ABBREVIATIONS
As a general rule, abbreviations should be expanded at first mention. If a term is used fewer than 3 times in an article, don't abbreviate it. Treat figure legends, tables, article text, acknowledgments, and other features as self-contained units where expansion of abbreviations is concerned. Some terms never require expansion; these are so designated in individual sections on nomenclature. Abbreviations for units of measure without a number need never be expanded.

Use emergency department or ED , *not* ER or emergency room.

Use emergency physician, *not* ER physician.

Use ECG, *not* EKG, for electrocardiography, electrocardiogram, or electrocardiographic.

Do not list Fellowships (FAAEM, FACEP, FACP, FACS etc)

Academic Degrees. (See AMA-10, pp 442-446 for a complete listing.) Abbreviations for academic degrees are used without expansion. Note that use of abbreviations in bylines and tables of contents varies from journal to journal. Some journals do not list any degrees, and others only list doctorate-level degrees.

BS	bachelor of science
BSN	bachelor of science in nursing
DC	doctor of chiropractic
DDS	doctor of dental surgery
DO	doctor of osteopathy
DPH or DrPH	doctor of public health
DVM	doctor of veterinary medicine
EMT-P	emergency medical technician-paramedic
MBBS	bachelor of medicine, bachelor of surgery
MbChB	bachelor of medicine, bachelor of surgery/chirurgery
MD	doctor of medicine
MPH	master of public health
MSN	master of science in nursing
NP	nurse practitioner
OD or DO	doctor of optometry
OT	occupational therapist
PharmD	doctor of pharmacy
PhD	doctor of philosophy
PT	physical therapist

Abbreviate the following, without periods, in street addresses.

Ave
Dr
E
Hwy
NE

NW
Pkwy
Rd
St
SW
Terr
W

Units of Measure. The following abbreviations and units are used with a numerical quantity. Do not capitalize a unit of measure unless the abbreviation contains a capital letter. Use of a plural *s* is acceptable for units that are unabbreviated, such as acre or rad. (See also AMA-10, pp 520-525.)

Never add a plural *s* to an abbreviated unit of measure (eg, 10 lb; not 10 lbs).

acre	acre
ampere	A
atmosphere	atm
base pair	bp
becquerel	Bq
calorie	cal
Celsius	C
centigram	cg
centigray	cGy
centimeter	cm
centimeters of water	cm H_2O
counts per minute	cpm
counts per second	cps
cubic centimeter	cm^3 (Use milliliter [mL] for liquid and gas measures)
cubic foot	cu ft
cubic inch	cu in
cubic meter	m^3
cubic micrometer	μm^3
cubic millimeter	mm^3
cubic yard	cu yd
Curie	Ci
cycles per second	Use Hertz [Hz]
dalton	Da
decibel	dB
deciliter	dL
diopter	D
disintegrations per minute	dpm
disintegrations per second	dps
dyne	dyne
electron volt	eV

equivalent	Eq
Fahrenheit	F
femtogram	fg
femtoliter	fL
fluid ounce	fl oz
foot	ft
French	F [catheter width measurement]
gauss	G
gigabyte	GB
gram	g
gravity	*g* [close up to number that precedes it]
gray	Gy
hertz	Hz
inch	in
international unit	IU
joule	J
kelvin	K
kilobase	kb
kilobyte	kB
kilocalorie	kcal
kilocurie	kCi
kilodalton	kDa
kiloelectron volt	kEv
kilogram	kg
kilohertz	kHz
kilojoule	kJ
kilometer	km
kilopascal	kPa
kilovolt	kV
kilowatt	kW
liter	L
megabyte	MB
megacurie	MCi
megahertz	MHz
megaunit	MU
meter	m
microcurie	µCi
microfarad	µF
microgram	µG
microliter	µL
micrometer	µm
micromolar	µM

