

Style Guide for Authors and Editors

This brief guide is a quick reference intended to answer questions about manuscript preparation asked by authors and editors. [Click here](#) for more comprehensive style guides.

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Instructions to Authors

For instructions to authors go to <http://www.cdc.gov/ncidod/eid/instruct.htm>.

Specific Style Issues

(Note: parenthetical acronyms refer to style guides listed in **Part III**)

Abbreviations and Acronyms

- A sentence can begin with an abbreviation. It cannot begin with a figure or symbol.

WBC count was . . .

Alpha (not α) particles are. . .(CMS)

- The article "a" or "an" should match the sound of the abbreviation or acronym, not the word for which it stands. (AMA)

an HMO report, but a health maintenance organization

However, articles are often omitted in front of abbreviations.

CDC, not "the CDC"

- Avoid too many abbreviations. Use standard abbreviations only; do not make up abbreviations. Spell out on first mention and use only if acronym occurs at least five times.
- If an organization's name has been translated into English, the organization's original acronym can be used on the second use of the organization's name, even if the organization is not mentioned after that single mention.
- Abstracts may contain abbreviations after a single mention. (ASM)
- See ASM for complete list of abbreviations that need not be introduced, for example:

AIDS

bp

DNA

EDTA

HIV

RNA

- The following are abbreviations that must be introduced but are allowed after initial mention (see ASM for complete list):

AZT
 CFU
 CNS
 CSF
 ECG, not EKG
 ELISA
 Government agencies (PAHO, WHO, CDC, WTO, FAO, USDA, FDA, APHIS, EPA)
 HACCP
 HPS
 HUS
 IFA (immunofluorescence assay)
 IgG, IgM
 IL
 MDRTB (not MDR-TB)
 PCR
 RT-PCR
 TB
 VRE

- Dates – Spell out months in text. In tables, figures (AMA), and references (UR), abbreviate months using the first three letters.

SI Units

Use SI units for units of measure (ASM), for example:

centimeter	cm
cubic millimeter	mm ³
Dalton	Da
deciliter	dL
gram	g
kilodalton	kDa
kilogram	kg
liter	L
meter	m
microgram	µg
microliter	µL
milligram	mg
milliliter	mL
millimeter	mm

Capitalization

- Avoid unnecessary capitalization. Follow CMS.
- Capitalize any word, including an article, following a colon a) if it begins a full sentence, b) if it begins a subtitle, or c) if it is the first word in a table stub (heading) or cell within a table. This does not apply to subtitles in references (See Uniform Requirements).

accession number

Do not capitalize accession number and use the abbreviation “no.” instead of number.

other capitalization preferences

a.m., p.m. (ASM)

California encephalitis virus

Eastern equine encephalomyelitis virus

Ebola (named after the Ebola River in Zaire)

federal

formalin

Gram stain, gram negative, gram positive (CBE)

Guinea worm disease

Gulf Coast

Internet

Legionnaires' disease

Mercurochrome

Pacific Coast

Simian immunodeficiency virus

Sin Nombre virus

Southeast Asia

Southern blot

St. Louis encephalitis virus

Suramin

Teflon

the Gambia, the Netherlands, The Hague

Venezuelan equine encephalomyelitis virus

Web page, Web site, the Web

West Africa (CMS)

western equine encephalomyelitis

Western Hemisphere

Western blot

x-ray (radiograph is preferred when referring to the image rather than the particles)

specific designations

Do not capitalize the following words, even when used as specific designations, unless they are part of a title: case, group, series, or patient.

statistical tests

The exact and complete titles of tests are capitalized. When the word test appears with the name of a test that is in written form and that is used as a survey or tool, the word test is capitalized. For tests that involve a process, as is the case with most statistical tests, the word test is not capitalized. (AMA)

For a list of statistical tests and capitalization, see AMA Manual of Style.

titles

- Capitalize the first initial of all words except articles, coordinating conjunctions, and prepositions (regardless of length). (ASM)

Exceptions:

Lowercase "to" as a preposition but capitalize as an infinitive.

Ability of Gene xyz To Induce Susceptibility to Penicillin

- Lowercase "that" as a subordinating conjunction but capitalize as a relative pronoun.

Evidence That Penicillin-Resistant Strains Are Common
Strains that Are Resistant to Penicillin

- Capitalize both words in hyphenated compound adjectives. (ASM)

Penicillin-Resistant Gonorrhea

- Titles of books and journals are neither italicized nor placed within quotation marks.
- Lowercase specific epithets in the scientific names of organisms in titles as you would in running text: *Escherichia coli*, NOT *Escherichia Coli*. (ASM)

trade names

Trade names should generally be capitalized. If a name is not found in dictionary or style manuals, follow author. Do not use TM and ® with trade names.

words derived from proper nouns

Most words derived from proper nouns are not capitalized.

Geographic Designations

- Spell out names of states and U.S. territories and possessions when they stand alone or follow a county name. (AMA)
- Use postal abbreviations in references, addresses, or product identification.

XYZ product (ABC Co., Atlanta, GA)

- Abbreviate U.S. as adjective; write out as noun. U.K. may be used as an adjective or noun.

U.S. citizens
Citizens of the United States

Numbers

Use SI or conventional units; see page 4 of this guide for a partial list (AMA). Some medical measurements, however, follow other conventions.

height (meters)	blood pressure (mm Hg)
weight (kilograms)	oxygen pressure (cm H ₂ O)
volume (liters)	blood and clinical chemistry
temperature (Celsius)	

To report both SI and conventional units, repeat the number in parentheses along with the unit of measure.

