

ACCP STYLE GUIDE FOR SCIENTIFIC AND MEDICAL WRITING (ABRIDGED)

I. General Style

To check the spelling and hyphenation of nonmedical terms, use *Webster's Collegiate Dictionary* (11th ed.) or go to www.merriam-webster.com.

For current medical terminology, consult *Dorland's Medical Dictionary* (32nd ed.).

For other style uses as noted, see the *AMA Manual of Style* (10th ed.).

Please note that these specific editions/Web sites of *Webster's*, *Dorland's*, and *AMA* will be referred to throughout this document.

Do not allow the use of Word's automatic formatting features. Type in numbers for numbered elements (e.g., 1., 2., 3.; i., ii., iii.) and letters for answer options or outlining elements (e.g., A., B., C., D.; a., b., c., d.).

Numbers

Avoid starting a sentence with numbers; if it cannot be avoided, spell them out. ("One hundred sixty-two individuals were enrolled in the trial ...")

If referring to discrete events, spell out numbers under 10 ("she takes the tablet four times daily or twice every 12 hours"). If describing a mathematic operation, use the numeral ("it decreases her risk 6-fold and gives her 6 times the adverse effects").

AGE

A 72-year-old woman

A man in his 50s

A woman younger than 30 years

A school-aged boy 6 years or older, a middle-aged man of 50 years

For further information, see *AMA*, p. 410: Age and Sex Referents.

***TIME* (notations of the clock)**

6 years (always spell out "seconds," "minutes," "hours," "days," "months," "years")

7-year period

1990s, the 2000s (the decade beginning January 1, 2000, and ending January 31, 2009)

20th century, 19th-century medicine. Spell out if less than 10: 7th

Between 2 days and 6 days (but: “from three to six times daily” and “three or four times daily”)

Refer to specific times in the morning or evening as a.m. or p.m. (e.g., “7:00 or 7 a.m., 7:30 p.m.).

Do not use “12 p.m.,” “12:00 p.m.,” 12 a.m.,” or “12:00 a.m.”; instead, use noon and midnight to avoid confusion.

TELEPHONE NUMBERS

Telephone numbers are expressed as (913) 492-3311, NOT 913-492-3311.

Punctuation

COLONS

Use a colon when introducing a list or series and using the words “as follows” or “the following.” If the list is complete, use *are* (“The four requested items are as follows:”); if the list is incomplete, use *include* (“Requested items include the following:”).

Do not capitalize the first word after a colon unless it is in a title or is a proper noun.

Do not use a colon when a list separated by commas can grammatically complete the sentence.

COMMAS

Use serial commas (also called Oxford commas) when listing a series (placing a comma after the item before the conjunction. (“The American flag is red, white, and blue”)

Use commas for dates that contain month, day, and year. (e.g., “The examination is scheduled for September 26, 2014; “His birthday, August 31, 1962, falls on a Sunday this year”)

EPONYMS

Do not use the possessive apostrophe “ess” (’s) (e.g., use Parkinson disease, Down syndrome) (see *AMA*, pp. 777-80). If in doubt, check *Dorland’s*.

HYPHENS

Use hyphens when two nouns are combined to create an adjective (e.g., “she has infusion-related symptoms”). Do not add a hyphen if the modifier follows the object (e.g., “the symptoms are infusion related”).

Use hyphens if they distinguish a word from a similar unhyphenated word (e.g., recreate vs. re-create; re-treat vs. retreat; unionized vs. un-ionized).

Example of hyphenation with numbers: “during 10- to 14-day courses”

Prefixes: In general, do not hyphenate prefixes, except when followed by a proper noun: “non-ACCP member.” If unsure of hyphenation, check *Webster’s*.

Suffixes: In general, do not hyphenate suffixes, except when word has more than two syllables or when it would cause a double same-vowel/triple consonant construction (e.g., use intra-abdominal, bell-like; NOT intraabdominal, belllike, see *AMA*, p. 350).

Titles/Headers. Words that are hyphenated in *Webster’s* dictionary (considered *permanent* compounds) are lowercase in headers: “Over-the-counter Drugs.” Words that do not appear in *Webster’s* (considered *temporary* compounds) are set title case: “Evidence-Based Theory.”

Do not use hyphens after adverbs ending in “ly” (but note that this is not true for adjectives ending in “ly”: early-onset Alzheimer disease).

QUOTATION MARKS

Smart quotes (“” and ‘’) are used for double quotation marks and apostrophes.

