



An Introduction to Medical Terminology

I. Greek and Latin Derivations*

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THERE is hardly any other aspect of medicine that is so discouraging for the beginning student as medical terminology. The first impact of the long, unfamiliar words is decidedly depressing. A French essayist of the 16th Century made the apt remark that "The language of medicine is an idiom foreign to the general speech and of discordant sound."¹ The same criticism could very well apply to present-day medical language, which sounds just as "discordant" to the uninitiated.

Although medical terms have been drawn from many languages, a large majority are from Greek and Latin. Some familiarity with the meaning of the most frequently used roots, prefixes, and suffixes will clarify the whole field. With a little study, it will be found that the long and formidable sounding medical terms are a combination of words which describe parts of the body, a function, or a condition. The basic terms occur over and over again in various combinations. A knowledge of the meaning of the roots, prefixes, and suffixes enables the student to analyze the medical terms into component parts. This is of the greatest aid in learning to understand the vocabulary of medicine. Some names of diseases given by the ancients and still used to-day are, in many instances, simply descriptions of the outstanding symptoms; for example, *hydro-phobia*—fear of water—for rabies, because the inability to drink is an early, characteristic sign of the disease.

I. GREEK IN MEDICAL TERMINOLOGY

It is estimated that about three-fourths of our 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

*Abbreviations: AS—Anglo-Saxon; E.—English; Fr.—French; G.—German; Gr.—Greek; L.—Latin.

¹ Quoted without source by Stedman, T. L., *Practical medical dictionary*, 13th ed., Baltimore, Wood, 1936. p.v.



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.² 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*).

A second reason for the large number of Greek medical terms is that the Greek language lends itself easily to the building of compounds. When new terms were needed, with the rapid expansion of medical science during the last century, Greek words or Latin words with Greek endings were used to express the new ideas, conditions, or instruments.³ 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*, easily understood by anyone familiar with the subject matter. Whoever has had to struggle with such German terms as *Keilbein*, *Milz*, *Stickstoff* instead of the familiar *sphenoid*, *lien*, and *nitrogen* will appreciate this.

Orthography

The Greek terms came into the English language through the Latin. In adapting the Greek words the Romans used the Latin alphabet. This generally corresponds to the Greek but there are a few exceptions. The Romans did not have a *k*, so the Gr. *k* is regularly represented by *c*

Gr. *kranion*, L. and E. *cranium*

Gr. *kleptomania*, L. and E. *cleptomania*

The Greeks had two letters for the short and long sounds of *e* and *o*; the Romans had only one letter for each whether the sound was short or long.⁴

The Greek *u*, when standing by itself, is transcribed in the L. and E. as *y*

Gr. *kruptos*—hidden, secret, L. and E. *cryptos*; the *u* in the Gr.

² The best concise summary of the achievements of the early Greek physicians is Charles Singer, *Greek Medicine* (in the *Legacy of Greece*, R. W. Livingstone, ed., Oxford, Clarendon Press, 1924, pp. 201-249).

³ For an all round introduction to linguistics and the influence of Greek on English see Bodmer Frederick, *The loom of language*, N. Y., Norton, 1944, pp. 246-249 and 657-682.

⁴ To avoid the use of Greek letters the long sounds of *e* and *o* are indicated with a line over the letter. The long *e* in Gr. is pronounced as *ā* in E., as in *ache*, age, etc.



diphthongs (two vowels united in one sound) when combined with *a*, *e* or *o* retains the *u* form in transcription: *au*, *eu*, *ou*.

The diphthongs *ai* and *oi* become *ae* and *oe* in L. and E. or in the latter, simply *e*, as in

Gr. diaita—regimen, L. diaeta, E. diet

Gr. amoiba—L. amoeba, E. ameba

The Gr. *ei* becomes *i*:

Gr. cheir—hand, L. and E. chir, as in chiropodist

The Gr. endings of *-os* and *-on* usually become *-us* and *-um* in L.

Gr. ton-os—L. ton-us, E. tonicity

Gr. baktēri-on—L. and E. bacteri-um

1. Some Greek root words

Scores of simple Gr. root words are used in our every-day 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	kranion—skull	pneumā—air, breath
aortē—aorta	larynx—voice box	psychē—soul
bronchos—gullet	mania—madness,	pyon—pus
cheir—hand	frenzy	pyr—fire, fever
cholē—bile	nausea—seasickness	sarx—flesh
derma—skin	neuron—tendon,	sōma—body
gastēr—belly	nerve	spasmos—spasm
haima—blood	osteon—bone	splēn—spleen
hēpar—liver	ophthalmos—eye	stoma—mouth
hygieia—health	pepsis—digestion	stomachos—stomach
hymēn—membrane	pharmakon—drug	tracheia—windpipe
kardia—heart	pharynx—throat	trauma—wound
kephalē—head	pleura—side, rib	

2. Prefixes

Among the most frequently used elements in the formation of words are prefixes. These consist of one or more syllables (originally prepositions or adverbs) placed *before* the words to show various kinds of relationships. In joining the stem, the final letter of the prefix undergoes certain changes. If a prefix ends in a vowel and the stem begins with one, the final vowel of the prefix is usually dropped, e.g.

epi-encephalon becomes ep-encephalon

para-otid becomes par-otid.

The final *n* of a prefix becomes *l* before following *l*, as in
 syl-logism from syn-logism;



it becomes *m* before *b, m, p, ph*, as in
em-phasis from en-phasis,
whereas before *s* the final *n* is dropped, as in
sy-stem from syn-stēma.