20 mmol/L (20 meq/L)

Use commas in all numbers with four or more digits.

Exception:

Dates
2,000 people by the year 2002

blood factors

factor VIII (Roman)

confidence intervals

Use “to” instead of a hyphen in a confidence interval.

(95% CI 0.8% to 1.6%)

equations

- Displayed equations and text are not separated with punctuation.

Distance is calculated as follows:

$$D = x(y)$$

where D = distance, x = time, and y = rate

- But if the same equation is run into text (i.e., not displayed), use a comma.

Distance is calculated as $D = x(y)$, where D = distance and...

- In equations, single letter abbreviations and variables are italicized; the surrounding parentheses are not. (ASM)
- Word equations have initial capital letters and no end punctuation.

(Number of new cases/Number of people at risk)

figures versus words

- Use figures for all units of measure (including standard deviations, volumes, drops), age, time (including decades), and money. In table headings, follow rules for numbers. In journal titles spell out numbers.

Twofold through ninefold, 10-fold on up, 2.5-fold, severalfold (ASM)

- Spell out words for numbers and ordinals from one through nine; use figures for 10 and above; do not use superscript for ordinals.

Nine, 10, ninth, 10th

Exceptions:

For two or more numbers in a series or related numbers within a sentence, if one number is 10, use figures for all.

Of the 300 tumors, 2 to 11 were adenocarcinomas.

We used 5 of the 82 samples. These five showed...

- At the beginning of a sentence, spell out all numbers.

Twenty milligrams was injected.

- When two numbers are adjacent, spell out one (usually the nonmeasure) number.

fractions

- Decimals are preferred to fractions, when possible. Spell out fractions whose terms are both lower than 10, and use figures and the virgule if higher. (ASM)

three quarters, two thirds, 1/12
two-thirds majority

- Hyphenate fractions used as adjectives but not as nouns. (CBE)

two thirds of the diagnoses
a two-thirds majority

numbered lists

Avoid unless necessary; use Arabic numbers followed by single parentheses (to avoid confusion with references). (CBE)

Three conditions were met: 1) handwashing procedures, once not strictly followed, were enforced; 2) isolation procedures were instituted; and 3) staff were trained in additional preventive measures.

percentages

Immediately follow the number, not the phrase.

The disease was found in 12 (50%) of the 24 children at the picnic.

ranges

- Limit to specific statistical meaning. In text, use "to"; do not use the en dash.

from 18 to 20 years
from 5% to 10%
from 1984 to 1990

- Use the en dash to connect continuing, or inclusive, numbers—dates, time, or reference numbers.
- Use the hyphen, not the en dash, between numbers that are not inclusive (CMS, p. 187)

Inclusive
1982–1984
May–June 1999

Not inclusive
25%-35%

- Repeat symbols in ranges, but do not repeat words. (AMA)

40°C to 70°C, 25% to 50%
The angles varied by five to six degrees.

ratios

Use colon (length:width, 2:1).

virus designations

HIV-1, HIV-2 (Arabic)

HTLV-III (Roman)

Preferred Usage

affect, effect

affect (v), to influence

effect (v), to bring about or initiate

effect (n), result or outcome

Alaskan Native, Alaska native

Alaska native, anyone who was born and raised in Alaska, regardless of cultural background.

Alaskan Native, a person having origins in any of the original peoples of the area that is now Alaska, and who maintains cultural identification through tribal affiliation or community recognition

American Indians, Native Americans

Both terms are acceptable. [source: *Indians Are Us? Culture and Genocide in Native North America* by Ward Churchill, 1994] Native Americans is preferred.

among, between

"among" always applies to more than two objects.

"between" literally applies to only two objects but may be used with more than two when each is treated individually, as in "a treaty between three powers" (CBE).

and, or

Avoid. In most cases, either "and" or "or" is correct. When a choice cannot be made, use "X, Y, or both."

age designations

neonate or newborn	birth to 1 month of age
infant	1 month to 2 years of age
child	2 to 13 years of age
school-age	5 to 18 years
teenage	13 to 19 years
adolescent	13 to 17 years of age
adult	18 years old and older
childbearing age	15 to 44 years old
elderly	(follow author)

Note:

Do not say "zero age."

based on, on the basis of

"based on" is often erroneously used to mean "on the basis of." Correctly used, it follows forms of the verb "to be."

The calculations were based on the following results.

biopsy

The procedure of removing and examining tissue, cells, or fluids from the living body. Observations are made on the biopsy specimen, not on the biopsy itself. Biopsy is a noun; do not use as a verb. (AMA)

black, African-American

Follow author, but "black" is not capitalized.

brevity

Use as few words as possible to make a point

the majority of	most or many
prior to	before
at the present time	now
at the time that	when
in terms of	in, of, for
the truth is	is
the facts are	are
in order to	to

burden

Avoid.

CDC

not "the CDC"

case, patient

A case is a particular instance of disease, illness, injury, or asymptomatic disease. Distinguish between a case (a situation or set of circumstances) and a patient (a human being). Cases do not show symptoms, experience side effects, recover, or die; patients do. Do not dehumanize persons into cases. ("Case-patient," however, is an acceptable term.)

Clostridium perfringens was isolated in a case of diarrhea or from a patient with diarrhea. Erythromycin is recommended for treating patients with legionellosis.

commercial sex workers, prostitutes

Follow author.

compare to, with

One thing or person is usually compared with another when the aim is to examine similarities or differences in detail. A thing is compared to another when a single striking similarity (or dissimilarity) is observed, or when a thing of one class is likened to one of another class, without analysis (AMA). In most cases, use compare with.

compare with: to examine in detail so as to discover the similarities or differences

The sodium levels of the patients in the control group were compared with those of the patients in the study group.

compare to: to liken to (to point out comparison without the act of detailed analysis)

Shall I compare thee to a summer's day?

compose, comprise

compose: to total, form, to go together, to make up (an object)

The district is composed of three counties.

comprise: to include, to contain

The whole comprises the parts; the parts do not comprise the whole.
A district comprises three counties.