microcole	µmol
microunit	µU
microvolt	µV
microwatt	µW
miles per hour	mph
milliampere	mA
millicurie	mCi
milliequivalent	mEq
milligram	mg
milliliter	mL
millimeter	mm
millimeters of mercury	mm Hg
millimeters of water	mm H_2O
millimolar	mM
millimole	mmol
millisecond	ms
milliunit	mU
milliwatt	Mw
molar	M
mole	mol
mouse unit	MU
nanocurie	nCi
nanogram	ng
nanometer	nm
nanomolar	nM
nanomole	nmol
newton	N
normal (solution)	N
ohm	Ω
osmole	osm
ounce	oz
parts per million	ppm
pascal	Pa
picocurie	pCi
picogram	pg
picometer	pm
pound	lb
pounds per square inch	psi
prism diopter	PD
quart	qt
rad	rad
revolutions per minute	rpm

roentgen	R
square centimeter	cm^2
square foot	sq ft
square inch	sq in
square meter	m^2
square millimeter	mm^2
tesla	T
torr	Use millimeters of mercury [mm Hg]
unit	U
volt	V
volume	vol
volume per volume	vol/vol
volume percent	vol%
watt	W
weight	wt
weight per volume	wt/vol
yard	yd

Units of Time. Use the following abbreviations in tables, line art, and virgule constructions. Otherwise, spell out.

day	d
hour	h
minute	min
month	mon
week	wk
year	y

Latin

Genera and Species. Names of bacterial genus (pl., *genera*) and species names are always italicized, with the genus name being capitalized. The species name always begins with a lowercase letter, even in titles and headings. After the first mention, the genus name is abbreviated and represented by its first letter. To avoid confusion, as many letters of the genus name may be retained in an abbreviation.

Spelled Out	Abbreviated

Chlamydia trachomatis	*C trachomatis*
Coccidioides immitis	*C immitis*
Escherichia coli	*E coli*
Mycoplasma pneumoniae	*M pneumoniae*
Pseudomonas aeruginosa	*P aeruginosa*
Staphylococcus aureus	*S aureus*
Streptococcus pyogenes	*S pyogenes*

(*But: Sta aureus* and *Str pyogenes,* for example*,* if both are discussed in the same article, to avoid confusion.)

Latin Terms. Abbreviate the following Latin terms as noted (not italicized, without periods), without expansion:

versus	vs
circa	ca

Use these abbreviations for Latin terms only in parentheses; spell out in running text.

that is	ie
for example	eg

NOMENCLATURE

Blood Groups and Platelet Antigens

Blood Group Systems (see AMA-10, pp 536-537). The blood group system names you're most likely to encounter are the ABO (which comprises blood types A, B, and O) and the Rh systems. Here are examples of acceptable usage:

ABO incompatibility
B cell
type O recipient
Rh-negative

Other blood group system names are Colton, Dombrock, Duffy, Kell, Kidd, and Kx.

Platelet-Specific Antigens (see AMA-10, pp 538-541). Here are samples of designations of platelet antigens from the human platelet antigen (HPA) nomenclature:

HPA-1
CD22
HPA-1a
HPA-1b

Cardiology

ECG Terms (see AMA-10, p 553). **Note: <u>Use the abbreviation ECG, *not* EKG, for electrocardiography, electrocardiogram, or electrocardiographic</u>.**

Leads	I, II, III (not 1, 2, 3)
Limb leads	aVR, aVL, aVF (not AVR, AVL, AVF)
Precordial leads	V_1, V_2, V_3
Right precordial leads	V_1R, V_2R, V_3R
Waves	F, P, Q, QS, R, S, S', T, U
Intervals	PR, QT, R-R

The above abbreviations, none of which require expansion, may also be used as adjectives to modify the following nouns: axis, complex, interval, segment, depression, prolongation, segment abnormality. The following lists such terms and their hyphenation:

QRS-T complex
QS wave
ST segment
ST depression
QT interval
R-R interval
TQ segment
J-ST axis
ST-segment abnormality

Heart Sounds (see AMA-10, p 556). Notations for the 4 heart sounds and 4 components, none of which need to be expanded in text, are as follows:

S_1	first heart sound
M_1	mitral valve component
T_1	tricuspid valve component
S_2	second heart sound
A_2	aortic valve component
P_2	pulmonic valve component
S_3	third heart sound
S_4	fourth heart sound

Heart Disease Classifications. Several classifications exist that describe classes of heart disease (see AMA-10, p 561).

