The Calgary Black Book:
Approaches to Medical Presentations

8th Edition (2015/2016)

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FACULTY OF MEDICINE | UNIVERSITY OF CALGARY

THE CALGARY BLACK BOOK

Approaches to Medical Presentations

Eighth Edition (2015)

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The Calgary Black Book: Approaches to Medical Presentations

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Medical presentation schemes conceived by Henry Mandin.
The Calgary Black Book Project founded by Brett Poulin.

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Message from the Editors

Welcome to the Eighth Edition of The Calgary Black Book! This ongoing project is the result of the hard work and dedication of medical students and faculty at the University of Calgary. We are proud that healthcare practitioners and trainees across Canada find the Black Book to be a useful tool.

In an effort to increase its potential as a learning tool, we have directed our efforts towards developing a case based online tool to help learners work through the Black Book schemes. We hope that working through cases with the schemes will add some clinical context and another dimension to the Black Book as a learning tool. We hope to make this more broadly available as the database grows with future generations of Black Book editors. We are always interested in feedback or suggestions to improve the Black Book; please direct any such communications to:
blackbk@ucalgary.ca

Thank you,

Jared McCormick & Hai Chuan (Carlos) Yu

Introduction to Schemes

The material presented in this book is intended to assist learners in organizing their knowledge into information packets, which are more effective for the resolution of the patient problems they will encounter. There are three major factors that influence learning and the retrieval of medical knowledge from memory: meaning, encoding specificity (the context and sequence for learning), and practice on the task of remembering. Of the three, the strongest influence is the degree of meaning that can be imposed on information. To achieve success, experts organize and "chunk" information into meaningful configurations, thereby reducing the memory load.

These meaningful configurations or systematically arranged networks of connected facts are termed schemata. As new information becomes available, it is integrated into schemes already in existence, thus permitting learning to take place. Knowledge organized into schemes (basic science and clinical information integrated into meaningful networks of concepts and facts) is useful for both information storage and retrieval. To become excellent in diagnosis, it is necessary to practice retrieving from memory information necessary for problem resolution, thus facilitating an organized approach to problem solving (scheme-driven problem solving).

The domain of medicine can be broken down to 121 (+/- 5) clinical presentations, which represent a common or important way in which a patient, group of patients, community or population presents to a physician, and expects the physician to recommend a method for managing the situation. For a given clinical presentation, the number of possible diagnoses may be sufficiently large that it is not possible to consider them all at once, or even remember all the possibilities. By classifying diagnoses into schemes, for each clinical presentation, the myriad of possible diagnoses become more manageable 'groups' of diagnoses. This thus becomes a very powerful tool for both organization of knowledge memory (its primary role at the undergraduate medical education stage), as well as subsequent medical problem solving.

There is no single right way to approach any given clinical presentation. Each of the schemes provided represents one approach that proved useful and meaningful to one experienced, expert author. A modified, personalized scheme may be better than someone else's scheme, and certainly better than having no scheme at all. It is important to keep in mind, before creating a scheme, the five fundamentals of scheme creation that were used in the development of this book. If a scheme is to be useful, the answers to the next five questions should be positive:

1. Is it simple and easy to remember? (Does it reduce memory load by “chunking” information into categories and subcategories?)
2. Does it provide an organizational structure that is easy to alter?
3. Does the organizing principle of the scheme enhance the meaning of the information?
4. Does the organizing principle of the scheme mirror encoding specificity (both context and process specificity)?
5. Does the scheme aid in problem solving? (E.g. does it differentiate between large categories initially, and subsequently progressively smaller ones until a single diagnosis is reached?)

By adhering to these principles, the schemes presented in this book, or any modifications to them done by the reader, will enhance knowledge storage and long term retrieval from memory, while making the medical problem-solving task a more accurate and enjoyable endeavour.

Dr. Henry Mandin
Dr. Sylvain Coderre

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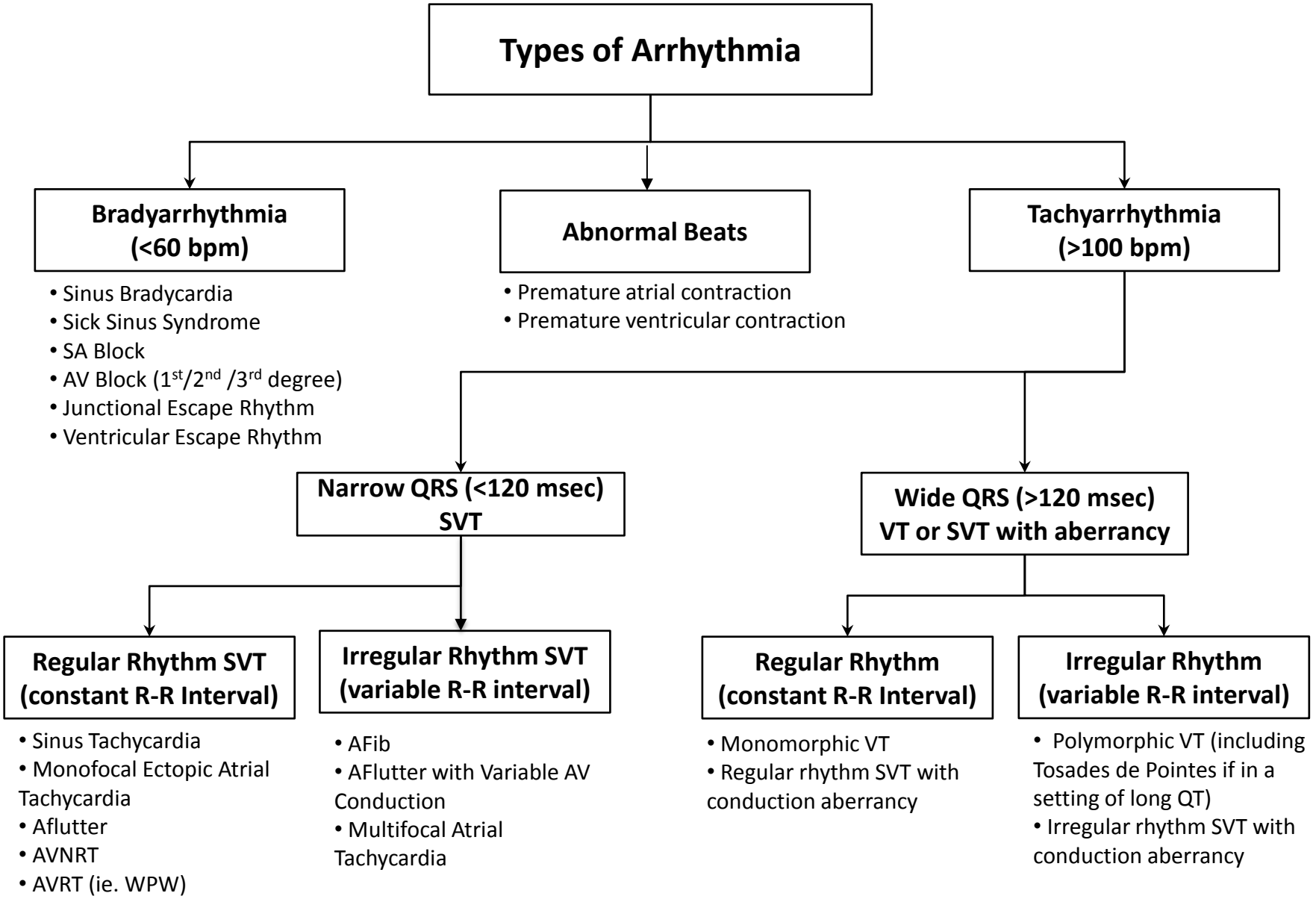
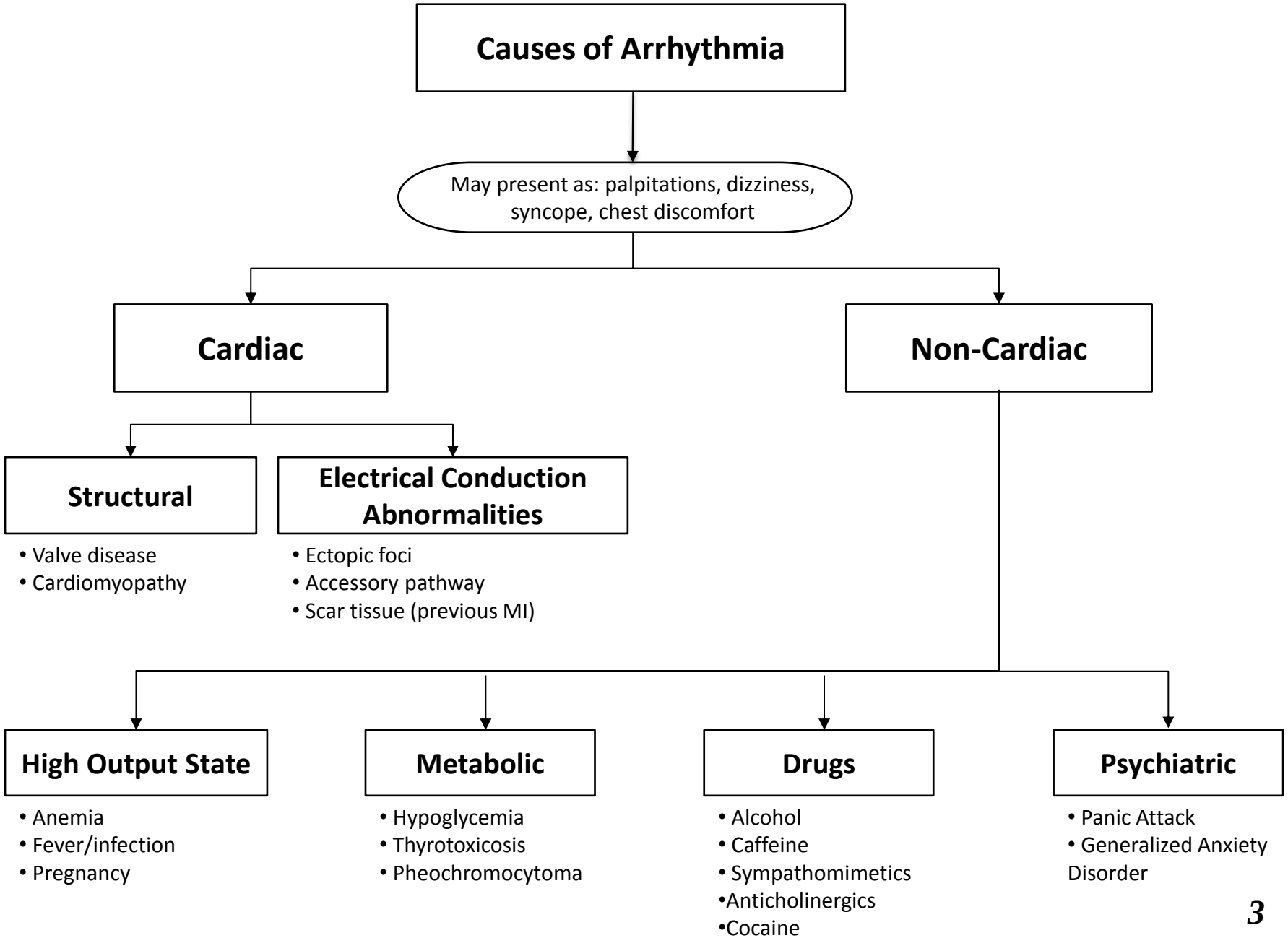
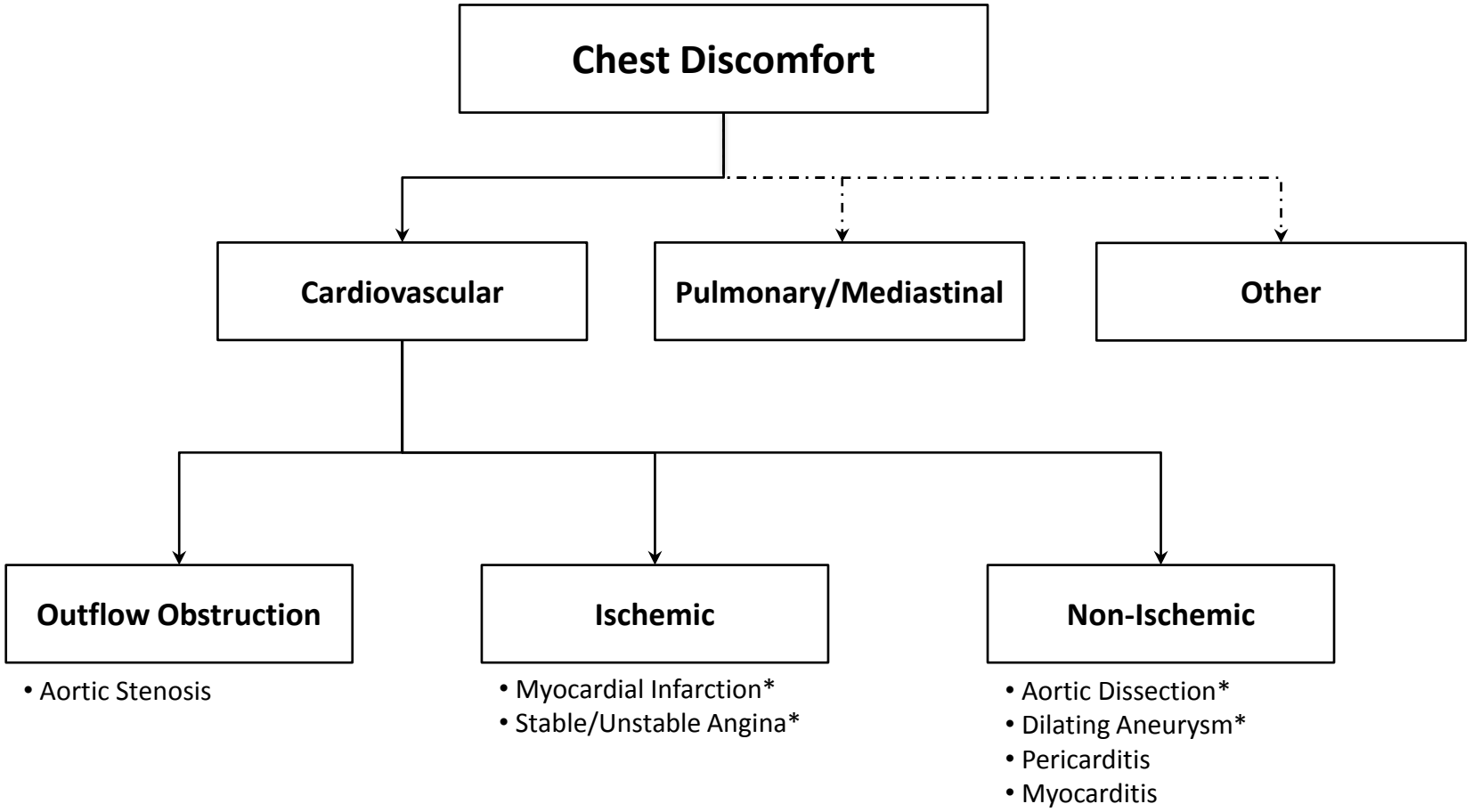
ABNORMAL RHYTHM 1



ABNORMAL RHYTHM 2

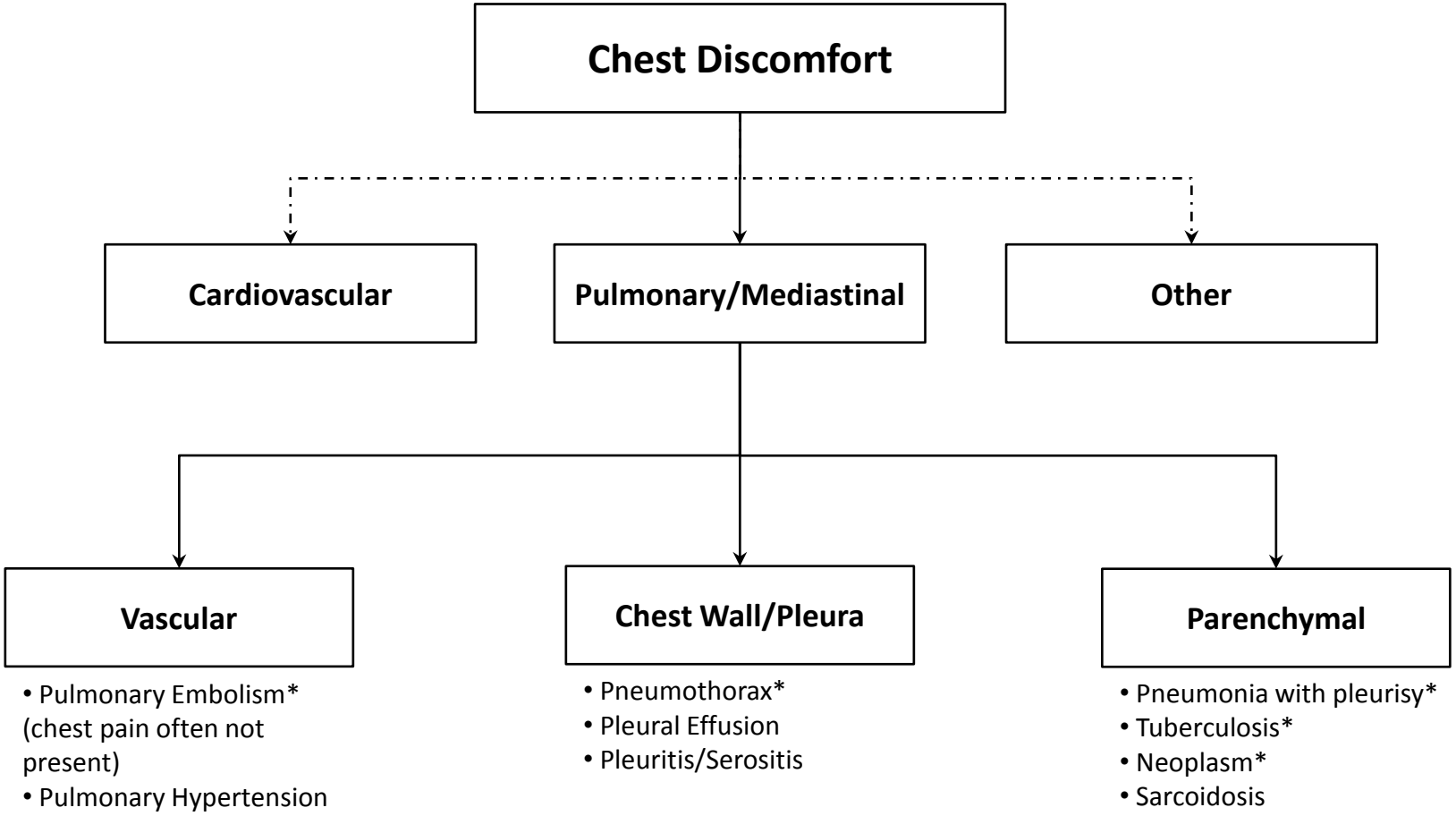


CHEST DISCOMFORT: Cardiovascular



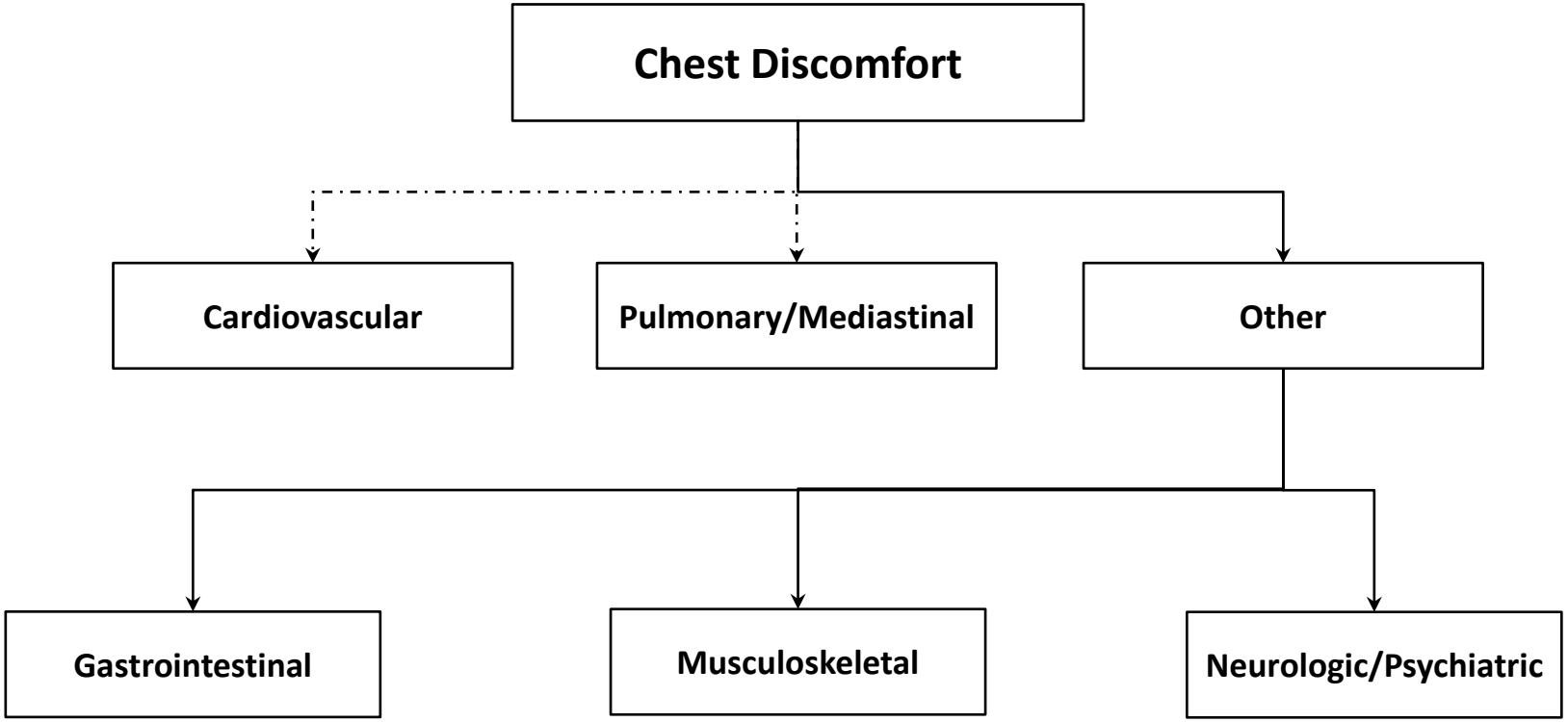
** Denotes acutely life-threatening causes*

CHEST DISCOMFORT: Pulmonary/Mediastinal



** Denotes acutely life-threatening causes*

CHEST DISCOMFORT: Other



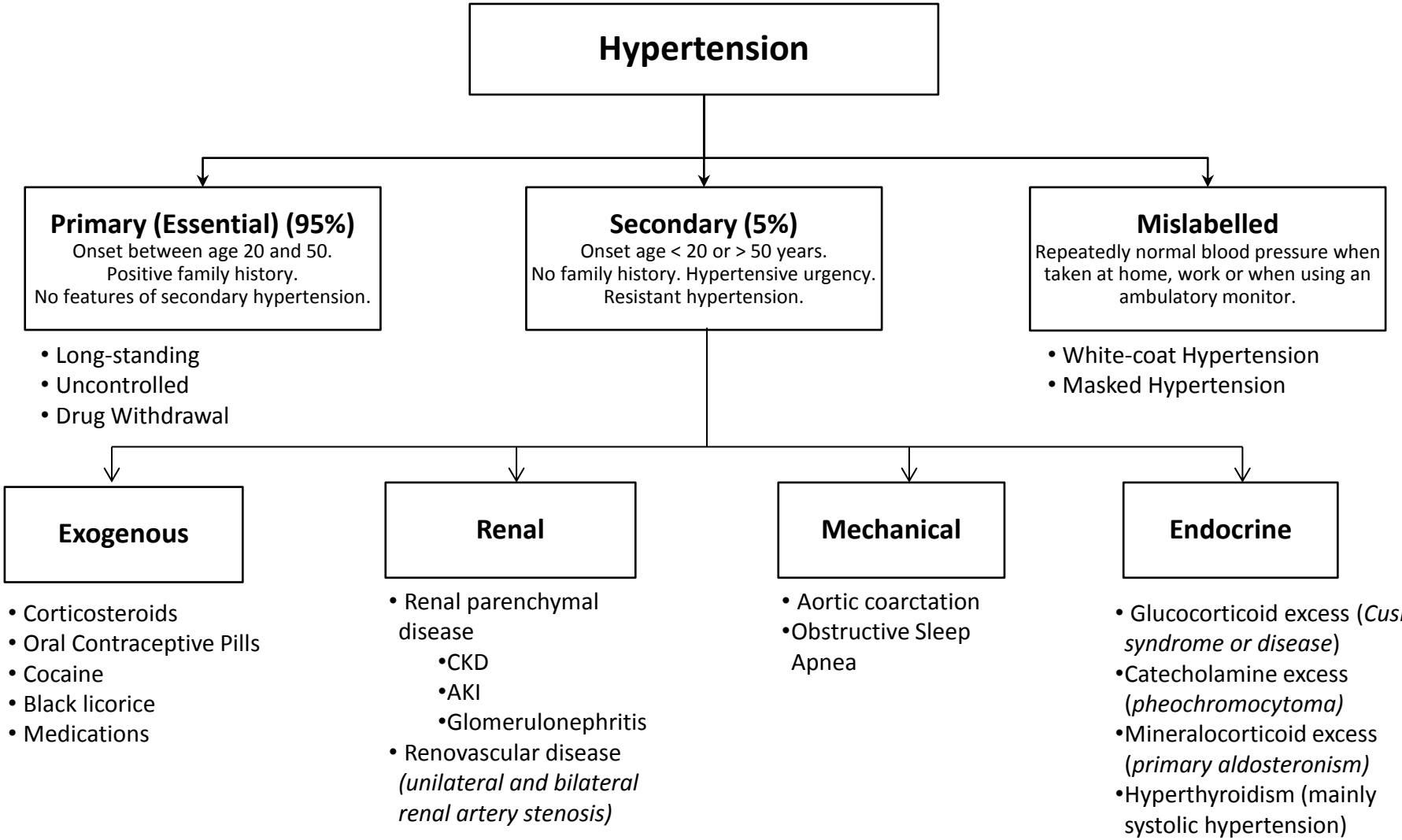
- Gastro-Esophageal Reflux Disease
- Biliary Disease
- Peptic Ulcer Disease
- Pancreatitis*
- Esophageal Spasm
- Esophageal Perforation*

- Costochondritis
- Muscular Injury
- Trauma

- Anxiety/Panic
- Herpes Simplex Virus/Post-Herpetic Neuralgia
- Somatoform Disorder
- Spinal Radiculopathy

** Denotes acutely life-threatening causes*

HYPERTENSION



Definition of hypertension:
Systolic BP ≥ 140mmHg or Diastolic BP ≥ 90mmHg
Isolated systolic hypertension in the elderly: ≥ 160mmHg
Diabetes mellitus ≥ 130/80mmHg
Note: In children, the definition of hypertension is different (either systolic or diastolic BP >95%ile), **but the approach is the same**.

Hypertensive Urgency: BP usually >180/110mmHg or asymptomatic Diastolic BP >130mmHg with target organ damage usually present but not acutely changing
Hypertensive Emergency: BP usually >220/140mmHg with evolving target organ damage

HYPERTENSION IN PREGNANCY

Hypertension in Pregnancy
DBP ≥ 90mmHg, based on two measurements

Clinical Pearl: BP should always be measured in a sitting position for a pregnant patient.