Do not write “comprised of.”

controls

Persons are used as controls.

dehumanizing terms

Describe a person as having a condition, not being the condition.

person with diabetes, not a diabetic
person with arthritis, not an arthritic
person with asthma, not an asthmatic
person with AIDS, not AIDS patient

develop

Diseases develop in patients. Patients do not develop diseases.

diagnose

To evaluate, identify

Conditions, syndromes, diseases, and pathogens are diagnosed. Patients are not diagnosed.

die of

Patients die of, not from specific diseases or disorders. (AMA)

different from

Use different from, not different than.

dosage, dose

Dosage implies a regimen; dose implies a quantity. (AMA)

dosage: the amount of medicine to be taken by a patient in a given period

dose: the amount taken at one time

due to, owing to

These terms are not synonymous. "Due to," an adjective, should be attached only to a noun or pronoun and should not be used in place of owing to, because of, on account of, which are compound prepositions. (WIT) A good rule of thumb is to use "due to" with forms of the verb "to be."

Her success is due to talent and hard work. (Due to modifies success.)

e.g. and i.e.

Place a comma after these abbreviations. Do not use "etc." in an e.g. or i.e. segment.

e.g. = for example, such as

i.e. = that is, in other words

Examples may be introduced by "e.g." but should not be followed by "e.g."

Correct:

In evaluating an I.Q. score, several factors, e.g., socioeconomic level, must be considered.

Incorrect:

Socioeconomic level, e.g., is a factor to be considered.

eliminate, eradicate

Disease is eradicated from the entire world, eliminated from a country or region.

epidemic, endemic

A disease is endemic in an area; the area is not endemic.

endemic malaria, disease-endemic areas

epidemic = a disease that occurs suddenly and in numbers in excess of what would be expected (because it was introduced from outside)

endemic = belonging or native to a particular people or country, indigenous

etc.

Do not use in scientific writing; it is considered vague.

etiology, cause

Etiology is the study or description of causes (agents) of a disease. Do not use "etiology" as a synonym for "cause." Etiology encompasses all the possible causes of a disease.

expire, die

Patients do not expire or have fatal outcomes; they die.

feel, believe

Use "feel" to express physical sensations; use "believe" to express personal conviction, accepting something as true.

The patient felt cold.

The author believed that the theory was sound.

fever, temperature

Fever is a rise of body temperature above normal. If a patient has a temperature of 37.8°C, he has a fever of 0.8°C.

Also correct:

The patient was febrile (37.8°C). (AMA)

Note:

Please use the Times New Roman degree symbol; do not use a superscript lowercase "o."

few, less (fewer, less; fewest, least)

"Few" refers to units or persons that can be counted.

"Less" refers to quantities of mass, bulk, or volume.

former Soviet Union

Refer to individual country. As a whole, refer to "Newly Independent States."

gram

Gram stain should be capitalized and never hyphenated. Gram negative and gram positive should only be hyphenated when used as a unit modifier.

Gram staining

gram negative

gram-positive bacteria

homosexual, bisexual, gay

Follow author on these terms. Sometimes the phrase "men who have sex with men" is used because some of these men do not label themselves as gay, homosexual, or bisexual.

-ic versus -ical

Dispense with most -al endings. For example, use epidemiologic, geographic, serologic, logistic, immunologic, toxicologic, anatomic.

Author's preference, however, should be considered, e.g, biological warfare.

immunize, vaccinate

immunize = to confer immunity

vaccinate = to administer vaccine

in, among

Conditions usually occur in, not among, persons.

The 25 cases of measles were in school-aged children
infection in patients, not infection among patients

incidence, prevalence

incidence (a rate), number of new cases per unit of population per unit of time

prevalence, number of existing cases per unit of population at a given time (point prevalence) or
in a given time (period prevalence).

individual, person

"Person" is a noun; "individual" is an adjective (e.g., an individual student).

inject, inoculate

Inject a fluid; inoculate an animal or person. Liquid cannot be inoculated into an animal or a petri
dish; it is injected into or spread on.

We used a 0.5-mL aliquot to inoculate each mouse.

We injected a 0.5-mL aliquot into each mouse.

injection, intravenous drug user(s)

Be aware of the difference between injection drug users (IDU) and intravenous drug users
(IVDU). The former includes other forms of drug use such as intramuscular injection.

insure, ensure, assure

insure, to guarantee life or property against risk (e.g., to underwrite; to give, take, or procure
insurance [CBE])

ensure, to make certain or guarantee (CBE)

assure, to make safe, to give confidence to (Webster)

in vitro

Do not hyphenate foreign phrases that are printed open in other circumstances (e.g., in vitro translation, in situ protein synthesis, in vitro-stimulated growth, in situ-synthesized proteins). ASM, p. 45

male, female

Both terms are adjectives. For nouns, use man, woman, boy, girl, or infant, if possible.

molecular weight

The relative mass of a substance. It is a pure number and has no units.

Incorrect:

The molecular weight of a protein is 30,000 Da.

