

BASICS OF MEDICAL TERMINOLOGY

Latin and Greek origins

TEXTBOOK
FOR
1ST YEAR STUDENTS OF MEDICINE

COMPILED BY LÁSZLÓ RÉPÁS

DEBRECEN 2013

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Preface

This textbook was written primarily for first year students of medicine at the University of Debrecen with the aim of providing them a brief introduction into the Latin and Old-Greek background of medical terminology. Therefore, having only a short time for such a profound topic in the 1st year curriculum, we concentrate on the parts of vocabulary that are the most important for a first year student. So, the textbook leads the student step-by-step through the basic terms of anatomical terminology, starting with the basic terms, planes and directional terms, and then going on to the terms related to the body parts and regions, continuing with the skeleton and joints, and finally it includes terms related to the muscular system.

In terms of grammar, the textbook provides only a minimal level of grammar necessary for plural and adjective formation.

In order to help build a medical vocabulary a number of different exercises follow each vocabulary unit including matching, fill-in-the-blank, odd-one-out, diagram labeling, crosswords etc.

An online interactive e-learning site related to the textbook also helps students in studying the world of medical terms. See: www.medi-lingua.hu

We hope that the textbook functions as a useful tool in the field of teaching professional language of medicine and health sciences.

I am very grateful to my colleague, Emőke Tóth, for her great help in reading the textbook and participating in the development of new exercises as well as giving valuable pieces of advice during the editing phase of the textbook.

I would like to thank Judith Bodnar M.D. for proofreading the book and for advice on content related to English terminology.

Debrecen, August 2013.

László Répás

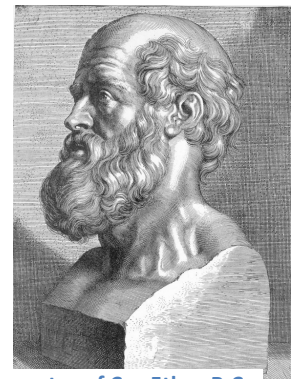
Chapter 1 Introduction to medical terminology

The main sources of medical terminology

Although medical terms have been drawn from many languages, a large majority are from Greek and Latin. Terms of Greek origin occur mainly in clinical terminology (e.g. *cardiology*, *nephropathia*, *gastritis*), Latin terms make up the majority of anatomical terminology (Nomina Anatomica) (e.g. *cor*, *ren*, *ventriculus*). There are, however, terms of different origin, taken from French (e.g. *massage*, *passage*, *plaque*, *pipette*, *bougie*), or from Italian (e.g. *varicella*, *belladonna*, *influenza*).

Greek in medical terminology

It is estimated that about three-fourths of medical terminology is of Greek origin. The main reason for this is that the Greeks were the founders of rational medicine in the golden age of Greek civilization in the 5th Century B.C. The Hippocratic School and, later on, Galen (the Greek from Asia Minor who lived in Rome in the 2nd century A.D.) formulated the theories which dominated medicine up to the beginning of the 18th Century. The Hippocratics were the first to describe diseases based on observation, and the **names given by them** to many conditions **are still used today**, for example, *arthritis*, *nephritis*, *pleuritis* (pleurisy).



Hippocrates of Cos 5th c. B.C.

A second reason for the large number of Greek medical terms is that the Greek language is quite **suitable for the building of compound words**.



Galen of Pergamon 2nd c. A.D.

When new terms were needed, with the rapid expansion of medical science during the last centuries, Greek words or Latin words with Greek endings were used to express the new ideas, conditions, or instruments. The new words follow the older models so closely that it is impossible to distinguish the two by their forms. Such recent words as *appendicitis*, *creatinine*, *cystoscope*, *epinephrine*, *streptococcus*, and many others do not appear different from the classical terms. The fact is that about one-half of our medical terminology is less than a century old. A third reason for using the

classical roots is that they form an **international language**.

Latin in medical terminology

Greek medicine migrated to Rome at an early date, and many Latin terms crept into its terminology. Latin was the **language of science** up to the beginning of the 18th century, so all medical texts were written in Latin. Under the influence of the great anatomical work of Andreas Vesalius, *De humani corporis fabrica* (1543), the **terminology of anatomy is almost exclusively Latin**.