Pre-existing Hypertension
Before Pregnancy OR
<20 weeks gestational age

Gestational Hypertension
Previously normotensive,
>20 weeks gestational age

No Proteinuria

Chronic Hypertension
- Primary
- Secondary

Proteinuria (≥0.3g/24hr urine) **OR one or more Adverse Conditions***
- Pre-existing Hypertension with Pre-Eclampsia

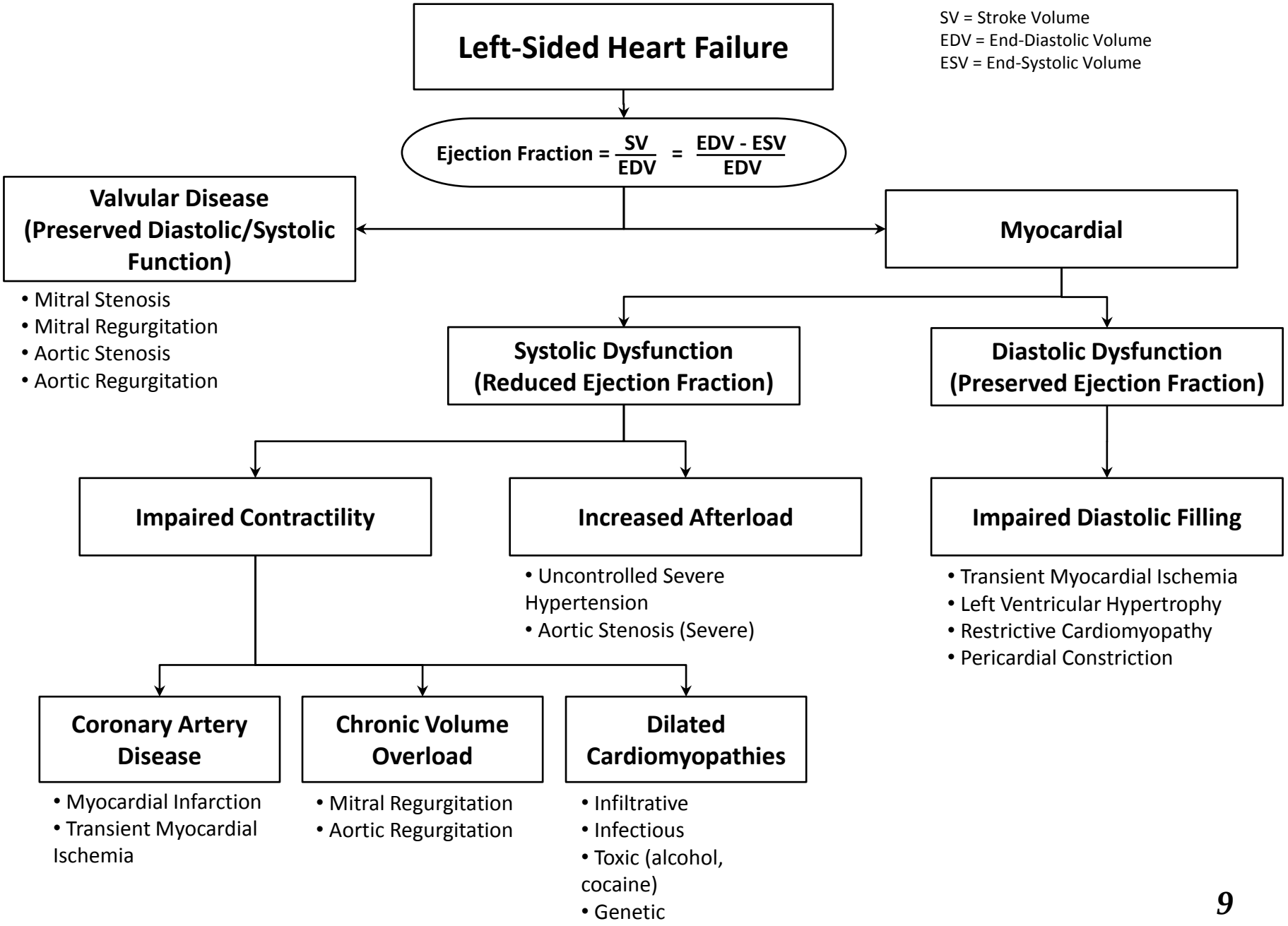
No Proteinuria
- Gestational Hypertension

Proteinuria (≥0.3g/24hr urine) **OR one or more Adverse Conditions***
- Gestational Hypertension with Pre-Eclampsia

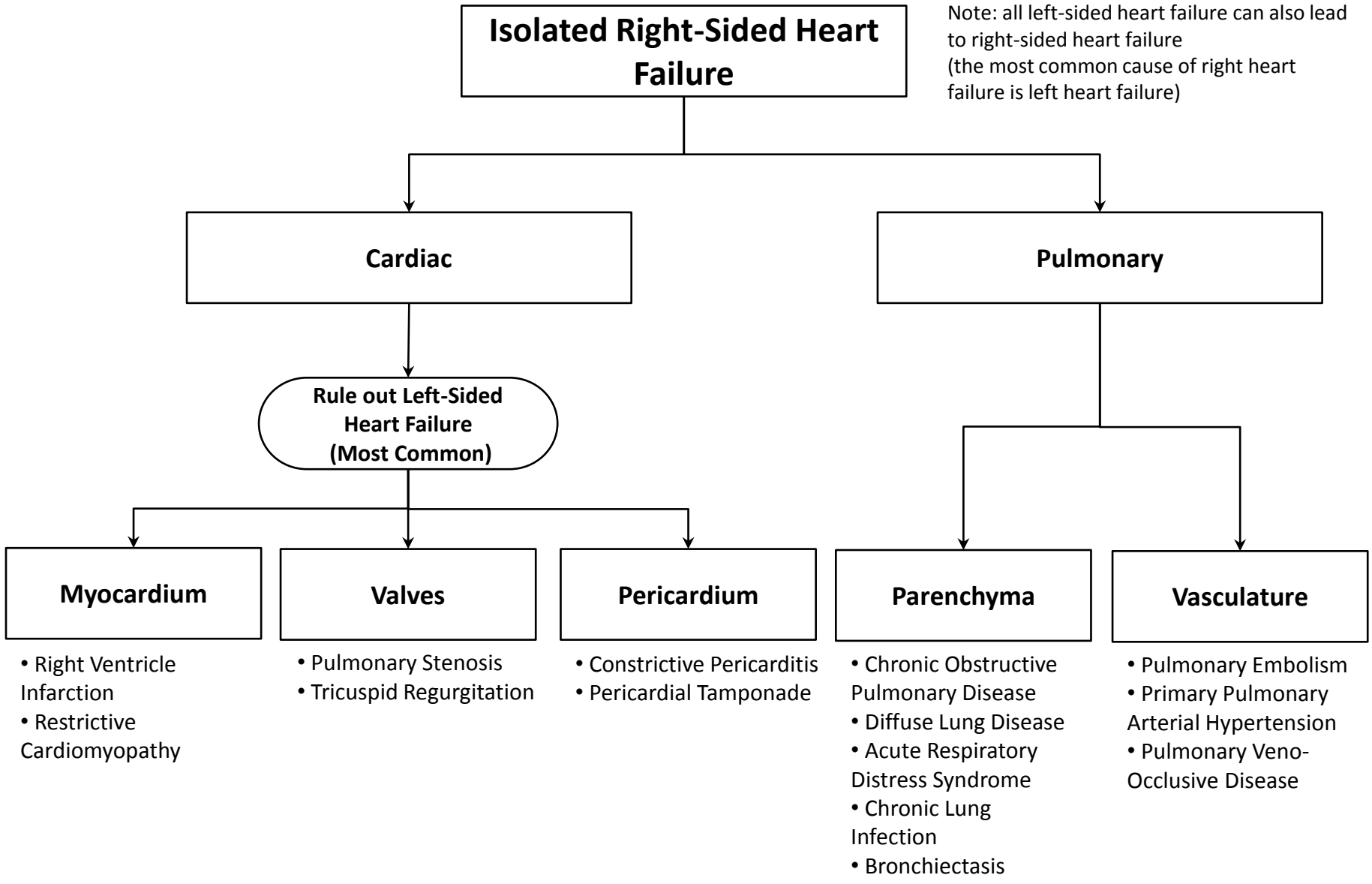
Pre-Eclampsia + Seizures/Coma
- Eclampsia

*Adverse Conditions: (SOGC, 2008)	Maternal	Fetal
	• Persistent or new/unusual headache • Visual disturbances • Persistent abdominal/RUQ pain • Severe nausea or vomiting • Chest pain/dyspnea • Severe hypertension • Pulmonary Edema • Suspected placental abruption • Elevated serum creatinine/AST/ALT/LDH • Platelet <100x109/L • Serum albumin <20g/L	• Oligohydramnios • Intrauterine growth restriction • Absent/reversed end-diastolic flow in the umbilical artery • Intrauterine fetal death

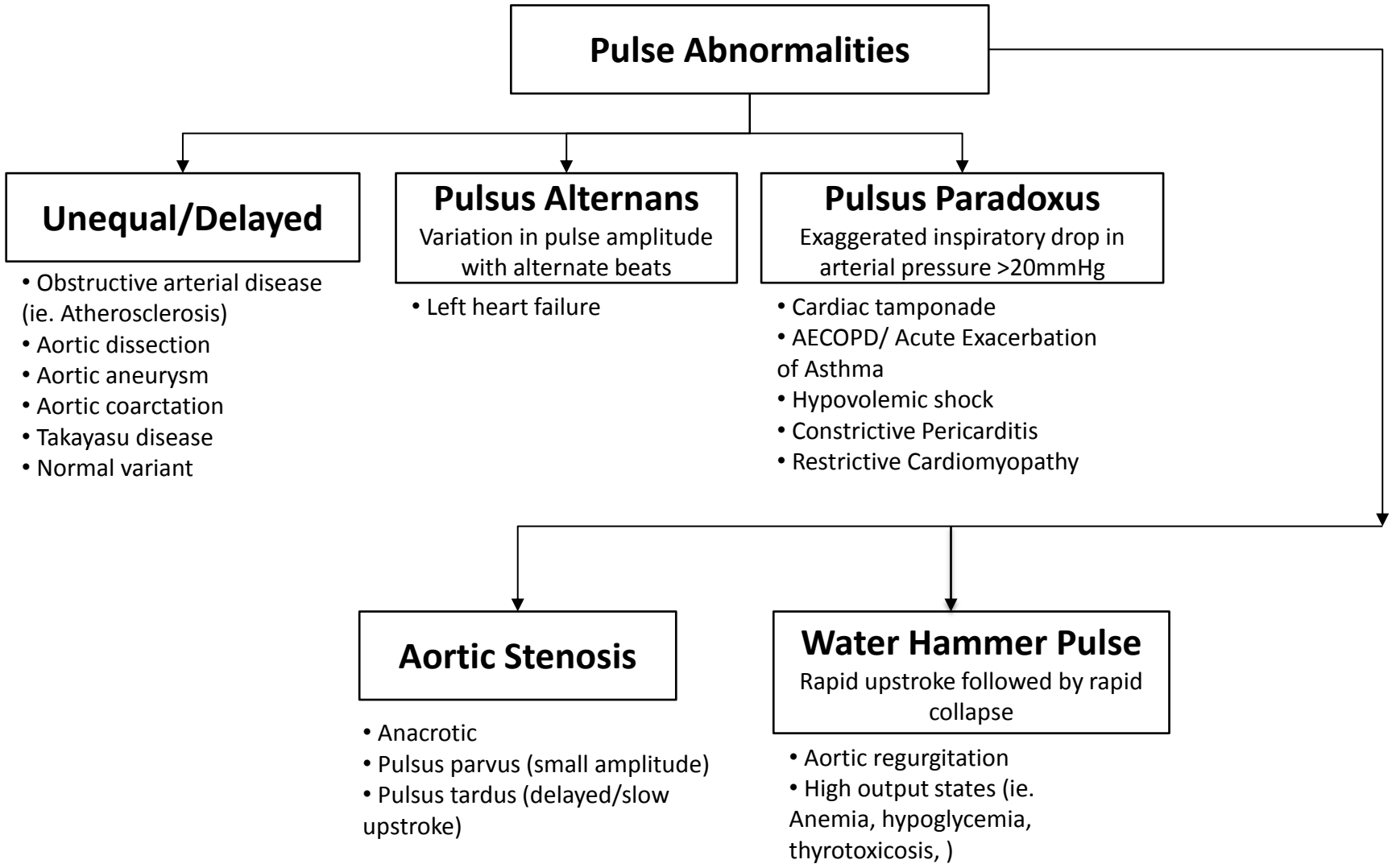
LEFT-SIDED HEART FAILURE



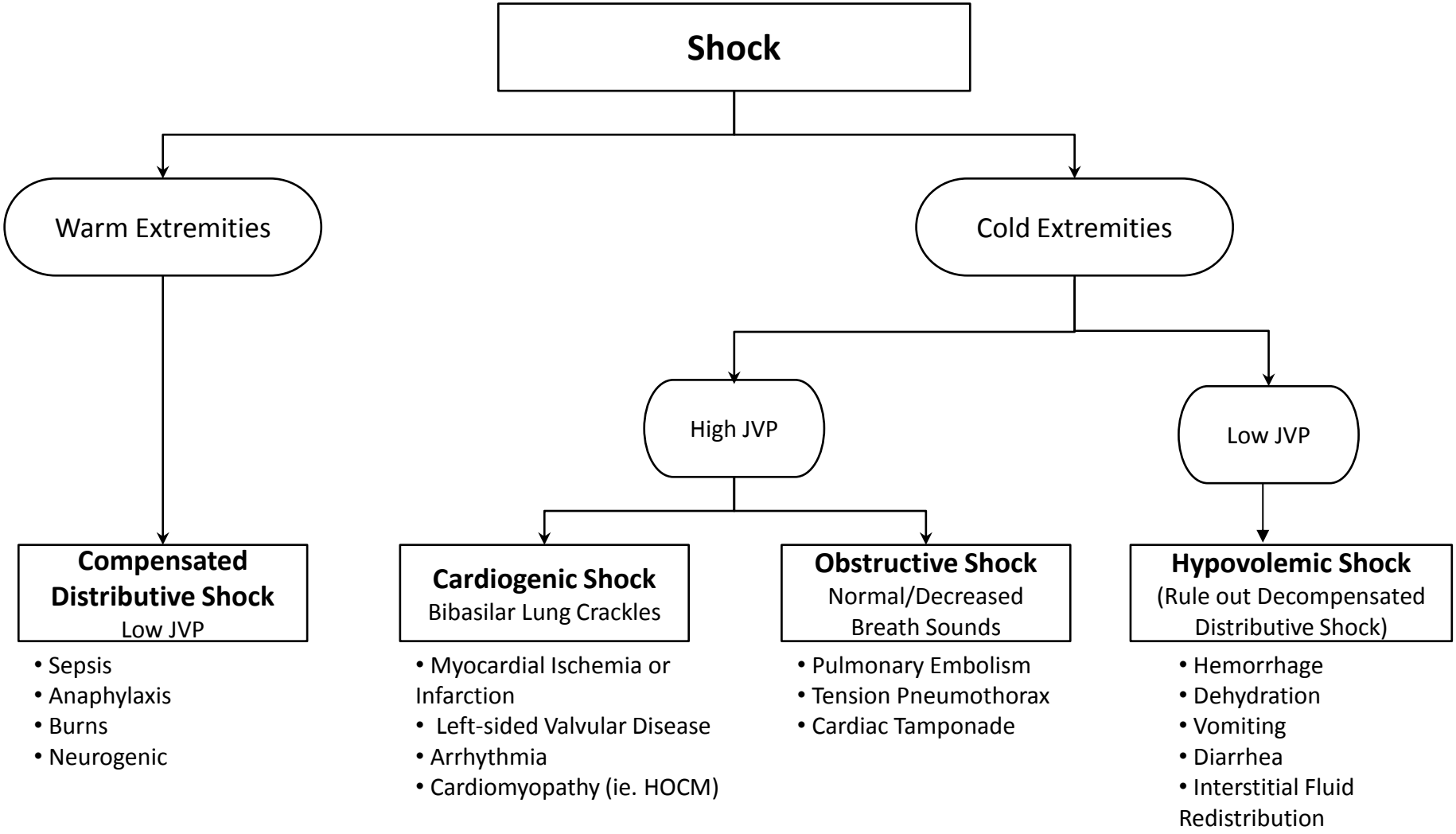
ISOLATED RIGHT-SIDED HEART FAILURE



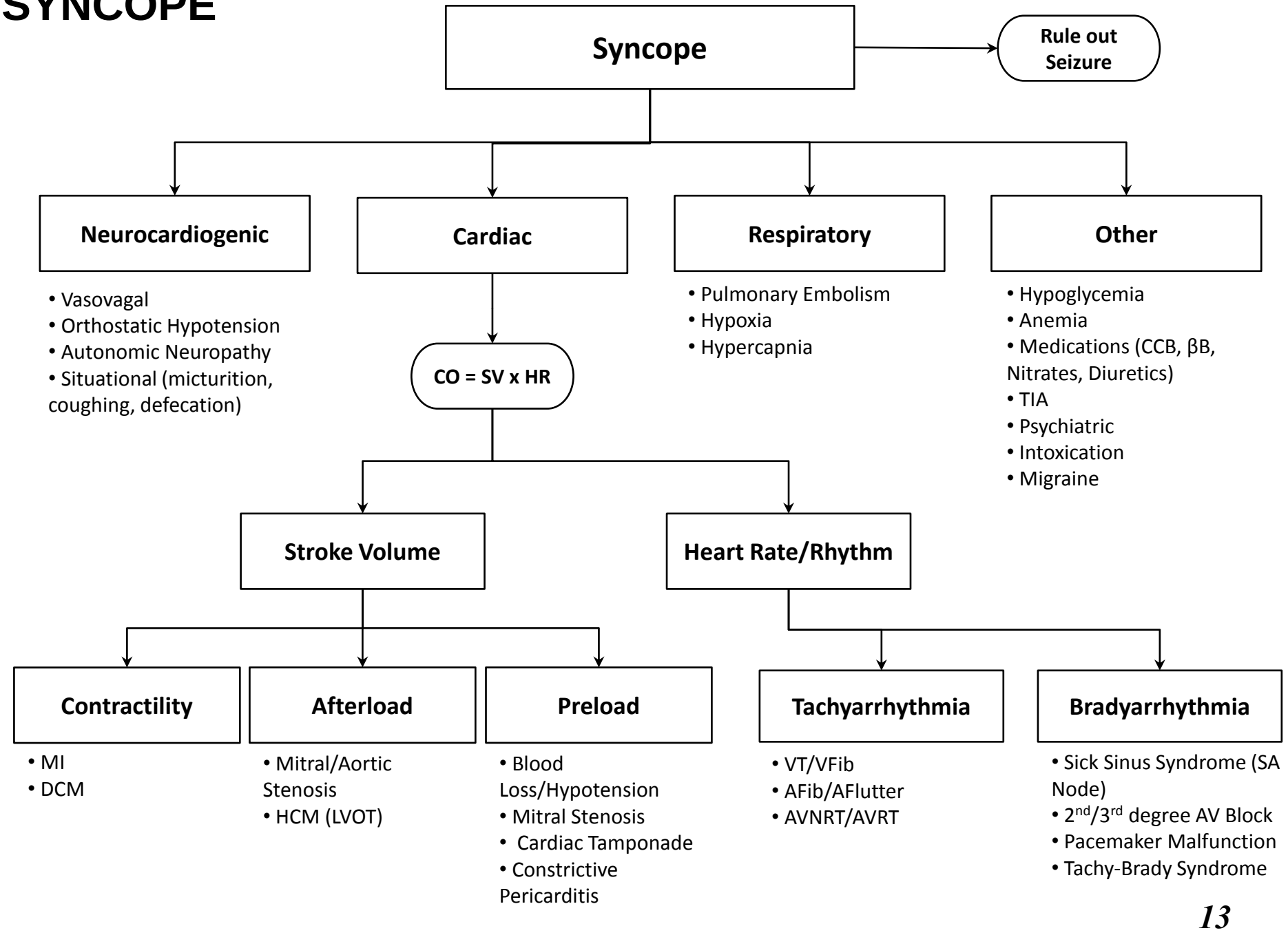
PULSE ABNORMALITIES



SHOCK


Shock
Warm Extremities
Cold Extremities
High JVP
Low JVP
Compensated Distributive Shock
Low JVP
• Sepsis
• Anaphylaxis
• Burns
• Neurogenic
Cardiogenic Shock
Bibasilar Lung Crackles
• Myocardial Ischemia or Infarction
• Left-sided Valvular Disease
• Arrhythmia
• Cardiomyopathy (ie. HOCM)
Obstructive Shock
Normal/Decreased Breath Sounds
• Pulmonary Embolism
• Tension Pneumothorax
• Cardiac Tamponade
Hypovolemic Shock
(Rule out Decompensated Distributive Shock)
• Hemorrhage
• Dehydration
• Vomiting
• Diarrhea
• Interstitial Fluid Redistribution

SYNCOPE


Syncope
Rule out Seizure
Neurocardiogenic
• Vasovagal
• Orthostatic Hypotension
• Autonomic Neuropathy
• Situational (micturition, coughing, defecation)
Cardiac
CO = SV x HR
Stroke Volume
Contractility
• MI
• DCM
Afterload
• Mitral/Aortic Stenosis
• HCM (LVOT)
Preload
• Blood Loss/Hypotension
• Mitral Stenosis
• Cardiac Tamponade
• Constrictive Pericarditis
Heart Rate/Rhythm
Tachyarrhythmia
• VT/VFib
• AFib/AFlutter
• AVNRT/AVRT
Bradyarrhythmia
• Sick Sinus Syndrome (SA Node)
• 2nd/3rd degree AV Block
• Pacemaker Malfunction
• Tachy-Brady Syndrome
Respiratory
• Pulmonary Embolism
• Hypoxia
• Hypercapnia
Other
• Hypoglycemia
• Anemia
• Medications (CCB, βB, Nitrates, Diuretics)
• TIA
• Psychiatric
• Intoxication
• Migraine

SYSTOLIC MURMUR: Benign & Stenotic

Systolic Murmur

Benign/Flow/ Hyperdynamic

- Pregnancy
- Fever
- Anemia

Stenosis

Incompetent Valve

Other

Supravalvular

- Aortic Coarctation
- Supravalvular Aortic Stenosis (rings, webs)

Subvalvular

- Hypertrophic Obstructive Cardiomyopathy
- Subvalvular Aortic Stenosis (rings, webs)

Valvular

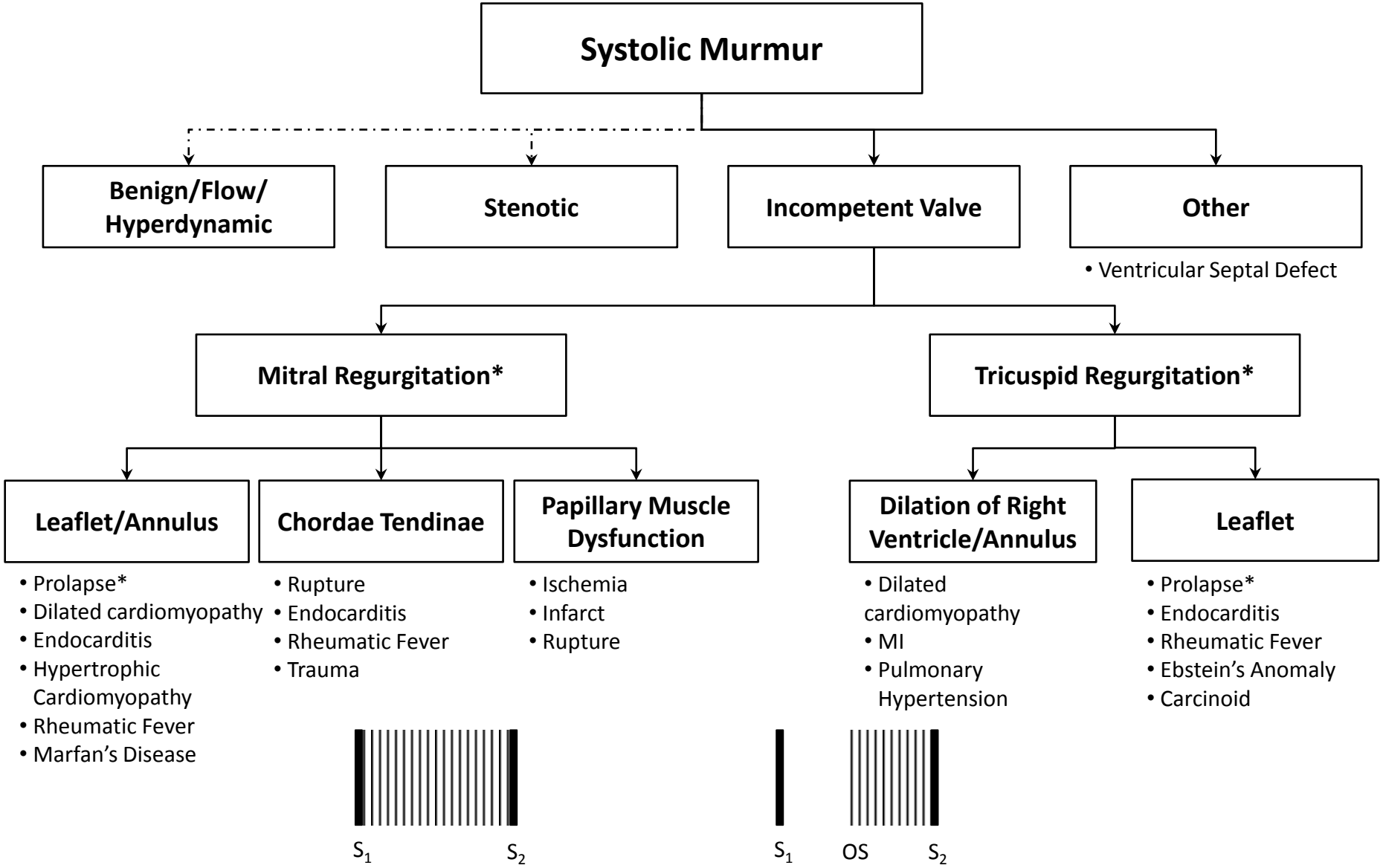
Aortic Stenosis*

- Uni-/Bicuspid
- Degenerative (Tricuspid)
- Rheumatic Heart Disease

Pulmonary Stenosis*

•Aortic Stenosis/ Pulmonary Stenosis

SYSTOLIC MURMUR: Valvular & Other



•Mitral Regurgitation/ Tricuspid Regurgitation

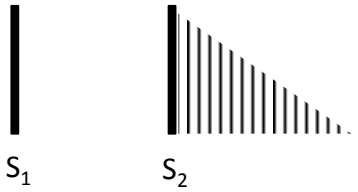
* Mitral Valve Prolapse (OS – opening snap)

DIASTOLIC MURMUR

Diastolic Murmur

Early Diastolic

- Aortic Regurgitation*
- Pulmonary Regurgitation (Graham-Steell Murmur)*



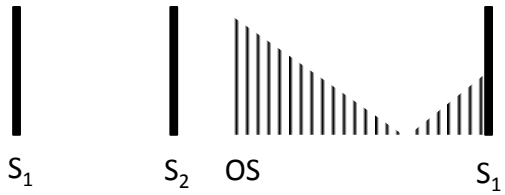
•Aortic Regurgitation/ Pulmonary Regurgitation

Mid-Diastolic

- Mitral Stenosis*
- Tricuspid Stenosis*
- Severe Aortic Regurgitation (Austin Flint Murmur)
- Atrial Myxoma Prolapse

Late Diastolic

- Mitral Stenosis*
- Tricuspid Stenosis*
- Myxoma



* Mitral Stenosis/Tricuspid Stenosis (OS – opening snap)

Respiratory Presentations

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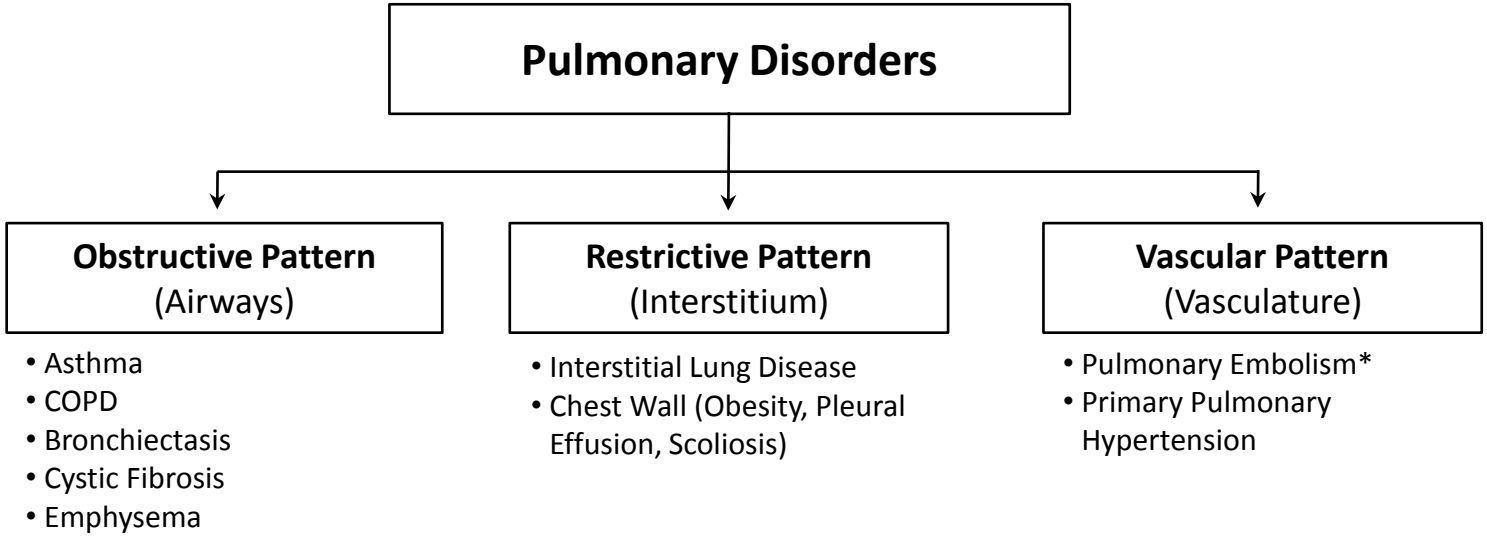
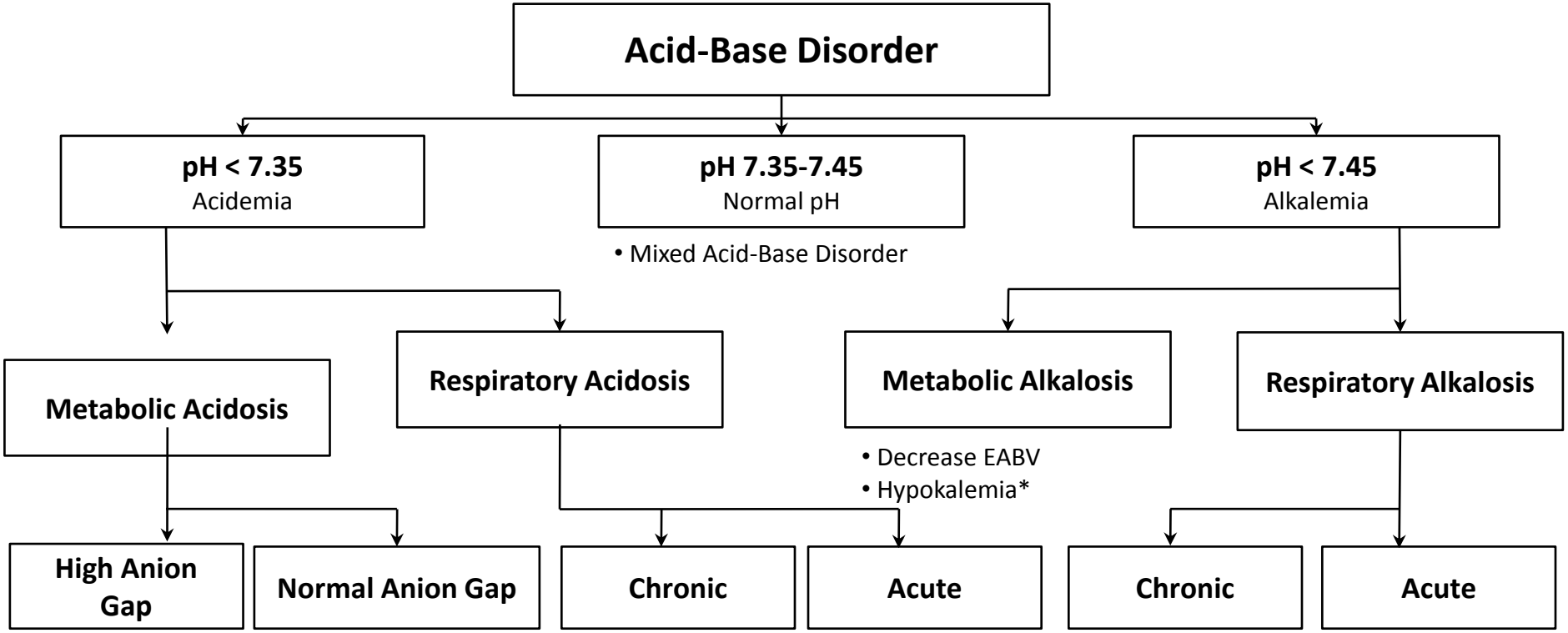
PULMONARY DISORDERS: Spirometry



