

499721 Medical Terminology (NU-2557)

“Structure of Medical Terms 2”

Natapol Supanatsetakul M.D., Ph.D.
Foreign Language in Medicine Learning Support Unit
(FLM - LSU)
Department of Pathology
Faculty of Medicine, Naresuan University

11 กันยายน 2557

Review structure of medical terms

- Terms built from Greek or Latin word parts
 - Prefixes
 - Suffixes
 - Combining forms
- Terms **NOT** built from Greek or Latin word parts
 - Eponyms
 - Acronyms
 - General English language
 - Other languages

Prefixes

- | | | |
|-----------|--------------------|--------------|
| • ana- | ย่ำ, ซ้ำ, อีก | anatomy |
| • acro- | แขนขา, ปลาย, ยอด | acromegaly |
| • con- | ร่วม | conjoined |
| • circum- | รอบ, โดยรอบ | circumcision |
| • ipsi- | ของตัวเอง เดียวกัน | ipsilateral |
| • meso- | กลาง | mesothelium |

Prefixes

- | | | |
|-----------|-------------------------------|----------------|
| • meta- | ภายหลัง, เกิน, เหนือ, เปลี่ยน | metastasis |
| • ortho- | ตรง, ถูก, ปกติ | orthopnea |
| • pachy- | หนา | pachyblepharon |
| • pseudo- | ปลอม, เทียม | pseudopodium |
| • syn- | ร่วมกัน | syndrome |
| • xero- | แห้ง | xerostomia |

Suffixes

- -malacia อ่อนนิ่มผิดปกติ osteomalacia
- -oid เหมือนกับ fibroid
- -ose คาร์โบไฮเดรต fructose
- -ase เอนไซม์ nuclease
- -poiesis การสร้าง hematopoiesis
- -penia พร่อง, น้อยกว่าปกติ leukopenia

Suffixes

- -sclerosis แข็ง atherosclerosis
- -stenosis แคบ, ตีบ esophagostenosis
- -spasm หดเกร็ง bronchospasm
- -tripsy ขบให้แตก lithotripsy
- -uria มีในปัสสาวะ pyuria

Combining forms

- dextr/o ข้างขวา dextrocardia
- sinistr/o ข้างซ้าย sinistrocerebral
- prim/i ครั้งแรก primigravida
- kary/o นิวเคลียส karyolysis
- nucle/o นิวเคลียส nucleotoxin

Combining forms

- lymph/o น้ำเหลือง lymphoma
- lymphocyt/o เซลล์ลิมโฟไซด์ lymphocytopenia
- lymphaden/o ต่อม้ำเหลือง lymphadenitis
- lymphangi/o ท่อน้ำเหลือง lymphangiophlebitis
- steth/o ทรวงอก stethoscopy

Generating a new medical terms

- Medical English era : International communication
- Built from Greek and Latin word parts
- Not from word parts: eponyms, acronyms, general English words, other languages
- Advancement of sciences and technology: To name or to call an innovation, new knowledge, new discovery
- Officially coined by a responsible committee or specialists
- Widely-used, referred to, or appeared in the medical literature and survived throughout the period of time

Medical coding for data processing

- Advancement of computer and information technologies
- Medical classification or medical coding is the process of transforming descriptions of medical diagnoses and medical procedures into universal medical code numbers
- Sources: health care record, hospital medical record
- Applications: statistical analysis, reimbursement, decision support systems, direct surveillance of epidemic outbreaks,

Types of coding systems

- **Statistical classifications – Nomenclatures**
- Diagnostic codes
 - Diseases, disorders, symptoms
- Procedural codes
 - Medical interventions
- Pharmaceutical codes
 - Medications
- Topographical codes
 - Specific location of the body
- Other codes

Medical Coding and Applications

- WHO-FIC
- ICD
- ICD-10-TM
- SNOMED, SNOMED-CT
- EHR
- DRG
- Thai DRG, CaseMix

WHO-FIC

- The World Health Organization - Family of International Classifications
- Comparison of health related data within and across populations and over time
- **Reference classifications :** <<http://www.who.int/classifications/en/>>
 - International Statistical Classification of Diseases and Related Health Problems (ICD)
 - International Classification of Functioning, Disability and Health (ICF)
 - International Classification of Health Interventions (ICHI)