Correct:

The molecular weight of the protein is 30,000. (CBE)

Correct:

The molecular mass . . . is 30,000 Da. (ASM)

morbidity, morbidity rate

morbidity: the condition of being diseased, the rate of illness or disease. "Illness" or "disease" is preferred over "morbidity"; avoid "morbidity rate."

mortality: the number of deaths from a particular condition. "Death" is preferred over "mortality."

mortality rate: the number of deaths in a particular population divided by the size of that population at the same time.

negative, normal

- Examinations and most laboratory tests are neither negative nor normal in and of themselves; interpretations of the tests, however, may be negative or normal.
- Observations, results, or findings from examinations and tests are normal or abnormal.
- Cultures, tests for microorganisms, tests for specific reactions, and reactions to tests may be negative or positive.
- Electroencephalograms, electrocardiograms, isotope scans, and roentgenograms are "pictures" and are, therefore, normal or abnormal, not negative or positive. (AMA)
- Urinalysis results were normal, not urinalysis was normal.

offspring

Use "children," not "offspring" for humans.

-ology

This suffix means "a branch of knowledge, science, or study of." Terms ending in -ology (e.g., etiology, pathology, serology) should not be used to describe particular items. (AMA)

Incorrect:

The pathology was located in the upper part of the gastrointestinal tract.

Correct:

The pathologic lesion was located in the upper part of the gastrointestinal tract.

Incorrect:

The histology was small-cell carcinoma of the lung.

Correct:

The histologic diagnosis was small-cell carcinoma of the lung.

Incorrect:

The patient's serology showed . . .

Correct:

The patient's serologic test results showed . . .

Incorrect:

We used the following methodology.

Correct:

We used the following method.

parameter

Parameter has a specific statistical meaning and should not be used simply to mean measurement, value, or number. Ordinarily, except when a descriptive quantity for a statistical population is meant, parameter should be changed to measurement, value, quantity, variable, number, or a comparable term. (AMA)

parasitemia

Change to "levels of parasitemia."

patient

An ill person who is receiving or has received medical care. Do not use the term "normal patients."

person, persons, people

Person is preferred over "individual."

The plural of person is "persons," not "people." The latter term refers to a group of persons who share particular characteristics (e.g., the American people).

present, present with

Jargon.

Incorrect:

The patient presented with . . .

Correct:

The patient sought treatment for . . .

Correct:

The patient had . . .

preventative, preventive

"Preventative" is becoming obsolete. "Preventive" is preferred.

react, test

A substance is tested for a reaction with another substance; it is not reacted with another substance.

redundant phrases

large in size - large

period of time - period

very unique - unique

resolve

Symptoms are resolved; patients do not resolve their symptoms.

risk of, for, from

What is my risk of getting AIDS?

Men who have sex with other men are at highest risk for AIDS.

The most serious risk from AIDS is death.

sacrifice

A euphemism for killing laboratory animals after an experiment. Preferred terms are "humanely kill" or "euthanize."

serum, sera

Serum samples or serum specimens are preferred terms, but "sera" is acceptable.

sex partners

not sexual partner

However, "sexual behavior" is a correct term.

significant

Significant has a specific statistical meaning. If that is not the meaning intended, substitute a synonym, e.g., important, marked, noteworthy, substantial.

subject

Substitute participant, patient, or person.

time designations

March to August (not inclusive)

March through August (inclusive)

1960s, not 1960's

once a day, not daily

twice a day, not twice daily

1986 to 1987 (1-year period)

1986 through 1987 (2-year period)

Avoid "between" (e.g., between 1986 and 1987)

titer

A noun, not a verb.

Incorrect:

were titered

Correct:

titers of . . . were determined

tracking

Jargon.

Incorrect:

tracking people

Correct:

analyzing trends among persons . .

U.S. citizens

Is preferred over Americans.

varying, various

varying = that which is changing (adjective) or causing to change (verb)

various = of different kinds or aspects

youth in high-risk situations

to avoid categorization by group, do not use "high-risk youth." Similarly, replace "high-risk groups" with "groups at high risk."

Punctuation

colon

A colon may be used to introduce a list or series. Do not capitalize the first word after a colon (unless it would be capitalized for other reasons such as beginning a sentence or a subtitle). Do not use a colon to introduce a series of complete sentences. Either change the colon to a period or edit the list so that it is no longer made up of complete sentences.

Incorrect:

The cells were prepared as follows: Strain 12B was grown in G broth. The cells were harvested by centrifugation. The pellet was dissolved in solution Y.

Correct:

The cells were prepared as follows. Strain 12 B was grown in G broth.

Incorrect:

The cells were harvested by centrifugation. The pellet was dissolved in solution Y.

Correct:

The cells were prepared as follows: strain 12B was grown in G broth, the cells were harvested by centrifugation, and the pellet was dissolved in solution Y.

If any item in a list includes a complete sentence that gives information about that item only, either edit out the colon or put the additional information in parentheses.

Incorrect:

This conclusion is based on the following results: 1) The mapping of the mutations between 0.13 and 0.23 map unit. This indicates that they lie within a 1.2-kbp region. 2) The presence of the Nif phenotype in all the mutants.

Correct:

This conclusion is based on the following results: 1) the mapping of the mutations between 0.13 and 0.23 map unit (this indicates that they lie within a 1.2-kbp region) and 2) the presence of the Nif phenotype.

Do not use a colon if the items in the list complete the sentence grammatically.

Incorrect:

XYZ medium contained: A, B, and C.