** Denotes acutely life-threatening causes*

ACID-BASE DISORDER



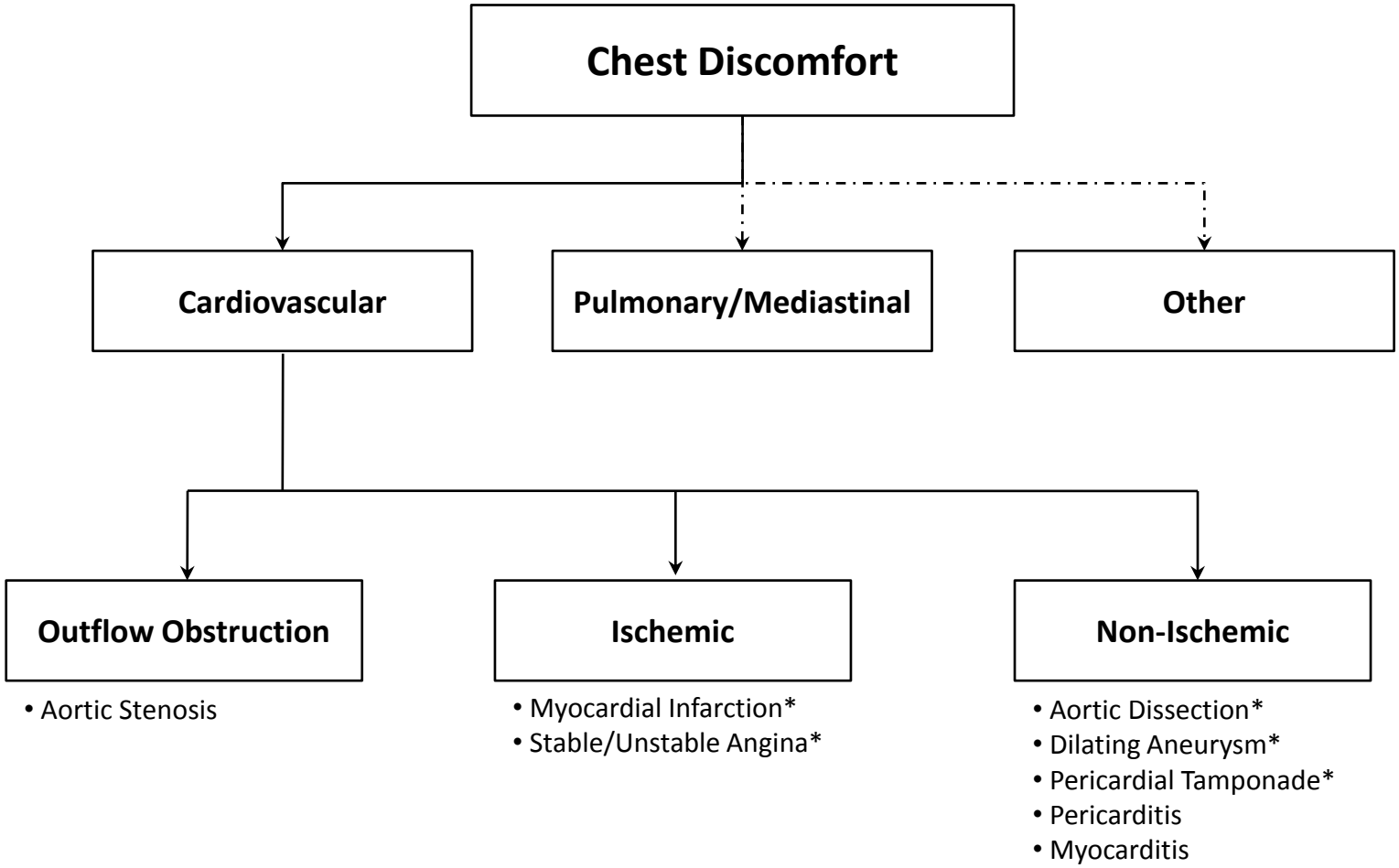
** Denotes acutely life-threatening causes*

Metabolic Acidosis – Mixed Metabolic Disorder:

Anion Gap Normal	Normal AG Acidosis Alone
ΔAnion Gap = ΔHCO_3^-	High AG Acidosis Alone
ΔAnion Gap < ΔHCO_3^-	Mixed AG Acidosis + Normal AG
ΔAnion Gap > ΔHCO_3^-	Mixed High AG Acidosis + Metabolic Alkalosis

Appropriate Compensation:	Ratio (CO_2:HCO_3^-)
Metabolic Acidosis	12:10
Metabolic Alkalosis	7:10
Acute Respiratory Acidosis	10:2
Chronic Respiratory Acidosis	10:4
Acute Respiratory Alkalosis	10:1
Chronic Respiratory Alkalosis	10:3

CHEST DISCOMFORT: Cardiovascular



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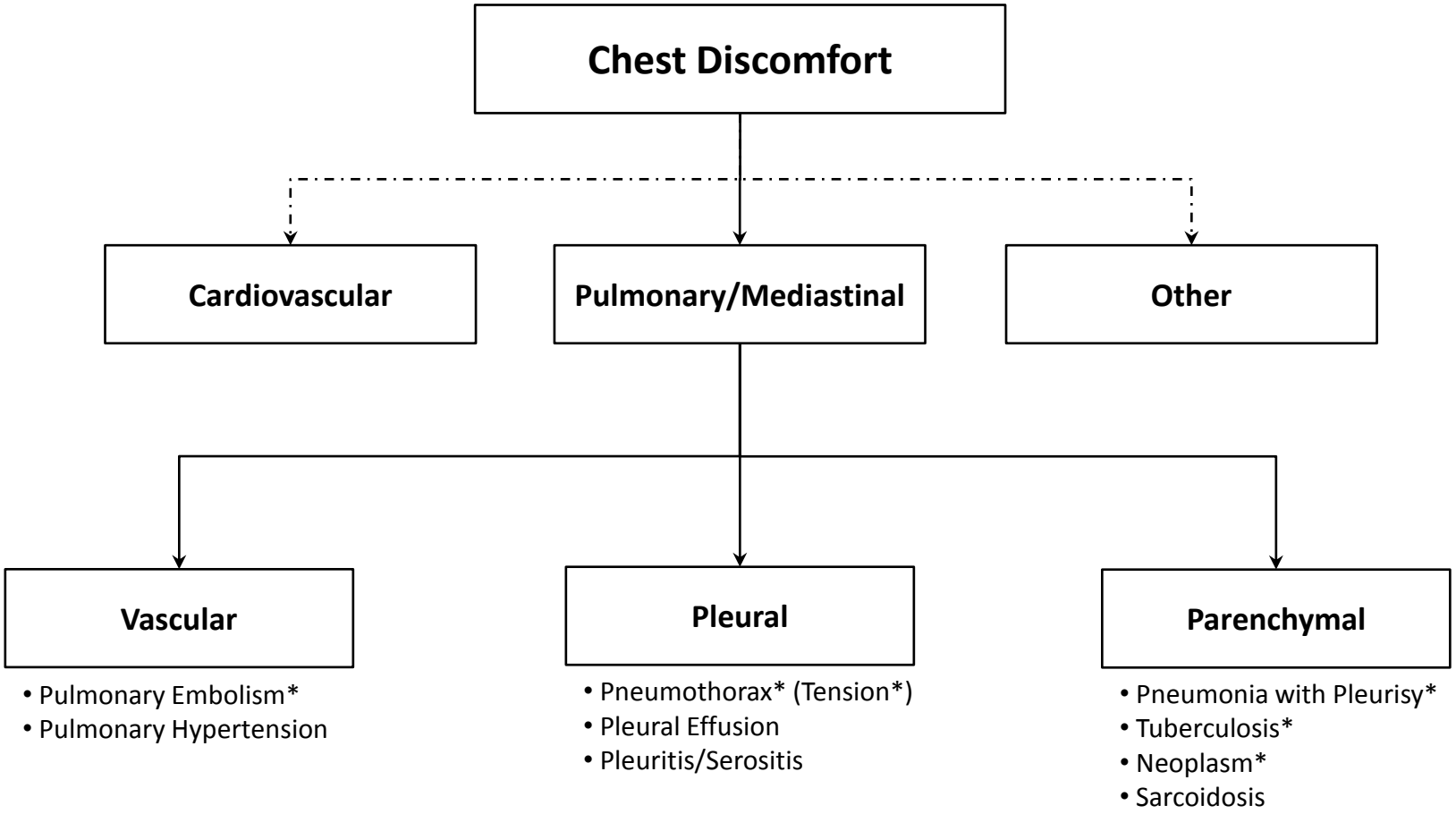
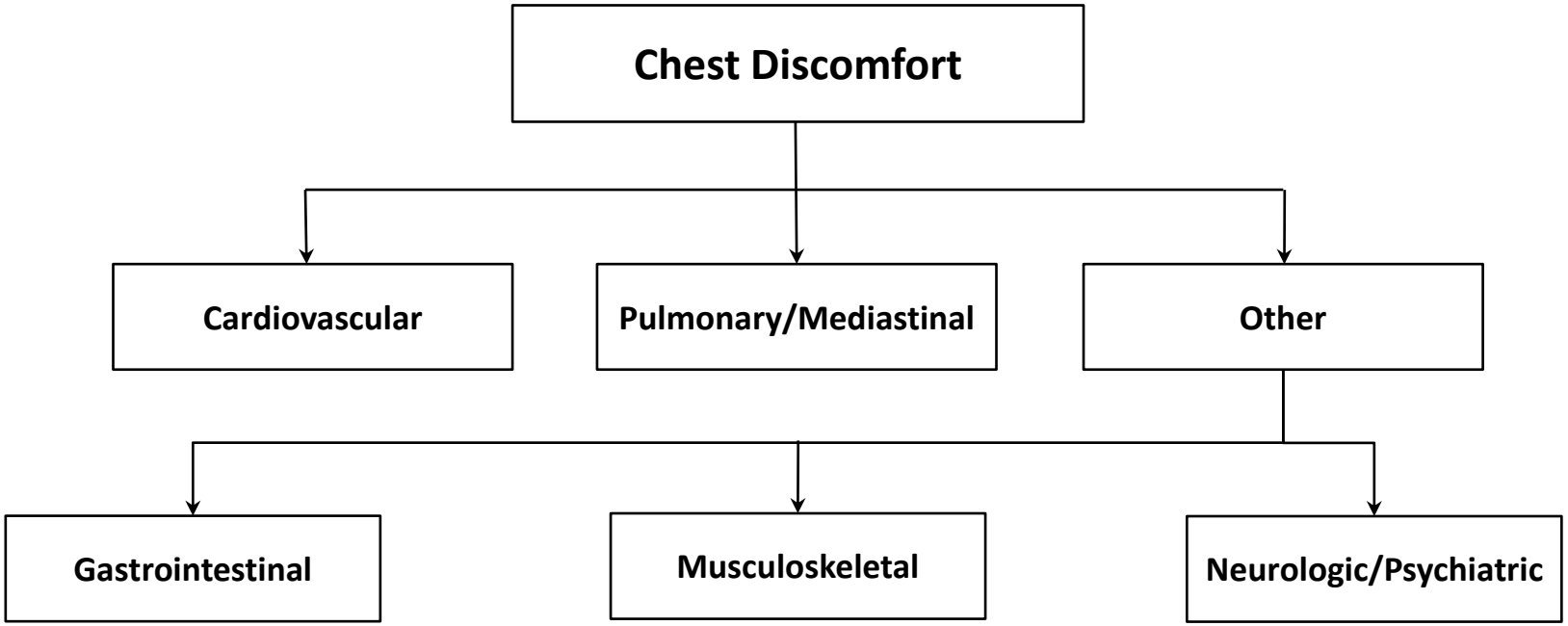
CHEST DISCOMFORT: Pulmonary/Mediastinal



** Denotes acutely life-threatening causes*

CHEST DISCOMFORT: Other

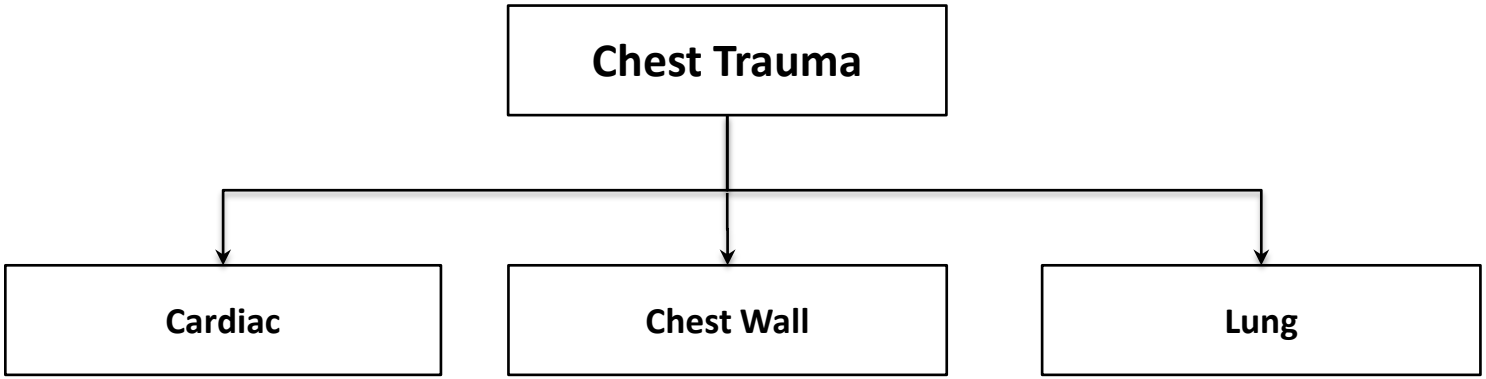


- GERD
- Biliary Disease
- Peptic Ulcer Disease
- Pancreatitis*
- Esophageal Spasm
- Esophageal Perforation*

- Costochondritis
- Muscular Injury
- Trauma

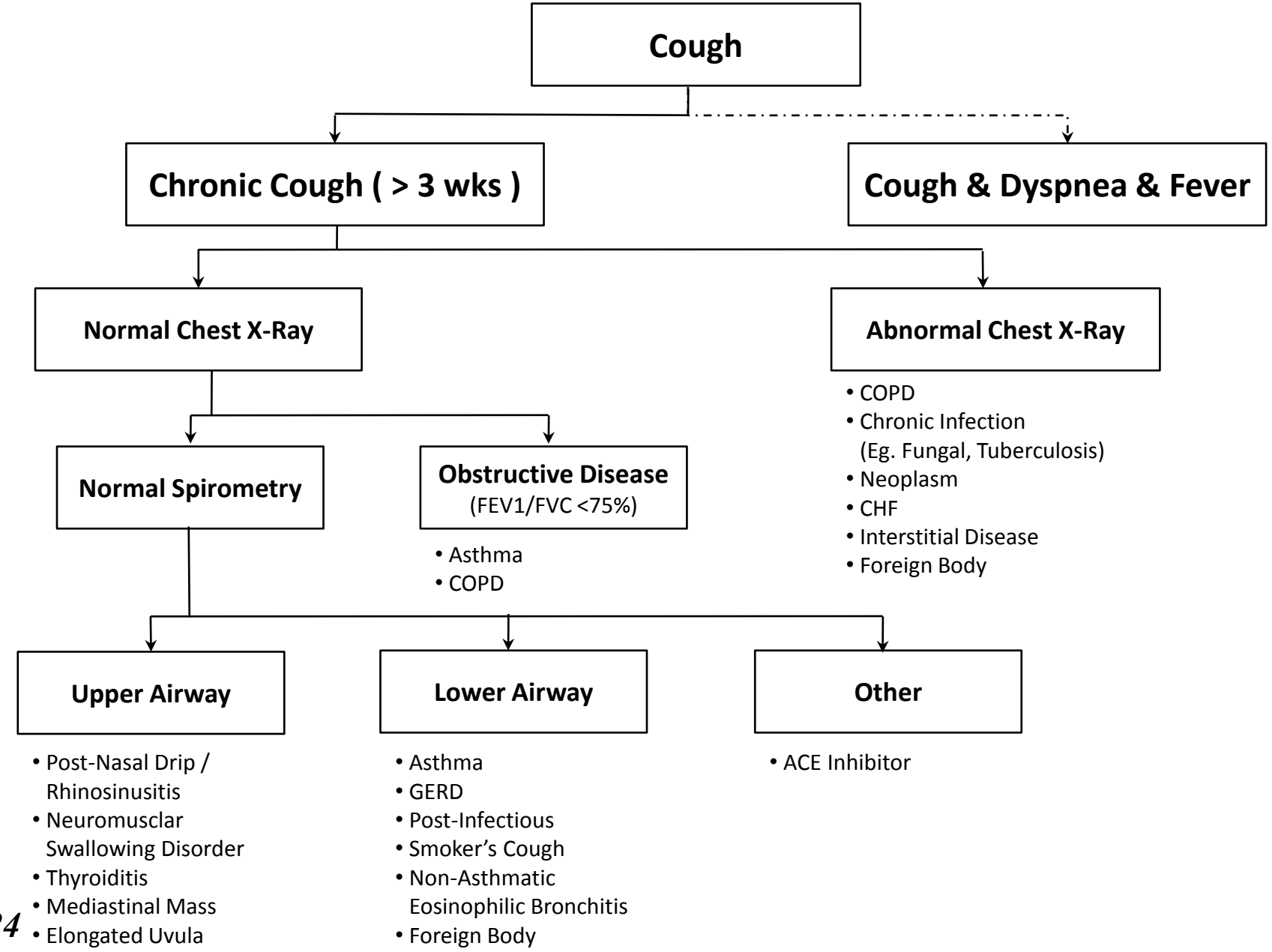
- Anxiety/Panic
- Herpes Simplex Virus/Post-Herpetic Neuralgia
- Somatoform Disorder
- Spinal Radiculopathy

CHEST TRAUMA

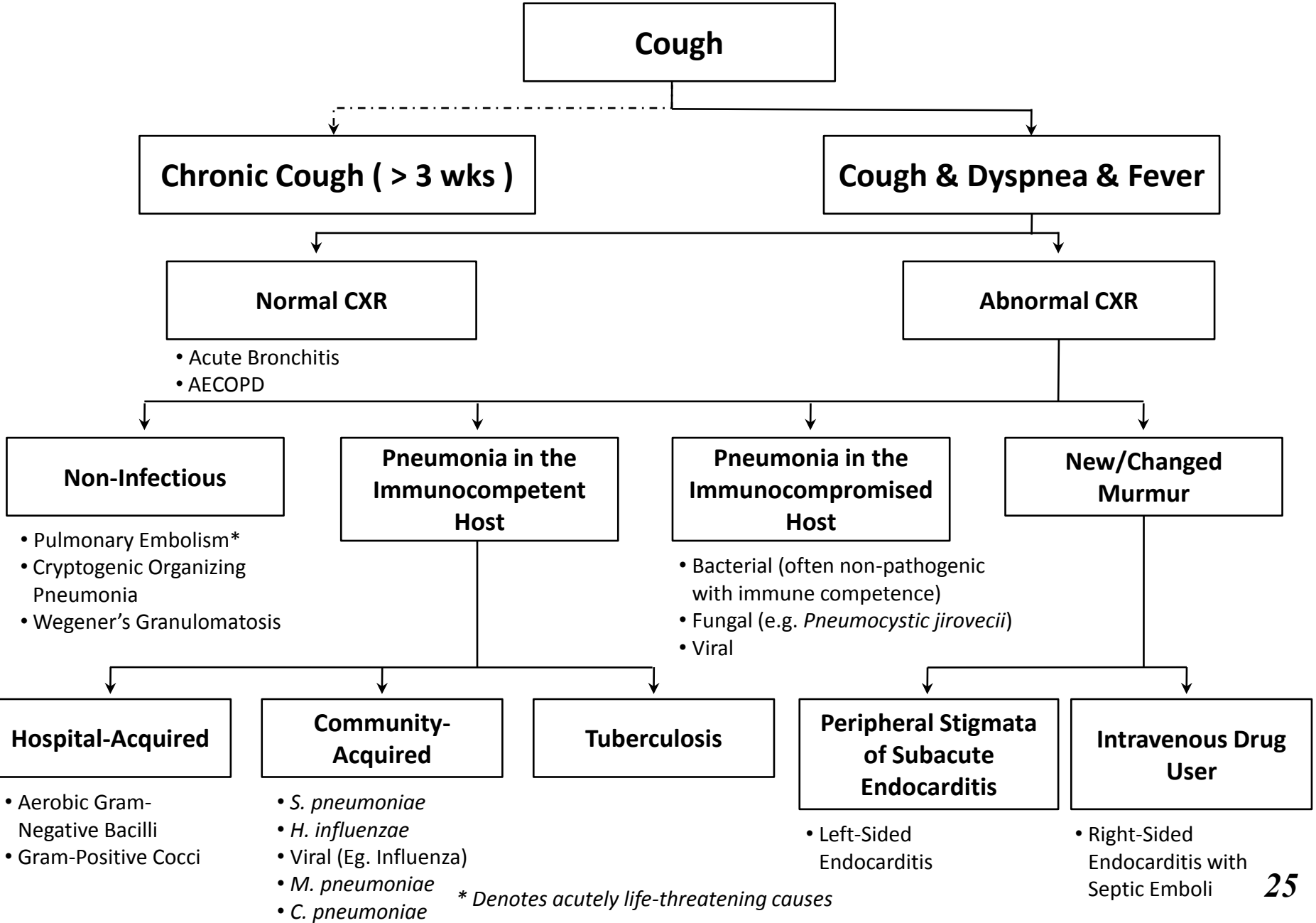


** Denotes acutely life-threatening causes*

COUGH: Chronic

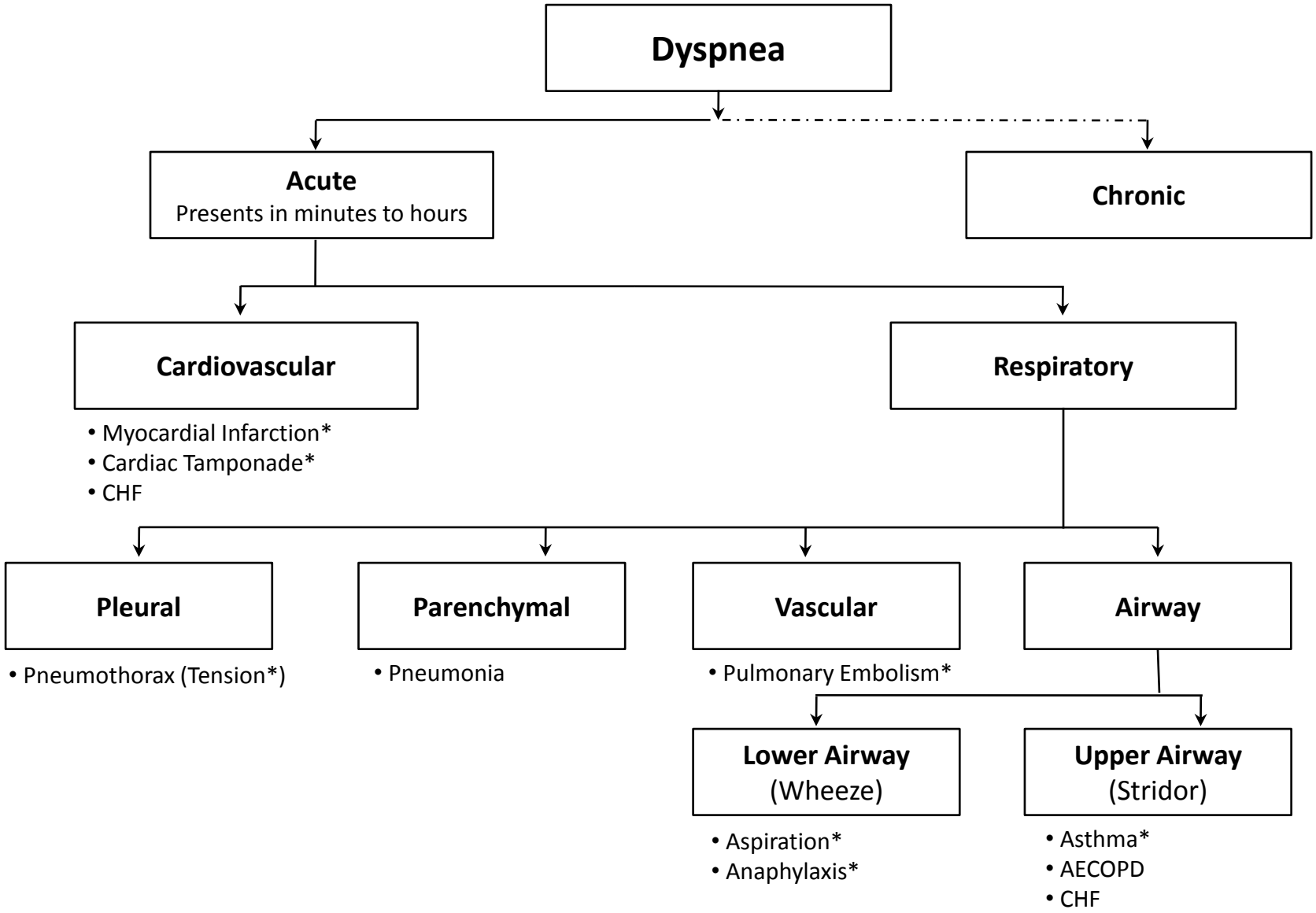


COUGH: Dyspnea & Fever



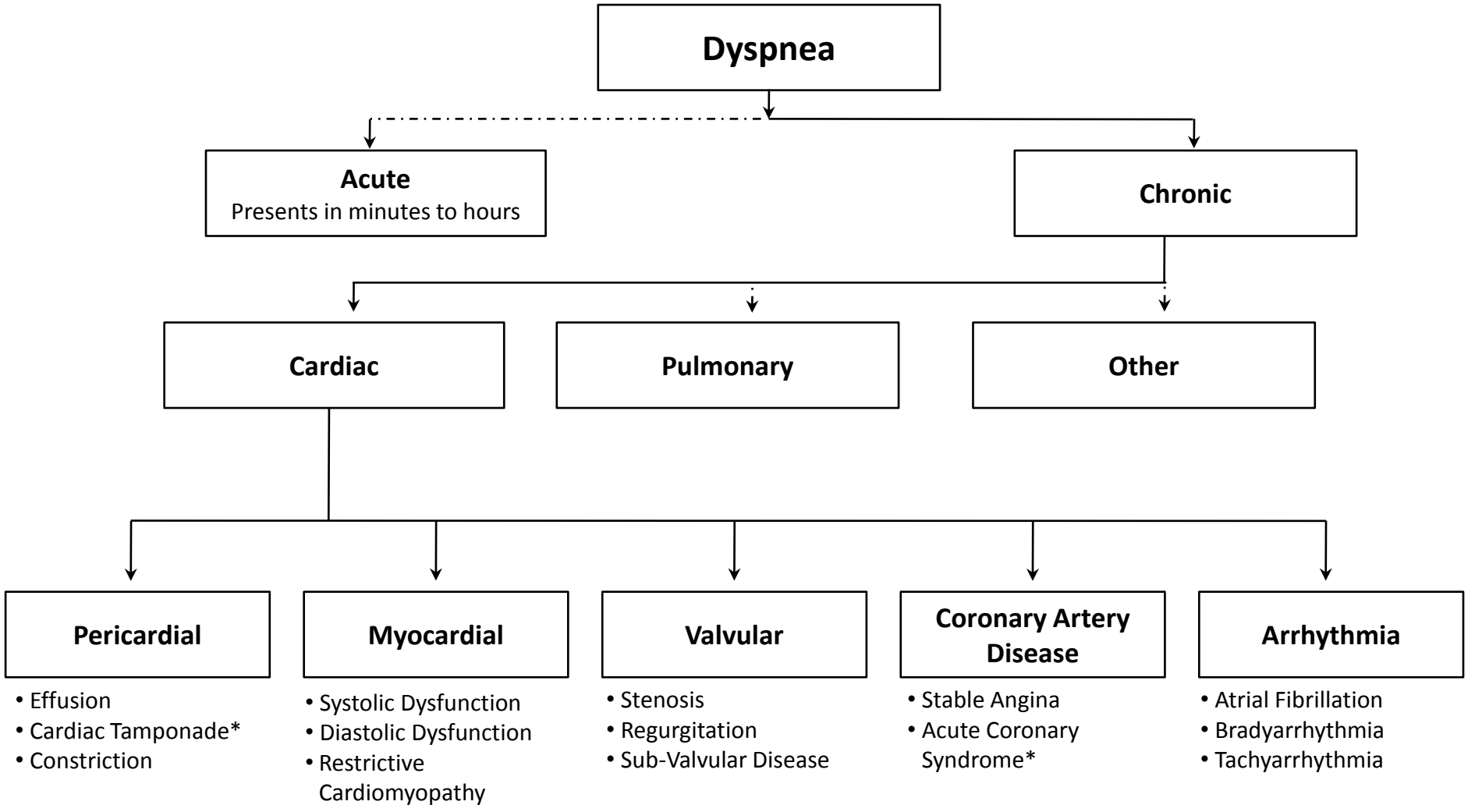
** Denotes acutely life-threatening causes*