ICD

- International Statistical Classification of Diseases and Related Health Problems
- The ICD is the global health information standard for mortality and morbidity statistics
- Monitoring of the incidence and prevalence of diseases, observing reimbursements and resource allocation trends, and keeping track of safety and quality guidelines
- First edition was published in 1893 as “The International List of Causes of Death” and has been periodically revised in series of editions, currently: ICD-10
- ICD-10 was endorsed by WHO in 1990, translated into 43 languages
- Alphanumeric code : I10 = Hypertension, J18.9 = Pneumonia, M00.91 = Pyogenic arthritis at shoulder
- ICD-11 will be finalized in 2017

ICD-10-TM

- International Classification of Diseases and Related Health Problem, 10th Revision, Thai modification
- บัญชีจำแนกโรคระหว่างประเทศ ฉบับแก้ไขครั้งที่ 10 ฉบับประเทศไทย (พิมพ์ครั้งแรกในปี พ.ศ. 2546 (ค.ศ.2003), ปัจจุบัน ฉบับปี 2012 ประกอบด้วยหนังสือ 5 เล่ม (รหัสโรค รหัสเหตุการณ์และการผ่าตัด ดรรชนี คู่มือการลงรหัส)
- ศูนย์มาตรฐานรหัสและข้อมูลสุขภาพแห่งชาติ กลุ่มข้อมูลทรัพยากรและมาตรฐานรหัสสุขภาพ กลุ่มภารกิจด้านข้อมูลข่าวสารสุขภาพ สำนักนโยบายและยุทธศาสตร์ กระทรวงสาธารณสุข<<http://thcc.or.th/index.php>>
- สมาคมเวชสารสนเทศไทย (Thai Medical Informatics Association, TMI) <<http://www.tmi.or.th/>>

SNOMED

- Systematized Nomenclature of Medicine (SNOMED)
- SNOMED was started in the U.S. by the College of American Pathologist in 1973 and revised periodically
- SNOMED Clinical Terms (SNOMED CT), the current version, belongs to International Health Terminology Standards Development Organization (IHTSDO) since 2007
- International, non-profit organization, based in Copenhagen, Denmark
- Current members (with financial support) : 19 countries
- To ensure safe, precise, and effective exchange of clinical and health related information using standardized clinical terminologies
- Website: <http://www.ihtsdo.org/>

SNOMED CT

- A systematically organized computer processable collection of medical terms providing codes, terms, synonyms, and definitions used in clinical documentation and reporting
- comprehensive, multilingual, standardized healthcare terminology
- Improve the accurate recording and sharing of EHR information
- Clinical findings, symptoms, diagnoses, procedures, body structures, organisms and other etiologies, substances, pharmaceuticals, devices and specimen
- ศูนย์พัฒนามาตรฐานระบบข้อมูลสุขภาพไทย, ศมสท. (Thai Health Information Standards Development Center) เครือสถาบันวิจัยระบบสาธารณสุข (สวรส.) กระทรวงสาธารณสุข <<http://www.this.or.th/index.php>>
- บัญชีข้อมูลยา และรหัสยามาตรฐานไทย (Thai Medicine Terminology, TMT)

Electronic Health Record (EHR)

- Systematic collection of electronic health information about an individual or population
- Generated and maintained within an institution (hospital, clinic, employer, insurance company)
- Information can be shared across facilities through a digital network
- Electronic medical record (EMR), Electronic patient record (EPR), personal health record (PHR)

Diagnosis-related group (DRG)

- To identify the “products” that a hospital provides for patients (in-patients) and classify into one of originally 467 groups
- DRGs are assigned by a “grouper” program based on ICD diagnoses, procedures, age, sex, discharge status, and the presence of complications or comorbidities
- DRGs have been used in the U.S. since 1982 to determine how much Medicare pays the hospital for each “product”, since patients within each category are clinically similar and are expected to use the same level of hospital resources

Thai DRG

- กลุ่มวินิจฉัยโรคร่วมไทย (สำหรับผู้ป่วยระยะเฉียบพลันในโรงพยาบาล)
- ศูนย์พัฒนากลุ่มโรคร่วมไทย, ศรท. (Thai CaseMix Centre) เครือสถาบันวิจัยระบบสาธารณสุข (สวรส.) กระทรวงสาธารณสุข รับผิดชอบการพัฒนาเครื่องมือจ่ายชดเชยด้วยระบบ CaseMix <http://www.thaicasemix.com/CMS/>
- ระบบการจัดกลุ่มผู้ป่วย เพื่อวัดผลผลิตของระบบบริการสุขภาพ และการพิจารณาชดเชยค่าตอบแทน ในการบริหารหน่วยบริการสุขภาพอย่างมีประสิทธิภาพ
- จัดกลุ่มโดยพิจารณาจาก การวินิจฉัยโรค, การผ่าตัดและหัตถการ, อายุ, ประเภทการจำหน่ายผู้ป่วย, จำนวนวันนอนโรงพยาบาล, น้ำหนักเด็กแรกเกิด
- ประกาศกระทรวงสาธารณสุข เรื่อง ราคากลางสำหรับกลุ่มวินิจฉัยโรคร่วม (Diagnosis Related Groups, DRGs) พ.ศ. 2541
- Thai DRG version 5.1.1, นักวิชาการและเจ้าหน้าที่เวชสถิติ (medical statistics, statistician) เวชระเบียน เวชสารสนเทศ (med informatics)