The most important prefixes are listed below with their meanings and a few examples of their use.

a-, an- (before a vowel)—a privative or a negative conveying deficiency, lack or weakness

a-pathy—lack of feeling⁵

a-tom—indivisible

an-emia—lack of blood

an-esthesia—lack of sensation

amphi-, amphi-—on both sides, double

amphi-bious—living on both sides (land and water)

amphi-theatre—a place for seeing around, an operating room

amphi-diplopia—double vision in both eyes

amphi-phil—fond of both, a cell which stains with either acid or dyes

ana-, an-—up, upward, again

ana-lysis—dissolution, breaking up (of chemical compounds)

ana-mnesis—recollection, medical history

ana-tomy—cutting up, dissection

an-a-phyllaxis—renewed loss of protection

anti-—against, opposed to, opposite of

anti-dote—against a given thing (poison)

anti-pyretic—against fever

anti-septic—against infection

ant-acid—against an acid, neutralizing an acid

apo-—off, away from

apo-physis—a growth away, a projection (from a bone)

apo-plexy—a stroke away, a sudden stroke

apo-staxis—a trickling down, a slight hemorrhage

apo-the-cary—a pharmacist (apothēkē—a repository)

cata-—down, downward

cata-menia—according to month, menses

cata-rrh—a flowing down, inflammation of the mucous membrane

cata-tonia—a downward tone, stupor

cat-hod—downward way, the return goal of an electron

⁵ Most of the definitions of medical terms are taken from Stedman's Practical medical dictionary, 16th revised edition, Baltimore, Williams, 1946. For difficult terms the well-known standard medical dictionaries in English (Black, Dorland, Gould) were consulted occasionally.



- dia*—through, across, completely
dia-betes—a going through, syphon, syphon disease
dia-gnosis—knowing completely, determination of the nature of a disease
dia-rhea—flowing through, fluid discharge
dia-thermy—heat going through, elevation of temperature by means of a current
dys—bad, difficult, defective
dys-entery—bad intestine
dys-pepsia—bad digestion
dys-pnea—difficult breathing
dys-trophy—bad nourishment
ec-, ex—out, out of, outward
ec-topic—out of place
ec-zema—a boiling out, an inflammation of the skin
ex-ophthalmos—eye (bulging) out
ex-ostosis—bone outside, a bony tumor
en-, em—in, within
en-cephalon—in the head, the brain
en-demic—in the people, present in a community
em-bolism—thrown in, a plugging of a vessel
em-bryo—grown in, fetus
hyper—over, above, excessive
hyper-emia—excessive blood
hyper-thyroidism—symptoms caused by excessive activity of the thyroid
hyper-tonic—excessive in tension
hyper-trophy—excessive nourishment, overgrowth
hypo—under, below, insufficient
hypo-chondriac—under the cartilage, an imaginary disease
hypo-dermic—under the skin
hypo-glyc-emia—low proportion of sugar in the blood
hypo-physis—a growth under (the brain), pituitary body
meta—after, behind, beyond, change
meta-bolism—change in throwing, tissue change
meta-morphosis—change in form
meta-stasis—change in position
met-enkephalon—after the brain, hindbrain
para—near, alongside, apart from, abnormal
para-noia—abnormal in mind
para-plegia—near stroke, paralysis of the extremities
par-esthesia—abnormal perception



- par-otid—beside the ear
- peri—about, around
 - peri-cardium—around the heart, membrane covering the heart
 - peri-osteum—around the bone, membrane covering the bone
 - peri-stalsis—contraction around, contraction of the intestines
 - peri-toneum—(membrane) stretching around, lining of the abdominal cavity
- pro—before, forward, in advance
 - pro-drome—running before, an early symptom
 - pro-geria—before old age, premature aging
 - pro-gnosis—knowing before, forecast
 - pro-phylaxis—advance protection
- syn-, sym—with, together, union
 - syn-drome—running together, an aggregate of symptoms
 - sy-stole (from syn-stolē)—contraction, the rhythmic contraction of the heart
 - sym-biosis—living together of two or more organisms
 - sym-ptom—a falling together, a sign

3. Suffixes

A suffix is a terminal letter or syllable added to the stem to modify or amplify its meaning. If a suffix begins with a consonant and it is joined to a stem ending in a consonant, a *connecting vowel*, mostly *o* is added to make the junction.

The most common suffixes are:

- ia, Fr. -ie, E. -y—denotes a pathological state or condition
 - agon-ia—contest, suffering
 - hyster-ia—a chronic neurosis formerly thought to be of uterine causation (hystera—womb)
 - man-ia—madness
 - ophthalm-ia—inflammation of the eye
- iasis—signifies a pathological state, condition, or its causation
 - lith-iasis—formation of calculi (lithos—stone)
 - psor-iasis—a skin disease (psōra—itch)
 - trichin-iasis—a disease caused by trichinae infestation
- ikos, L. -icus, E. -ic—an adjectival termination
 - an-esthetic—pertaining to anesthesia, a drug producing anesthesia
 - epilept-ic—pertaining to epilepsy
 - hect-ic—irregularly feverish (hexis—habit; orig. meaning habitual)
 - patholog-ic—pertaining to pathology



-ismos, L. **-ismus**, E. **-ism**—denotes a condition

embol-ism—the plugging of an artery or vein (embolos—wedge)

hypnot-ism—a condition of artificially induced sleep (hypnos—sleep)

metabol-ism—tissue change (metabolē—change)

rheumat-ism—rheumatic fever (rheuma—flux)

-istēs, E. **-ist**—signifies an agent or doer of the action indicated by the root

anatom-ist—one who cuts up

anesthet-ist—one who takes away sensation

orthodont-ist—one who straightens teeth

urolog-ist—one who treats urological disorders

-itis—originally the adjectival ending **-itēs** used with nosos—disease; it is now used alone and has acquired the significance of inflammatory disease

appendic-itis

arthrit-is

bronch-itis

ot-itis

} inflammation of the part named in the stem

-ize, Gr. **-izein**—a verbal suffix indicating treatment by means of a special instrument or drug

an-esthet-ize—to take away sensation

catheter-ize—to use a catheter

hypnot-ize—to put to sleep

-ma, **-ema**, **-oma**—designates a concrete pathological condition

ec-zema—a boiling out, inflammation of the skin

ex-anth-ema—a skin flower, a skin eruption

Words ending in **-oma** are so numerous, referring usually to swelling or tumor, that this ending is considered equivalent to tumor, e.g.