DYSPNEA: Acute



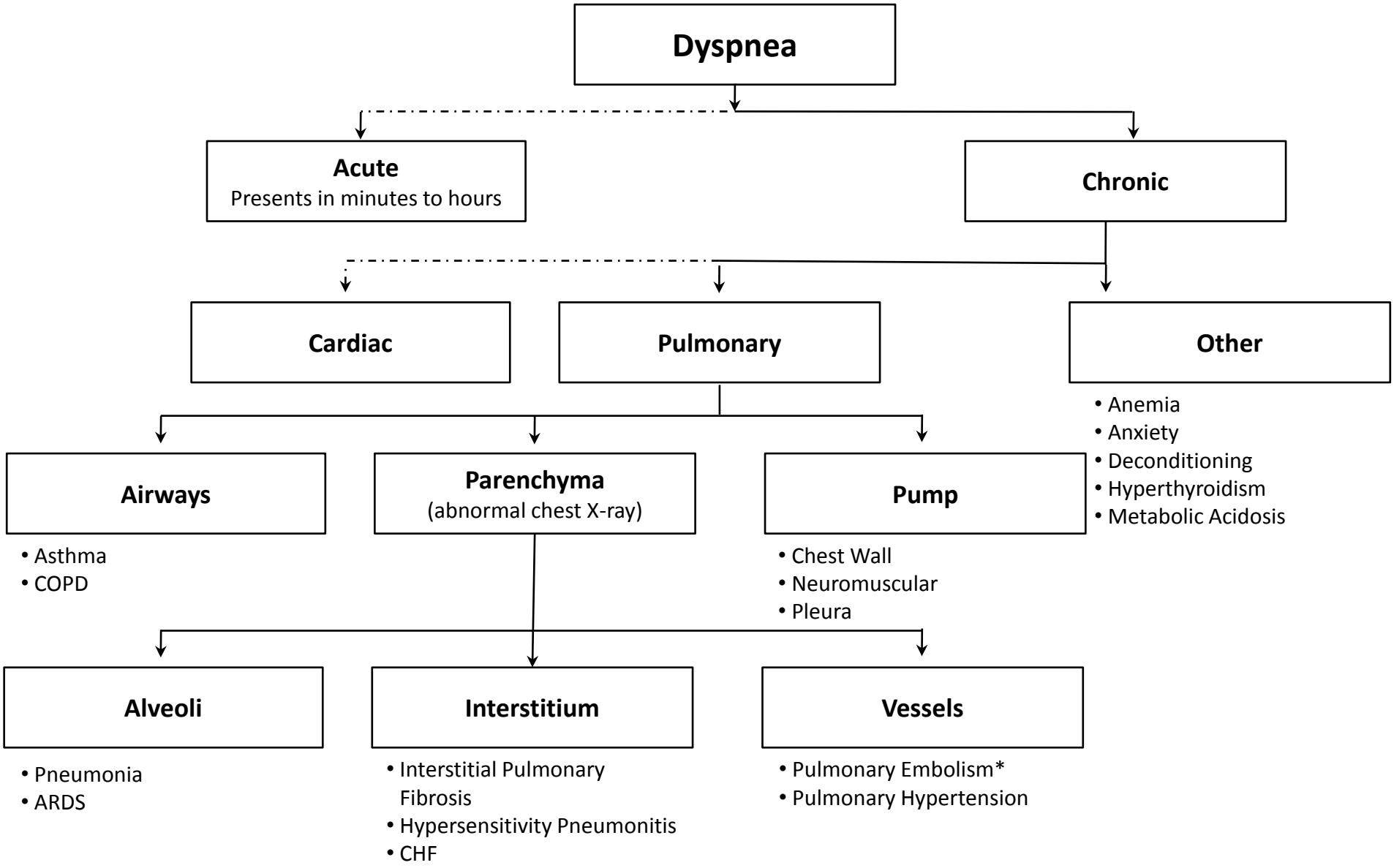
** Denotes acutely life-threatening causes*

DYSPNEA: Chronic – Cardiac

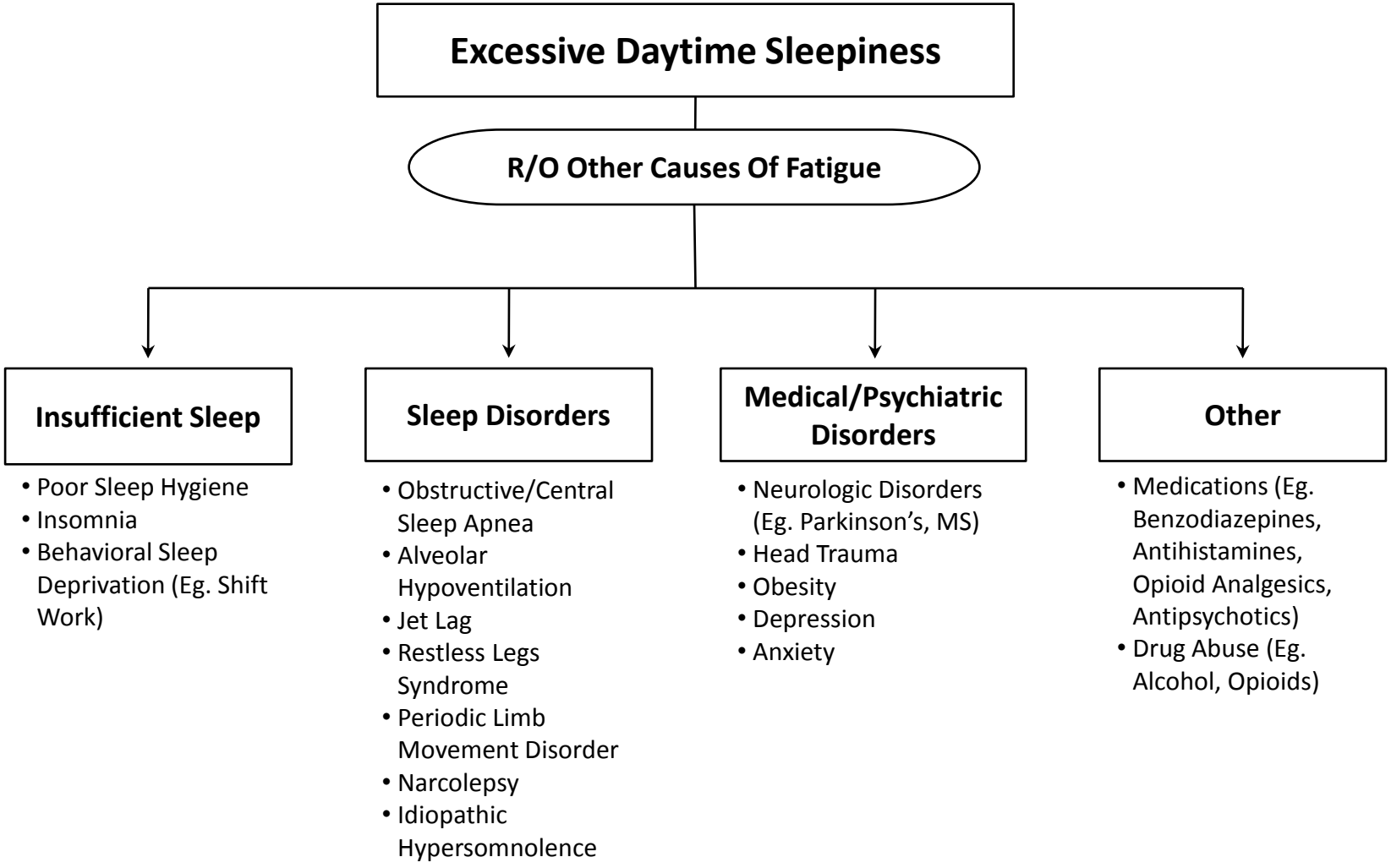


** Denotes acutely life-threatening causes*

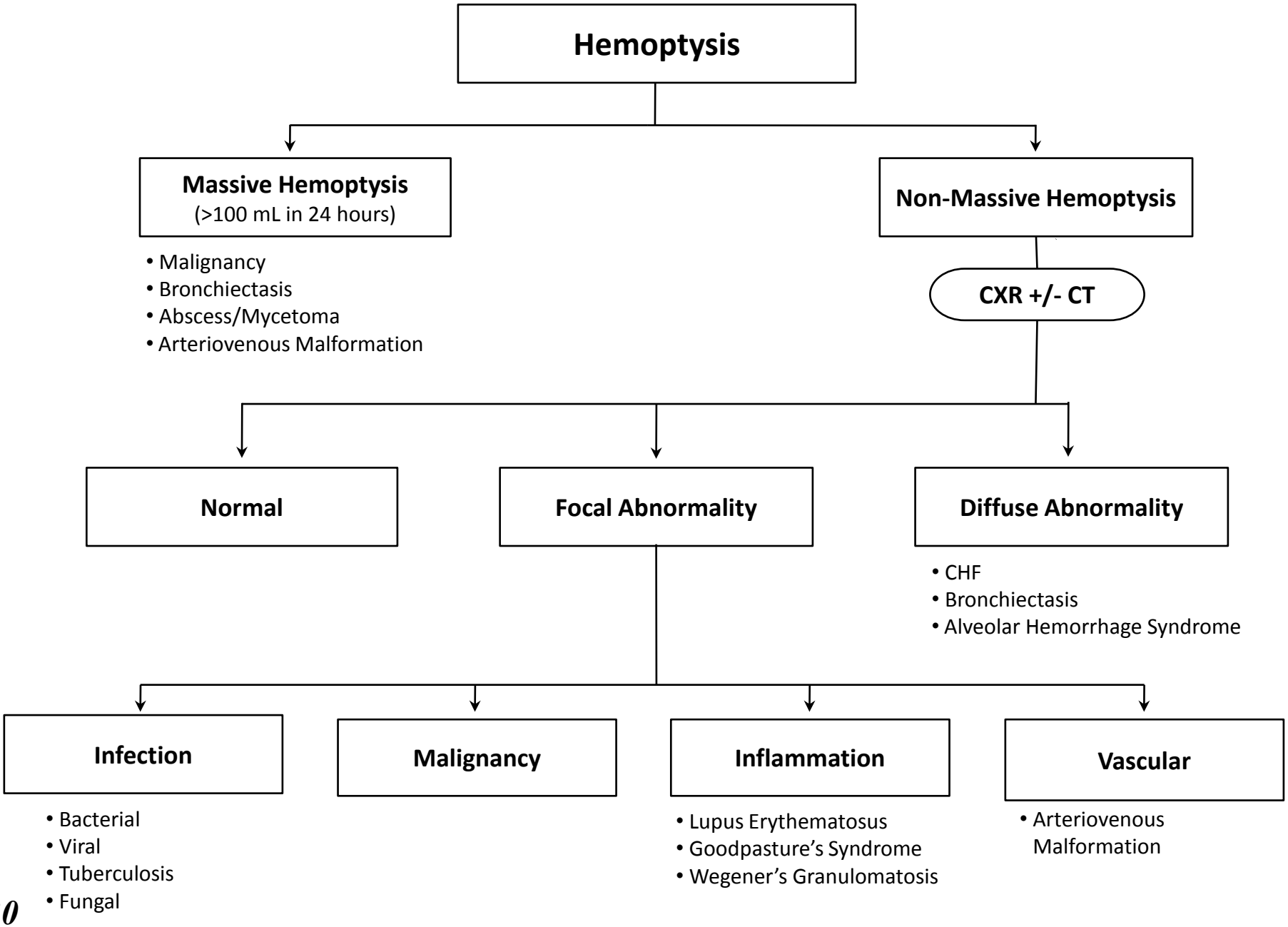
DYSPNEA: Chronic – Pulmonary/Other



EXCESSIVE DAYTIME SLEEPINESS



HEMOPTYSIS

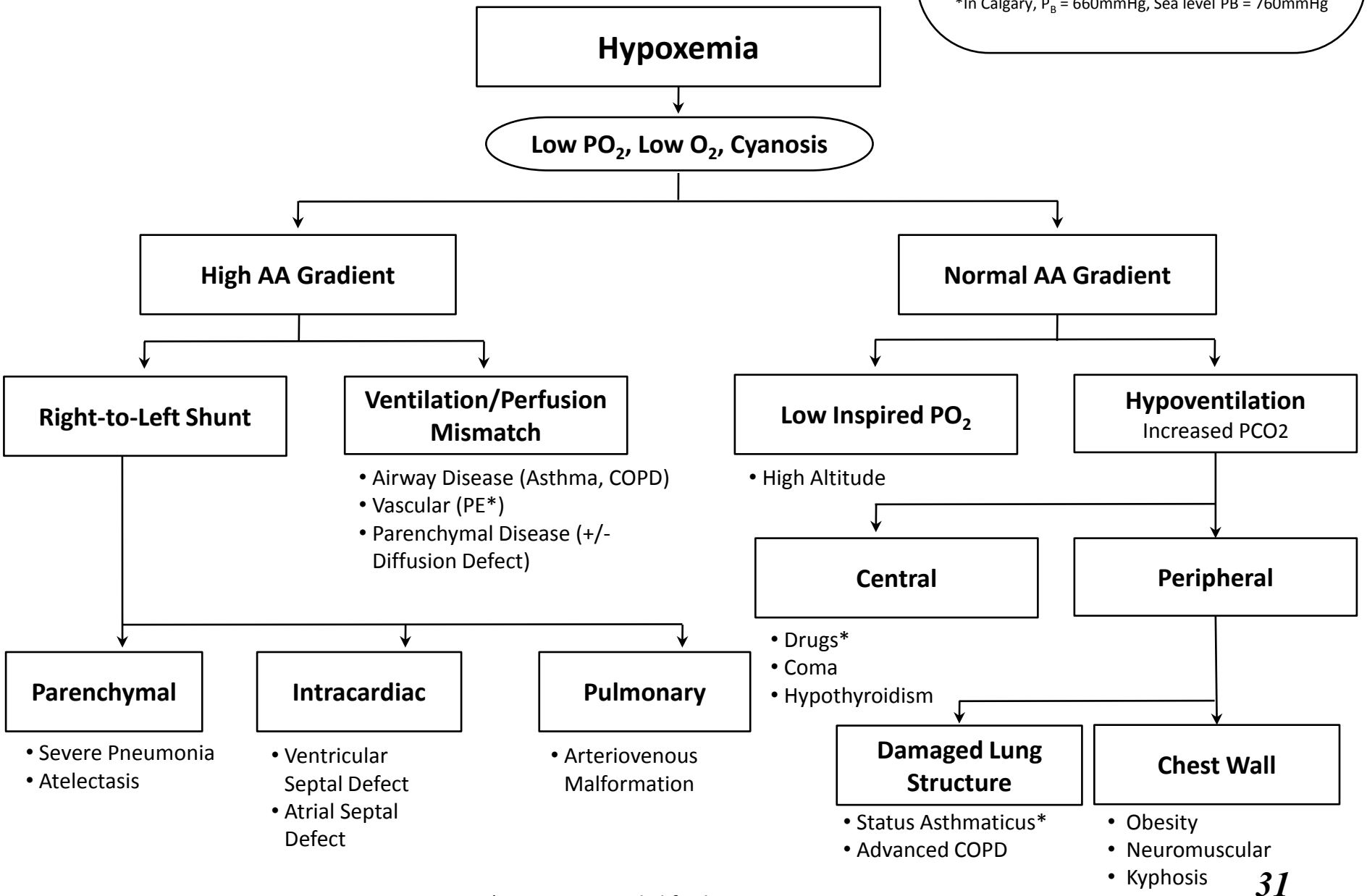

Hemoptysis
Massive Hemoptysis
(>100 mL in 24 hours)
• Malignancy
• Bronchiectasis
• Abscess/Mycetoma
• Arteriovenous Malformation
Non-Massive Hemoptysis
CXR +/- CT
Normal
Focal Abnormality
Diffuse Abnormality
• CHF
• Bronchiectasis
• Alveolar Hemorrhage Syndrome
Infection
• Bacterial
• Viral
• Tuberculosis
• Fungal
Malignancy
Inflammation
• Lupus Erythematosus
• Goodpasture's Syndrome
• Wegener's Granulomatosis
Vascular
• Arteriovenous Malformation

HYPOXEMIA

Alveolar-Arterial Gradient = $P_AO_2 - P_aO_2$

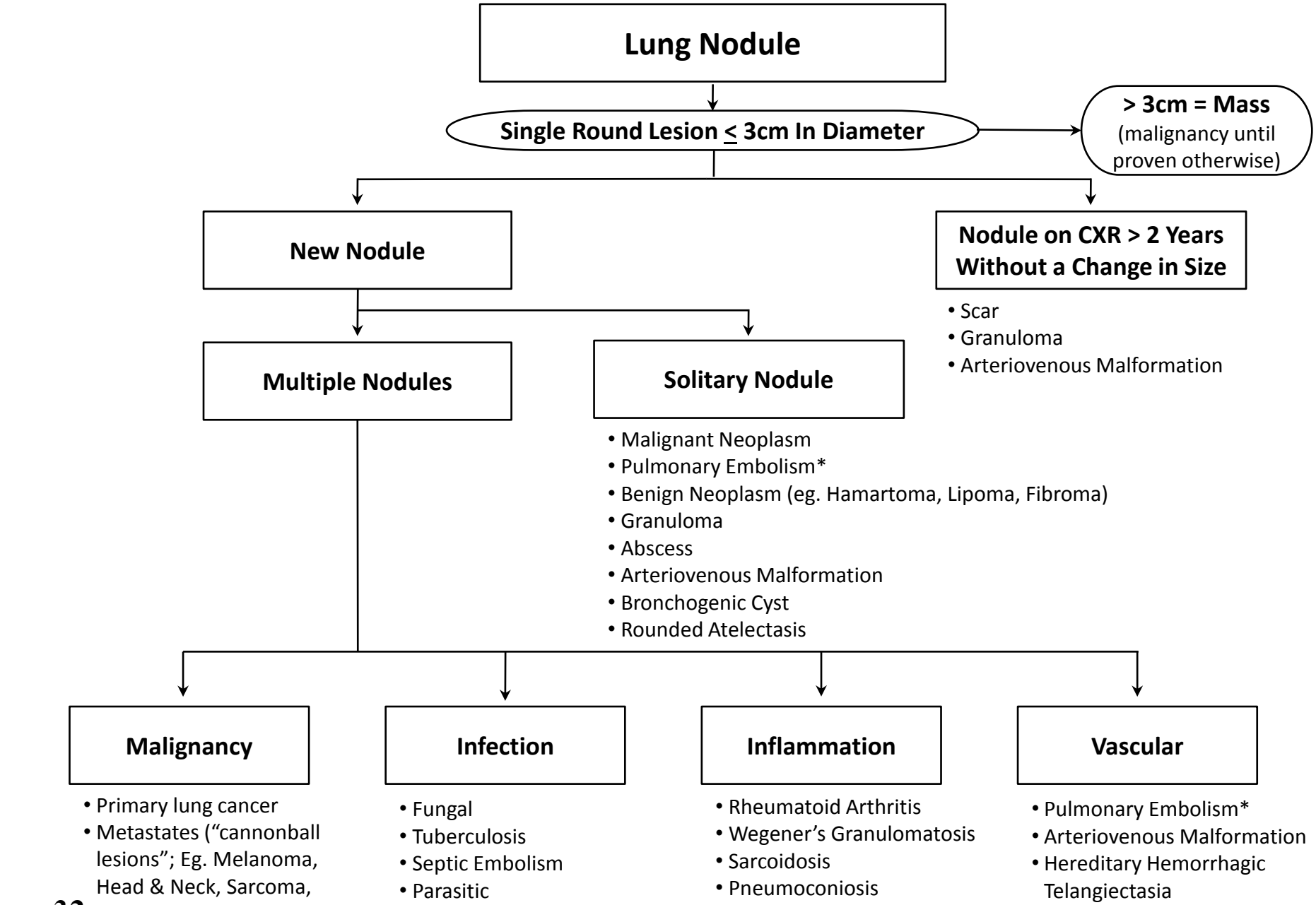
$P_AO_2 = F_iO_2 (P_B - PH_2O) - (P_aCO_2/0.8)$

*In Calgary, P_B = 660mmHg, Sea level PB = 760mmHg



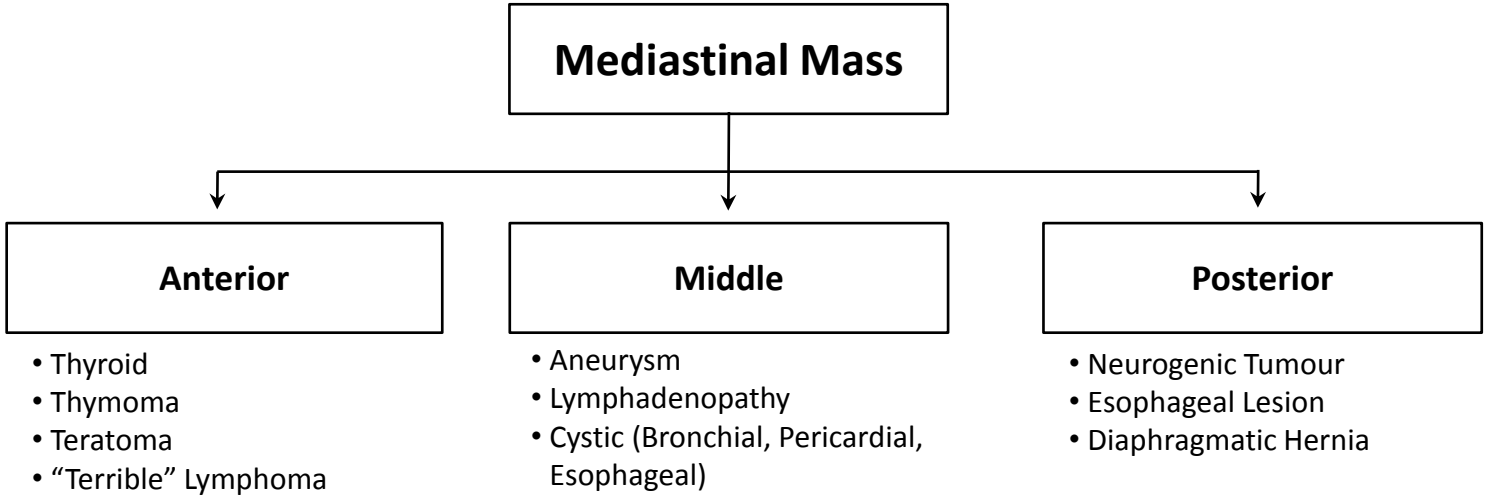
** Denotes acutely life-threatening causes*

LUNG NODULE

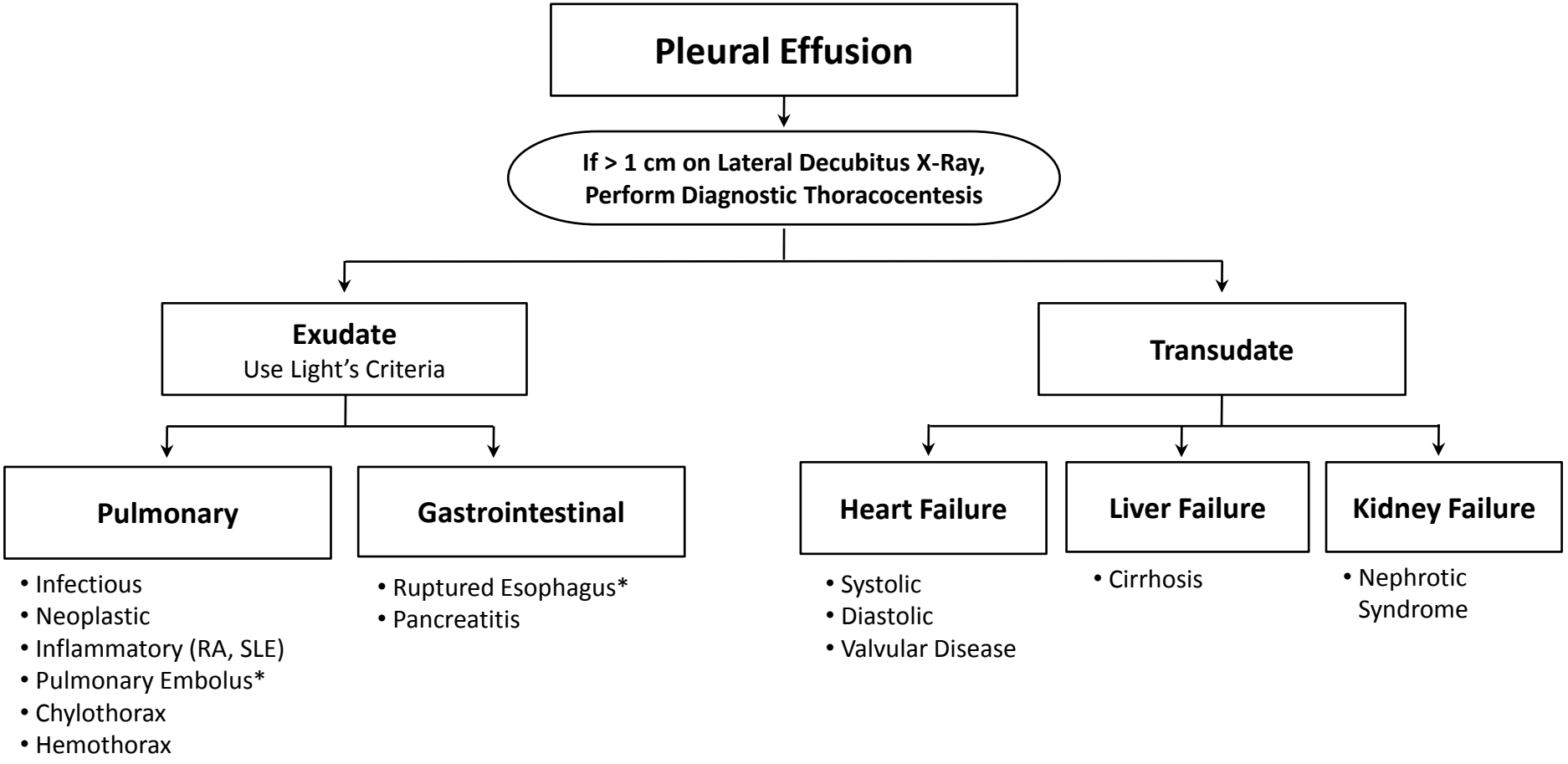


** Denotes acutely life-threatening causes*

MEDIASTINAL MASS



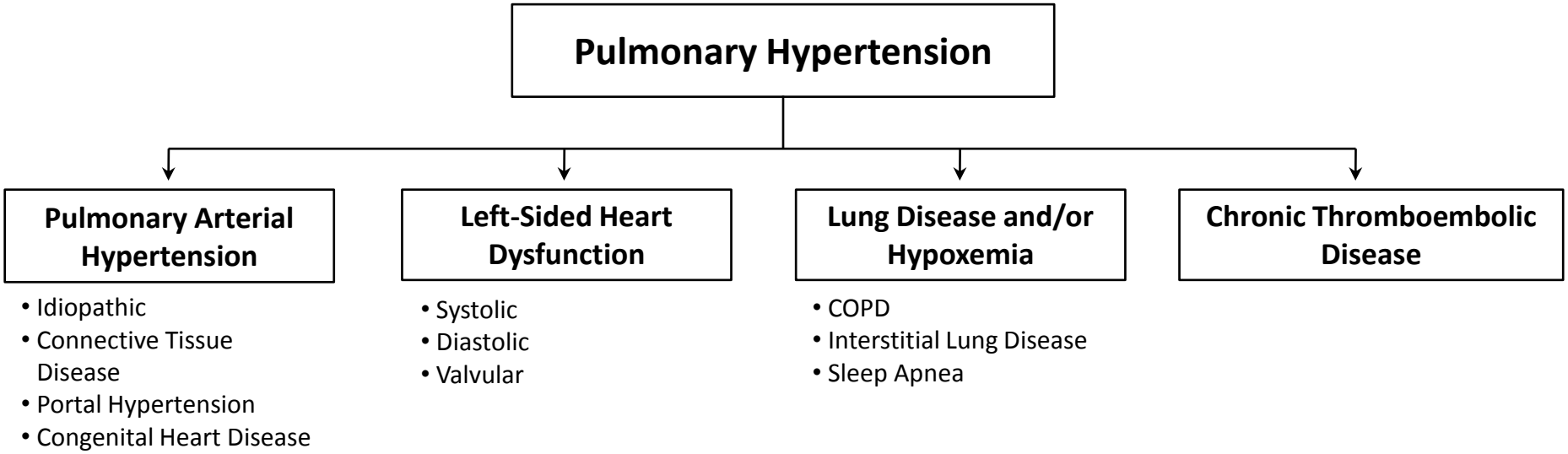
PLEURAL EFFUSION



Light's Criteria
Pleural Fluid Protein/Serum Protein > 0.5
Pleural Fluid Lactate Dehydrogenase (LDH)/Serum LDH > 0.6
Pleural Fluid LDH > 2/3 Serum Upper Limit of Normal