Approaches for Learning Medical Terminology

Some examples of learning approach:

(ศัพท์หมวด หรือ หมวดคำศัพท์ หรือ กลุ่มคำศัพท์)

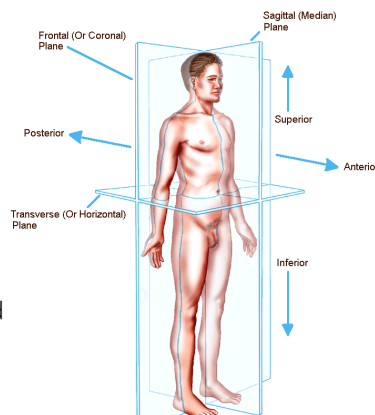
- I. Body as a whole
- II. Body systems
- III. Medical subjects
- IV. Medical specialties
- V. Clinical perspectives

I. Body as a whole

1. Body planes and directions
2. Body cavities
3. Quadrants and regions
4. Macroscopic-to-microscopic

1. Body Planes and Directions

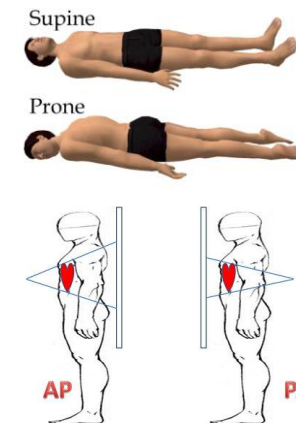
- Anatomical position
- Coronal plane (frontal plane)
- Midsagittal plane
- Transverse plane
- Other body directions and positions



<http://www.emsjunkie.com/wp-content/uploads/2012/07/Anatomic-Planes.png>

Coronal plane

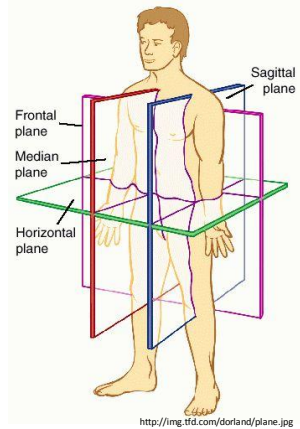
- Frontal plane
- Anterior or ventral
- Posterior or dorsal
- Prone position
- Supine position
- Anteriorly or anterior direction
- Posteriorly or posterior direction
- Anteroposterior direction (AP)
- Posteroanterior direction (PA)
- Anterior aspect, posterior aspect



http://www.jonathandownham.com/wp-content/uploads/2012/05/ap_vs_pa_opt.jpg

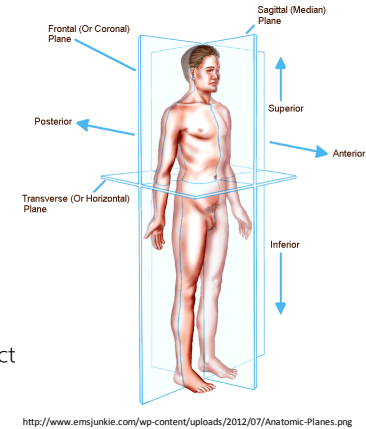
Midsagittal plane

- Median plane, sagittal plane
- Midline
- Medially (medial direction, toward midline)
- Laterally (lateral direction, away from midline to the side of the body)
- Right lateral aspect
- Left lateral aspect



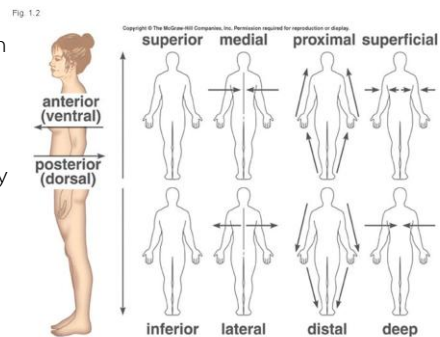
Transverse plane

- Horizontal plane
- Superior (top) section
- Inferior (bottom) section
- Superiorly, superior direction, cephalad direction
- Inferiorly, inferior direction, caudad direction
- Superior aspect, Inferior aspect