Use italics, not quotation marks, when drawing attention to a specific term. “The term *lung-protective ventilation strategy* will be used to denote ...”

SEMICOLONS

Semicolons separate independent clauses (each clause could be a stand-alone sentence). Using a semicolon enhances the connection between the two clauses.

Semicolons can be used to separate a series of items if other punctuation is present within the series. (“She owns shoes; alligator, suede, and leather handbags; and belts”)

II. General Word Use Style

Race/Ethnicity

According to *AMA*, use:

white (not Caucasian)

African American (no hyphen)

Hispanic; Asian

Others: editors will follow author on use (see *AMA*, pp. 415-6)

States and Countries

STATE NAMES

Spell out in narrative text; in addresses and references, use the two-letter postal code.

COUNTRIES

Spell out “United States” unless used as an adjective (“Current U.S. mortality rates are ...”).

Spell out United Kingdom when used as a noun; use UK (no periods) for the adjectival form.

Commonly Misused Words and Phrases

GENERAL ERRORS

Avoid contractions (e.g., “don’t,” “can’t”).

Use formal language and avoid shortened words and jargon (e.g., use “examination” rather than “exam”; “laboratory test results” instead of “labs”; “vital signs” instead of “vitals”) (see *AMA*, pp. 408-9, and Table II-1).

Avoid jargon such as prognosticate, digitalize, and protocolize.

Avoid back-formations that are not in the dictionary (e.g., avoid “the patient was diuresed”; instead, use “the patient underwent diuresis” *AMA*, p. 407).

Avoid discriminatory language such as “burn *victim*” and “patient *suffers from*” (emphasis added). Instead, use “burn survivor” and “patient has” (see *AMA*, pp. 402, 416-7).

Avoid labeling patients by their diseases (e.g., “diabetes patient,” “diabetic,” “dementia patient,” hypertensive patient” (see *AMA*, pp. 416-7). Instead, use “patient with ...”

Diseases and conditions are diagnosed, not patients. Instead of using “a patient was diagnosed,” use “the patient received a diagnosis” (see *AMA*, p. 391). Similarly, treatments fail, but patients do not fail treatment.

COMMONLY MISUSED WORDS

Affect/Effect

Affect (*verb*) means to influence; to change; to assume. *Effect* (*noun*) means result; impression; (*verb*) to bring about, to cause.

Alternate/Alternative

Alternate (*verb, adjective*) refers to things occurring in succession. *Alternative* (*noun*) means a different choice.

Data

Data is a plural noun that should be used with a plural verb (e.g., “data are provided”; “data suggest”) and plural modifiers (e.g., “these data”); also, use “there are few data,” not “there are little data.”

Farther/Further

Farther refers to spatial distance (e.g., “He threw the ball farther than the other player”). *Further* is an extension of time or degree (“He further investigated the concept”).

Fewer/Less

Fewer is used for individual units and numbers (e.g., fewer mistakes, fewer data). *Less* is used for quantities (e.g., less money) (see *AMA*, p. 394).

That/Which

That introduces a restrictive clause—a clause that is essential to the meaning of the noun or noun phrase described (“The plant that needs to be watered is in the living room”). *Which* introduces a nonrestrictive clause—one that adds more information but is not essential to the meaning (“The houseplant, which needs to be watered, is kept in the living room”). Sometimes, it is difficult to discern

whether the author is using a restrictive clause (that) or a nonrestrictive clause (which); in these cases, go per author.

Since/Because

Since implies time that has passed (e.g., “Since then, things have changed”).

Because implies cause and effect (e.g., “Because things have changed since then ...”). Do not use *as* in this context because the meaning could become confused (see AMA, p. 386).

While/Whereas

While implies action that occurred at the same time as something else. *Whereas* is used for comparisons (e.g., “One patient went home, whereas the other patient remained hospitalized”).