** Denotes acutely life-threatening causes*

PULMONARY HYPERTENSION



Hematologic Presentations

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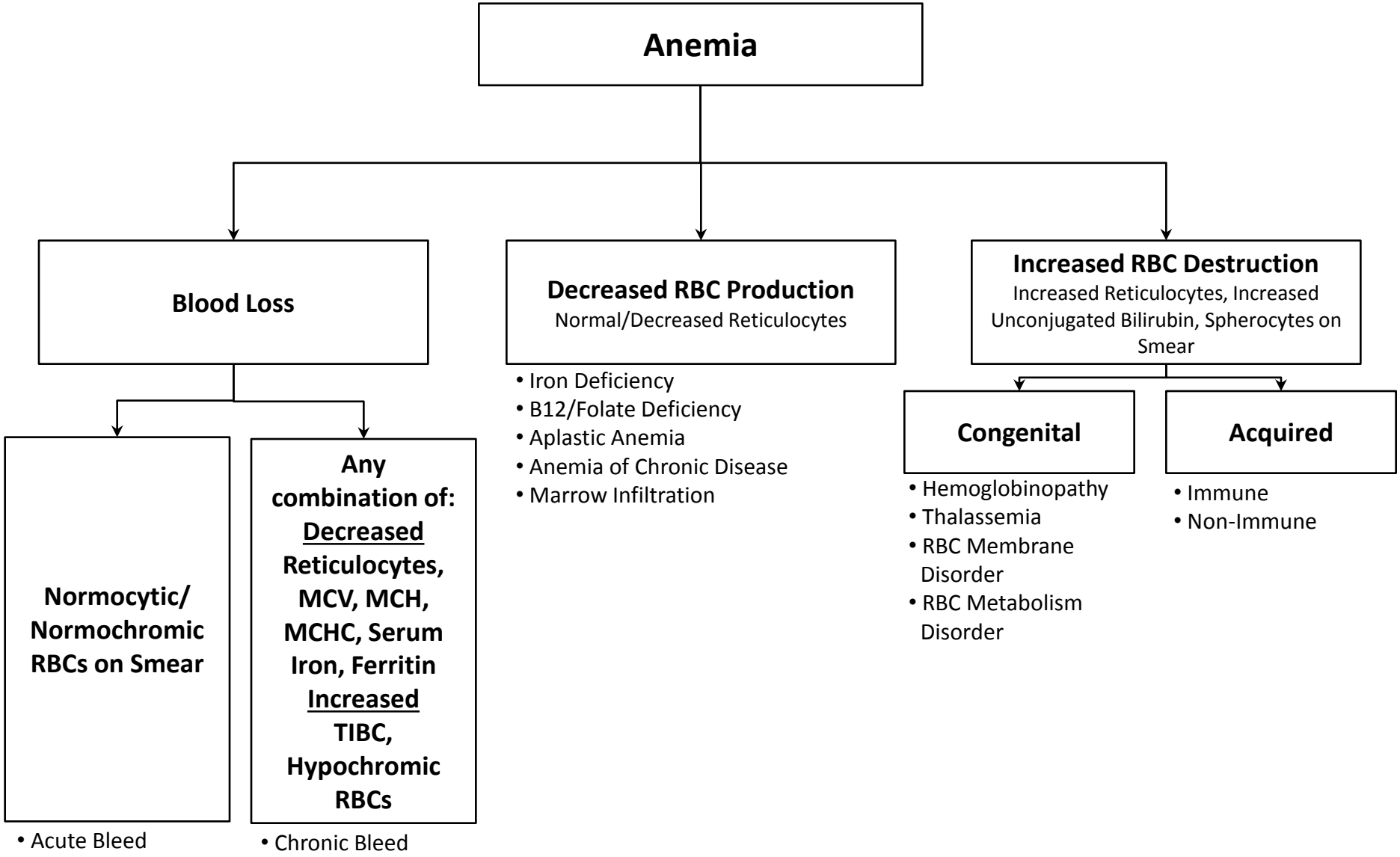
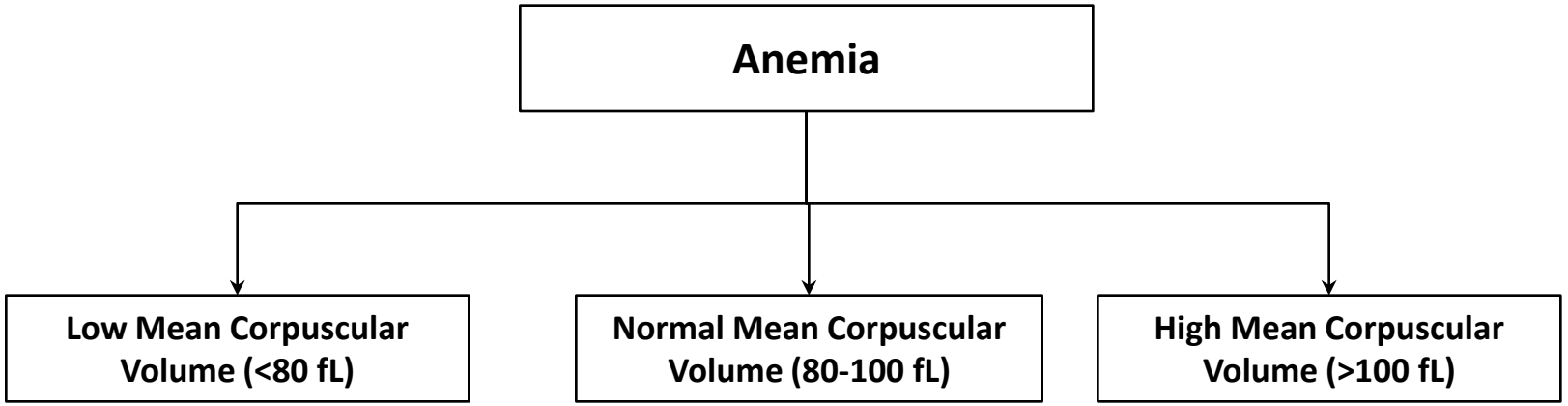
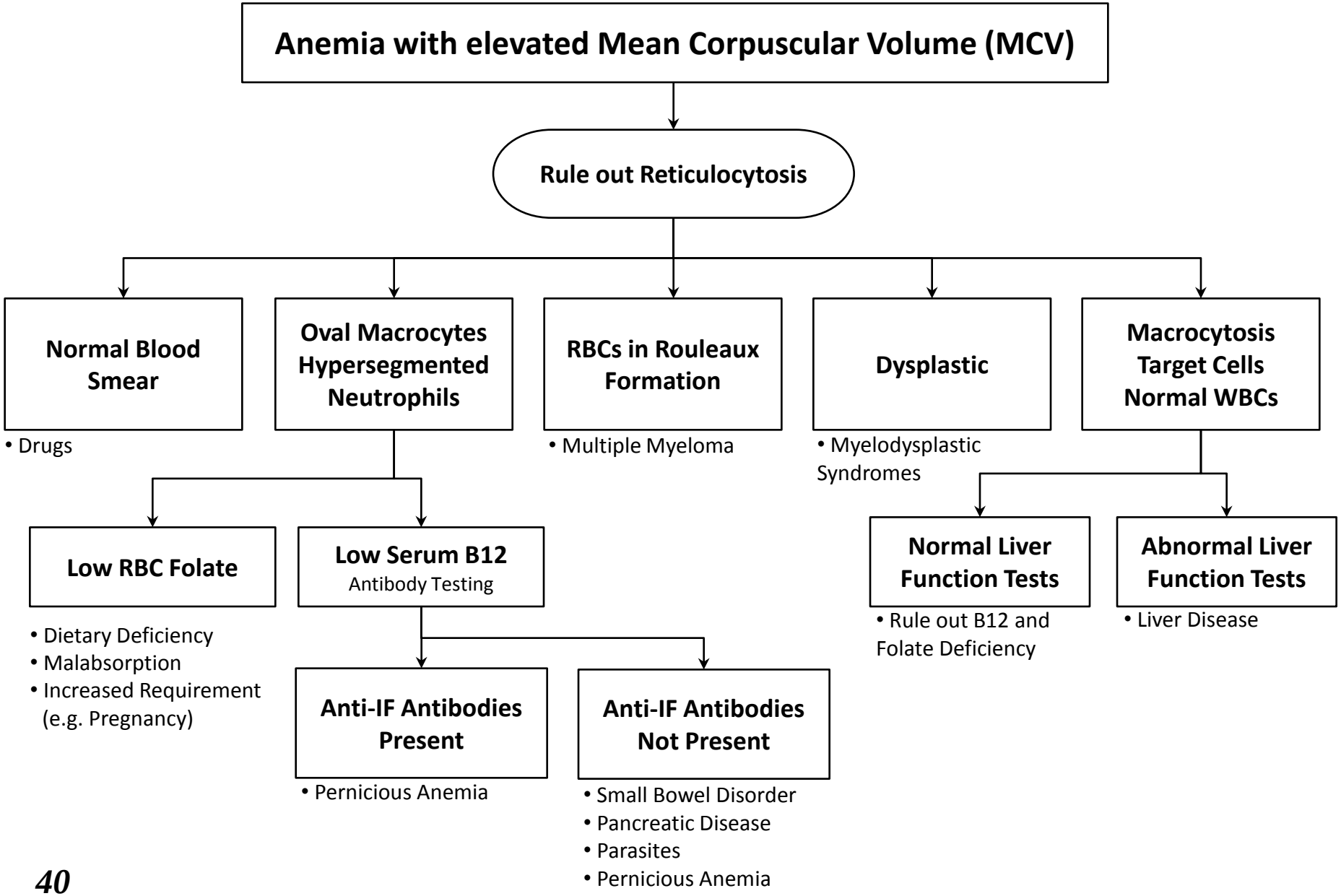
OVERALL APPROACH TO ANEMIA



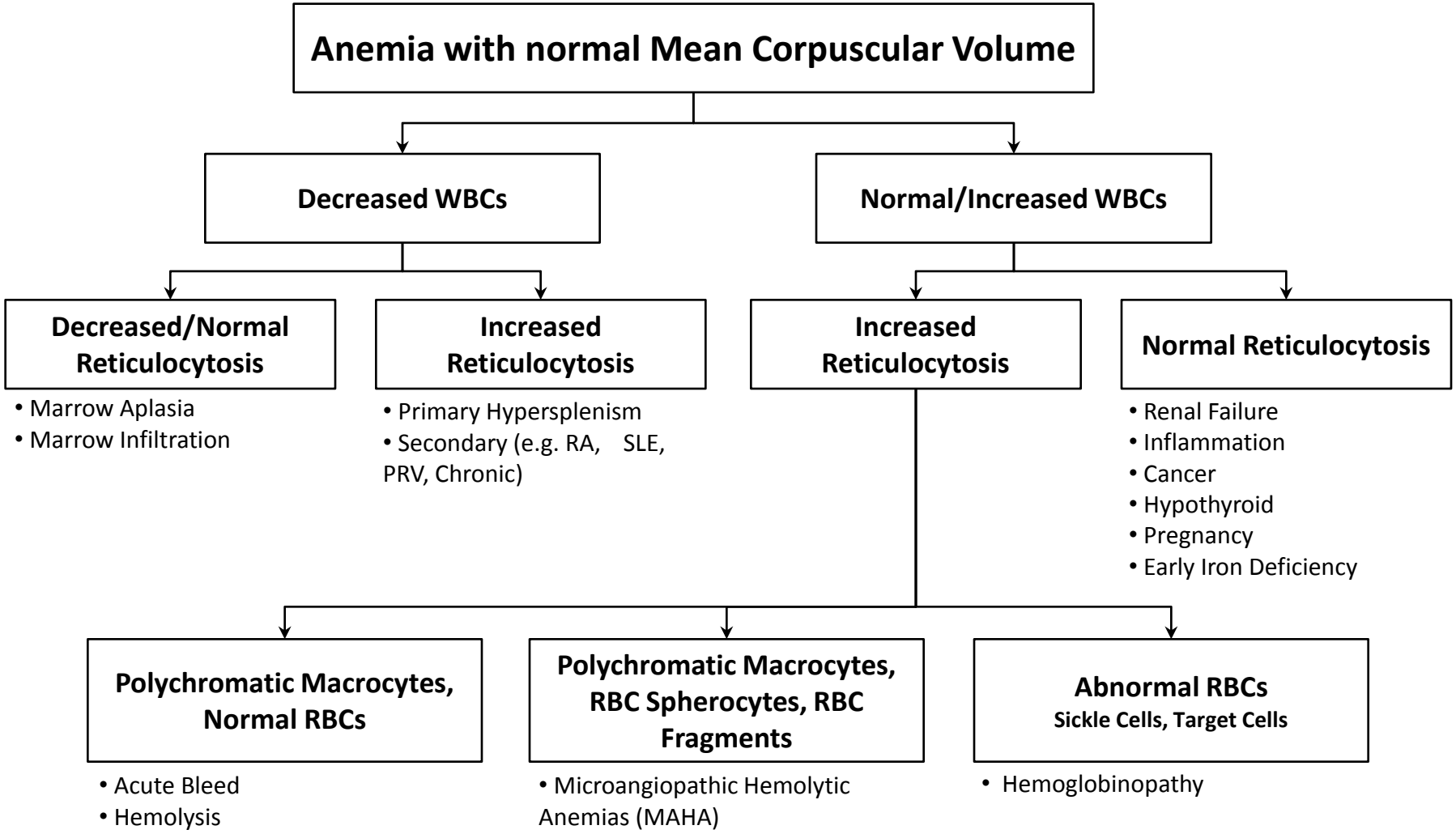
APPROACH TO ANEMIA: Mean Corpuscular Volume



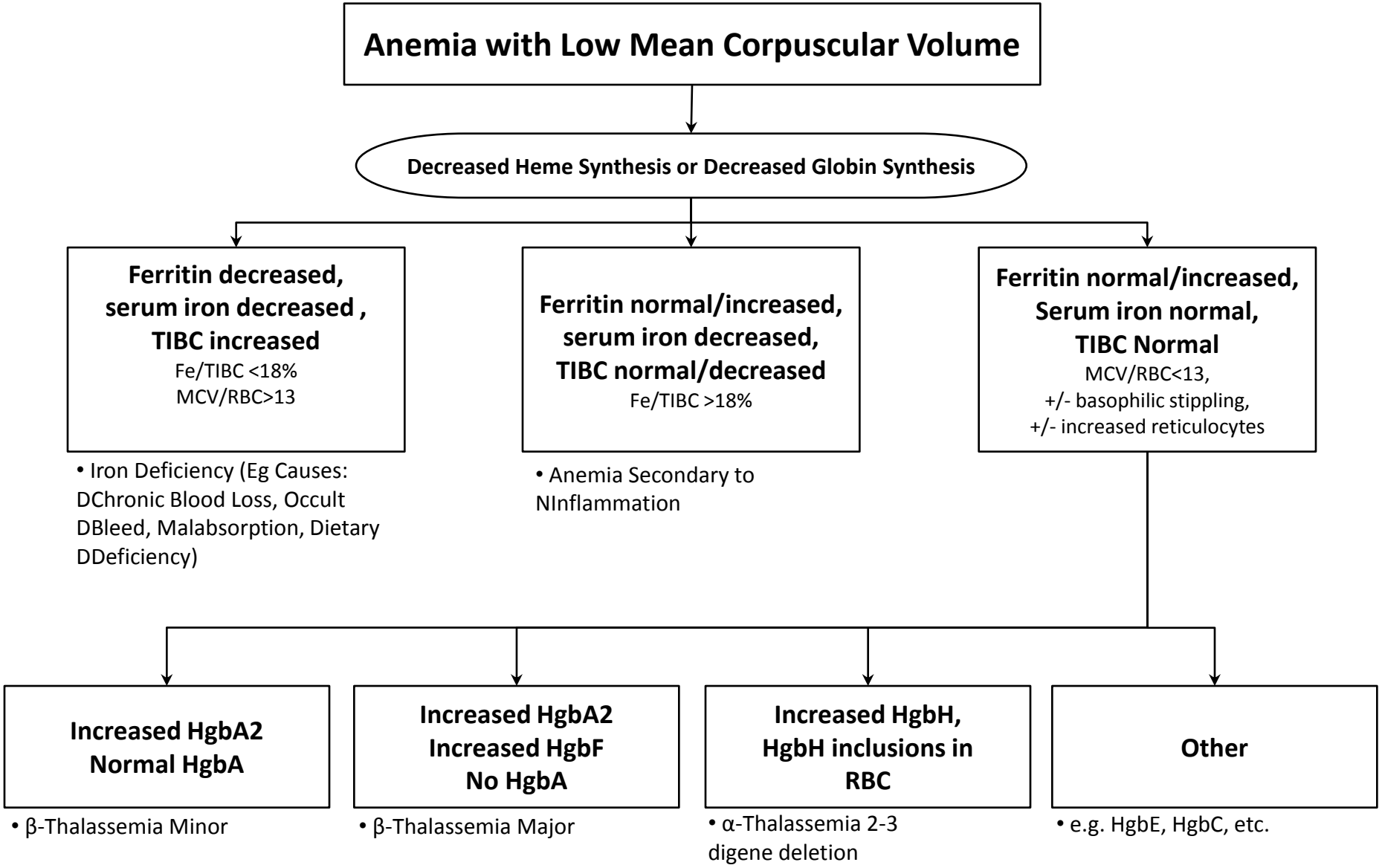
ANEMIA WITH ELEVATED MCV



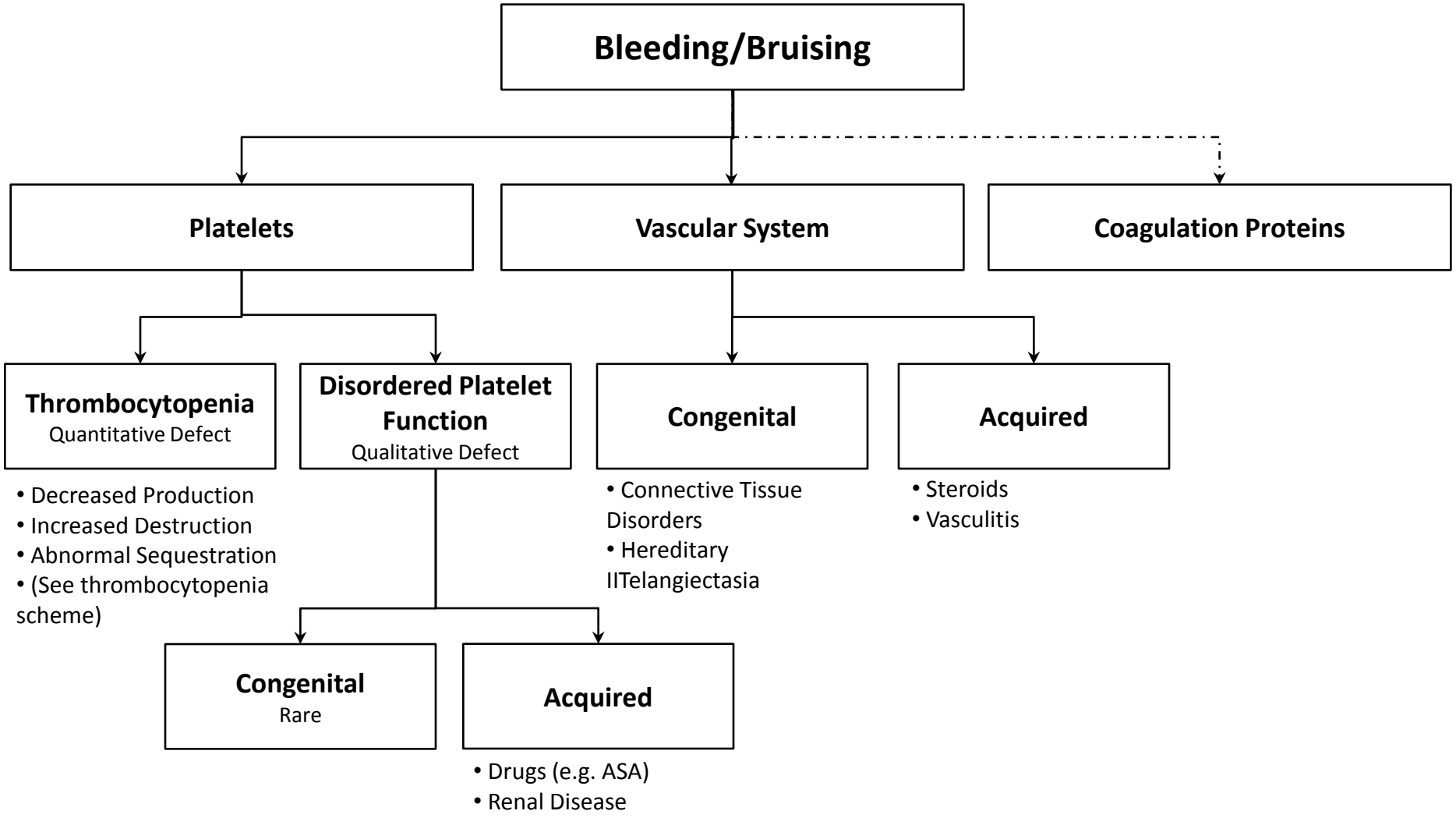
ANEMIA WITH NORMAL MCV



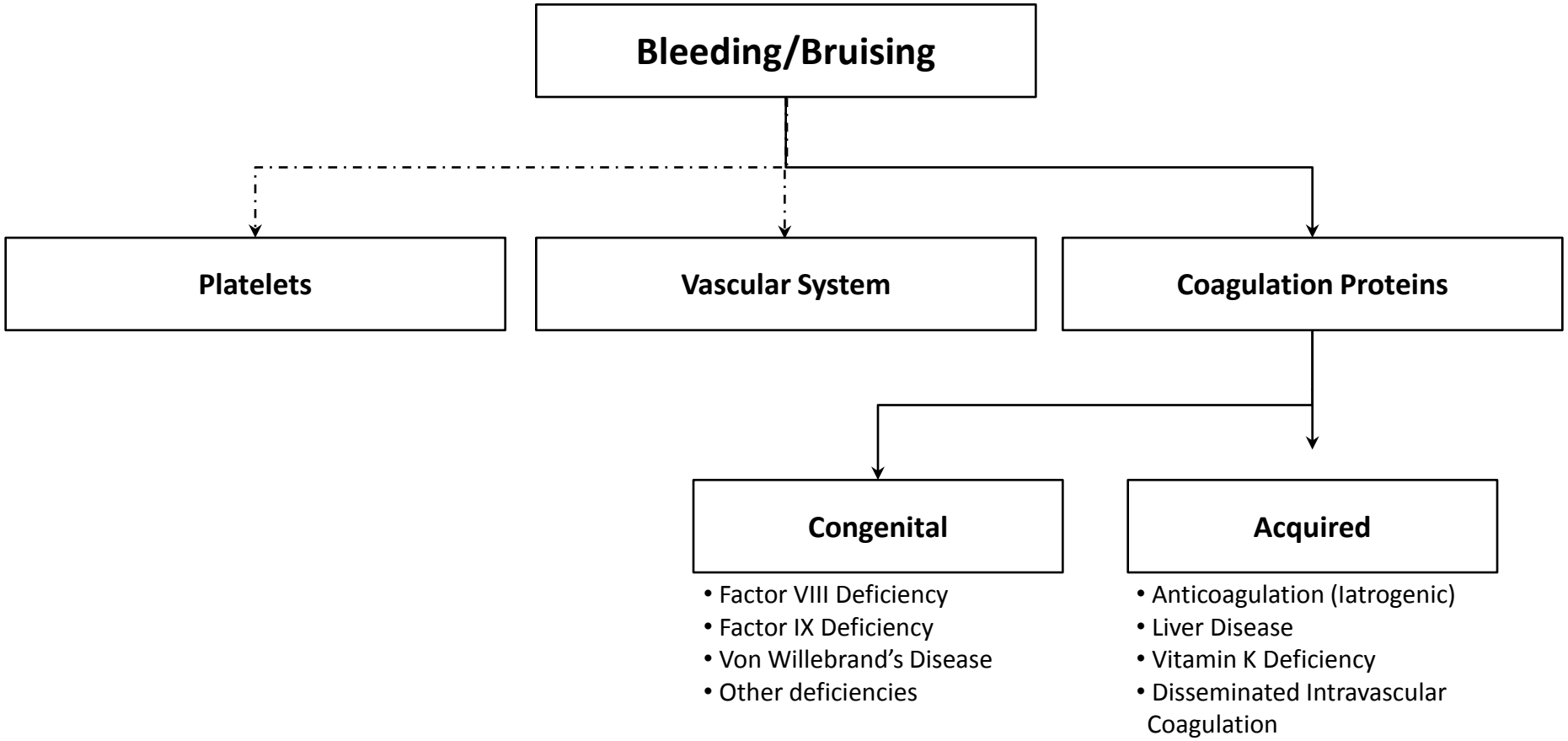
ANEMIA WITH LOW MCV



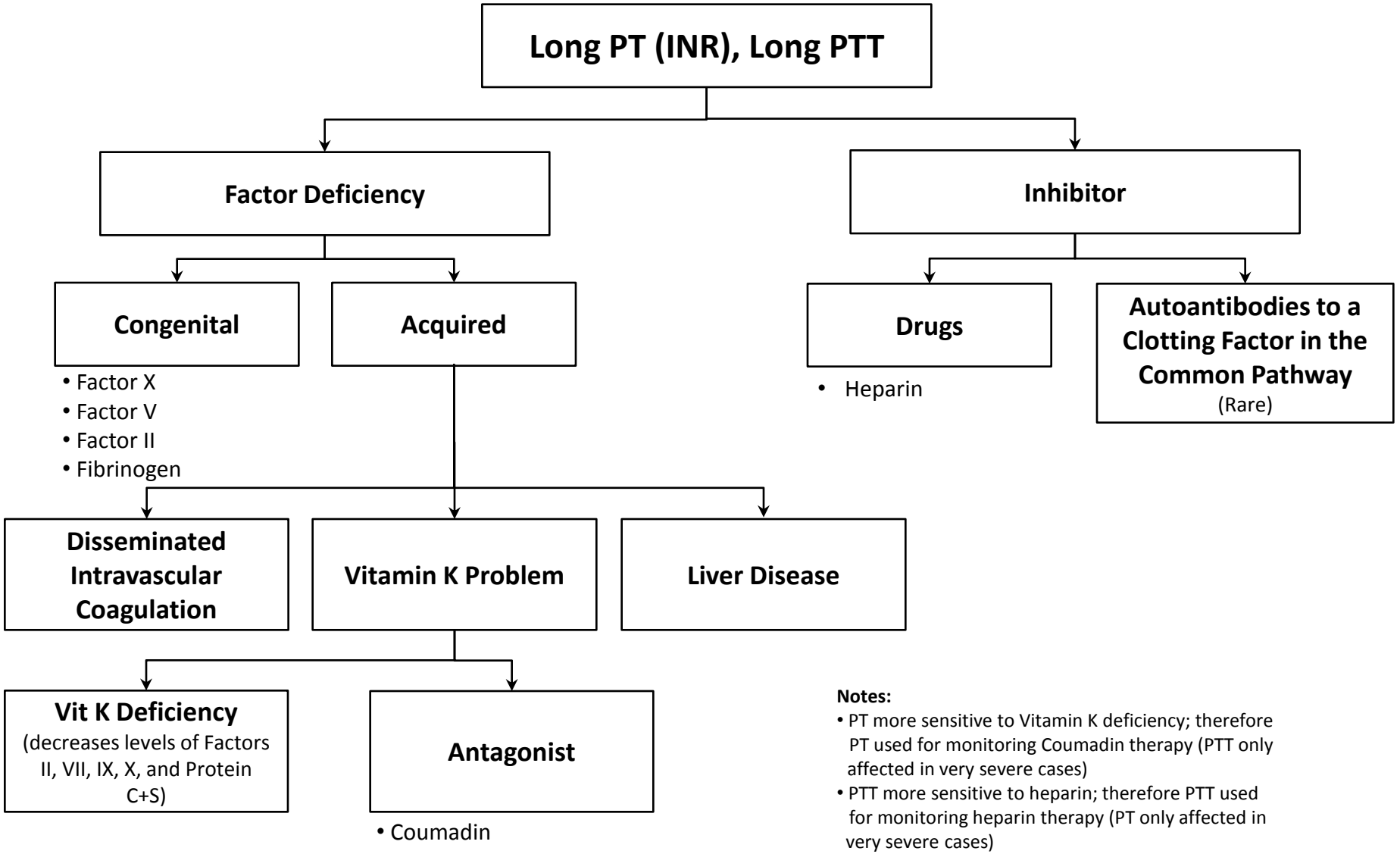
APPROACH TO BLEEDING/BRUISING:
Platelets & Vascular System



APPROACH TO BLEEDING/BRUISING: Coagulation Proteins



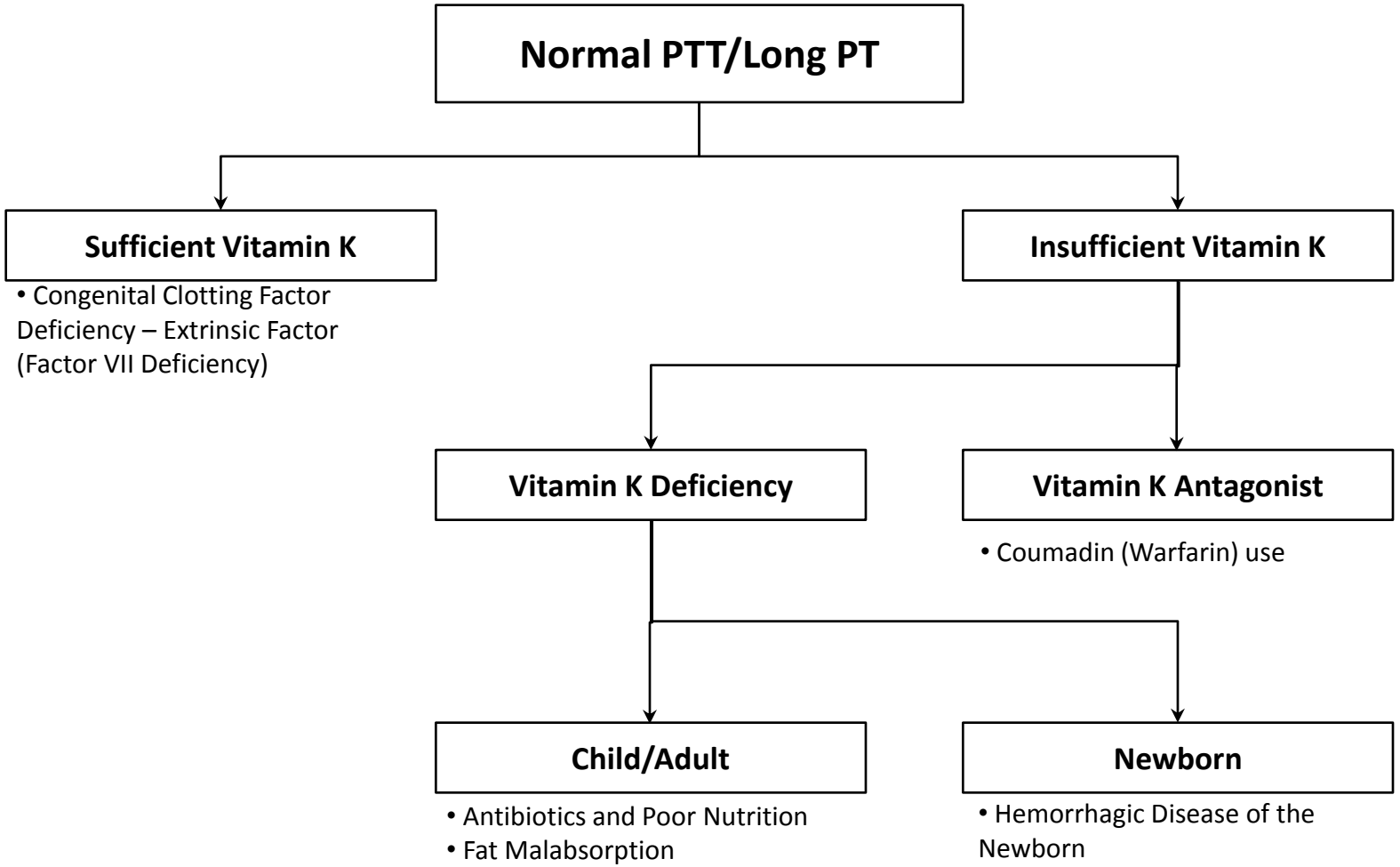
APPROACH TO PROLONGED PT (INR), PROLONGED PTT