Correct:

XYZ medium contained A, B, and C.

commas

Place a comma:

- after all items linked by "and" or "or" in a series, including the item before the conjunction.
- after state when city is mentioned in text (In Dallas, Texas, in 1995...)
- after date that gives month, day, and year in text. (The test given January 1, 1997, showed that . . .)
- after an introductory phrase of five or more words. A comma can be used after fewer words if necessary to clarify the meaning.
- after i.e. or e.g.

em dashes

Avoid in scientific writing. Their use is for sudden breaks in thought that change the sentence structure or amplify and expand a phrase in the main clause. Try parentheses instead.

en dashes

- Use the en dash to connect continuing, or inclusive, numbers—dates, time, or reference numbers.
- Use the hyphen, not the en dash, between numbers that are not inclusive.

Inclusive
1982–1984
May–June 1999

Not inclusive
25%-35%

- Use between compound adjectives when one element is an open compound or when at least two elements are hyphenated compounds; or, in complex modifying phrases that include suffixes and prefixes and hyphens.

New York–Boston connector

- In complex modifying phrases that include suffixes or prefixes, hyphens and en dashes are sometimes used to avoid ambiguity.

non-group–specific blood
manic-depressive–like symptoms

footnote symbols, numbers, letters

- For addresses and affiliations, footnote symbols are used in the following order: *, †, ‡, §, ¶, #. They are doubled if more are needed. Footnotes in text use superscript numbers.
- Tables and figures use superscript letters. (ASM) All information at the bottom of a table must be footnoted, but all abbreviations may be in one footnote.

note: See ASM Style Manual for abbreviations that may be used without introduction in a table.

hyphens

- Terms formed by combining two or more words or elements of words may be open (with a space between them), hyphenated, or solid (as one word). If in doubt about how to treat a compound, consult Webster's Dictionary or ASM.
- Compound adjectives should be hyphenated
- Common and unambiguous adjectives, however, need not be hyphenated.

food safety issues, foodborne illness study, public health nurse

- Do not hyphenate after an adverb ending in -ly even when used in a compound modifier preceding the word modified.

The rapidly rising temperature caused . . .

- Do not hyphenate foreign phrases that are printed open in other circumstances (e.g., in vitro translation, in situ protein synthesis, in vitro-stimulated growth, in situ-synthesized proteins). ASM
- CDC mailstops are not hyphenated.

Mailstop C12

italics

- **Emphasis**
Do not introduce italics, underlining, or bold face type for emphasis. Use only as indicated in this style guide.
- **Foreign words and phrases**
Some foreign words and phrases have become part of standard English usage and do not need to be italicized, unless not using italics would be confusing. These terms include

in vivo
in vitro
falciparum (in falciparum malaria)
et al.

parentheses and brackets

Nested parentheses sometimes appear in chemical names. Follow author. (ASM)

(x(yy)x)

If a designation that already contains parentheses must be enclosed within parentheses, do not change the designation. Instead, use brackets in place of the outer set of parentheses. (ASM)

Incorrect:

another strain (strain 123(pXYZ))

Incorrect:

another strain (strain 123[pXYZ])

Correct:

another strain [strain 123(pXYZ)]

In circumstances other than mathematical expressions, the inner set of parentheses should be changed to brackets. (ASM)

Incorrect:

The procedure we used [the Lowry method (12)] . . .

Correct:

The procedure we used (the Lowry method [12]) . . .

In numbered lists, use a single parenthesis to avoid confusion with references (CBE).

Three procedures were instituted hospitalwide: 1) handwashing, which is associated with fewer nosocomial infections; 2) isolation precautions, according to established guidelines; and 3) mandatory screening of staff.

periods

Use periods in in-text abbreviations.

U.S. citizens from Washington, D.C., were . . .
et al.

If an e-mail address ends a sentence, do not add a period at the end of the sentence. Likewise, e-mail addresses or URLs in references are not followed by a period.

possessives

6 months' gestation
Legionnaires' disease
woolsorters' disease

Year indications are not possessive.

1960s, not 1960's

Diseases or syndromes named after a person or place are generally not possessive:

Bright disease
Chagas disease
Down syndrome
Hodgkin disease
Kaposi sarcoma
Kawasaki syndrome
Lyme disease
Marfan syndrome
Minimata disease
Reye syndrome
Rocky Mountain spotted fever

prefixes

- Terms formed by combining two or more words or elements of words may be open (with a space between them), hyphenated, or solid (as one word). If in doubt about how to treat a compound, consult Webster's Dictionary or ASM.
- Following are a list of common prefixes. They should always be solid except as noted below.

ante-	inter-	over-	sub-
anti-	intra-	post-	super-
co-	macro-	pre-	supra-
counter-	micro-	pro-	trans-
de-	mid-	pseudo-	ultra-
extra-	multi-	re-	un-
infra-	non-	semi-	

Exceptions:

- before a capital letter (un-American)
- before an abbreviation or acronym (non-mRNA)
- before a numeral (pre-1970)
- to avoid confusion with a similar unhyphenated word (re-cover, re-creation)
- to avoid a confusing meaning, as in immunologic terms such as anti-rabbit, anti-goat, anti-mouse, anti-human. "Goat anti-rabbit IgG" means goat antiserum against rabbit IgG, not goat IgG that is antirabbit.

Even if letters are doubled, common prefixes are usually not joined by hyphens.

antiinflammatory
intraabdominal
nonnegotiable
posttraumatic

restrictive and nonrestrictive clauses

Place commas around nonrestrictive clauses (extra information).

The samples, which James analyzed, had been stored for 2 weeks.
(Only one set of samples is being discussed; therefore, the clause "which James analyzed" is not necessary for defining the samples.)

Do not place commas around restrictive clauses (necessary information).