Table II-1. ACCP General Style

Correct	Incorrect
1000	1,000
101°F (no space; be sure to use degree symbol)	101° F
% (with number) (no space between number and percent sign)	percent
about, around	approximately
above, below	as previously discussed, to be discussed later
after	following
almost	nearly
although/whereas	while (except when meaning “during the time that”)
a.m., p.m.	A.M., P.M., AM, PM
amid, among	amidst, amongst
and	&
because (<i>implies cause and effect</i>)	as, since
because of <i>OR</i> caused by (depending on context)	due to
before	prior to
by, through, by way of	via
caregiver	care-giver
caused by <i>OR</i> because of (depending on context)	due to
CD4 ⁺	CD4+
chief concern	chief complaint
clearer	more clear
C _{max} /V _{max}	C _{max} /V _{max}
common, often	frequent, frequently
community-acquired (pneumonia)	community-associated (pneumonia)
comorbid/comorbidity	co-morbid/co-morbidity

composed of	comprised of
consist of, include	comprise
continue	proceed
crossover	cross-over
day care	daycare
decision-maker/making	decision maker
dietitian	dietician
died	succumbed, passed away (see <i>AMA</i> , p. 325; avoid euphemisms)
during, for, throughout	over
eBook	e-book, ebook
e-mail (use E-mail to begin a sentence)	email
emergency department	emergency room
end point	endpoint or end-point
fever, temperature (patient has a fever <i>but</i> patient has a temperature of 101.1°F [38.4°C]) (see <i>AMA</i> , p. 394)	patient has a high fever; patient is spiking a fever
Furthermore (to begin sentence)	further
has to, must, requires	needs
health care (noun or adjective) (see <i>AMA</i> , p. 395)	healthcare
however	on the other hand
In addition (to begin sentence)	Additionally, Also (do not use to begin a sentence)
individual, specific	unique
In general (to begin sentence)	Generally (do not use to begin sentence)
in vitro, in vivo	<i>in vitro, in vivo</i>
man/woman (for adult [i.e., “42-year-old man”]) (Use female/male as adjective [i.e., “33-year-old female patient with diabetes”])	male/female (do not use as noun)
many, several	a number of, multiple
more than, greater than	over
Of importance, Of interest (to begin sentence)	Importantly, Interestingly
often	oftentimes
often, commonly	frequent(ly)
on (see <i>AMA</i> , p. 399)	upon, unless
online	on-line
on-site	onsite
past (as in most recent: “for the past 10 years”)	last (unless denoting finality)
patient(s)	pt(s)
people	persons

people who	people that
policy-makers/making	policy makers
preventive	preventative
proved (<i>verb</i>)	proven
proven (<i>adjective</i>)	proved
regarding <i>OR</i> with respect to	in/with regards to
regardless of	irregardless of
similarly	likewise
sooner	more rapidly
stand-alone	standalone
think, believe	feel
throughout, during	over
time (or period)	time period
to (if meaning of sentence is not lost)	in order to/in an attempt to
together with	along with
toward	towards
under representation/represent	under-representation
under way	underway (one word only in the nautical sense)
use (<i>verb</i>)	utilize, employ (see <i>AMA</i> , p. 404)
use (<i>noun</i>)	usage (“pretentious”; see <i>AMA</i> , p. 404)
was, is	has been shown to/reported that
Web site	Web-site, Website, website
wrote	authored

III. Scientific Writing Style

For current medical terminology and spelling, consult *Dorland’s*.

Consult *AMA* for gene and genetic terminology.

Use the prime symbol in chemical and biological designations (e.g., from the 5’ end to the 3’ end; 5'-monophosphate) (see *AMA*, p. 363).

For scientific study names, do not allow unusual capitalization, boldface, or underlining, etc., to spell out study names (e.g., for the ESPRIT study, do not use Ethical Social Psychological Research for Implementing Screening for fetal Trisomies; instead, use regular fonts and capitalization according to ACCP style: Ethical Social Psychological Research for Implementing Screening for Fetal Trisomies) (*AMA*, p. 380).

Measurements and Laboratory Values

STATISTICS

Mathematic operators: Do not +, ±, <, >, ≤, and ≥ in the text unless in an equation or for statistical values such as p, n, and r); spell them out in text: “6 hours or less” not “≤ 6 hours.”

Statistical values (p, n, and r) are allowed in text in parentheses (p<0.001, n=1, r=0.2). Do not italicize, and avoid the use of capital P and N in this context.

Other statistical values should appear with spaces around the operators (if applicable). “The odds ratio (OR) was 40, and the 95% confidence interval (CI) was 1.25–3.33 (OR 40; 95% CI, 1.25–3.33).”

Percentages: Between 5% and 10%, from 5% to 20%, 10%–20%. Within a sentence, use %; to start a sentence, use the word *percent*: “Seventy percent of patients ...”.

Ratios: Use a colon for ratios involving numbers (“a 2:1 ratio”). Use slashes in ratios involving words, word abbreviations, and combination words/word abbreviations (e.g., male/female [M/F]; BUN/creatinine; *but* risk-benefit).