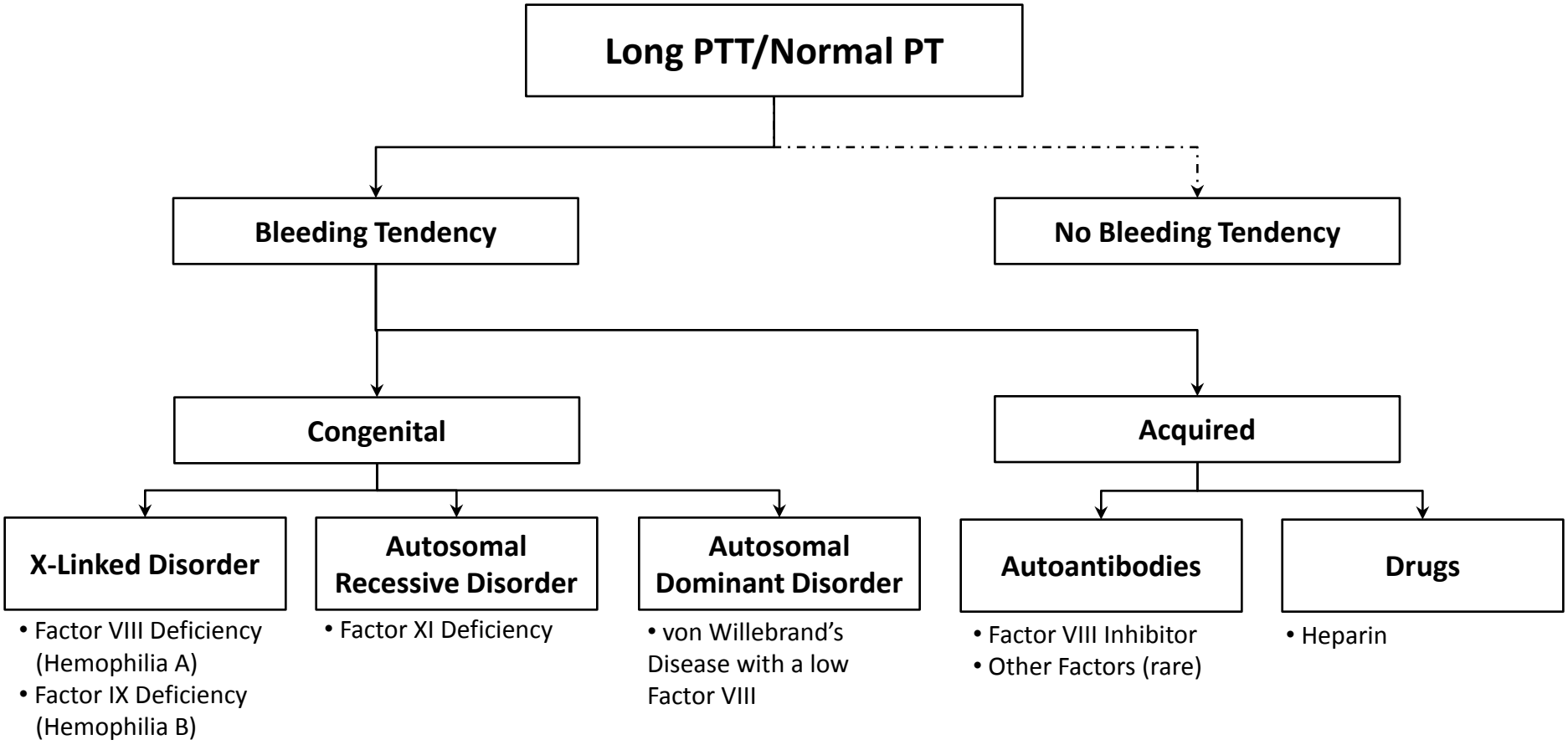
Notes:

- PT more sensitive to Vitamin K deficiency; therefore PT used for monitoring Coumadin therapy (PTT only affected in very severe cases)
- PTT more sensitive to heparin; therefore PTT used for monitoring heparin therapy (PT only affected in very severe cases)

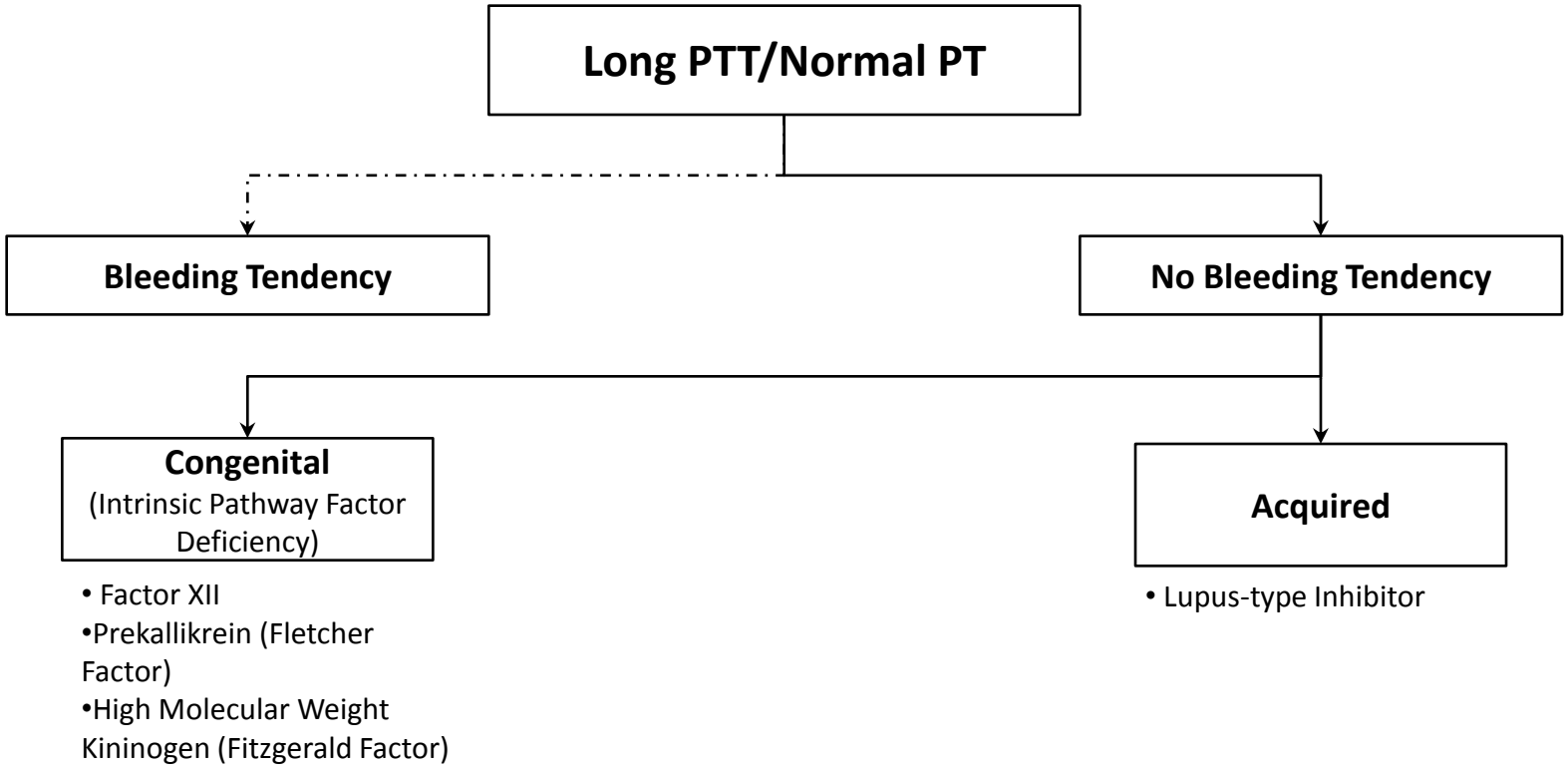
PROLONGED PT (INR), NORMAL PTT



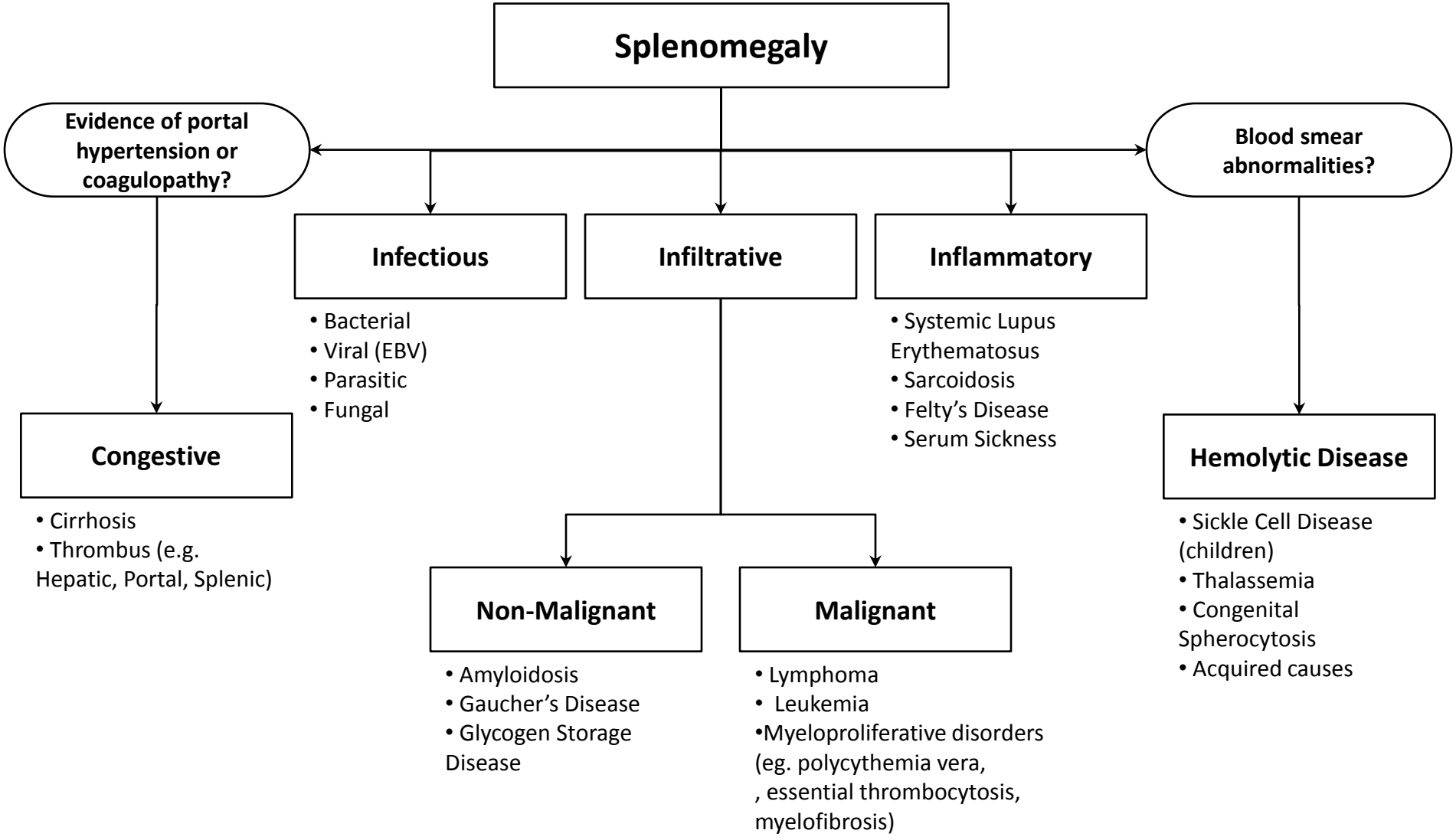
PROLONGED PTT, NORMAL PT (INR): Bleeding Tendency



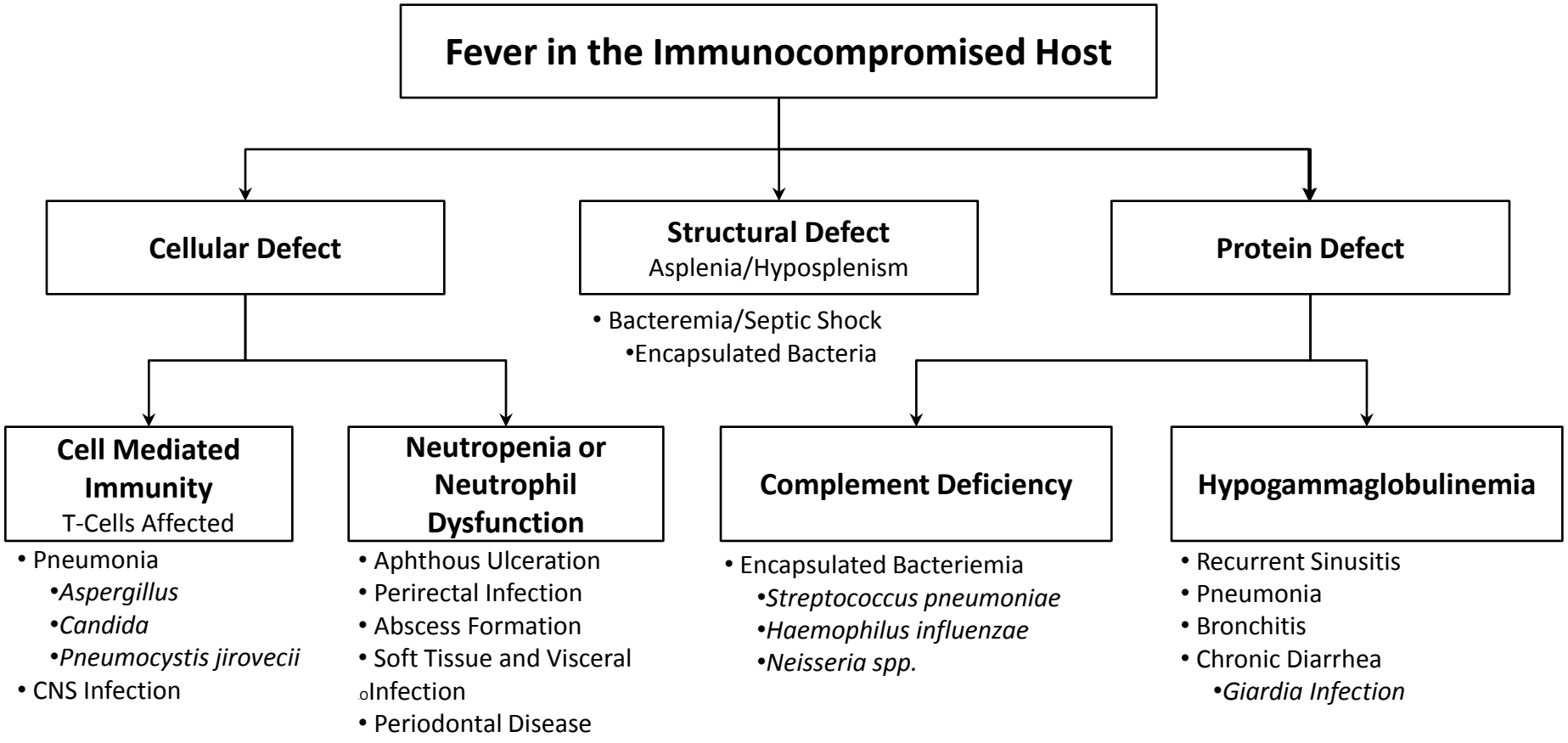
PROLONGED PTT, NORMAL PT (INR): No Bleeding Tendency



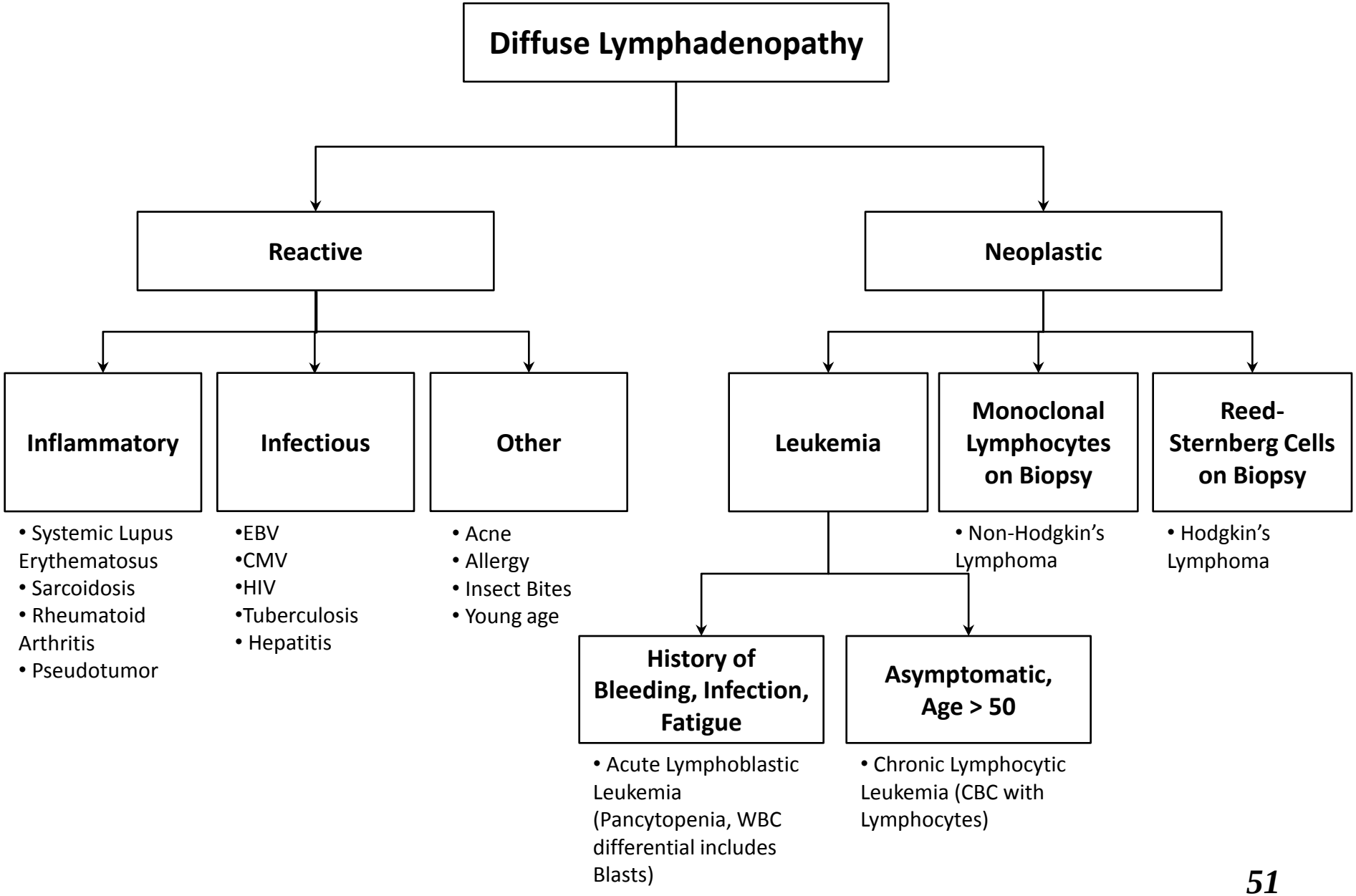
APPROACH TO SPLENOMEGALY



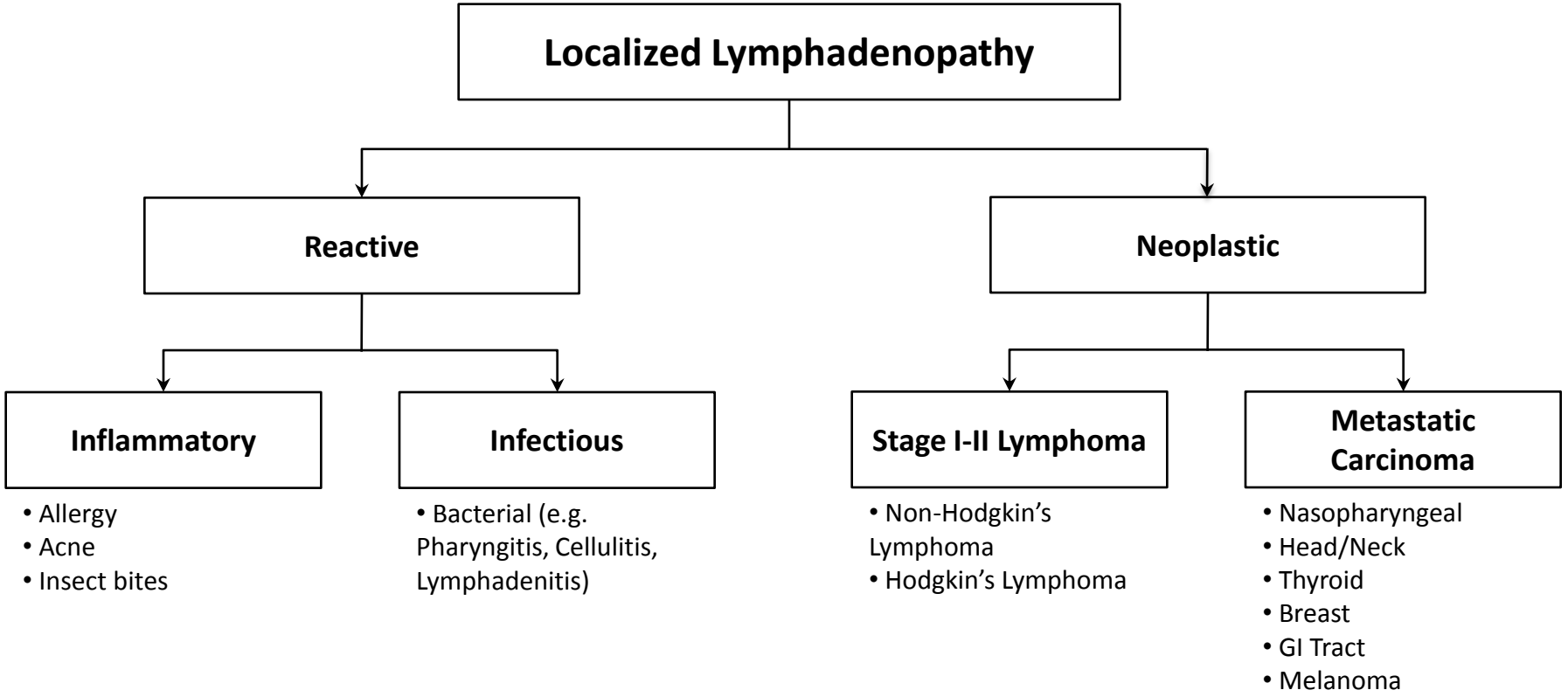
FEVER IN THE IMMUNOCOMPROMISED HOST



LYMPHADENOPATHY: Diffuse

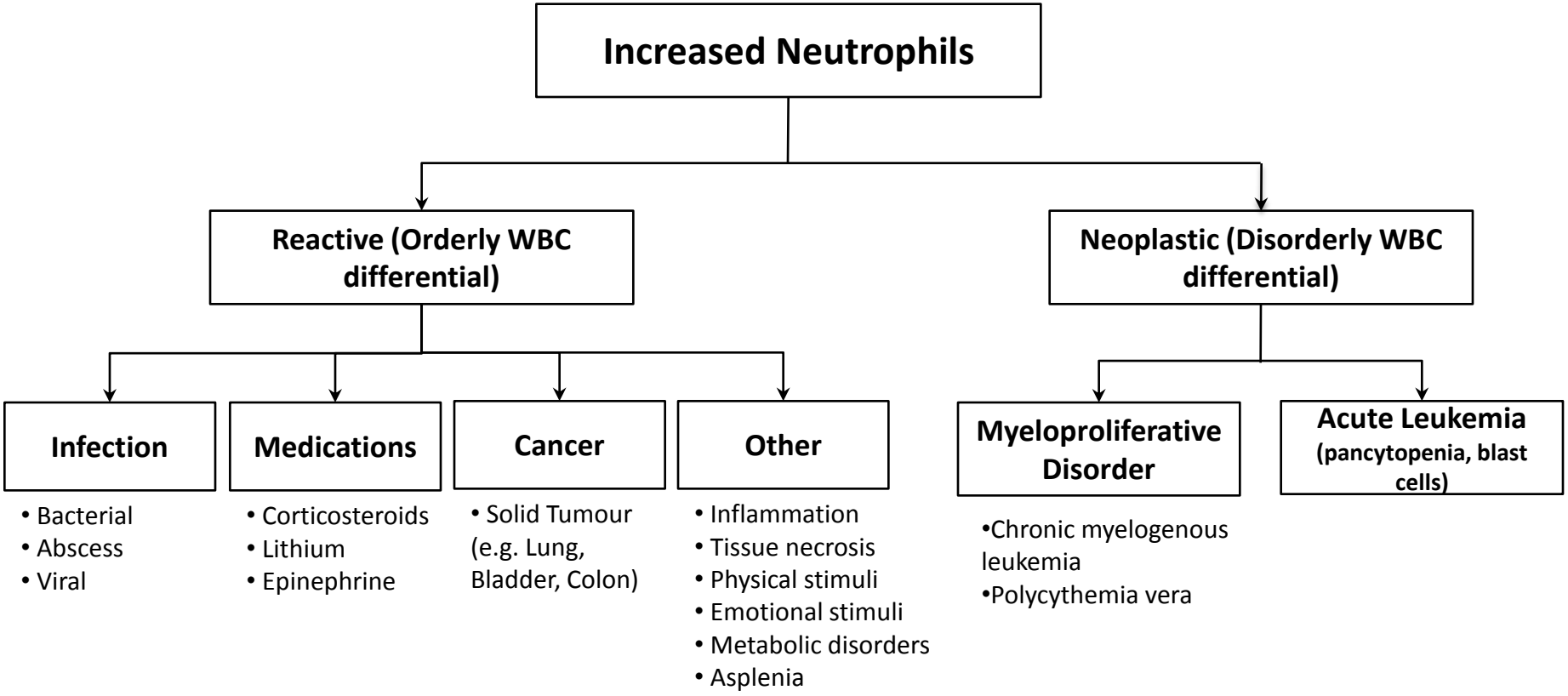


LYMPHADENOPATHY: Localized

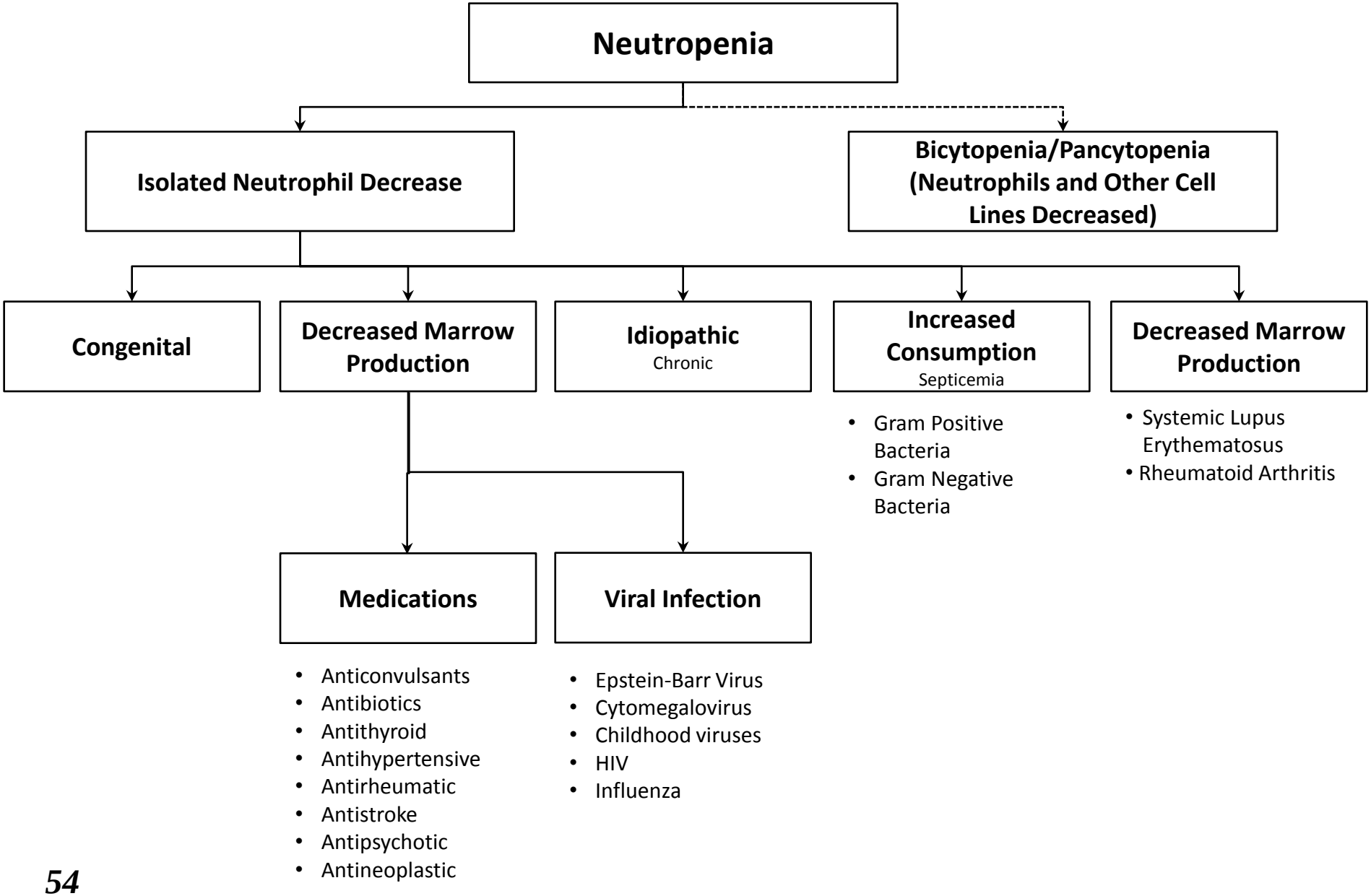


Cervical	**Supraclavicular**	**Axillary**	**Epitrochlear** (Always pathologic)	**Inguinal**
<u>Anterior</u> • Infection (e.g. Mononucleosis, Toxoplasmosis) <u>Posterior</u> • TB • Lymphoma • Kikuchi Disease • Head/Neck Malignancy	• Thoracic Malignancy (Breast, Mediastinum, Lungs, Esophagus) • Abdominal Malignancy (Virchow's Node)	• Infection (Arm, Thoracic Wall, Breast) • Cancer (In absence of infection in upper extremity)	• Infection (Forearm/Hand) • Lymphoma • Sarcoidosis • Tularemia • Secondary Syphilis	• Leg Infection • Sexually Transmitted Infection • Cancer