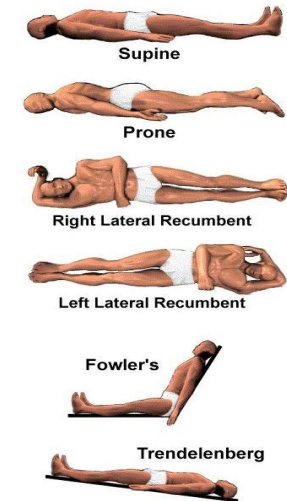
Other Body Directions and Positions

- Distally, distal direction
- Proximally, proximal direction
- Superficial, superficially
- Deep, deeply
- External, externally
- Internal, internally



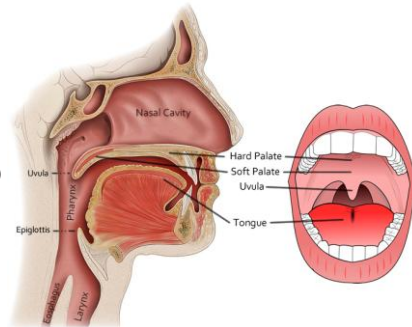
Body Positions

- Supine position
- Prone position
- Lateral recumbent position
- Sims position
- Fowler position
- Trendelenburg position
- Lithotomy position
- Recovery position
- sitting, standing, squatting etc.

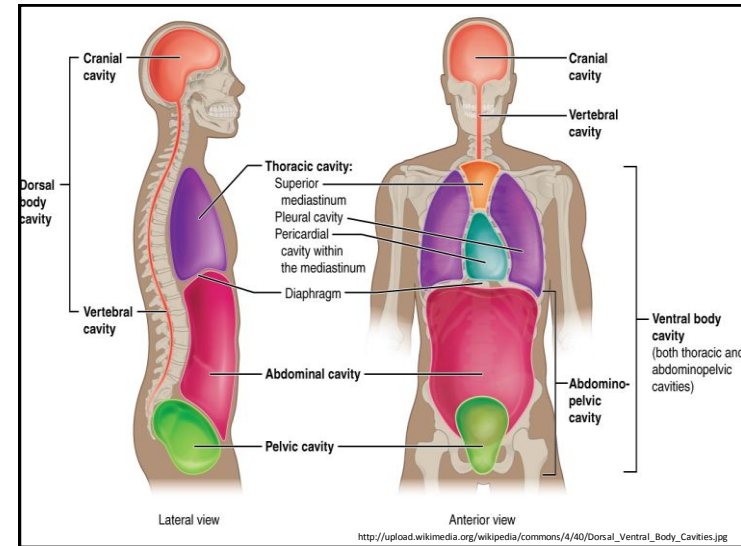


2. Body Cavities

- Nasal cavity
- Oral cavity
- Dorsal cavity
 - Cranial cavity
 - Spinal cavity (spinal canal)
- Ventral cavity
 - Thoracic cavity
 - Abdominal cavity
 - Pelvic cavity
 - Abdominopelvic cavity



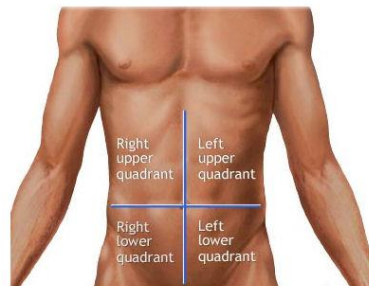
<http://www.speechinja.com/2013/08/ANAT001-Gro-pharynxAnatomy8.html>



http://upload.wikimedia.org/wikipedia/commons/4/40/Dorsal_Ventral_Body_Cavities.jpg

3. Quadrants and Regions

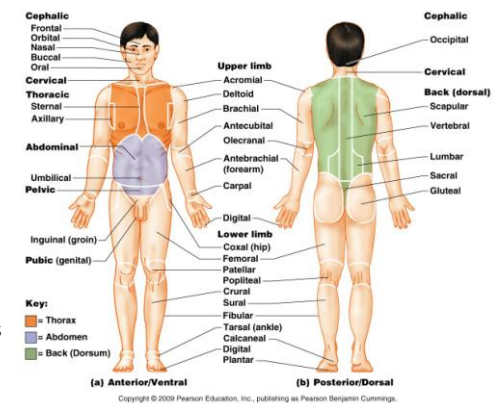
- Abdominopelvic quadrants
- Right upper quadrant (RUQ)
- Left upper quadrant (LUQ)
- Right lower quadrant (RLQ)
- Left lower quadrant (LLQ)