DRUG/DOSING INFORMATION

Abbreviate units of measurement as follows: g = gram, mL = milliliter, dL = deciliter, mcg (not µg) = microgram, mm³ (not microliter or cc).

Spell out *units* when describing dosing information; use U (or IU) when describing blood concentrations or laboratory results.

Insert a space between the number and the units (e.g., 20 g/day or 200 mL/week).

Identify drug combinations with a slash (“trimethoprim/sulfamethoxazole”), with spaces around the slash closed up.

Use only generic drug names (query author if only brand name is used; brand name may be used in parentheses after generic name when generic is first mentioned in text, if desired).

Do not use ™, ©, and ® signs for drug names. (Use ™, ©, and ® signs only for ACCP products such as “Updates in Therapeutics® and in the References section per author use [see AMA, p. 213: “Use of Trademarked Names in Publication”].)

Do not capitalize or abbreviate drug names or laboratory tests in text: sulfamethoxazole, not Sulfamethoxazole or SMZ.

PATIENT ASSESSMENT VALUES

For temperature, provide degrees in Fahrenheit with equivalent degrees Celsius in

parentheses: 98.6°F (37.0°C). Close up with degree symbol.

Give weight in kilograms (kg); add equivalent weight in pounds if desired. Give height in inches: 62 inches

Always use units with laboratory values (e.g., blood pressure = 80/120 mm Hg; not just 80–120).

Table III-1. Additional Drug-Specific ACCP Style

Correct	Incorrect
acetylcysteine	<i>N</i> -acetylcysteine
aldesleukin	interleukin-2
aspirin	ASA
azacitidine	5-azacytidine
carmustine	BCNU
cisplatin	CDDP, DDP
cytarabine	cytosine arabinoside
dactinomycin	actinomycin-D
epoetin	erythropoietin
etoposide	VP-16
fluorouracil	5-fluorouracil
interferon (type should be specified)	
mercaptopurine	6-mercaptopurine
mitomycin	mitomycin-C
pegaspargase	peg-asparaginase
pentostatin	deoxycoformycin
statin	HMG CoA (3-hydroxy-3-methylglutaryl co-enzyme A) reductase inhibitor
streptozocin	streptozotocin

Table III-2. ACCP Style for Common Tests, Their Abbreviations, and Units of Measurement^a

Examination	Preferred Units
albumin	g/dL
alanine aminotransferase (ALT)	IU/L
alkaline phosphatase (ALK)	IU/L
aspartate aminotransferase (AST)	IU/L
bicarbonate	mEq/L
bilirubin (direct or total)	mg/dL
blood pressure	mm Hg
blood urea nitrogen (BUN)	mg/dL
B-type natriuretic peptide (BNP)	pg/mL
calcium (ionized)	mmol/L
calcium (total serum)	mg/dL
carbon dioxide	mmol/L

CD4 ⁺ count	cells/mm ³
chloride, serum or plasma	mEq/L
cholesterol (total, HDL, LDL, triglycerides)	mg/dL
complete blood cell count (CBC)	[number] x 10 ³ cells/mm ³
creatine kinase (CK), serum	U/L
creatinine (clearance) (CrCl)	mL/minute/1.73m ²
C-reactive protein	mg/dL
ferritin	ng/mL
fractional concentration of oxygen in inspired gas (FIO ₂)	(no units – % is understood)
γ-glutamyl transpeptidase	IU
glucose	mg/dL
heart rate (not pulse rate)	beats/minute
hematocrit	%
hemoglobin	g/dL
hemoglobin A1C	%
insulin	U/mL
international normalized ratio (INR)	(no units)
lactate dehydrogenase (LDH)	IU/L
magnesium	mEq/L
mean arterial pressure	mm Hg
mean corpuscular hemoglobin (MCH)	pg/cell
mean corpuscular hemoglobin concentration (MCHC)	g/dL
mean corpuscular volume (MCV)	fL/cell
osmolality, serum	mOsm/kg
oxygen saturation (SaO ₂)*	%
partial pressure of carbon dioxide (PCO ₂)*	mm Hg
partial pressure of carbon dioxide in arterial blood (PaCO ₂)*	mm Hg
partial pressure of oxygen (PO ₂)*	mm Hg
phosphorus	mg/dL
platelet count	[number]/mm ³
potassium	mEq/L
red blood cell count (RBC)	[number] x 10 ³ cells/mm ³
respiratory rate	breaths/minute
serum creatinine concentration (SCr)	mg/dL
sodium	mEq/L
white blood cell count (WBC)	[number] x 10 ³ cells/mm ³

^aItems with an asterisk need not be spelled out on first mention.