carcin-oma—a cancerous tumor, a malignant growth

granul-oma—a tumor of granulation tissue

neur-oma—a tumor formed of nerve cells

sarc-oma—a fleshy thing, a fleshy tumor

-oid; originally **-oeid**, from Gr. **eidos**—form, appearance; denotes a resemblance to the object designated in the main word

sphen-oid—wedge-shaped (sphēn—wedge)

typh-oid—like typhus fever (typhos—stupor)

thyr-oid—the shieldlike gland (thyreos—shield)

xiph-oid—sword-shaped (xiphos—sword)

-sis, **-osis**—denotes any production or increase (physiological or pathological); secondarily an invasion and increase of parasites within



the organism. It is often interchangeable with *-iasis* as trichin-osis or trichin-iasis

adip-osis—an excessive accumulation of fat

rhe-xis (from rheg-sis)—a breaking, a rupture

sep-sis—a rotting, putrefaction

tubercul-osis—an invasion by the tubercle bacilli

Chemical suffixes

-ase (asis—slime)—denotes a colloid enzyme

amyl-ase—a starch splitting enzyme (amylon—starch)

lip-ase—a fat splitting enzyme (lipos—fat)

-ate—indicates a salt of a base

phosph-ate—a salt of phosphoric acid

sulph-ate—a salt of sulphuric acid

-ide—a name for a binary compound containing a non-metallic element

chlor-ide—a compound of chlorine with another element

sulph-ide—a compound of sulphur with a base

-in—a termination noting a glucoside

fibr-in (L. fibra—fiber)

gelat-in (L. gelatum—congealed)

prote-in (Gr. prōtos—first)

-ine—an ending used in the names of alkaloids

hero-ine—alkaloidal ester of morphine

morph-ine—alkaloid of opium

-ite—a terminal indicating a salt of an acid ending in *-ous*

phosph-ite—a salt of phosphorous acid

sulph-ite—a salt of sulphurous acid

Compound words

In addition to the words made up of a stem combined with one or more prefixes and suffixes, there are terms which have a second stem as a component part. Some Gr. terms may have as many as three stems joined, e.g. *leuco-cyt-hemia*—leucemia. Nouns, adjectives, and adverbs may be used in various combinations. The first part of a compound word generally indicates its *essential* meaning which is modified or amplified by the second part. If the second part begins with a consonant, the connecting vowel *o* is usually inserted for the sake of euphony. If two vowels are juxtaposed by the combination, the first is generally dropped.

A list of nouns regularly appearing as first part of a compound. (Many of these are names of parts of the body.)



anthrop- (anthrōpos—man)

anthropo-genesis—origin of man

anthropo-metry—measurement of man

bio- (bios—life)

bio-logy—the science of living organisms

bi-opsy—examination of a tissue excised from the living body

broncho- (bronchos—gullet)

broncho-cele—windpipe tumor, goiter

broncho-pneumonia—inflammation of the bronchi

cardi-, cardio- (kardia—heart)

cardi-a-taxia—irregularity in the action of the heart

cardio-gram—recording of the movements of the heart

cheir-, chir- (cheir—hand)

ch(e)iro-practor—a practitioner of manipulation

chiro-gnomy—physiognomy of the hand

cyto- (kytos—cell)

cyto-architecture—the order of arrangement of cells in a tissue

cyto-zoic—living in a cell

derma-, dermat- (derma—skin)

dema-graph—an instrument for writing on the skin

dermato-logy—study of the skin

entero- (enteron—the intestine)

enter-ectomy—resection of a segment of the intestine

entero-lith—an intestinal calculus

gastr- (gastēr, stem, gastr—stomach)

gastro-enterology—the medical specialty dealing with diseases of the stomach and intestines

gastr-odynia—pain in the stomach

gynec- (gynē, gynec—female)

gyneco-mastia—female breast in the male

gyneco-plastics—reparative surgery of the female organs

hem-, hemat- (haima, haimat—blood)

hemat-emesi-s—vomiting of blood

hemo-rrhage—bleeding

hepat-, (hēpar, hēpat—liver)

hepat-a-trophy—atrophy of the liver

hepato-melanosi-s—dark pigmentation of the liver

hydr- (hydōr, hydr—water)

hydro-cephalus—water head, a congenital deformation

hydro-gen—a gas which forms water when combined with oxygen

hydro-therapy—treatment by the use of water



hypno- (hypnos—sleep)

hypn-agogue—inducer of sleep

hypno-lepsy—uncontrollable sleepiness

hyster- (hystera—uterus)

hyster-ectomy—excision of the uterus

hystero-ptosis—prolapse of the uterus

litho- (lithos—stone)

litho-nephria—stone in the kidney

litho-tomy—cutting for stone

morph- (morphē—form)

morpho-logy—the science of structure

morpho-genesis—the evolution of form

my- (mys—muscle)

my-asthenia—muscular weakness

myo-carditis—inflammation of the muscular wall of the heart

narc- (narkē—numbness, stupor)

narco-lepsy—numbing seizure, petit mal

narco-mania—craving for narcotics

nephro- (nephros—kidney)

nephro-py-osis—suppuration of the kidney

nephro-scler-osis—hardening of the kidney

neuro- (neuron—cord, tendon, nerve)

neur-algia—nerve pain

neur-asthenia—nerve weakness

odont- (odys, odont—tooth)

odonto-clasis—breaking of tooth

odont-orthrosis—straightening of teeth

ophthalmo- (ophthalmos—eye)

ophthalmo-gyric—causing eye movements

ophthalmo-scope—an instrument to view the eye

osteo- (osteon—bone)

osteo-malacia—softening of the bone

osteo-necrosis—killing, decay of the bone

ot- (ūs, ōt—ear)

oto-myc-osis—a fungus-caused inflammation of the ear

oto-rrhea—discharge from the ear

pod- (pūs, pod—foot)

pod-agra—seizure in the foot, gout

pod-iatrist—foot practitioner

pyo- (pyon—pus)

pyo-genic—pus forming

pyo-periton-itis—suppurative inflammation of the peritoneum



- pyr-, pyret-** (pyr—fire, heat, inflammation)
pyr-exia—an acute inflammation
pyreto-mania—an uncontrollable desire to incendiarism
sphygmo- (sphygmos—pulse)
sphygmo-graph—an instrument to record pulse beat
sphygmo-mano-meter—an instrument for measuring the blood pressure
zoö- (zoön—a living thing, an animal)
zoö-logy—study of animals
zoö-parasite—an animal parasite

List of adjectives which regularly appear as first part of compounded words.