Classification	Classes	Example
Braunwald	I-III	Braunwald class I
	IA-IIIC	Braunwald class IIB
CCS	I-IV	CCS class I
Forrester	I-IV	Forrester class I

Killip	I-IV	Killip class III heart failure
NYHA	I-IV	NYHA class III

Molecular Cardiology (see AMA-10, pp 562-563).

Cardiac Muscle. The following terms **do not** require expansion in text:

A band
H band
M line
T tubules
Z line

The following terms **do** require expansion at first mention in text:

TnC	troponin C
TnI	troponin I
TnT	troponin T
cTnC	troponin C, cardiac form
cTnI	troponin I, cardiac form
cTnT	troponin T, cardiac form

Miscellaneous Terms (Cellular and Molecular) (see AMA-10, pp 562-563). The following terms **do not** require expansion, unless the author provides the expansion, in which case the term should be expanded at first mention:

athero-ELAM
CK-MB
NOS
NOS1
NOS2
NOS3
P cell
tPA

The following terms **do** require expansion at first mention in the text:

acyl CoA	acyl coenzyme A
apo AI	apolipoprotein AI
apo AII	apolipoprotein AII
apo E3	apolipoprotein E3
HDL	high-density lipoprotein
HDL-C	HDL cholesterol
HDL-R	HDL receptor
IDL	intermediate-density lipoprotein
LDL	low-density lipoprotein
LP-X	lipoprotein X
VHDL	very high-density lipoprotein
VLDL	very low-density lipoprotein

Genetics

Abbreviations. The following abbreviations do not require expansion at first mention (see AMA-10, pp 585-586):

DNA	deoxyribonucleic acid
RNA	ribonucleic acid
A	adenine
C	cytosine
G	guanine
T	thymine

The following abbreviations do require expansion at first mention:

bDNA	branched DNA
cDNA	complementary DNA
dsDNA	double-stranded DNA
gDNA	genomic DNA
hn-cDNA	heteronuclear cDNA
mtDNA	mitochondrial DNA
nDNA	nuclear DNA
rDNA	ribosomal DNA
scDNA	single-copy DNA
ssDNA	single-stranded DNA

The following units of measure apply to DNA sequences. In their abbreviated form, they should only be used with a number.

base	base
kb	kilobase (single sequence) or kilobase pairs (paired sequence)
Mb	megabase (single sequence) or megabase pairs (paired sequence)

Following are examples of usage of these units of measure:

a 20-base fragment
a 235-bp repeat sequence
a 23-kb vector genome
1 Mb of DNA

Colony-Stimulating Factors, Hormones, Interleukins, Interferons, and Other Cytokines. The following are some commonly used abbreviations for these components of the immune system (see AMA-10, pp 685-686).

The following abbreviations should be expanded at first mention:

CSF	colony-stimulating factor
G-CSF	granulocyte CSF
GM-CSF	granulocyte-macrophage CSF
M-CSF	macrophage CSF
Epo	erythropoietin

GH	growth hormone
PrL	prolactin
Tpo	thrombopoietin
IL-1	interleukin 1
IL1ra	interleukin 1 receptor agonist
IL-18	interleukin 18
IL-29	interleukin 29
CNTF	ciliary neurotrophic factor
LIF	leukemia inhibitory factor
SCF	stem cell factor
TGFβ	transforming growth factor β
TNF-α	tumor necrosis factor α
TNF-β	tumor necrosis factor β

HLA Antigens. Although HLA stands for human histocompatibility leukocyte antigen(s), it need never be spelled out. A sample of HLA designations that might you might encounter in, for example, articles on tissue transplantation, are listed below. (For specific information about sub designations or domain names, see AMA-10, pp 688-690). None of these designations need to be spelled out in text or abstracts.