Andreas Vesalius A.D. 1514-1564

Greek alphabet, transcription and pronunciation of Greek letters

Greek letters occur in Physics, Biophysics and other sciences, so it is worth knowing them as well as because Greek words are numerously present in medical terminology.

Letter	Name	Pronunciation	Latin transcription	Example	Pron.	Latin transcription
A α	alpha	/á/	a	άνθρωπος	/anthrópos/	anthropologia
B β	beta	/b/	b	βίος	/bios/	biologia
Γ γ	gamma	/g/	g	γαστήρ	/gastér/	gastritis
Δ δ	delta	/d/	d	δέρμα	/derma/	dermatitis
E ε	epsilon	/e/	e	έγκέφαλος	/enkephalos/	encephalopathia
Z ζ	dzeta	/dz/	z	ζῶον	/dzóon/	zoologia
H η	eta	/é/	e	ήπαρ	/hépar/	hepatomegalia
Θ θ	theta	/th/	th	θώραξ	/thórax/	pneumothorax
I ι	iota	/i, í/	i	ιστός	/histos/	histologia
K κ	kappa	/k/	c (k)	κράνιον	/kranion/	cranium
Λ λ	lambda	/l/	l	λάρυγξ	/larünx/	larynx
M μ	mu	/m/	m	μεμβράνα	/membrána/	membrana
N ν	nu	/n/	n	νεῦρον	/neuron/	neuron
Ξ ξ	ksí	/x/	x	ξηρός	/xeros/	xeroderma
O ο	omikron	/o/	o	ὄργανον	/organon/	organum
Π π	πί	/p/	p	πλευρά	/pleura/	pleura
P ρ	ρό	/r/	rh	ρέυμα	/reuma/	rheuma
Σ σ ς	sigma (end sigma)	/s/	s	σῶμα	/sóma/	somatotrop
T τ	tau	/t/	t	τραχεΐα	/trakheia/	trachea
Υ υ	üpsilon	/ü, ú/	y	ύπνος	/hupnos/	hypnoticum
Φ φ	φί	/ph/	ph	φωνή	/fóné/	phonendoscop
Χ χ	κί	/kh/	ch	χρόνος	/khronos/	chronicus
Ψ ψ	ψί	/ps/	ps	ψυχή	/psükhé/	psychosomaticus
Ω ω	όmega	/ó/	o	ὄτα	/óta/	otitis media

Letter combination	Pronunciation	Latin transcr.	Greek example	Pronunciation	Latin transcription
αι	/ai/	ae	αἴσθησις	/aiszhésisz/	anaesthesia
ει	/ei/	i / e	χείρ	/kheir/	chirurgia
οι	/oi/	oe	οἰσοφάγος	/oisophagos/	oesophagus
αη	/aē/	aë / ae	ἀήρ	/aēr/	aerophagia
οη	/oē/	oë / oe	πνοή	/pnoē/	eupnoe
γγ, γκ, γξ, γχ	/ng, nk, nx, nkh/	ng, nc, nx, nch	φάλαγξ	/phalanx/	phalanx, phalanges

Exercises

1. Try to transcribe the following Greek words with Latin letters.

Greek	Latin	Greek	Latin
κεφαλή	<i>cephale</i>	οἶδημα	
ἀνάμνησις		ἰσχιάς	
φάρυγξ		ὑπόφυσις	
θεραπεία		ἐπιδερμίς	

2. Which Greek letters are these anatomical terms related to? What do they refer to? Search for them.

lambdoid

hyoid

sigmoid

deltoideus

What is the meaning of the -oid suffix?

3. Some Greek root words

A lot of simple Gr. root words are used in everyday English without our realizing their origin. To quote just a few: *acme, basis, chaos, character, criterion, dogma, drama, echo, enigma, horizon, phantasia, stigma, thema*, etc.