- allo-** (allos—other)
allo-cinesis—passive movement, reflex movement
all-ergy—a clinical change in the capacity of the organism to react to an infection, hypersensitiveness
auto- (autos—self)
auto-matism—a condition in which movements are made without conscious exercise of the will
aut-opsy—seeing with one's own eyes, post-mortem examination
brady- (bradys—slow)
brady-cardia—abnormal slowness of the heart beat
brady-pnea—abnormal slowness of respiration
caco- (kakos—bad)
cac-hexia—bad habit, lack of nutrition, and wasting
cac-idrosis—morbid sweating
crypto- (cryptos—secret, hidden)
crypto-genic—of hidden, obscure origin
crypt-orchid—hidden, undescended testis
ecto- (ektos—outside)
ecto-derm—outer side of the skin
ecto-plasm—moulded on the outer side, the outer side of the cytoplasm
erythro- (erythros—red)
erythro-cyte—red cell, red corpuscle
erythr-edema—red swelling
hemi- (one half)
hemi-atrophy—atrophy of one lateral half of a part or organ
hemi-plegia—half stroke, paralysis of one side of the body
hetero- (heteros—other, different, opposite)
hetero-plasty—surgical grafting with tissue derived from another individual



- hetero-tonia—different, variable tension
- homeo-* (homoios—similar)
 - homeo-pathy—a special system of therapeutics
 - homeo-stasis—condition of bodily equilibrium; literally “standing still”
- homo-* (homos—the same)
 - homo-lateral—on or relating to the same side
 - homo-sexual—having attraction for the same sex
- idio-* (idios—one’s own, private)
 - idio-pathic—noting a primary disease, one originating without apparent extrinsic cause
 - idio-syncrasy—one’s own mixing, peculiarities of a person
- iso-* (isos—equal, like)
 - iso-thermal—having the same temperature
 - iso-tonia—tonic equality
- leuco-* (leukos—white)
 - leuco-cyte—white cell, white blood corpuscle
 - leuco-rrhea—white discharge
- macro-* (makros—long, large)
 - macro-cephalic—having a large head
 - macro-glossia—enlargement of the tongue
- mega-, megal-* (megas, megal—great, large)
 - mega-colon—dilatation of the large intestine
 - megalo-mania—delusion of grandeur
- melan-* (melas, melan—black)
 - melan-cholia—black bile, a depressed emotional state
 - melano-sarcoma—a deeply pigmented sarcoma
- meso-* (mesos—middle)
 - mes-encephalon—midbrain
 - mes-entery—middle intestine
- micro-* (mikros—small)
 - micro-be (mikros+bios)—small living thing
 - micro-scope—a viewer of small things
- mono-* (monos—alone, single)
 - mono-nuclear—having a single nucleus
 - mono-plegia—paralysis of one limb
- neo-* (neos—new, recent, young)
 - neo-natal—relating to the period immediately succeeding birth
 - neo-plasm—new growth
- oligo-* (oligos—little, few)
 - oligo-phrenia—mental weakness, feeble-mindedness
 - oligo-pnea—infrequent respiration



- ortho-** (orthos—straight, correct)
ortho-dontia—straightening of the teeth
ortho-pedics—correction of deformities
oxy- (oxys—sharp, acid)
oxy-gen—a gaseous element present in acids
oxy-lalia—rapid speech
paleo- (palaios—ancient)
paleo-genesis—hereditary transmission of peculiarities
paleo-pathology—study of diseases of the prehistoric times
pan- (pas, pan—all, entire)
pan-creas—all flesh, the pancreas gland
pan-demic—a disease attacking all
polio- (polios—grey)
polio-encephalitis—inflammation of the grey matter of the brain
polio-myelitis—inflammation of the grey matter of the spinal cord
poly- (polys—much, many)
poly-pus—many feet
poly-uria—excessive urination
proto- (prōtos—first)
proto-plasm—first formed, living matter
proto-type—first form, primitive form
pseudo- (pseudēs—false, spurious)
pseudo-cele—false cavity, the 5th ventricle of the brain
pseudo-cyesis—false pregnancy
tachy- (tachys—fast)
tachy-cardia—quick heart, rapid action of the heart
tachy-pnea—rapid breathing
xantho- (xanthos—yellow)
xantho-derm—yellow skin
xanth-opsia—yellow vision

Some adverbs regularly appearing as first part of a compound.

- di-** (dis—twice)
di-hydric—a chemical compound with two hydrogen atoms
di-morphism—existing in two forms
endo- (endon—within)
endo-crine—secretion within, internal secretion
endo-metrium—within the uterus, membrane lining the uterus
eu- (eu—well, easy)
eu-phoria—bearing oneself well, good health
eu-thanasia—easy death



exo—outside, outward

exo-genous—originating outside

exo-gnathion—outside jaw, maxilla

opisth- (opisthē—behind)

opisth-encephalon—brain behind, the cerebellum

opistho-tonos—stretching backward, a tetanic spasm

palin—back, backward, again

palin-dromia—a running back, a relapse

palin-esthesia—a return of sensation

tēlē—distant

tele-neuron—the end neuron

tele-pathy—minding-reading from afar

Some nouns regularly appearing as second part of a compound.