HLA-A
HLA-A1
HLA-A23(9)
HLA-B
HLA-Bw4
HLA-C
HLA-Cw9(w3)
HLA-E
HLA-F
HLA-G
HLA-DR
HLA-DR1
HLA-DQ
HLA-DQ7(3)
HLA-DP
HLA-DO
HLA-DM

HLA Antigens vs Pseudogenes. The HLA antigen designators (above) are set in roman type. If an author uses italic type, it's likely that an HLA pseudogene is being described. Query the author if you are in doubt or if the context doesn't clarify which entity is being referred to (see AMA-10, p 693-694).

Immunoglobulins. The five classes of immunoglobulin are listed below. Although Ig stands for immunoglobulin in the designations below, which do not require expansion, the word *immunoglobulin* should be spelled out when it is used without a class, subclass, or chain designation (heavy or light). (For detail about region and chain designations, see AMA-10, pp 696-697.)

Class

IgG
IgA
IgM
IgD
IgE

Subclass

IgG1
IgG2
IgG3
IgG4
IgA1
IgA2

Immunoglobulin Prefixes. The immunoglobulin designations with prefixes should be spelled out a first mention, particularly since some of the prefixes have more than 1 meaning.

Abbreviation With Prefix	Spelled Out
mIgM	monomeric IgM
mIgM	membrane-bound IgM
pIg	polymeric immunoglobulin
pIgA	polymerized IgA
pIgR	receptor for pIg
sIg	surface immunoglobulin
sIgA	secretory IgA

Isotopes. Notation for radioactive isotopes consists of an element symbol, with its isotope number following. The abbreviation convention for the radioactive isotope is to use a superscript isotope number in front of the element symbol (see samples in table below). The abbreviation, shown in the righthand column below, may be used without expansion.

Element	Abbreviation	Radioisotope	Abbreviation
carbon	C	carbon 14	^{14}C
chromium	Cr	chromium 51	^{51}Cr
iodine	I	iodine 125	^{125}I
		iodine 131	^{131}I
technetium	Tc	technetium 99m	^{99m}Tc
thallium	Tl	thallium 201	^{201}Tl
xenon	Xe	xenon 133	^{133}Xe

Substances Tagged With Isotopes. Radioactive compounds can be used to "label" or "tag" substances that are then traced in a patient for diagnostic purposes. The following phrases allude to this sort of use:

^{125}I-labeled RBCs
glucose labeled with ^{14}C
radionuclide-tagged microsphere

Radiology Terms. Radiology encompasses diagnostic, interventional radiology, nuclear medicine, and radiation therapy. Below is a partial list of terms and abbreviations of procedures and technology related to various aspects of radiology.

angiography/angiogram
arteriography, arteriogram
arthrography, arthrogram
computed tomography (CT)
Doppler
echocardiography, echocardiogram
echo time (TE; plural, TEs)
ultrasound, untrasonography (US)
T1 (do not expand)
T2 (do not expand)
T2*(do not expand; asterisk is part of the abbreviation)
magnetoencephalography (MEG)
magnetic resonance imaging (MRI)
positron-emission tomography (PET)
repetition time (TR; plural, TRs)
signal intensity
single-photon-emission CT (SPECT)

Symbols and Abbreviations. The following is a brief list of statistical symbols and abbreviations (see AMA-10, pp 900-902).

ANOVA	analysis of variance
ANCOVA	analysis of covariance
α	Greek alpha: probability of type I error
β	Greek beta: probability of type II error, or population regression coefficient
CI	confidence interval
df	degrees of freedom
f	frequency, or a function of
F	F test
MANOVA	multivariate analysis of variance
n	size of a subsample
N	total sample size
OR	odds ration
P	statistical probability (do not insert zero before decimal; eg, *P*<.05)
χ^2	χ^2 test (*not*: chi-square test)
r	bivariate correlation coefficient
R	multivariate correlation coefficient
SD	standard deviation of a sample

SE	standard error
SEM	standard error of the mean
t	Student *t* test
U	Mann-Whitney *U* (Wilcoxon) statistic
z	*z* score