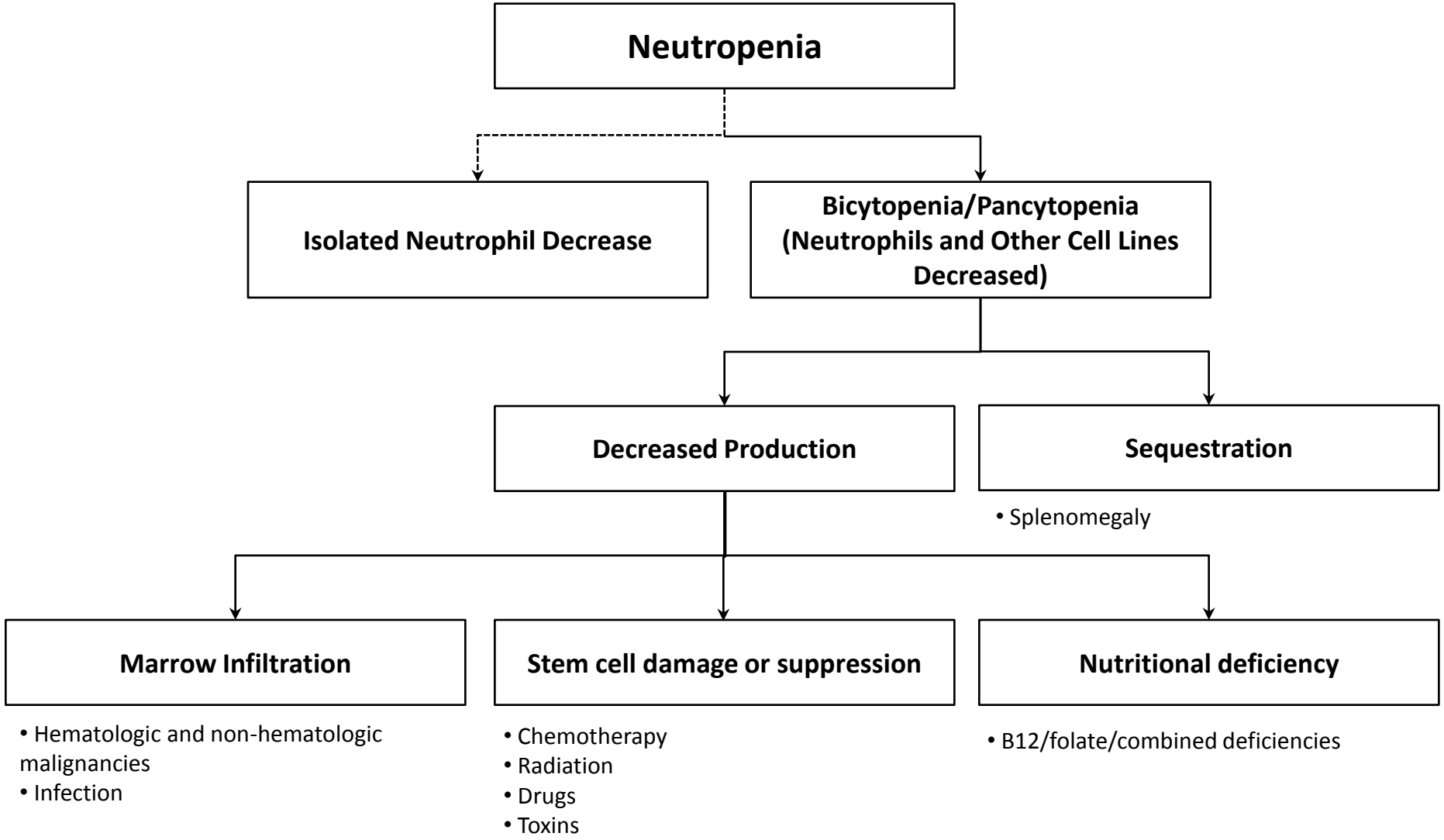
NEUTROPHILIA



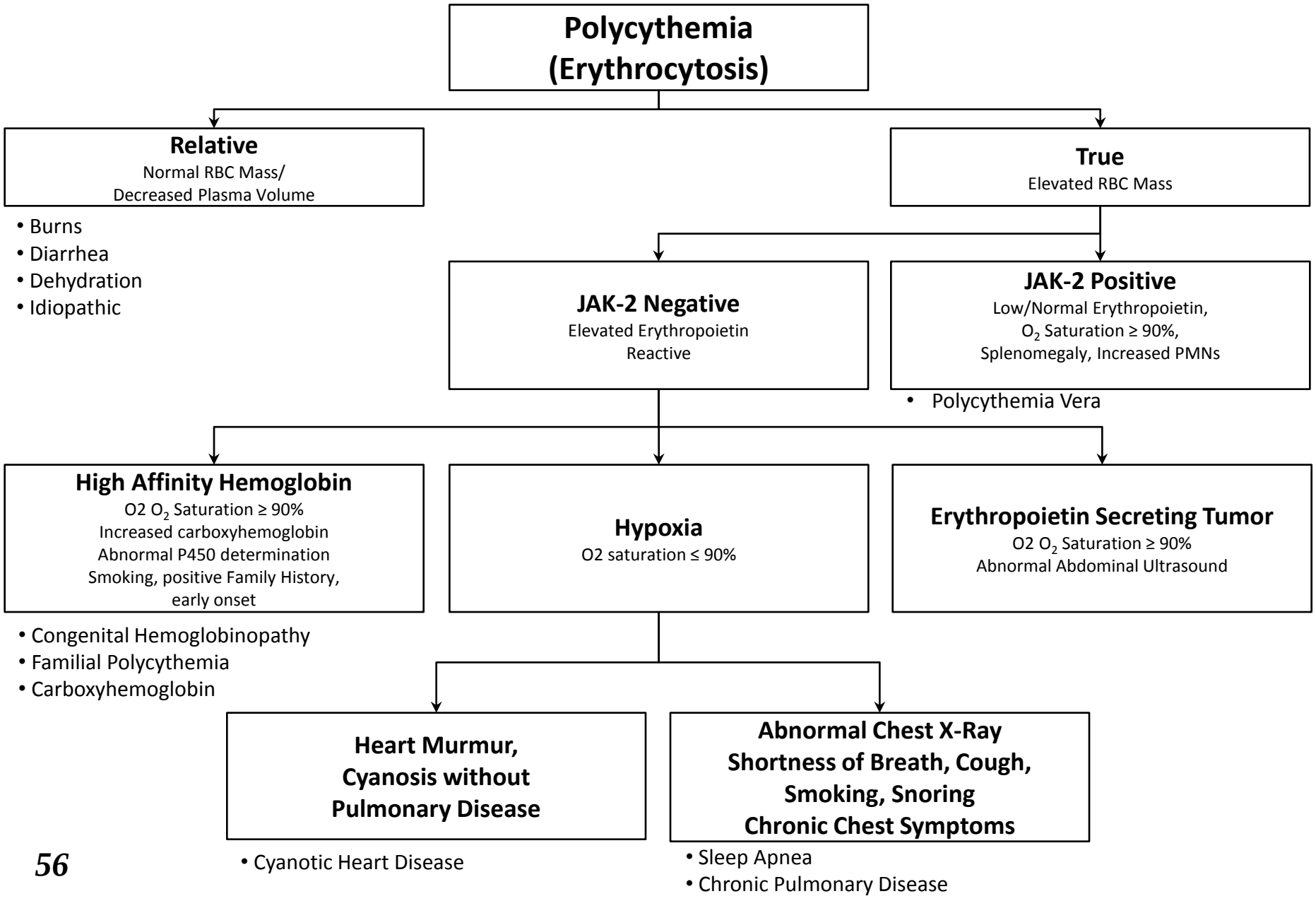
NEUTROPENIA: Decreased Neutrophils Only



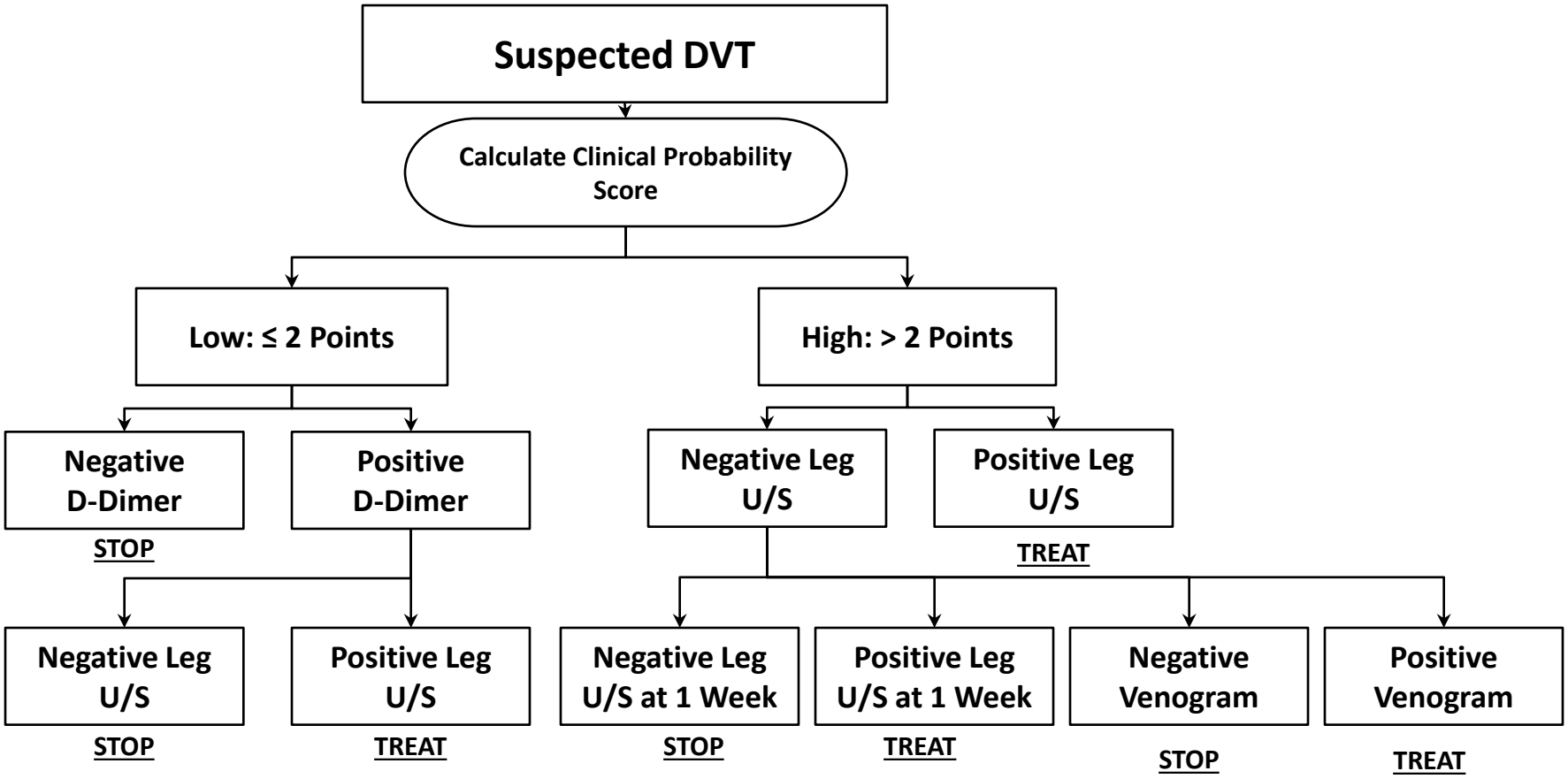
NEUTROPENIA: Bicytopenia/Pancytopenia



POLYCYTHEMIA



SUSPECTED DEEP VEIN THROMBOSIS (DVT)

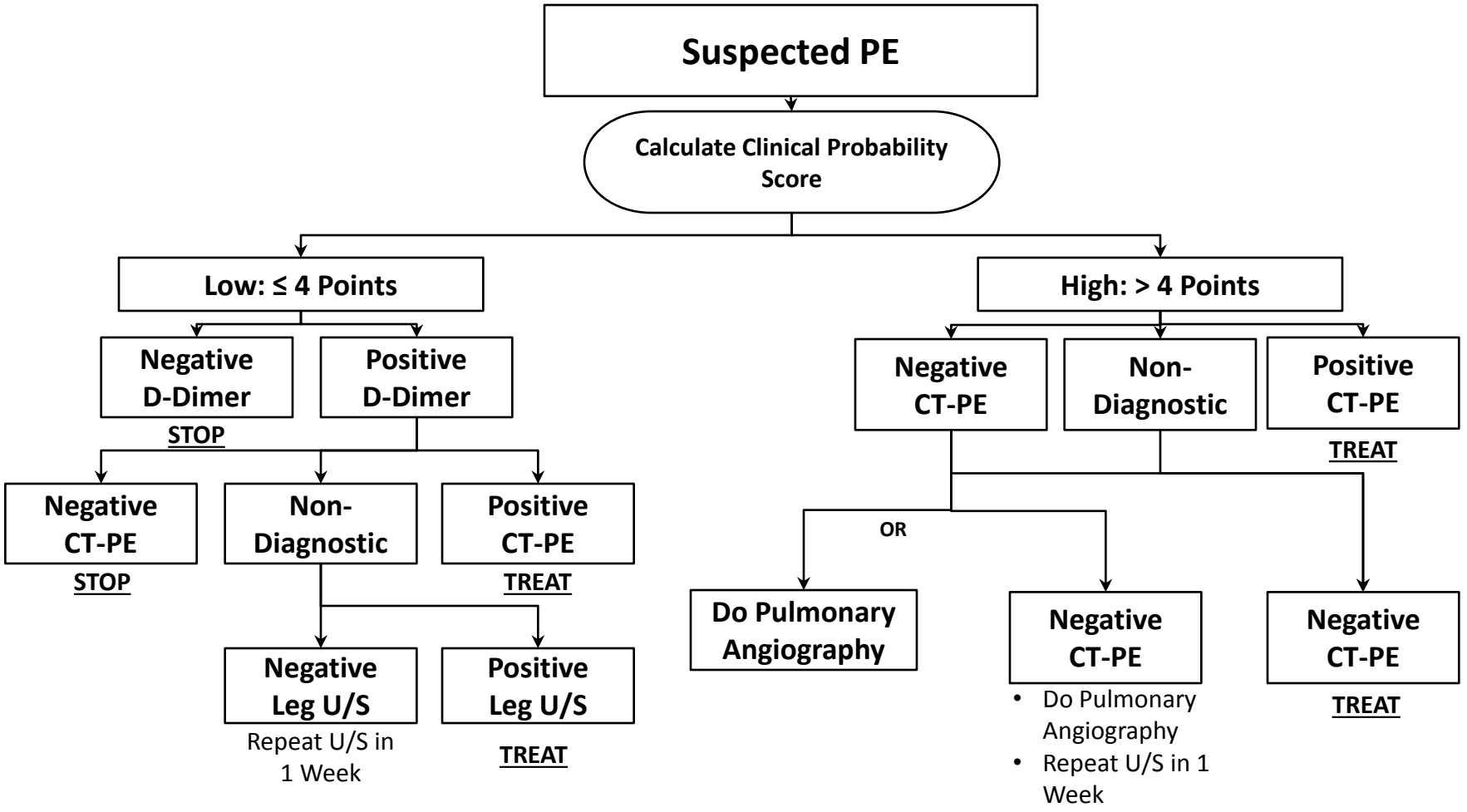


Well's Criteria for DVT

Active Cancer	(1)	
Paralysis, paresis, recent immobilization of lower extremity		(1)
Recently bedridden for >3days, or major surgery in last 4 weeks		(1)
Localized tenderness along distribution of the deep venous system		(1)
Entire leg swollen	(1)	
Calf swelling by >3cm compared to asymptomatic leg	(1)	
Pitting edema (greater in symptomatic leg)	(1)	
Collateral, nonvaricose superficial veins	(1)	
Alternative diagnosis as or more likely than DVT	(-2)	

Wells, P.S. *et al.* (2003). Evaluation of D-dimer in the diagnosis of suspected deep-vein thrombosis. *New England Journal of Medicine*; 349: 1227-1235.

SUSPECTED PULMONARY EMBOLISM (PE)

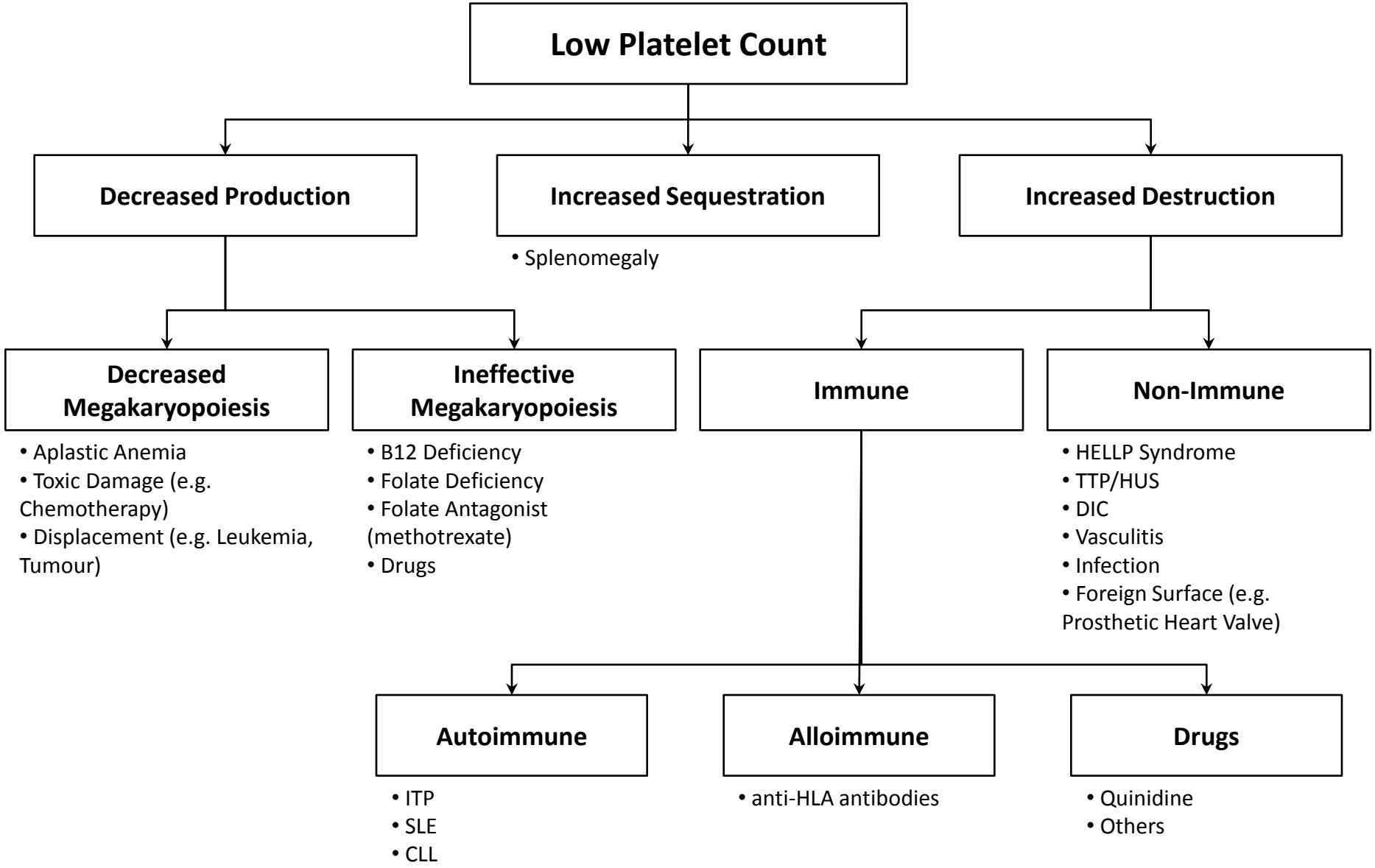


Well's Criteria for PE

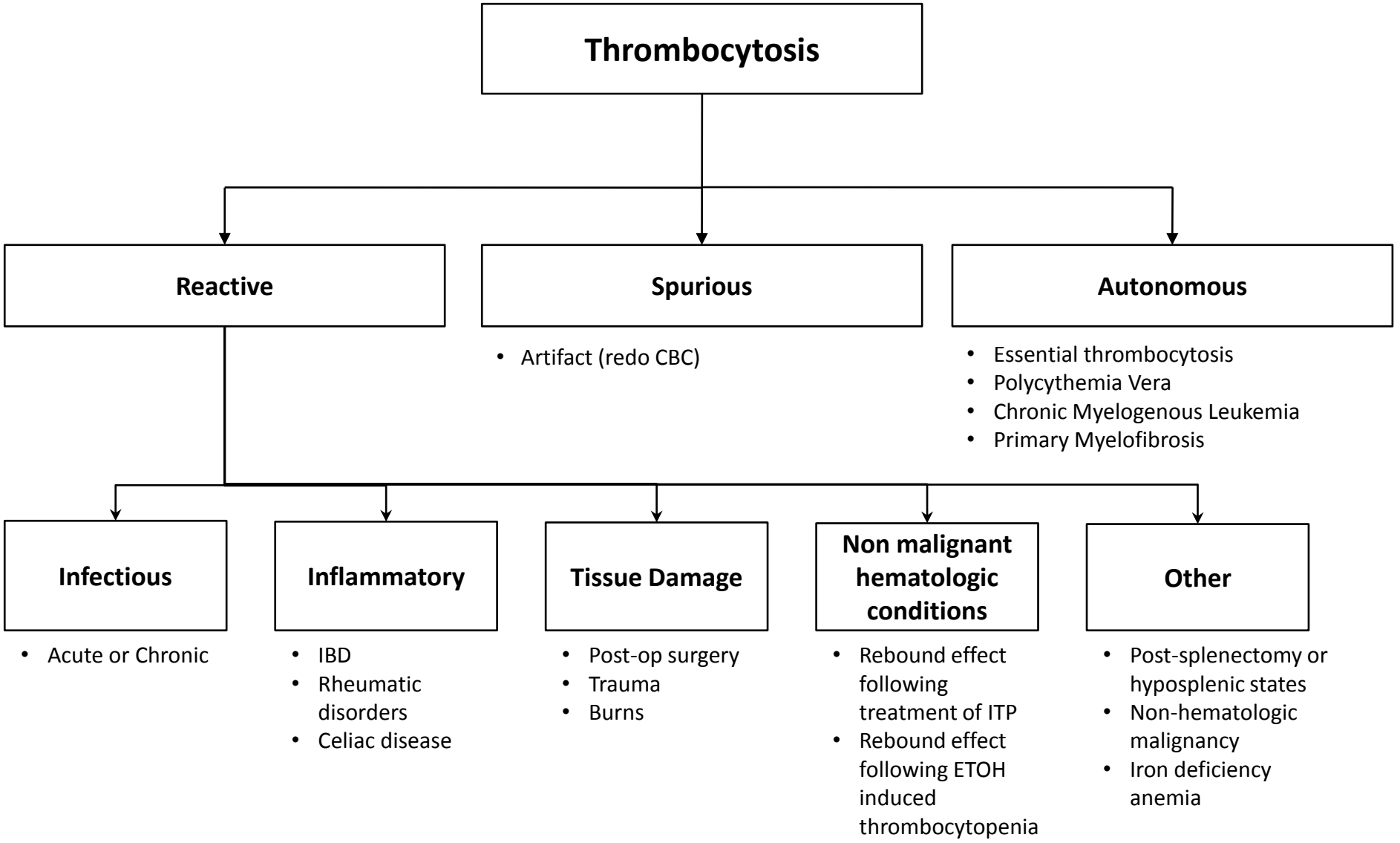
Clinical Signs and Symptoms of DVT (leg swelling and pain with palpation of the deep veins)	(3.0)
Alternative diagnosis less likely than PE	(3.0)
Heart rate >100bpm	(1.5)
Immobilization or surgery in last 4 weeks	(1.5)
Previous DVT or PE	(1.5)
Hemoptysis	(1.0)
Malignancy (ongoing or previous 6 months)	(1.0)

Wells P.S, et al. (2000). Derivation of a simple clinical model to categorize patients probability of pulmonary embolism: increasing the models utility with the SimpliRED D-dimer. Thromb Haemost 2003; 83: 416-20. Writing Group for the Christopher Study Investigators. (2006). Effectiveness of managing suspected pulmonary embolism using an algorithm combining clinical probability, D-Dimer testing, and computer tomography. JAMA;295: 172-179.