-agogue (agōgos—leader)

galact-agogue—an agent promoting the secretion of milk

hypn-agogue—inducer of sleep, hypnotic

-agra—seizure

cardi-agra—heart seizure, angina pectoris

pod-agra—foot seizure, gout

-algia (algos—pain)

gastr-algia—stomach ache

neur-algia—nerve pain

-asthenia (asthenēs—weak)

my-asthenia—muscular weakness

neur-asthenia—nerve weakness, nervous exhaustion

-cele (kēlē—protrusion, tumor, hernia)

hemato-cele—blood cyst

hydro-cele—water hernia

-cinesia (kinēsis—movement)

cardio-cinesia—movement, action of the heart

entero-cinesia—movement of the intestine, peristalsis

-clasia, -clasis—breaking

arthro-clasia—breaking of a joint, breaking up of adhesions

hemo-clasis—breaking up of the red blood corpuscles

-cyte (kytos—cell)

erythro-cyte—red blood corpuscle

lympho-cyte—lymph corpuscle

-ectomy (ektomē—excision)

hyster-ectomy—excision of the uterus

thyroid-ectomy—excision of the thyroid gland



- ectopia** (ek + topos—out of place)
 - nephro-ectopia—abnormal mobility of the kidney
 - splen-ectopia—abnormal mobility of the spleen
- emia** (haima—blood)
 - an-emia—lack of blood
 - ur-emia—an excess of urea in the blood
- esthesia** (aisthēsis—feeling, sensibility)
 - an-esthesia—lack of feeling
 - par-esthesia—an abnormal spontaneous sensation (like itching)
- genesis**, E. -geny—generation, origin
 - patho-genesis—the origin or development of a disease
 - spermato-genesis—production of spermatozoa
 - onto-geny—the development of the individual
- gram** (gramma—writing, drawing)
 - cardio-gram—the record of the movement of the heart
 - encephalo-gram—a roentgenogram of the brain
- graph**, -**graphy** (graphein—to write)
 - dermo-graph—an instrument for marking or writing on the skin
 - ventriculo-graphy—radiography of the cerebral ventricles
- lith** (lithos—stone, calculus)
 - entero-lith—an intestinal calculus
 - hemato-lith—a concretion in the wall of a blood vessel
- logia**, Fr. -logie, E. -logy (Gr. logos—word, discourse, treatise)
 - physio-logy—the science which deals with life processes
 - uro-logy—the specialty dealing with the diseases of the urinary organs
- lysis**—dissolution, loosening, breaking down
 - hemo-lysis—destruction of the red blood cells
 - para-lysis—loss of voluntary movement in a muscle
- malacia** (malakia—softening)
 - myo-malacia—softening of muscular tissues
 - osteo-malacia—softening of the bones
- mania**—madness, uncontrollable impulse
 - klepto-mania—a pathological impulse to steal
 - megalo-mania—delusion of grandeur
- megalia**, E. -megaly (megas, megal—large)
 - acro-megalia or acromegaly—enlargement of the extremities
 - spleno-megalia—enlargement of the spleen
- meter**, Gr. mētron, L. metrum—measure, an instrument for measuring
 - pulsi-meter—instrument to measure the pulse



- thermo-meter—instrument to measure heat
- odynia* (odynē—pain)
 - acr-odynia—pain in the extremities
 - ot-odynia—pain in the ear
- opia* (ōps—vision)
 - ambly-opia—dimness of vision (amblys—dull)
 - my-opia—winking vision, shortsightedness (myein—to wink)
- pathy* (pathos—suffering)
 - adeno-pathy—glandular disease
 - psycho-pathy—a disorder of the mind, insanity
- philia* (philein—to like)
 - hemo-philia—“liking of blood”, a disorder marked with hemorrhages
- phobia* (phobos—fear)
 - claustro-phobia—a morbid fear of being in any closed place
 - hydro-phobia—fear of water, rabies
- plasty* (plassein—to form; cf. “plastic” surgeon)
 - entero-plasty—plastic surgery of the intestines
 - rhino-plasty—plastic surgery of the nose (rhis, rhin—nose)
- plegia* (plēgē—stroke)
 - hemi-plegia—half stroke, paralysis of one side of the body
 - para-plegia—paralysis of the lower part of the body
- poiesis*—making, formation
 - hemato-poiesis—formation of blood
- ptosis*—falling, displacement
 - hystero-ptosis—prolapse of the uterus
 - viscero-ptosis—displacement of the internal organs
- pyosis* (pyon—pus)
 - arthro-pyosis—suppuration in a joint
 - nephro-pyosis—suppuration of the kidney
- rrhagia, -rrhage* (rhēgnymi—break forth)
 - hemo-rrhage—bleeding
 - metro-rrhagia—bleeding from the uterus (mētra—uterus)
- rrhaphy* (rrhaphē—stitch)
 - perineo-rrhaphy—suturing of the perineum
 - urethro-rrhaphy—suture of the urethra
- rrhea* (rrhoia—flow)
 - gono-rrhea—a discharge caused by gonococcus infection
 - leuco-rrhea—white discharge
- sclerosis*—hardening, induration
 - arterio-sclerosis—hardening of the arteries
 - arthro-sclerosis—stiffness of the joints



- scope, -scopy* (skopein—to view)
 - cysto-scope—an instrument to view the bladder (kystis—bladder)
 - ophthalmo-scope—an instrument to view the fundus of the eye
- spasm* (spasmos—convulsion, cramp)
 - entero-spasm—intestinal colic
 - pyloro-spasm—painful contraction of the pylorus
- stasis*—stoppage, checking
 - hemo-stasis—arrest of bleeding
 - homeo-stasis—standing still, bodily equilibrium
- staxis*—dripping, oozing, slow hemorrhage
 - entero-staxis—bleeding from the intestines
 - epi-staxis—nose bleed
- stenosis*—narrowing
 - cardio-stenosis—narrowing of the heart
 - entero-stenosis—narrowing of the intestines
- stomy* (stoma—mouth)
 - colo-stomy—forming an opening into the colon
 - cysto-stomy—forming an opening into the bladder
- therapy* (therapeia—treatment)
 - hydro-therapy—treatment by water
 - physio-therapy—treatment by natural means (air, water, massage)
- thermy* (thermē—heat)
 - dia-thermy—elevation of temperature by electric current
 - electro-thermy—applying heat by electricity
- tomy* (tomē—incision)
 - laparo-tomy—incision into the loin (lapara—loin)
 - lobo-tomy—operation on the frontal lobe
- trophy* (trephein; stem, troph—to nourish)
 - a-trophy—lack of nourishment, wasting of the tissues of the body
 - hyper-trophy—excessive nourishment, overgrowth
- uria* (ūrein—ūriate)
 - hemat-uria—blood in the urine
 - py-uria—pus in the urine

Chemical compound words

Chemical compound words are formed very irregularly. They are hybrid (using Gr. and L. stems combined in one word) and in most cases they are greatly abbreviated, e.g.

am-yl from am (ylon—starch) + (h) yl (ē)—material
 formaldehyde from form (ic acid) + al (cohol) + dehyd
 (rogenatum), etc.