The samples that James analyzed had been stored for 2 weeks.
(More than one set of samples is being discussed. The clause "that James analyzed" defines the noun "samples," telling which samples were analyzed.)

semicolons

- are used to separate independent clauses containing commas.
- are used between two parts of a compound sentence when the independent clauses are not joined by a conjunction.
- separate items in a series if internal punctuation is present.

suffixes

The following suffixes are joined without a hyphen: -fold, -hood, -less, -like, -wise, unless doing so

- creates an unclear or excessively long word
- triples a consonant (bell-like)
- follows a proper noun (Whitman-like)
- follows a number and for decimal fractions, e.g., 10-fold; 2.5-fold (ASM)

Follow the dictionary, ASM, or CMS to determine whether terms are written as one word, two words, or hyphenated. Following is a list of common terms.

acute-phase serum samples	age group (2 words)	antibody-capture ELISA
antibody-positive children	back to back (adv), back-to-back (adj)	bedbug
bed net (n), bed-net (adj)	birthplace	birth weight (2 words)
bloodborne	bottle-fed	breast-feed, breast-fed
case-fatality rate	case-patient	chickenpox
childbearing	child care (n), child-care (adj)	coauthor
convalescent-phase serum samples	co-worker	cut off (v), cutoff (adj)
cross-reaction, cross-infection (see CMS for hyphenated "cross" words)	database	day care (n), day-care (adj)
desktop publishing	e-mail	en route
enzyme-linked immunosorbent assay	fast food (n), fast-food (adj)	finger-prick, finger-stick
follow-up (n), follow up (v)	foodborne	food handlers
food handling (n), food-handling (adj)	fresh water (n), freshwater (adj)	Gram stain
gram negative, gram positive (hyphenate if used as an adj)	groundwater	handwashing
health care (n), health-care (adj)	immunodeficiency, not immune deficiency	life cycle
life-style	live-born	long term (n), long-term (adj)
long-standing	managed care (n, adj)	needle-stick
online (adv, adj)	overestimate (most over- or under- prefixes are solid)	person-to-person transmission, but transmission was person to person
post mortem (adj), postmortem (noun)	postpartum	readout
schoolchildren	seawater	snowblindness
stand by (v), standby (adj)	stillborn	short term (n), short-term (adj)
sub-Saharan	T cell (n), T-cell (adj)	tickborne
toxic shock syndrome	under way	vector-borne
waste water	waterborne	work-up (n), work up (v)
well-being	well-known person, but he is well known	
workplace	worldwide	

virgules

The virgule often implies duality (AMA).

The physician/patient experience implies the physician and patient are one and the same.
The physician-patient relationship implies two different persons.

"or" or "and" should replace the virgule; avoid and/or.

He or she, not he/she

Father and son bowling league, not father/son bowling league

References

- Identify references in text, tables, and legends as they appear consecutively by Arabic numerals in parentheses.
- "Editor" is spelled out in references.
- Use postal abbreviations in parentheses for states for location of publisher (omit DC after Washington), but write out states when given as meeting locations.
- Follow Uniform Requirements, noting in particular the following:

abstracts

- Abstracts should not contain references because abstracts need to stand alone.
- Abstracts can be cited in the references. If the abstract has only a page number, cite the name of the booklet (e.g., Program and Abstracts).

Galil K, Singleton R, Levine O, Fitzgerald M, Ajello G, Bulkow L, et al. High prevalence of *Haemophilus influenzae* type b (Hib) carriage among Alaska Natives despite widespread use of Hib-conjugate vaccine. In: Abstracts of the 35th Infectious Disease Society of America; San Francisco, California; 1997 Sept 13–16; Abstract 421. Alexandria, Virginia: Infectious Disease Society of America; 1997.

articles in press

Number any references to articles in press and place in the references. Include year. For articles submitted to be published, place in text as for personal communications and unpublished data (W.W. Lamb, submitted for pub.).

dissertations, theses

Dissertations can be used as references; theses cannot. Cite theses in the text, giving all information that would normally be included in a reference. International variations in terminology occur; the primary distinction is whether or not the work is published.

Kaplan SJ. Post-hospital home health care: the elderly's access and utilization [dissertation]. St. Louis (MO): Washington Univ.; 1995.

Internet citations

Follow Uniform Requirements.

Morse SS. Factors in the emergence of infectious diseases. *Emerg Infect Dis* [serial online] 1995 Jan–Mar [cited 1996 Jun 5];1. Available from: URL: <http://www.cdc.gov/ncidod/EID/eid.htm>

journal names

Use Index Medicus journal abbreviations; spell out the journal name if it is not in Index Medicus.

organization as author

Spell out the full name of the organization if it is the author, or just put title with no author. Never use anonymous or "no author given."

World Health Organization, not WHO

personal communications, unpublished data

Place in text

(D.E. Berg, pers. comm.)

(D. Stantio, unpub. data)

ProMed Citation

Lipkin I. West Nile-like virus: PCR primers and protocols. *ProMed*. October 13, 1999. Accessed at: <http://www.promedmail.org>, archive number: 19991013.1826.

secondary sources

(e.g., USA Today) Avoid. Suggest that the author use a primary source.

when CDC is the author

The name may differ.

1992–present Centers for Disease Control and Prevention

1980–1991 Centers for Disease Control

1970–1979 Center for Disease Control

Scientific Nomenclature

bacteria

Italicize species, variety or subspecies, and genus when used in the singular. Do not italicize or capitalize genus name when used in the plural.

