



IMED1004 Semester Note

2025, SEMESTER 2

BELIEVE IN YOURSELF

IMED1004 Note – Week 1

SL2 Introduction to Pathology

- **Pathology** (patho = disease/suffering; logy = study)
 - **Pathology = the study of disease/disordered function of structural, biochemical & functional changes in cells, tissues & organs**
 - **Dis-ease = lack of ease**
 - Abnormal variation in structure/function of part of the body
 - *Health (WHO def) = a state of complete physical, mental & social well-being
 - **The nature & causes of diseases –**
 - Investigate cause
 - Analysis of blood, body fluids & tissues
 - Making diagnosis
 - Disease prevention
 - Treatment decisions & monitoring
 - Determining the cause of death
 - Medical research
 - **Intersects life cycle** – pre-conception 孕前, gestation 孕期, growth, development, aging & death
 - Look for –
 - **Symptoms (things patient feels)** – departure from normal function/feeling, noticed by patient
 - **Physical findings** – objective evidence, noticed by patient/doc on clinical examination
 - **Investigations** – pathology & radiology (structural changes)
- **Etiology 病因學 & pathogenesis of disease**
 - **Etiology – study of cause of the disease (for management & prevention)**
 - **Primary etiology** – known cause
 - Major factor:
 - **Genetic** – inherited & congenital malformations
 - **Acquired** – vascular events, inflammatory/infective, trauma, autoimmune, metabolic disorders, nutrition & environment, iatrogenic 醫源性, neoplastic 與瘤有關, degenerative 退化的
 - **Idiopathic 原因不明；自發性** – unknown cause
 - **Pathogenesis – mechanism of development/progression of disease**
 - **Morphological changes – structural alterations in cells/tissues**
 - Used to – diagnose a disease
 - Observed by:
 - **Naked eye** – gross morphologic changes (gross lesions)
 - **Microscopic** – microscopic changes (microscopic lesions)
 - Can lead to functional alterations → clinical signs & symptoms
 - **Functional derangements 錯亂 & clinical manifestations**
 - Genetic, biochemical & structural changes in cells/tissues → **influence normal function**
 - Determine:
 - **Clinical features – signs & symptoms**
 - **Course 進程**
 - **Prognosis 預斷 of disease**
- **Cell injury – failing to adapt under stress and undergo certain change**
 - **Cellular responses**
 - Histology changes
 - Or intracellular accumulations occur
 - Extracellular accumulations – abnormal products build up in the interstitium
 - **Reversible - recover from injury**
 - **Adaptation**
 - **Atrophy 萎縮/hypertrophy 肥大**
 - Increase/decrease in size of cells tissues

- **Hyperplasia 增生**
- **Metaplasia 化生** – replace mature cell with another type of mature cell (not normal for the tissue) [adaptive response]
- **Neoplasia 瘤形成** – new, uncontrolled growth of cells forming neoplasms/tumors
- **Irreversible – point of no return - die**
 - **Necrosis – premature death of cells**
 - Cell membranes fall apart, cell enzymes leak & digest cell
 - Elicits local host reaction – inflammation
 - May persist for some time/digested by enzymes
 - Intracellular proteins leakage allow detection of tissue-specific necrosis using blood/serum
 - **Apoptosis – programmed cell death**
 - Eliminate potentially harmful cells, outlived their usefulness, irreparably damaged cells
 - Activation of cellular enzymes (caspases) → nuclear DNA & cytoplasmic proteins degrade
 - Apoptotic bodies break off, consumed by phagocytes
 - Plasma membrane (intact) altered
 - Little leakage – no inflammation
- **Classify etiology & pathogenesis of disease**
 - **Congenital**
 - **Genetic** – chr/gene defects
 - **Inherited**
 - **Teratogen** – affects normal growth/structure/function of developing embryo/fetus

§L3 Health and Society

- **Health (is not only absence of disease & illness)**
 - **Being healthy (wellbeing – positively constructed good health status)**
 - **Integrity 完整 state** – anatomic, physiologic, psychological
 - **Ability to deal with stress** – physical, biological, psychological, social
 - **Ability to perform personally valued roles** – family, work, community
(Determinants of health – biology & genetics, personal behaviors, health services, social & economic environment, physical environment)
 - Indigenous def of health: social, emotional & cultural well-being of the whole community
 - **Factors of poor health**
 - **Disease**
 - Biomedical paradigm 範例
 - Occurs when components fail to function
 - **Illness**
 - How an individual experiences disease
 - Incorporates social, psychological & spiritual aspects
- **Models of health support – improve health status**
 - By preventing & treating disease (occurs at clinical & population levels – much benefit to populations but little to individual)
 - **Primary, secondary and tertiary disease prevention – relation to natural history of disease**
 - **Primary** – stop the disease from occurring e.g. vaccination
 - **Secondary** – early detection and treatment e.g. screening for hypertension (screening provides early opportunity to halt)
 - Interventions
 - Halt disease progression
 - Shorten duration of disease
 - Reduce complications
 - **Tertiary** – reduce progress/complications of disease e.g. rehabilitation after stroke,

Social, economic, environmental, psychological

medication to manage symptoms

- **Recovery is impossible** – focuses on restoring function & quality of life
- Disease is symptomatic
 - Interventions
 - Halt disease progression
 - Reduce disease impact
 - Measure of disease prevention effectiveness – e.g. coronary heart disease: DALY/1000 people
- **Health promotion & social determinants of health**
 - Strategies & apply frameworks
 - **Ottawa charter (1986)**
 - Prerequisites for health – peace, shelter, education, food, income, a stable ecosystem, social justice, equity
 - **Shanghai declaration (2016)**
 - 3 pillars for development of health promotion
 - Good governance
 - Healthy cities
 - Health literacy
 - Call to action: make bold political choices for health
 - Social mobilization
 - **WHO focus areas of health promotion**
 - **Creating healthy cities**
 - Healthy spaces – health-supportive
 - Provide basic sanitation & hygiene needs
 - Access to health care
 - **Improving health literacy (empower people to improve their health)**
 - Available & understandable information
 - Can be counselling, education, promotion
 - **Promoting health & well-being**
 - **Promoting health through good governance**
 - Factor health into the decisions they make, make sure health promotion priorities are determined by the affected communities
 - Social mobilization – call to action