II. LATIN IN MEDICAL TERMINOLOGY

As the Romans conquered the then known world, Latin became the universal language of Italy and the provinces. Many centuries after the fall of Rome, Latin still ruled supreme. To this very day, Latin is the language of the Catholic Church, and during the formative period of the western European languages it was incorporated in every one of them. The Romance languages, and especially French, is modern Latin, preserving most of the form and spirit of the ancient language. English is to some extent Germanic in form and part of its vocabulary is Germanic, but a considerable section is of Latin ancestry borrowed from the French. Most of the common roots of speech are Anglo-Saxon, but the moment we leave primitive life and advance to more civilized living, our words immediately become Latin. We *walk, start, stop, breathe, sleep, wake, talk, live and lie* in Anglo-Saxon but we *advance, retreat, approach, retire, inspire, confer, discuss, compare, refute, debate, perish, survive* in Latin, and the predominant part of the vocabulary of business, commerce, finance, government, diplomacy, and the sciences is Latin.

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.

1. Some Latin root words.

The number of Latin root words in medicine is legion. We shall quote just a few as examples:

anus—ring	dens—tooth	ilium—flank
aqua—water	facies—face	labium—lip
bacillus—little rod	fascia—band	latus—side
bucca—cheek	febris—fever	lens—lentil
cancer—crab	femur—thigh, thigh bone	ligamentum—binding
caput—head	fetus—embryo	lingua—tongue
caries—decay	foramen—perforation	lues—plague
cella—chamber	fornix—arch	lupus—wolf
cerebrum—brain	fossa—ditch	manus—hand
cervix—neck	frons—forehead	meatus—opening
cor—heart	fundus—base, bottom	mens—mind
corpus—body	glans—gland	mensis—month
cortex—bark	hernia—rupture	morbus—disease
cutis—skin		nodus—knot



oculus—eye	ruga—wrinkle,	tonsilla—pointed pole
os—mouth	furrow	tunica—garment
ovum—egg	saliva—spittle	tussis—cough
patella—shallow pan	scrotum—pouch	ulcus—ulcer
pectus—chest	sella—chair	uterus—womb
pelvis—basin	semen—seed	vagina—sheath
placenta—flat cake	spina—thorn	valva—valve
pons—bridge	stimulus—goad	vas—vessel
pulmo—lung	succus—juice	vena—vein
pupilla—little girl	sudor—sweat	venter—belly
ren—kidney	tabes—wasting	vermis—worm
retina—net	talus—ankle	vesica—bladder
	tergum—back	virus—poison

2. Prefixes

When prefixes are joined with a stem, some changes take place, which are essentially the same as the ones outlined in the introduction to the Gr. prefixes. In addition to these, it is to be noted that the final consonant of the L. prefixes *ad-*, *con-* and *ob-* are usually changed to duplicate the letter which follows, for example:

<i>ad-</i> cept becomes <i>ac</i> -cept	<i>con-</i> lateral becomes <i>col</i> -lateral
<i>ad-</i> ferens becomes <i>af</i> -ferens	<i>ob-</i> ciput becomes <i>oc</i> -ciput
<i>ad-</i> sume becomes <i>as</i> -sume	<i>ob-</i> press becomes <i>op</i> -press, etc.
<i>con-</i> lapse becomes <i>col</i> -lapse	

The most important Latin prefixes are listed below with their meanings and a few examples of their use:

- a-, ab-, abs-*—away from, off
 - a-vulsion—tearing away
 - ab-ductor—leading away
 - ab-oral—away from the mouth
 - abs-tract—a condensation
- ad-*—to, toward
 - ad-hesion—sticking to
 - ad-renal—near the kidney, adrenal gland
 - ac-cretion—accumulation
 - ap-pendix—hanging upon
- ambi-, ambo-*—both, on both sides
 - ambi-dextrous—able to use both hands
 - ambi-valent—having power in both directions
 - ambo-ceptor—accepting both, a substance in the blood
 - ambo-sexual—bisexual, affecting both sexes



- ante*—before (in time or space), in front of, forward
ante-cubital—before the elbow
ante-flexion—bending forward
ante-natal—before birth
ante-version—tipping forward
- bi-, bis*—twice, double
bi-carbonate—a salt having two elements of carbonic acid
bi-cuspid—having two points
bi-lateral—pertaining to both sides
bis-axillary—pertaining to both armpits (axilla)
- circum*—around, about
circum-cision—cutting around
circum-flex—bent around
circum-ocular—around the eye
circum-oral—around the mouth
- co-, con-* (from L. cum)—with, together
co-agulation—changing into a clot
con-cussion—a violent shock
col-lapse—extreme prostration
com-press—pressed together, a compressed pad
- contra*—against, opposed
contra-ception—against conception
contra-indication—rendering a particular treatment undesirable
contra-stimulant—opposing stimulation
contra-toxin—against toxin
- de*—down, downward; sometimes a privative
de-ciduous—not permanent, temporary
de-composition—decay, putrefaction
de-mentia—without mind, mental deterioration
de-odorant—taking odor away
- di-, dis*—an inseparable preposition denoting sundering, apart; sometimes negative
di-gestion—carrying (food) away, digestion
dis-infectant—freeing from infection, an agent that disinfects
dis-location—displacement (of a bone)
dis-sect—cut apart, cut up
- e-, ec-, ex*—out, out of, off, removal
e-jection—act of throwing out
e-nucleate—to remove whole
ex-tract—something drawn out, extracted
ex-udate (from ec+sudate)—sweat out, sweat