<http://www.medicalbillingandmedicalcoding.com/image-files/commonanatomytermsquadrants.jpg>

Regions

- Head and neck
- Thorax
- Back
- Pectoral girdle and upper limb
- Pelvic girdle and lower limb
- Abdomen and Pelvis



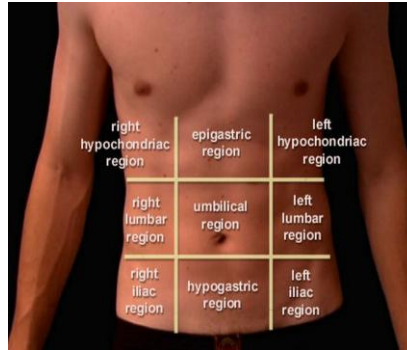
(a) Anterior/Ventral (b) Posterior/Dorsal

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http://legacy.owensboro.kctcs.edu/gcaplan/anat/notes/01_05Figure-L.jpg

Abdominopelvic Regions

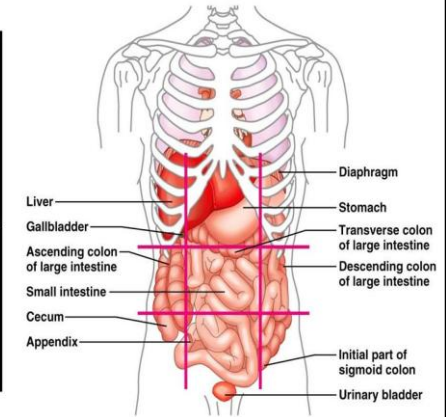
- Right hypochondriac region
- Epigastric region
- Left hypochondriac region
- Right lumbar region
- Umbilical region
- Left lumbar region
- Right iliac (inguinal) region
- Hypogastric (pubic) region
- Left iliac (inguinal) region



<http://healthfixit.com/wp-content/uploads/2013/03/nine-abdominal-regions-or-areas.jpg>



(a)



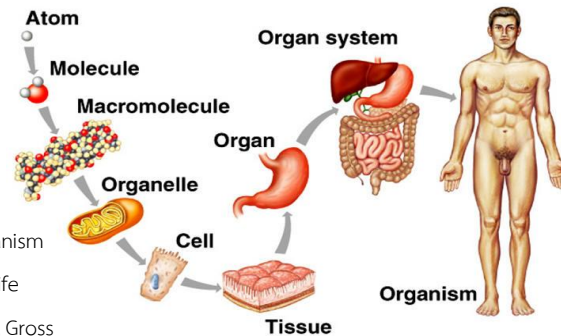
(b)

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http://classconnection.s3.amazonaws.com/279/flashcards/1914279/jpg/9_abdominopelvic_regions1348255094923.jpg

4. Macroscopic-to-Microscopic

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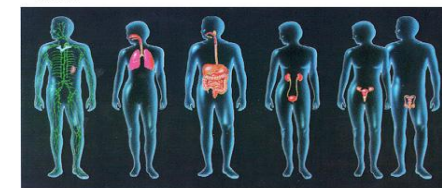
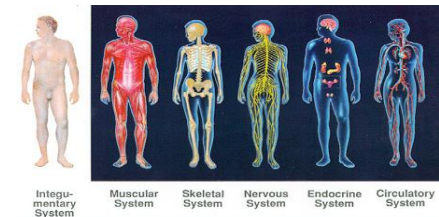


- Level of organism
- Hierachy of life
- Macroscopic, Gross
- Microscopic, microscope, microscopy

<http://legacy.owensboro.kctcs.edu/gcapijan/anat/notes/APIK20No20.jpg>

II. Body systems

- Cardiovascular system
- Blood, Lymphatic, and Immune system
- Respiratory system
- Gastrointestinal system
- Urinary system
- Reproductive system
- Musculoskeletal system
- Nervous system and special sense organs
- Endocrine system
- Integumentary system



<http://bodysystemsdesign.com/wp-content/uploads/2013/03/11-body-systems.jpg>

III. Medical subjects

- Anatomy
 - Embryology
 - Histology
- Physiology
- Biochemistry
- Microbiology
- Molecular biology
- Pharmacology
- Pathology
- Medicine, Medical sciences