Scientific Nomenclature

BACTERIA

Italicize genus and species (e.g., *Staphylococcus aureus*). On second mention, abbreviate genus (e.g., *S. aureus*) (see *AMA*, pp. 743, 925-6).

If the text addresses several species within the genus, the genus may be spelled out when it is first used in the text for each species and then abbreviated (e.g., “*Staphylococcus aureus* and *Staphylococcus epidermidis* are common organisms that cause skin infections.”) (see *AMA*, p. 743).

When referring to several species, use spp. (e.g., “Infection from one or more *Staphylococcus* spp.”). Use in text, tables, and figures; if in doubt whether singular or plural is meant, query the author.

VIRUSES

In general, virus names are not italicized.

Table III-3. ACCP Scientific Writing Style

Correct	Incorrect
adherence (to) when referring to patients (see <i>AMA</i> , p. 384)	compliance (with)
adverse effect(s)	side effect(s)
alpha/beta error	α/β error
analog	analogue
at risk of	at risk for
baseline	base line
bed rest	bedrest
beta-carotene	beta carotene, β carotene
beta cell(s) (<i>noun</i>)	β cells
bloodborne	blood-borne
blood-brain barrier	blood brain barrier
blood flow	bloodflow
brain stem	brainstem
breastfeeding/breastfed (see <i>AMA</i> , p. 388) (but bottle-feeding/bottle-fed)	
calcium channel blockers	calcium antagonists
case-control trial	case-controlled trial
cerebrospinal fluid	cerebral spinal fluid
compliance (with) when referring to rules and regulations, policies (see <i>AMA</i> , p. 384)	compliance to
concentration (<i>unit amount of a substance in a unit amount of another substance</i> [e.g., g/dL])	level
(of) concern (the symptom is of concern)	concerning
down-regulate	downregulate
electrocardiogram (one picture) vs. -graphy, -graphic, -graphs (entire procedure) (abbreviated “ECG; see	EKG

AMA, p. 506)	
emergency	emergent
EtOH	ETOH
fold: 2-fold, several-fold	twofold, severalfold
fractions, common: two-thirds	two thirds
genitourinary	urogenital
gram-negative (as modifier)	Gram-negative
Gram stain	Gram's stain, gram stain
Greek letters – use non-italic symbols, not words; these do not act as capital first letter (e.g., use β -Lactamase) (see AMA, pp. 781-2)	beta-blocker
half-life, half-lives (plural)	$t_{1/2}$, $T_{1/2}$
-ic, rather than -ical, should be used if in dictionary with same meaning (except for: biological, historical, mechanical, philosophical, psychological, statistical, theoretical) (see AMA, p. 396)	logistical, etc.
inhalation route	inhaled route
interferon alfa	interferon alpha
inpatient, outpatient	in-patient, out-patient
life-year, pack-year, person-years	life year, pack year, person years
long-term (<i>adjective</i>) (<i>chronic</i> , <i>referring to therapy or dosing</i>)	long term therapy
male, female sex (<i>sex</i> denotes an individual's biological characteristics; <i>gender</i> also denotes the cultural aspects of an individual. In formal medical writing, <i>sex</i> is usually the preferred term (see AMA, pp. 395, 412)	male, female gender
mild to moderate	mild-to-moderate
moderate to severe	moderate-to-severe
nuclear factor- κ B (NF κ B)	
nutraceuticals	neutraceuticals/natraceuticals
once daily (once-daily [<i>adjective</i>])	1/day
pack/day, pack-years	1 pack per day, pack/years
quality-adjusted life-years	quality adjusted life years
radiograph, roentgenogram	X-ray, x-ray
(lactated) Ringer solution	Ringer's solution
serotonin	5-HT
serotonin-3	5-HT3
sexual orientation	sexual preference
short-term (<i>adjective</i>) (acute, dosing)	short term dosing
survivor	victim

tumor necrosis factor alpha (TNF α)	TNF- α , TNF-alpha
up-regulate	upregulate
values	levels (<i>when referring to serum or plasma concentrations</i>)
variables, values, guidelines, boundaries	parameters (<i>unless referring to statistics</i>)
versus: use versus in text; vs. in titles, headings, parenthetical items, and tables and figures	<i>versus</i> , vs., vs