- extra-, extro*—outside of, outer side
 - extra-cellular—outside the cell
 - extra-cranial—outside the skull
 - extra-vasation—a discharge of blood from a vessel into the tissues
 - extro-vert—a person whose interest is turned outward
- in-, im*—in, into, inside
 - in-cision—cutting in, a cut
 - in-cubation—lying in, the latent stage of an infectious disease
 - im-mersion—placing a body under water
 - im-pacted—pressed closely together, immovable
- in-, im*—an inseparable prefix indicating a negation; a privative
 - in-curable—not curable
 - in-sane—without mind, of unsound mind
 - im-maculate—without a spot
 - ir-reducible—not reducible, incapable of being made smaller
- infra*—below, beneath, downward, lower
 - infra-inguinal—below the groin
 - infra-maxillary—below the maxilla
 - infra-orbital—below the orbit (eye socket)
 - infra-red—beyond the red end of the spectrum
- inter*—between
 - inter-cellular—between cells
 - inter-digital—between the fingers or toes
 - inter-mittent—marked by intervals
 - inter-vertebral—situated between two vertebrae
- intra*—within, inside of
 - intra-cellular—within the cell
 - intra-rectal—within the rectum
 - intra-uterine—within the uterus
 - intra-venous—in, into, within a vein
- intro*—into, inward, within
 - intro-duction—leading into
 - intro-flexion—bending inward
 - intro-mission—insertion
 - intro-vert—turned within, a person given to introspection
- juxta*—beside, near
 - juxta-articular—situated near a joint
 - juxta-position—an adjacent position
 - juxta-spinal—close to the spinal column
- ob*—in front of, against, near (space or time)
 - ob-literation—complete removal
 - ob-stetrics—to stand in front (of a woman), midwifery



- ob-struction—the act of blocking or clogging
oc-clusion (from *ob*-clusion)—the act of closure or state of being closed
per—through, thorough, excessive, very
per-cutaneous—through the skin (cutis)
per-forate—to pierce, bore through
per-meable—permitting the passage through
per-oxide—the oxide that contains the greatest number of oxygen atoms
post—behind, following, after (time or space), posterior
post-encephalitis—following or a sequel of encephalitis
post-febrile—after fever (febris)
post-ocular—behind the eye
post-partum—after birth
prae-, E. *pre*—before (in time or space), in front of, anterior
pre-frontal—the anterior portion of the frontal lobe
pre-gnancy—before birth, gestation
pre-mature—unripe, undeveloped, occurring before the appointed time
pre-oral—in front of the mouth
pro—before, in front of, forward
pro-cess—an advance or progress
pro-ductive—leading forward, capable of producing
pro-lapse—to fall, sink forward
pro-sector—one who prosects, demonstrator of anatomy
re-, *red* (before a vowel)—back, again
re-current—running back, returned
re-duce—lead back, replace
re-flex—bent back, reacting, reaction
red-integration—renewal, restoration of lost or injured parts
retro—back, backward, behind
retro-flexion—bending backward
retro-grade—going backward, moving backward
retro-nasal—posterior nasal
retro-version—turning backward
se—an inseparable prefix meaning apart, sundering
se-cretion—separation (esp. of various substances from the blood)
se-gregation—removal of certain parts from a mass
se-junction—breaking of continuity
sub-, *sup*—under (in position or degree), beneath, downward, nearly
sub-acute—not definitely acute
sub-cutaneous—under the skin



- sub-liminal—below the threshold (of sensation)
- sup-puration (from sub-puration)—the formation of pus
- super*—above (in position or degree), over, upper part, extreme
- super-acute—excessively sharp or acute
- super-ciliary—above the eyebrow
- super-numerary—in excess of the regular or normal number
- super-tension—extreme tension
- supra*—above, upon, over, upper
- supra-costal—above the rib (costa)
- supra-pubic—above the pubic arch
- supra-renal—above the kidney (ren)
- supra-sternal—above the breast (sternum)
- trans*—across, through, beyond
- trans-ference—carry across, displacement of symptoms or effect
- trans-fusion—pouring across, transfer of blood
- trans-plantation—grafting of tissues
- trans-urethral—through the urethra
- ultra*—beyond, in excess
- ultra-filtration—extra fine filtration
- ultra-ligation—ligation of a vessel beyond the origin of a branch
- ultra-violet—rays beyond the violet end of the spectrum
- ultra-virus—extra virus, filtrable virus

3. Suffixes

- ago, -igo (from L. ago—to drive)—gives an idea of activity
- lumb-ago—rheumatism of the lumbar region (lumbus—loin)
- prur-igo—itch (prurire—to itch)
- vert-igo—dizziness, giddiness (vertere—to turn around)
- alis, E. -al—an adjectival termination
- cruci-al—decisive (crux—cross)
- digit-al—relating or resembling a digit
- dors-al—relating to the back (dorsum)
- or-al—relating to the mouth (os, stem or-)
- culum, E. -cle—a diminutive
- corpus-cle—little body
- folli-cle—little bag (follis)
- ventri-cle—little belly, ventricle (venter)
- vesi-cle—little bladder (vesica)
- or—denotes a state or an agent
- don-or—giver (donare—to give)
- levat-or—one that lifts (levare—to lift)
- rub-or—redness (ruber—red)



- tum-or—swelling (tumescere—to swell)
- orium, Gr. -tērion—designates a place
 - sanat-orium—a place for treatment (sanare—to heal)
 - sens-orium—the seat of sensation (sensus—sense)
 - tent-orium—tent, an anatomical part resembling a tent or covering
- osus, E. -ous or -ose—an adjectival suffix
 - aque-ous—watery (aqua)
 - adip-ose—fatty (adepts, stem; adip—fat)
 - pil-ose—hairy (pilus—hair)
 - rug-ose—wrinkled (ruga—wrinkle)
- tas, E. -ty—denotes an abstract quality or idea
 - acidi-ty—the state of being acid (acidum)
 - immuni-ty—a state resistant to disease (immunis—free from service)
 - in-sani-ty—unsoundness of mind (insanus)
 - senili-ty—old age (senex—old)
- tio, Fr. and E. -tion—a suffix of verbal roots signifying an action or function
 - bi-furca-tion—a forking, division into branches (furca—fork)
 - in-flamma-tion—a morbid change in the tissues (flamma—flame)
 - palpa-tion—an examination by the hands (palpare—to feel)

4. Compound words

Latin is, comparatively speaking, poor in compound words. Instead of doubling up words in Latin, significant prefixes or suffixes are added, or the words—retaining their proper syntactical relations—are simply written together as one word (jurisdictio, paterfamilias, etc.). Still, the language contains many genuine compounds of all parts of speech: substantives, verbs, and adverbs.