Here is a short list of some basic words used in medical terminology:

adēn – gland

kephalē – head

pneuma – air, breath

aortē- aorta

kranion – skull

psychē – soul

bronchos – windpipe

larynx – voice box

pyon – pus

cheir – hand

mania – madness, frenzy

pyr – fire, fever

cholē – bile

nausea – seasickness

sarx – flesh

derma – skin

neuron – tendon, nerve

soma – body

gastēr – belly

osteon – bone

spasmos – spasm

haima – blood

ophthalmos – eye

splen – spleen

hepar – liver

pepsis – digestion

stoma – mouth

hygieia – health

pharmakon – drug

stomachos – stomach

hymen – membrane

pharynx – throat

tracheia – windpipe

kardia – heart

pleura – side, rib

trauma – wound

4. Do you know what the meaning of the following terms is? Search for them.

dermatitis

splenomegaly

traumatology

gastroscopy

ophthalmoscope

neuropathy

h(a)ematology

psychosomatic

pleurisy

antipyretics

craniotomy

laryngotomy

Latin pronunciation rules

We pronounce Latin words here in Hungary differently from the way they are pronounced in English-speaking countries. We follow the Eastern-European tradition in Latin pronunciation. The following table illustrates the differences of pronunciation of Latin words in English and in Hungarian language.

Letter(s)	Example(s)	German/ Hungarian	English
a	antebrachium	/a(:)/	/ɑ(:)/ or /eɪ/
ā	rādix	/a:/	/ɑ(:)/ or /eɪ/
c^{+a,o,u, cons.-} c^{+e,i,y,ae,oe} cc^{+e,i,ae,oe}	caput, collum, crus, cervix, circa, cysta occiput, acceleratio	/k/ /ts/ /kts/	/k/ /s/ /ks/
e	septum	/ɛ/ or /e:/	/ɛ/, /eɪ/ or /i:/
ē	vēna,	/e:/	/i:/
g g^{e,i,ae,oe}	gluteus, gingival	/g/	/g/ /dʒ/
h	homo,	/h/	/h/ or /-/
i	pelvis, saliva,	/ɪ/	/ɪ/ or /aɪ/
ī	vīrus, vītalis,	/i:/	/ɪ/ or /aɪ/
j	jejunum, major	/j/	/dʒ/
o	os, cor, oculus	/ɔ/	/ɒ/ or /əʊ/
ō	per ōs, ōvum	/o:/	/ɒ/ or /əʊ/
qu	liquor, aqua,	/kv/	/kw/
tj^{+vowel}	auscultātiō,	/tsɪ/	/ʃɪ/
u	caput,	/ʊ/	/ʌ/ or /ju:/
ū	lūna, cūra	/u:/	/ʌ/ or /ju:/
um	bacterium	/ʊm/	/əm/
ae (æ)	Caesar, caesarea	/e:/ or /ɛ:/	/eɪ/ or /i:/
aē, aë	aēr, aērophagia	/ ae:/	/ ai:/
oe (œ)	oesophagus	/ø:/	/i:/
oē, oë	Aloë, diploë	/ œe:/	/ əsi:/
ch	brachium	/k ^h /	/k/

Reading practice

cytoplasma,	transfusio	circus,	sulphur	separatio,
circulatio,	plasma,	leukaemia,	praepositio,	ambulantia,
doctor,	consilium;	uraemia,	sphaera,	aqua,
vaccina,	genius,	oesophagus,	lethargia,	antiquarium,
lac,	siccus,	oedema,	hypophysis,	antiquitas,
color,	occiput,	eupnoē,	typhus,	colloquium;
pelvis,	localis,	psychologia,	thrombosis,	combustio,
manus,	biceps,	chromosoma,	phlebitis,	foetus,
abortus,	saccus,	physiologia,	nephritis,	suggestio,
pressio,	focus,	apotheca,	stomachus,	aphtha,
radius,	cursus,	therapia,	aërophagia,	sanguis,
serum,	tractus,	symphonia,	dyspnoē,	quinque.
summa cum laude	occasio,	philosophia,	<i>Aloē vera</i> ,	bucca
physiologia,	deformatio,	phagocyta,	assimilatio,	ligamentum
infusio,	acceleratio,	pneumothorax,	sanctio,	

Did you know?

