65. Gut	Gut
66. Heart & lung: the journal of critical care	Heart Lung
67. Heart (British Cardiac Society)	Heart
68. Hospitals & health networks / AHA	Hosp Health Netw
69. JAMA (journal of the American Medical Association)	JAMA
70. The Journal of allergy and clinical immunology	J Allergy Clin Immunol
71. The Journal of bone and joint surgery-American volume	J Bone Joint Surg Am
72. The Journal of bone and joint surgery-British volume	J Bone Joint Surg Br
73. The Journal of clinical endocrinology and metabolism	J Clin Endocrinol Metab
74. The Journal of clinical investigation	J Clin Invest
75. Journal of clinical pathology	J Clin Pathol
76. The Journal of family practice	J Fam Pract
77. Journal of immunology (Baltimore, MD)	J Immunol
78. The Journal of infectious diseases	J Infect Dis
79. The Journal of laryngology and otology	J Laryngol Otol
80. The Journal of nervous and mental disease	J Nerv Ment Dis
81. Journal of neurosurgery	J Neurosurg
82. The Journal of nursing administration	J Nurs Adm
83. Journal of oral and maxillofacial surgery	J Oral Maxillofac Surg
84. The Journal of pediatrics	J Pediatr
85. Journal of the American College of Cardiology	J Am Coll Cardiol
86. Journal of the American College of Surgeons	J Am Coll Surg
87. Journal of the American Dietetic Association	J Am Diet Assoc
88. The Journal of thoracic and cardiovascular surgery	J Thorac Cardiovasc Surg
89. The Journal of trauma	J Trauma
90. The Journal of urology	J Urol

JOURNAL TITLE

ABBREVIATION

91. The journals of gerontology. Series A, Bio/medical sciences	J Gerontol A Biol Sci Med Sci
92. The journals of gerontology. Series B, Psychological/social	J Gerontol B Psychol Sci Soc Sci
93. Lancet	Lancet
94. Mayo Clinic proceedings	Mayo Clin Proc
95. The Medical clinics of North America	Med Clin North Am
96. The Medical letter on drugs and therapeutics	Med Lett Drugs Ther
97. Medicine	Medicine (Baltimore)
98. Neurology	Neurology
99. The New England journal of medicine	N Engl J Med
100. The Nursing clinics of North America	Nurs Clin North Am
101. Nursing outlook	Nurs Outlook
102. Nursing research	Nurs Res
103. Obstetrics and gynecology	Obstet Gynecol
104. The Orthopedic clinics of North America	Orthop Clin North Am
105. Pediatric clinics of North America	Pediatr Clin North Am
106. Pediatrics	Pediatrics
107. Physical therapy	Phys Ther
108. Plastic and reconstructive surgery	Plast Reconstr Surg
109. Postgraduate medicine	Postgrad Med
110. Progress in cardiovascular diseases	Prog Cardiovasc Dis
111. Public health reports (Washington, D.C. :)	Public Health Rep
112. Radiologic clinics of North America	Radiol Clin North Am
113. Radiology	Radiology
114. Rheumatology (Oxford, England)	Rheumatology (Oxford)
115. Southern medical journal	South Med J
116. Surgery	Surgery
117. The Surgical clinics of North America	Surg Clin North Am
118. Translational research	Transl Res
119. The Urologic clinics of North America	Urol Clin North Am

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