Some nouns regularly appearing as first part of compounded words.

- ilio- (ilium—flank)
 - ilio-costal—relating to the ilium and ribs (costa)
 - ilio-femoral—relating to the ilium and thigh bone (femur)
 - ilio-lumbar—relating to the iliac and lumbar region (lumbus—loin)
 - ilio-sacral—relating to the ilium and sacrum
- latero- (latus, stem later—side)
 - latero-abdominal—pertaining to the side and abdomen
 - latero-flexion—a bending or curvature to one side (flectere—to bend)



latero-torsion—twisting to one side (torquere—to twist)

latero-version—turning to one side (vertere—to turn)

Some adjectives regularly appearing as first part of a compound.

albo—(albus—white)

albo-cinereous—ashen white (cinus, ciner—ash)

albo-ferrin—a light brown powder with an iron compound
(ferrum)

albu-lactin—trade name of a soluble lactalbumin (lac-milk)

anter-(anterior—before, in front of)

antero-grade—moving forward (gradior—to step)

antero-lateral—in front and to the side (latus)

antero-posterior—relating to both front and rear.

dextro—(dexter, dextr—right)

dextro-ocular—right eyed (oculus)

dextro-manual—right handed (manus)

dextro-pedal—right footed (pes, stem, ped-)

mal-(malus—bad, evil)

mal-adjustment—poor adjustment

mal-aria—bad air (aria)

mal-formation—congenital deformity

mal-practice—mistreatment of a disease

medio-(medius—middle)

medio-carpal—relating to the central part of the wrist (carpus)

medio-lateral—relating to the middle and one side

medio-tarsal—relating to the middle of the instep (tarsus)

multi-(multus—many)

multi-form—occurring in many forms

multi-gravida—a woman who has been pregnant many times

multi-lobar—having several lobes

multi-nuclear—having two or more nuclei

pluri-(plus, plur—more)

pluri-glandular—noting several glands or their secretion

pluri-gravida—a synonym for multi-gravida

pluri-para—a woman who has given birth to three or more
children

primi-(primus—first)

primi-para—a woman giving birth the first time

prim-ordial—primitive (ordire—to begin)

postero-(posterior—behind)

postero-lateral—behind and to one side



postero-parietal—relating to the posterior portion of the parietal lobe

semi—half, in part, somewhat

semi-comatose—in a condition of mild coma

semi-flexion—midway between extension and flexion

semi-lunar—half-moon shaped (luna)

semi-luxation—a partial dislocation (luxatio)

sesqui—one and a half, one half more

sesqui-basic—a salt with 3 equivalents of the acid for 2 of the base

sesqui-hora—an hour and a half

sinistro- (sinister, sinistr—left)

sinistro-cerebral—relating to the left cerebral hemisphere

sinistro-lateral—relating to the left side

sinistro-torsion—turning or twisting to the left

uni- (unus—one)

uni-axial—having one axis

uni-lateral—having one side, confined to one side only

uni-nuclear—having one nucleus

Some nouns usually appearing as second part of a compound word.

-form from L. forma—shape, form—indicating a resemblance to the stem word

cunei-form—wedge shaped (cuneus)

funi-form—rope like (funis)

fusi-form—spindle shaped (fusus)

-fuge from L. fugare—to expel, drive away

centri-fuge—an apparatus driving particles to the center

febri-fuge—reducing fever (febris)

vermi-fuge—an agent causing expulsion of intestinal worms (vermis)

5. Hybrid terms

Many medical terms are a mixture of Greek and Latin. Such terms are called *hybrid* terms. They may be Gr. words with L. endings, such as

bacteri-al	de-hydr-ation
derm-al	peri-card-ium
hem-al	

or L. words with Gr. endings, as

appendic-itis	fibr-oma
tonsill-itis	granul-oma, etc.



or a mixture of Gr. and L. in one compound such as

cancer-ology	para-sacral
colori-meter	post-hepatic
mono-nuclear	veno-tomy
oculo-gyric	
viscero-ptosis and many others.	

As a rule such terms should be avoided as contrary to the spirit of the language, although many of them are so well entrenched that it would be rather difficult, if not impossible, to replace them (for example, appendicitis, bacterial, dehydration, colorimeter, visceroptosis, etc.).*

References

From the voluminous literature on medical terminology I wish to mention only a few important works that could be consulted with profit:

Agard, Walter R., Medical Greek and Latin at a glance, 2nd ed., N.Y., Hoeber, 1937. A short, concise presentation of the subject with good classified lists.

Spilman, Mignonette, Medical Latin and Greek, Ann Arbor, Edwards Bros., 1946. Arranged somewhat differently from Agard's work, it starts with the Latin, being the more familiar language and leads slowly to the more difficult Greek. Has two good lists of the Latin and Greek roots in medical terminology.

Andrews, Edmund, Medical terminology, Annals of Medical History, 10:180-198, 1928. A good introduction to medical terminology; it is not a systematic presentation but a short bird's-eye view of the whole field, stressing the historical principles.

Andrews, Edmund, A history of scientific English. The story of its evolution based on a study of bio-medical terminology, N.Y., Smith, 1947. A posthumous work of the same author, elaborating on the above-mentioned article, studying all linguistic elements in medical terminology against their historical background. A real store-house of valuable data for the philologically minded.

Jaeger, Edmund C., A source book of biological names and terms, Springfield, Ill., Thomas, 1944. An alphabetical dictionary of biological names and terms with good derivations.

* To be concluded.