Believe it or not, **more than half of the words in the English dictionary are Latin**, and you are speaking, more or less, Latin every day!

And here are quite a few abbreviations that you may have used without ever having realized their original Latin content.

Match each Latin abbreviation with its own meaning.

<i>Abbr.</i>	<i>Latin</i>		<i>Meaning in English</i>
A.D.	<i>anno Domini</i>		1) "bring together", compare
a.m.	<i>ante meridiem</i>		2) "for example", "for instance".
p.m.	<i>post meridiem</i>		3) "and others", "and co-workers".
c., ca., cca.	<i>circa</i>		4) "and the others",
C.V. or CV	<i>curriculum vitae</i>		5) "among other things".
cf.	<i>confer</i>		6) "that is", "in other words".
e.g.	<i>exempli gratia</i>		7) "note well"
et al.	<i>et alii</i>		8) "after what has been written"
etc.	<i>et cetera</i>		9) "for each one hundred"
i.a.	<i>inter alia</i>		10) "Teacher of Philosophy"
i.e.	<i>id est</i>		11) "may he/she rest in peace"
N.B.	<i>nota bene</i>		12) "immediately"
P.S.	<i>post scriptum</i>		13) "against"
per cent.	<i>per centum</i>		14) "in the year of the Lord" The years of the Christian calendar era.
Ph.D.	<i>Philosophiæ Doctor</i>		15) "before midday"
R.I.P.	<i>requiescat in pace</i>		16) "after midday"
stat.	<i>statim</i>		17) "around", "about", approximately
vs or v.	<i>versus</i>		18) "course of life"

Chapter 2 Anatomical positions, planes and directions

Body positions

In anatomy all the directional terms are referred to as the so called anatomical position of the body.



Anatomical / Erect position

_____ **position**: The body is in standing position.

_____ **position**: The body is lying on the belly with the face down.

_____ **position** is a standard position of the body: standing erect, facing directly forward, feet pointed forward and slightly apart, and arms hanging down at the sides with palms facing forward. This position is used as a reference to describe sites or motions of various parts of the body.



Supine

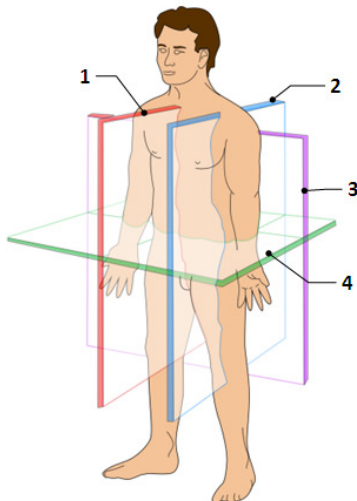


Prone

_____ **position**: The body is lying on the back with the face up.

Anatomical planes of the body

Identify the planes



___ **Frontal or coronal planes** (L. *frontalis*; pertaining to the forehead; *coronalis*; pertaining to a crown): planes passing longitudinally through the body from side to side, at right angles to the median plane, dividing the body into front and back parts.

___ **Horizontal or transverse planes** (L. *horizontalis*; *transversus*): planes passing horizontally through the body, at right angles to the sagittal and frontal planes, and dividing the body into upper and lower portions.

___ **Midsagittal or median plane** (L. *mediansagittalis*): the plane passing longitudinally through the middle of the body from front to back, dividing it into right and left halves.

___ **Sagittal or paramedian planes** (L. *sagittalis*, *sagitta*; arrow):

vertical planes passing through the body parallel to the median plane (or to the sagittal suture), dividing the body into left and right portions.