Listeria monocytogenes is; *Listeria* is a ubiquitous organism.
Listeria are; salmonellae; mycobacteria

If a paper is about several species of the same genus, the genus needs to be spelled out only in the title and at first use in the abstract, text, tables, and figures. It may subsequently be abbreviated for other species. (ASM)

"We studied *Pseudomonas aeruginosa*, *P. putida*, and *P. fluorescens*."

Do not italicize the name of a class, order, family, or tribe. (AMA)

Exception:

The genus *Salmonella* consists of only two species: *S. enterica* (divided into six subspecies) and *S. bongori*. Most salmonellae encountered in EID will be serotypes (serovars) belonging to *S. enterica*. On first mention, put the genus and species in italics, followed by initially capped serotype in Roman (e.g., *Salmonella enterica* serotype Paratyphi; on 2nd mention, just put *S. Paratyphi*). Serotypes belonging to other subspecies are designated by their antigenic formulae following the subspecies name (e.g., *S. enterica* subspecies *diarizonae* 60:k:z or *S. IIIb* 60:k:z)

viruses

When used formally, virus family, subfamily, and genus names should be capitalized and printed in italics. A virus species name should also be printed in italics, with the first letter of any subsequent proper noun capitalized.

Avian leukosis virus
Hepatitis B virus

Subsequent reference to the same virus should be an accepted acronym, not italicized, e.g.,

WNV (for *West Nile virus*)
HBV (for *Hepatitis B virus*)

The name of a tentative species whose taxonomic status is uncertain should not be in italics, but its first word (and any proper noun) should be capitalized.

For more information on this new virus nomenclature style, recently adopted by several international organizations, see International Committee on Taxonomy of Viruses. Virus taxonomy: classification and nomenclature of viruses: seventh report of the International Committee on Taxonomy of Viruses. Van Regenmortel MHV, chairman. New York: Academic Press;2000.

Spelling

change British spelling to American

analog, not analogue
analyze, not analyse
anesthesia, not anaesthesia
color, not colour
estradiol, not oestradiol
homolog, not homologue
orthopedics, not orthopaedics
titer, not titre

Exceptions:

aerobic
anaerobic
proper names (The XYZ Programme, *S. faecalis*, *N. gonorrhoeae*)

commonly misspelled words

(See also Hyphens for list of terms written as one word, two words, or hyphenated.)

acknowledgment (not acknowledgement)
Cameroon (not Cameroun)
Côte d'Ivoire (not Ivory Coast)
Dhaka (not Dacca)
Escherichia coli O157 use the letter O, not the number 0.
Haemophilus influenzae type b (Hib)
helminthic, not helmintic
hemorrhage
inoculation
judgment, not judgement
leukocyte, not leucocyte
mucus (n), mucous (adj)
occurred, occurrence
omit, omitted
precede
proceed
protozoon (n, s), protozoa (n, pl) protozoan (adj)
repellent
supernatant, not supernate
villus (n), villous (adj)

Statistical Terms

common tests

For tests named after a person, avoid the possessive unless the term is always written in the possessive.

Fisher exact test
Pearson correlation coefficient
Sorenson correlation coefficient
Student t test

mathematical symbols (+, †, , =, <, >, , , ~.)

Are closed up when they indicate mathematical operations. In all other contexts, a space should be printed on each side of the symbol. (ASM)

a probability of <0.01 (note: always use 0 before decimal in p value)
a >25% drop, but 45%±2%
-70°
between nucleotides -55 and +19
G+C content
densities of <10³
magnification of x200, but 4 x 10⁶
10× lens objective [note: math font ×]
the MIC was <8.0 g/ml
>10-fold, greater than fourfold

Use words, not mathematical symbols, in nonmathematical expressions in text. Disregard this rule in the bodies of tables. (ASM)

Tumor cells plus IFN injections, not tumor cells + IFN injections

Exception:

>, <, may be used in text.

Do not allow a mathematical symbol to stand for the main verb in a clause.(ASM)

Incorrect:

When $p < 0.005$. . .

Correct:

When p was < 0.005 . . .

Incorrect:

densities <10³

Correct:

densities of <10³

other common statistical terms

(check ASM and Reporting Statistics in Medicine for large glossary)

chi square (noun; chi-square, adjective); if not spelled out, use Greek Chi symbol (χ)

Mann-Whitney U test

Wilcoxon matched-pairs, Wilcoxon rank-sum test, Wilcoxon signed-ranks test, Log-Rank analysis, Wilcoxon 2-sample test

Kolmogorov-Smirnov test for goodness-of-fit

Epi Info 5

SAS statistical package

probability

p= 0.05 (lower case p, no italics; put zero before decimal)

symbols

Use the % symbol within a sentence. Begin a sentence with "percent."

Put a space between a number and its measure (5 mL, 5 M).

Exception:

No space before the percent or degree symbols.

5%, 70°C

Tables and Figures

Follow ASM style for figures and tables. If there is only one figure or table, do not number it. Tables must be created with the word-processing program's table editor.

abbreviations

Tables and figures should be self-explanatory; therefore, spell out terms even if introduced in the text.

captions and legends

Place table heading above, not below, the table. Capitalize the first letter only. Do not make into a sentence; do not add a period.

Place figure legend within the text, not below the figure. Capitalize the first letter only. The legend may begin with a sentence or a sentence fragment. Add a period.

footnotes

Use superscript letters to indicate footnotes, even if only one footnote; there is no space between a footnote symbol and the footnote.

- Stack footnotes.
- Cite all table abbreviations in one footnote.
- Place a period at the end of footnotes.
- Footnote symbols need not be repeated in like boxhead entries. (ASM)
- Convert unwieldy table data to footnotes.

orientation

Tables should be arranged with like data reading downward (e.g., organism names, virus titers). Do not use landscape orientation; use portrait.

units of measure in tables

Need not be repeated in every row but should be given once in the boxhead (in parentheses and abbreviated if possible). The unit of measure usually appears after the thing it measures, not necessarily at the end of the boxhead.