<http://effinspell.com/images/Hermes2C.jpg>

IV. Medical specialties

- Internal medicine
 - Gastroenterology
 - Pulmonology
 - Cardiology
 - Hematology
 - Dermatology
 - Neurology
 - Endocrinology
 - Urology
- Pediatrics
- Obstetrics and Gynecology
- Surgery
- Orthopedics, Orthopedic surgery



http://upload.wikimedia.org/wikipedia/commons/1/16/Asclepius_and_hygieia_relief.jpg

IV. Medical specialties

- Ophthalmology
- Otolaryngology
- Psychiatry
- Rehabilitation medicine
- Radiology and Radiotherapy
- Pathology
- Forensic medicine
- Family medicine
- Community medicine,
Occupational medicine



http://upload.wikimedia.org/wikipedia/commons/1/16/Asclepius_and_hygieia_relief.jpg

V. Clinical perspectives

1. Patient interview and history taking
2. Physical examination
3. Laboratory investigation
4. Diagnosis
5. Treatment



<http://ftpmirror.your.org/pub/wikimedia/images/wikipedia/th/c/c/6/Nuhosp.JPG>

V. Clinical perspectives

1. Patient interview and history taking

- Chief complaint (CC), present illness (PI), past medical history (PMH)
family history (FH), social history (SH), personal history (PH)
- Symptomatology
- Symptoms:
 - pain, myalgia, otalgia (-algia, -algisia)
 - nausea, vomiting, hematemesis (-emesis)
 - diarrhea, rhinorrhea, amenorrhea (-rhea)
 - dysuria, dysphagia, dyspnea (dys-)
 - fever, hyperthermia, hypothermia
 - paresis, weakness, paralysis

V. Clinical perspectives

2. Physical examination

- Basic skills : inspection, palpation, auscultation, percussion
- Vital's sign (VS) : T, BP, HR (P), RR
- Abnormal signs :
 - Babinski sign
 - Kernig sign and Brudzinski sign
 - Hoffmann sign
 - Chvostek sign etc.
- Medical tools for general physical examination

V. Clinical perspectives

3. Laboratory investigation

- Anatomical pathology
 - histopathology, cytopathology, autopsy
- Clinical pathology (laboratory medicine)
 - CBC, peripheral blood smear, urine analysis
- Radiology (diagnostic radiology)
 - radiography, ultrasonography, CT, MRI,
 - medical imaging

V. Clinical perspectives

4. Diagnosis

- Diseases, disorders, syndromes
- Etiology, pathogenesis, pathophysiology, pathologic lesion, pathology
- Disease categories :
 - congenital, hereditary
 - degenerative
 - inflammation, infectious, nosocomial
 - hemodynamic
 - neoplastic
 - environmental, nutritional, occupational
 - trauma, accident
 - idiopathic, immunologic
 - iatrogenic

V. Clinical perspectives

5. Treatment

- Medical procedures, medical devices
- Surgical procedures, surgical tools
- Anesthesiology
- Medications and pharmacology
- Chemotherapy, gene therapy
- Radiotherapy, nuclear medicine
- Rehabilitation medicine, alternative medicine

Approach used in this course

- **Body systems**
 - Body system I : CVS, Blood-lymphatic-immune, Respiratory
 - Body system II : GI, KUB
 - Body system III : Male-female reproductive, Endocrine
 - Body system IV : CNS, Eye, ENT
 - Body system V : Integumentary, musculoskeletal
- **Medical specialties**
 - Psychiatry, Oncology, Pathology
- **Languages**
 - Thai, English, French, German, Italian

Approach used in this course

- **In each body system :**
 1. Learning medical terms :
 - Areas of study and specialist
 - Structure and function
 - Signs and symptoms
 - Laboratory and diagnostic investigation
 - Diseases and disorders
 - Medical and surgical procedures
 - Medications
 - Miscellaneous
 2. Prefixes – Suffixes – Combining forms
 3. Eponyms – Acronyms

Homework

- **Course assignment :** Self-directed learning
 - คัดเลือกหัวข้อ หรือหมวดคำศัพท์ตามความสนใจของกลุ่ม
 - การศึกษาในประเด็นหรือหัวข้อเรื่องเฉพาะ เกี่ยวกับคำศัพท์แพทย์
 - คัดเลือกรายการคำศัพท์เพื่อการเรียนรู้ (10-15 คำ)
 - นำเสนอหัวข้อรายงานสัปดาห์หน้า