Directional terms

___ **anterior or ventral** (L. *ventralis* < *venter* = belly): directed toward the front side or situated on the belly surface

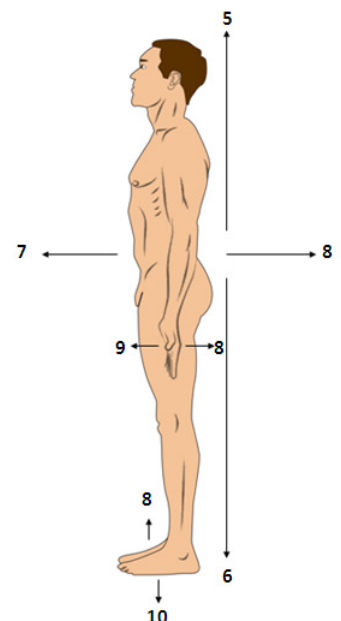
___ **inferior or caudal / caudad** (L. *caudalis* < *cauda* = tail): positioned toward the lower part of the body

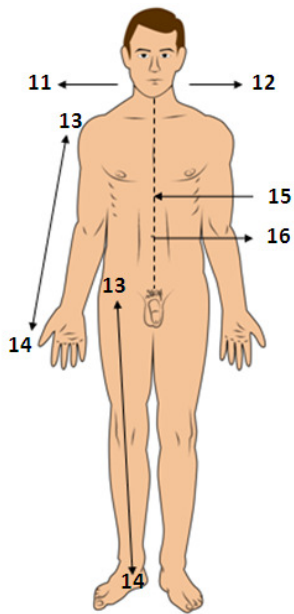
___ **palmar or volar** (L. *palmaris* < *palma*; *volaris* < *vola* = the front side of hand): pertaining to the anterior surface of the hand

___ **plantar** (L. *plantaris*, *planta*; sole or bottom of foot): pertaining to the sole of the foot

___ **posterior or dorsal** (L. *dorsalis* < *dorsum* = back): positioned toward the back, or towards the back side of the hand or the foot

___ **superior or cranial** (L. *cranialis* < *cranium* = skull) or **cephalic / cephalad** (Gr. *kephalē*; head): positioned toward the head end of the body





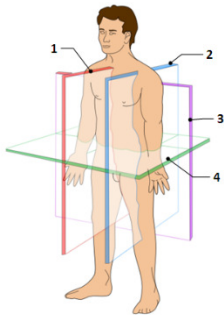
- ___ **dexter, dextra, dextrum** (L.): located on the right side
- ___ **distal** (L. *distalis*; farther): in the limbs away from the trunk
- ___ **lateral** (L. *lateralis*): situated or extending away from the median plane of the body
- ___ **medial** (L. *medialis*): situated toward the median plane or midline of the body or a structure
- ___ **proximal** (L. *proximus*; closest): in the limbs, closer to the trunk
- ___ **sinister, sinistra, sinistrum** (L., also: *laevus*): located on the left side
- external** (L. *externus*; outer): situated near the outside
- internal** (L. *internus*; inner): within or inside
- superficial** (L. *superficialis, superficies*; surface): pertaining to the surface
- deep or profundus** (L.): deep, situated at a deeper layer of the structure (especially in muscular system)
- parietal** (L. *paries*; wall): pertaining to the wall or outer covering of an organ or structure

Vocabulary 1 - Anatomical positions, planes and directions

<i>Latin</i>	<i>English</i>	<i>Meaning in English</i>
anterior , anterius	anterior	directed toward or situated on the belly surface, front side
caudalis , caudale	caudal	positioned toward the tailbone
cranialis , craniale/	cranial/cephalic/ cephalad	positioned toward the head
dexter , dextra, dextrum	dexter	right side
distalis , distale	distal	in the limbs, away from the trunk
dorsalis , dorsale	dorsal	positioned toward the back
externus , externa, externum	external	situated near the outside
(planum) frontale / coronale	frontal / coronal plane	planes dividing the body into front and back parts.
(planum) horizontale / transversale	horizontal /transverse plane	planes dividing the body into upper and lower parts
inferior , inferius	inferior	lower
(inter)medius , intermedia, intermedium	middle	in between two other structures
internus , interna, internum	internal	inner or inside
lateralis , laterale	lateral	situated or extending away from the median plane of the body
medialis , mediale	medial	situated toward the median plane or midline of the body or a structure
(planum) mediansagittale	mediansagittal plane	the plane dividing the body into right and left halves
palmaris , palmare / volaris , volare	palmar / volar	pertaining to the anterior surface of the hand
plantaris , plantare	plantar	pertaining to the sole of the foot
posterior , posterius	posterior	positioned toward the back
profundus , profunda, profundum	deep	deep
proximalis , proximale	proximal	in the limbs, closer to the trunk
(planum) sagittale	sagittal plane	planes parallel to the median plane, dividing the body into left and right portions.
sinister , sinistra, sinistrum	left	left side
superficialis , superficiale	superficial	situated on the surface of the structure
superior , superius	superior	upper
ventralis , ventrale	ventral	directed toward or situated on the belly surface