Animal wt (g) during treatment

Units of Measure

Common units of measure may be abbreviated without introduction if used with numbers or in tables but not alone in text.

30 ng, but protein measured in nanograms

See AMA for a complete list of common units of measure and p. 4 of this guide for a short list.

versus

Use "versus" in text (this method versus that one); "vs." in statistics (2.5 vs. 3.4); and "v" in legal citations (Roe v. Wade).

Verbs

dialyze blood, not animals or humans

transfuse blood, not animals or humans

subject-verb agreement

In a noncount noun in a prepositional phrase with "none," the verb plurality is determined by the object of the preposition.

None of the blood was...

None of the patients are participating.

A number (total, group) of persons are.

The number (total, group) reported is 25.

Seventy-eight percent is the largest percentage reported.

The Centers for Disease Control and Prevention is...

A quantity indicated by a unit of measure is singular, even when the units are spelled out. (ASM)

Twelve milliliters was injected.

...10 mg was added

...5 mL was injected

...10 days has passed

...220 cpm of radioactivity was detected

Exceptions:

Non-absolute or informal units

...10 drops were added

Do not allow a mathematical symbol to stand for the main verb in a clause. (ASM)

Incorrect:

When $p < 0.005$. . .

Correct:

When p was < 0.005 . . .

Medical jargon often uses nouns as verbs. Avoid.

Incorrect:

was electrophoresed

Correct:

underwent electrophoresis

Incorrect:

The patient was biopsied.

Correct:

A biopsy was performed.

Other Resources

Comprehensive Style Guides and Other Print Resources

For a more in-depth discussion of medical writing and editing issues, refer to other authoritative sources, including print versions of

- A Dictionary of Virology (Mahy)
- American Medical Association Manual of Style (AMA)
- ASM Style Manual (ASM)
- Chicago Manual of Style (CMS)
- Control of Communicable Diseases Manual (APHA)
- Dorland's Illustrated Medical Dictionary
- How To Report Statistics in Medicine (Lang)
- Index Medicus
- International Code of Nomenclature of Bacteria (1990 Revision), P.H. A. Sneath, editor, 1992, American Society for Microbiology
- Manual of Systematic Bacteriology (Bergey)
- Physicians Desk Reference
- Scientific Style and Format (Council of Science Editors [CSE])
- Stedman's Medical Dictionary
- Stein's Medical Abbreviations
- Uniform Requirements for Manuscripts Submitted to Biomedical Journals (UR)
- Virology (Fields)
- Virus taxonomy: classification and nomenclature of viruses: seventh report of the International Committee on Taxonomy of Viruses. Van Regenmortel MHV, chairman. New York: Academic Press;2000
- Webster's New Collegiate Dictionary
- Webster's Third New International Dictionary (unabridged)
- Words Into Type (WIT)

- **Internet Resources**

- Checklist of North American Birds
<http://www.aou.org/aou/birdlist.html>
- Encyclopaedia Britannica
www.Britannica.com
- GPO's Copyright Law of United States; 162 pp
<http://www.loc.gov/copyright/circs/circ92.pdf>
- Index Medicus
<http://www.nlm.nih.gov/tsd/serials/lji.html>
- LBSN-List of Bacterial Names with Standing in Nomenclature
<http://www.bacterio.cict.fr/>
- Merriam-Webster Collegiate 10th dictionaries
<http://www.m-w.com>
- Northern Light: good, all-purpose search engine for locating people and addresses, in particular
<http://www.nimr.mrc.ac.uk/intro.htm>
- Online thesaurus of geographic names
http://shiva.pub.getty.edu/tgn_browser
- Source of online classics including reference works for editors (Strunk, Fowler's) and 3rd edition of American Heritage Dictionary, 2000 edition of Columbia Encyclopedia, and 1996 edition of Roget's Thesaurus
www.bartleby.com
- Physicians Desk Reference
<http://www.pdrel.com/>
also available free through CDC for CDC employees at <http://www.pdrel.com/>
- Stedman's Medical Dictionary
<http://www.stedmans.com/>
- Uniform Requirements
<http://www.acponline.org/journals/resource/unifreqr.htm>
- Virus taxonomy: classification and nomenclature of viruses: seventh report of the International Committee on Taxonomy of Viruses
<http://www.ncbi.nlm.nih.gov/ICTVdb/Ictv/index.htm>

CDC Intranet Resources

Authorship of CDC or ATSDR Publications, Manual Guide General Administration CDC-69

Manual Guide-General Administration CDC-18, Clearance Procedures for Scientific and Technical Documents

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black, African-American	12
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case, patient	12
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commercial sex workers, prostitutes	12
compare to, with	13
compose, comprise	13

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develop	13
diagnose	13
die of	14
different from	14
dosage, dose	14
due to, owing to	14
e.g. and i.e.	14
eliminate, eradicate	14
epidemic malaria, disease-endemic areas	14
epidemic, endemic	14
etc.	15
etiology, cause	15
expire, die	15
feel, believe	15
fever, temperature	15
few, little	15
former Soviet Union	15
gram	15
homosexual, bisexual, gay	15
-ic versus -ical	16
immunize, vaccinate	16
in vitro	17
in, among	16
incidence, prevalence	16
individual, person	16
inject, inoculate	16
injection, intravenous drug user(s)	16
insure, ensure, assure	16
male, female	17
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