Exercises

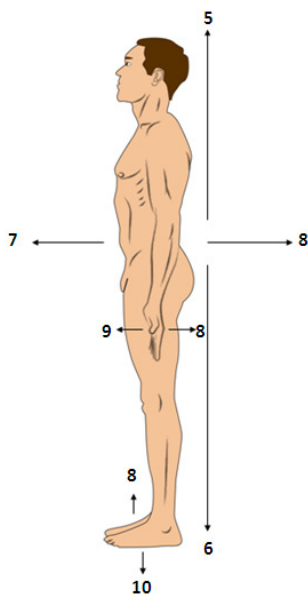
1. Write the name of the corresponding plane.



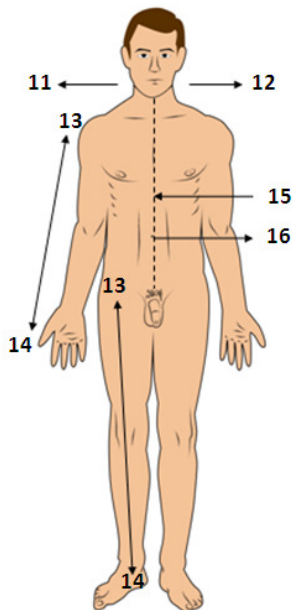
1. _____
2. _____
3. _____
4. _____

2. Choose and write the corresponding name of the directional term from the list below. In some cases there are two correct answers, but some do not fit in.

caudal; superior; cranial; inferior; dexter; lateral; sagittal; ventral; posterior; distal; anterior; dorsal; sinister; coronal; proximal; medial; longitudinal;



5. _____
6. _____
7. _____
7. _____
8. _____
9. _____
10. _____



11. _____
12. _____
13. _____
14. _____
15. _____
16. _____

3. True – False Examine each of the following statements. If the statement is true, write T; if false, write F in the first blank, and then correct the statement by replacing the underlined word in the second blank.

- E.g. The wrist is distal to the elbow. T _____
- A midsagittal plane divides the body into equal dexter and sinister parts. _____
- A horizontal plane divides the body into anterior and posterior parts. _____
- The chest is inferior to the belly. _____
- The little finger is dexter to the thumb. _____
- In anatomical position the palm is turned to the back. _____
- In the prone position, a person is lying face-up. _____

4. Odd One Out Eliminate the one term that does not fit in with the rest. Explain your choice briefly.

- palmar – ventral – caudal – anterior _____
- plantar – sagittal – horizontal – frontal _____
- cephalic – superior – distal – cranial _____

5. Synonyms Write a word that means the same as each of the following.

- | | | | |
|----------|-------|----------|-------|
| dorsal | _____ | cranial | _____ |
| inferior | _____ | frontal | _____ |
| palmar | _____ | anterior | _____ |

6. Opposites. Write a word that means the opposite of each of the following.

- | | | | |
|-----------|-------|----------|-------|
| superior | _____ | external | _____ |
| profundus | _____ | lateral | _____ |
| volar | _____ | dexter | _____ |
| plantar | _____ | proximal | _____ |

7. Fill in the blanks with the appropriate word

The thumb is on the _____ side of the hand, the little finger is on the _____. Pectoralis major muscle is a surface muscle over the pectoralis minor muscle so its position is termed as _____. The toes are at the _____ part of the lower limb. The elbow is _____ to our wrist. The inner part of the ankle is the _____ malleolus, the outer one is _____ malleolus.

8. Latin proverbs

- | | |
|---------------------|--------------------------|
| Cogito ergo sum. | Veni, vidi, vici. |
| Errare humanum est. | Aquila non captat muscas |