THROMBOCYTOPENIA



THROMBOCYTOSIS



Gastrointestinal Presentations

Gastrointestinal Presentations

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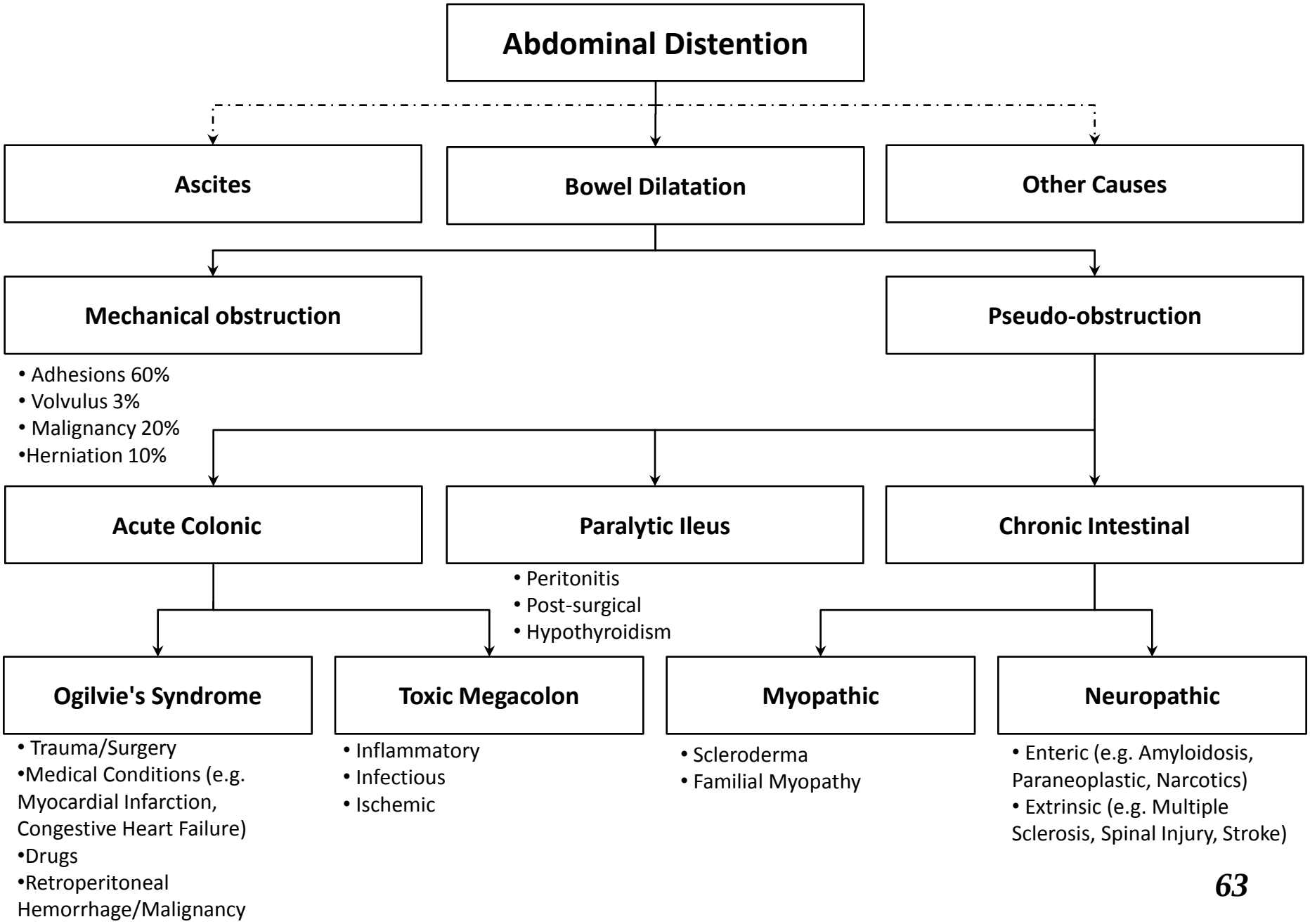
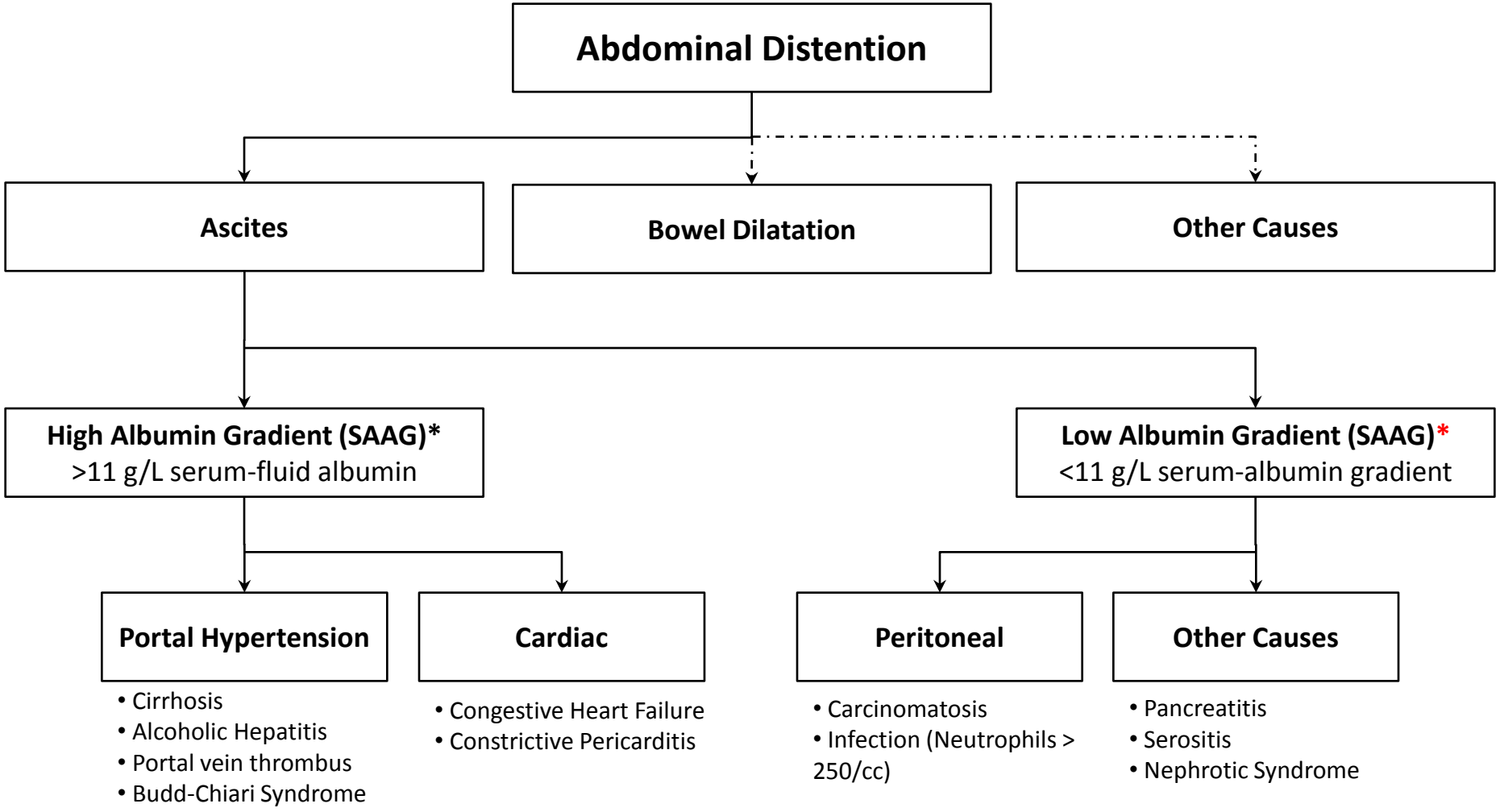
ABDOMINAL DISTENTION: Abdominal Distention



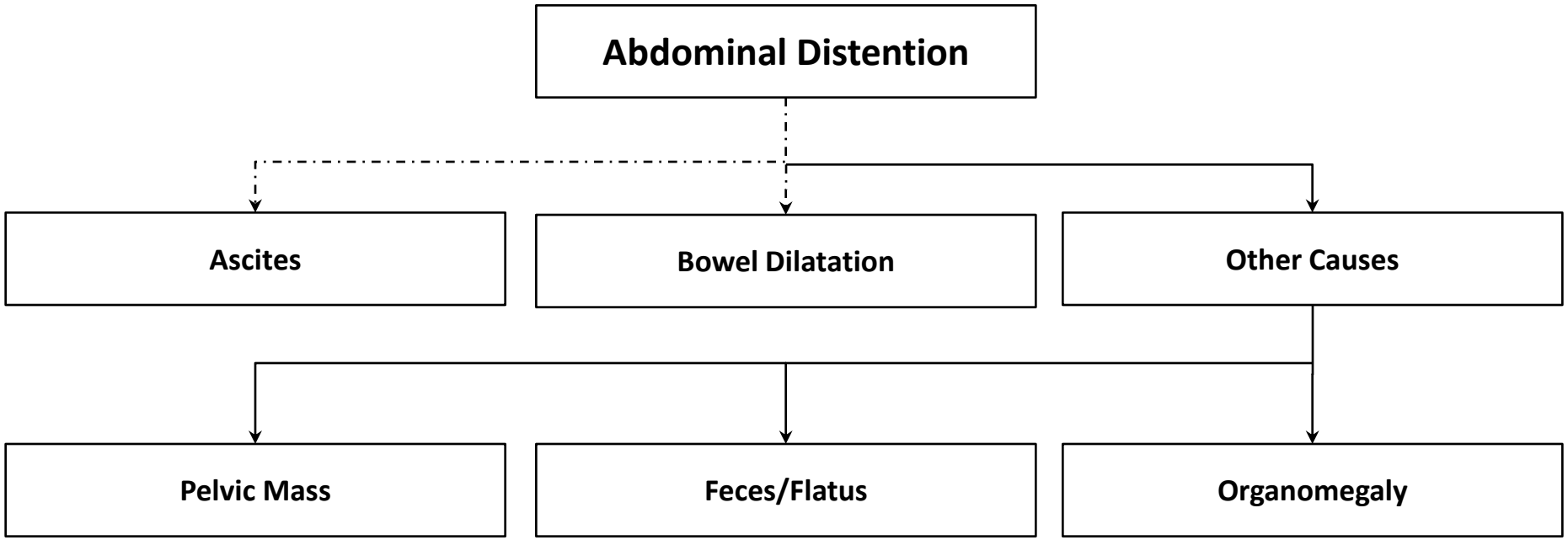
ABDOMINAL DISTENTION: Ascites



Clinical pearl: "rule of 97": SAAG 97% accurate. If high SAAG, 97% of time it is cirrhosis/portal hypertension. If low SAAG, 97% time carcinomatosis (and cytology 97% sensitive)

*Serum Ascites Albumin Gradient (SAAG) = [Serum albumin] – [Peritoneal fluid albumin]

ABDOMINAL DISTENTION: Other Causes



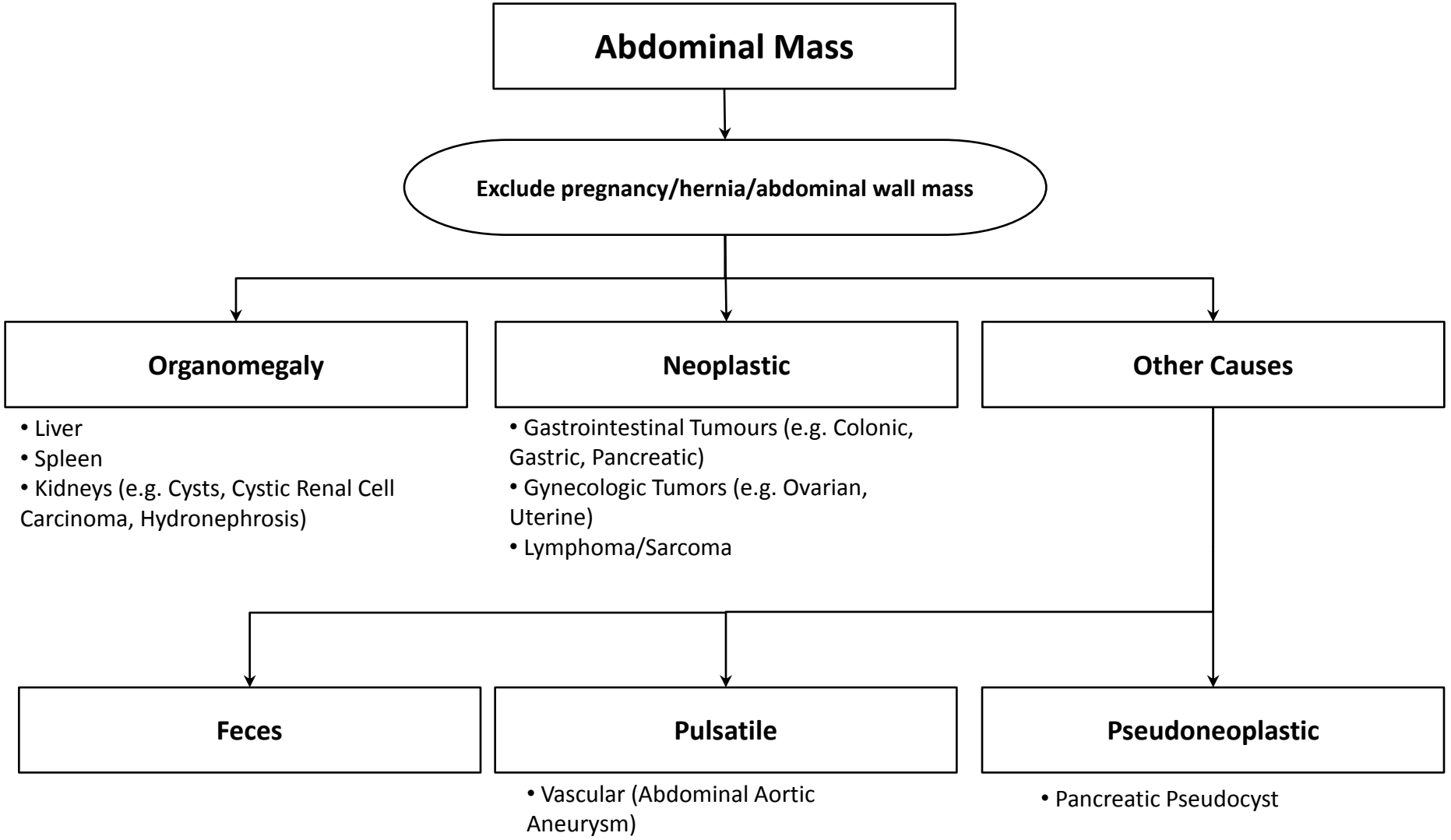
- Pregnancy
- Fibroids
- Ovarian Mass
- Bladder Mass
- Malignancy
- Obesity

- Constipation
- Irritable Bowel Syndrome
- Carbohydrate Malabsorption
- Diet (Lactose Intolerance)
- Chronic Obstruction

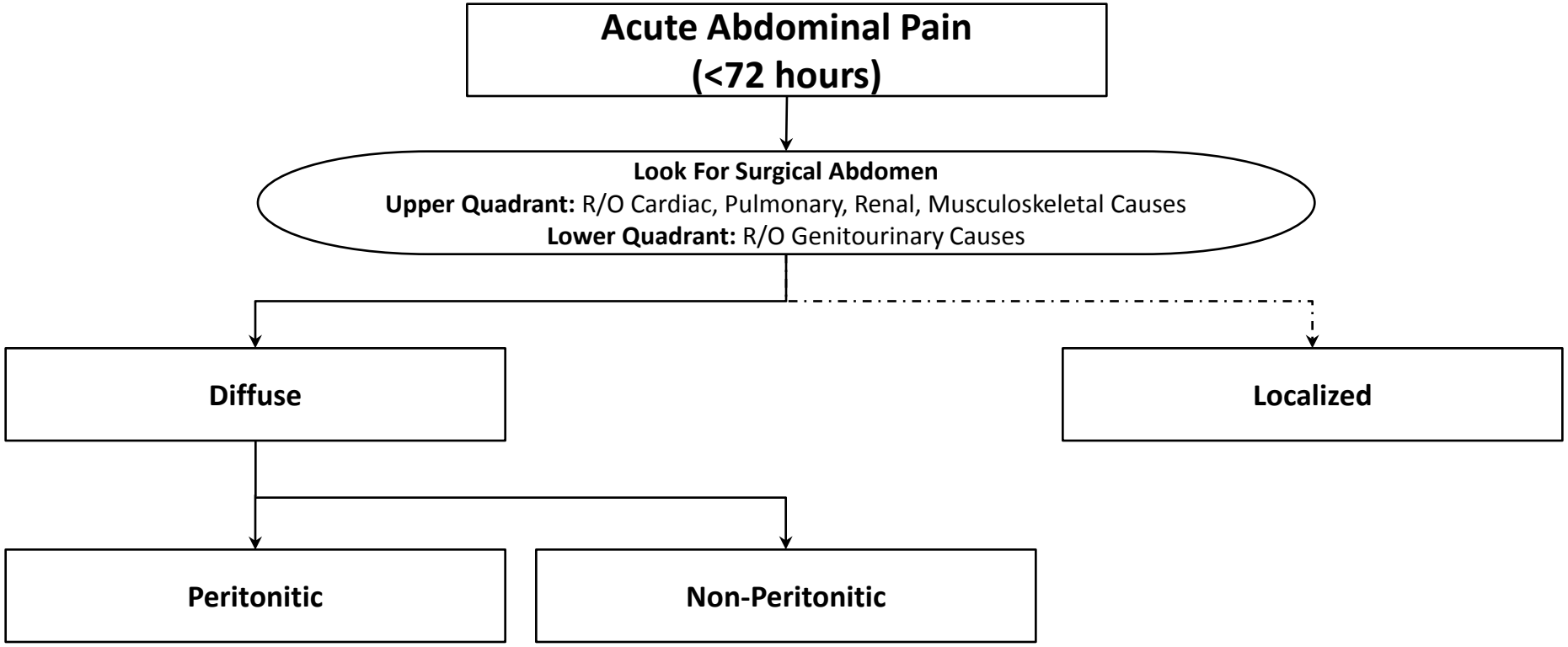
- Hepatomegaly
- Splenomegaly
- Hydronephrosis
- Renal Cysts
- Aortic Aneurysm

6 Fs of Abdominal Distention
- *Fluid*
- *Feces*
- *Flatus*
- *Fetus*
- *Fibroids and benign masses*
- *Fatal tumour*

ABDOMINAL MASS



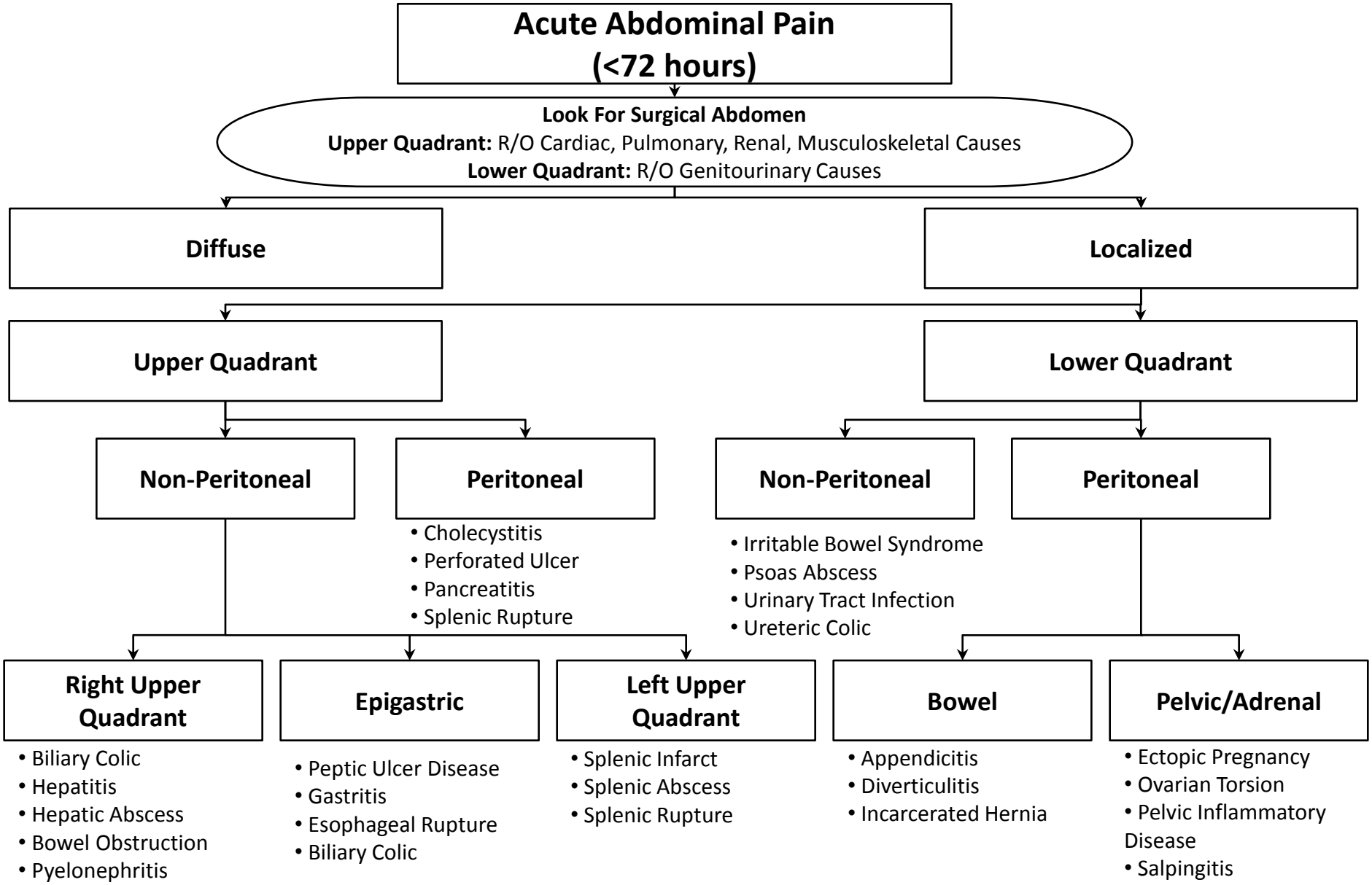
ABDOMINAL PAIN (ADULT): Acute - Diffuse



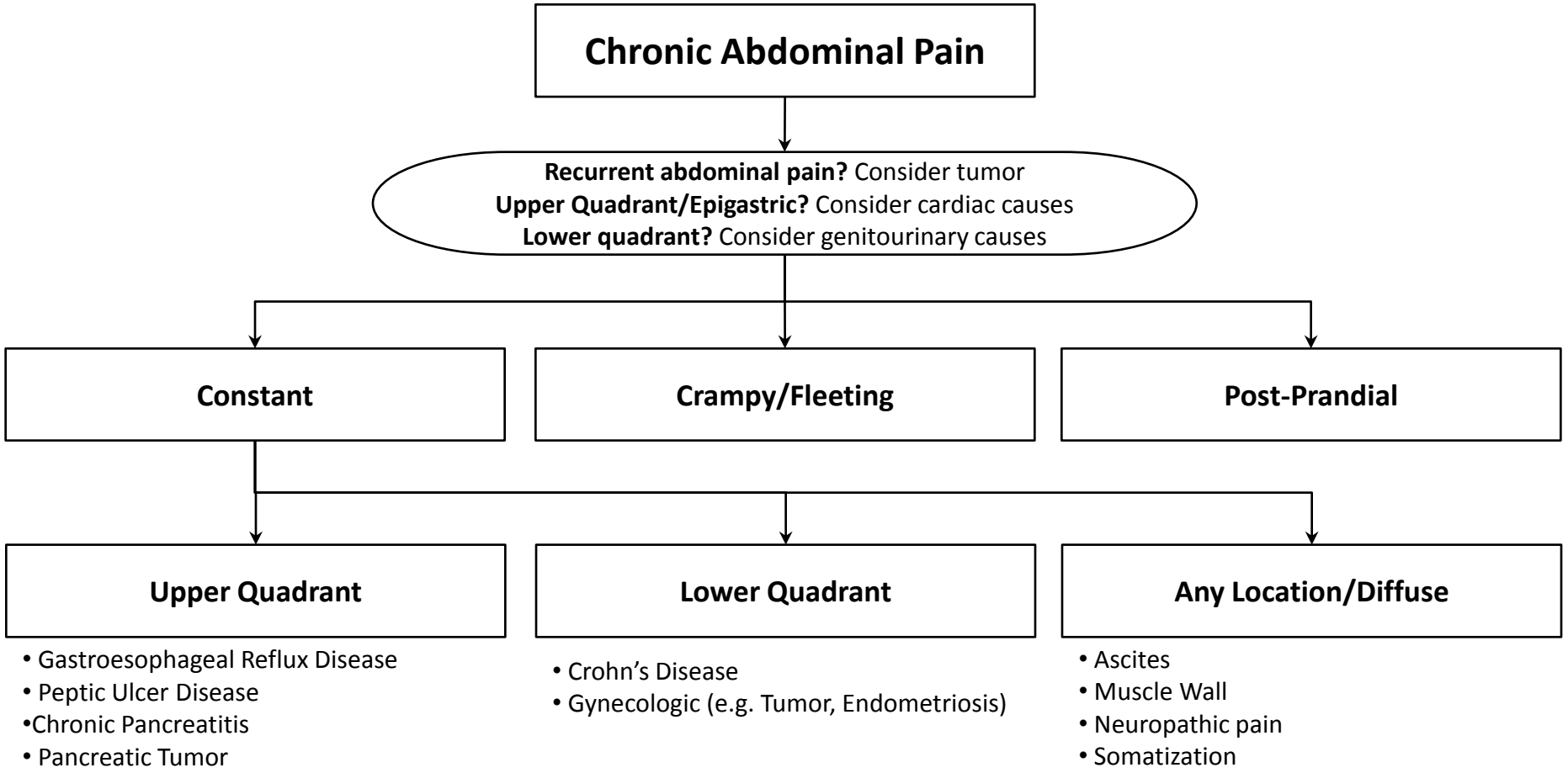
- Pancreatitis
- Bowel Obstruction
- Viscus Perforation
- Intraperitoneal Hemorrhage (ruptured AAA)

- Gastroenteritis
- Irritable Bowel Syndrome
- Constipation
- Metabolic Disease (e.g. Diabetic Ketoacidosis)
- Mesenteric Ischemia
- Mesenteric Thrombus
- Sickle Cell Anemia
- Musculoskeletal
- Trauma
- Peptic Ulcer Disease

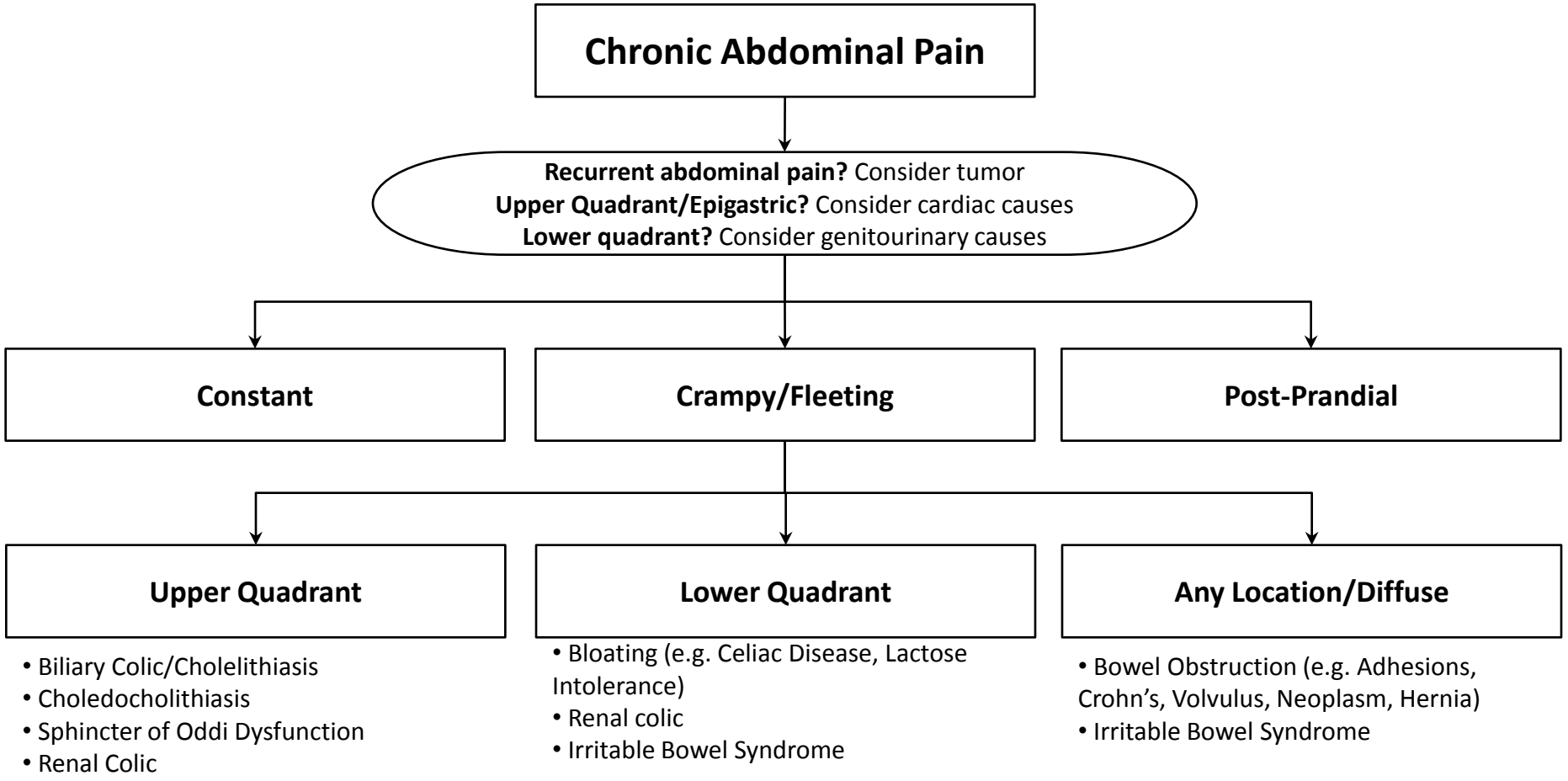
ABDOMINAL PAIN (ADULT): Acute - Localized



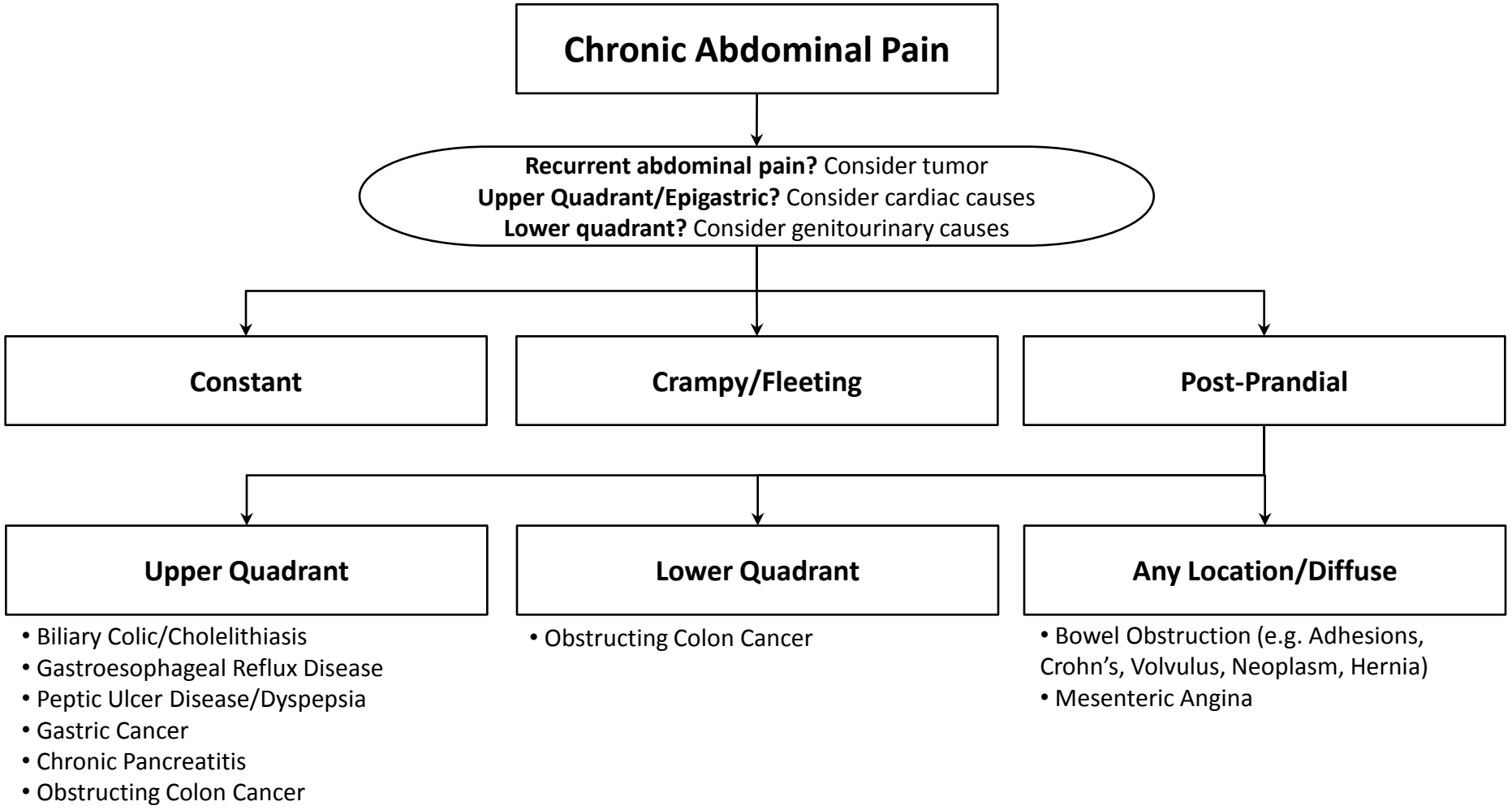
ABDOMINAL PAIN (ADULT): Chronic - Constant



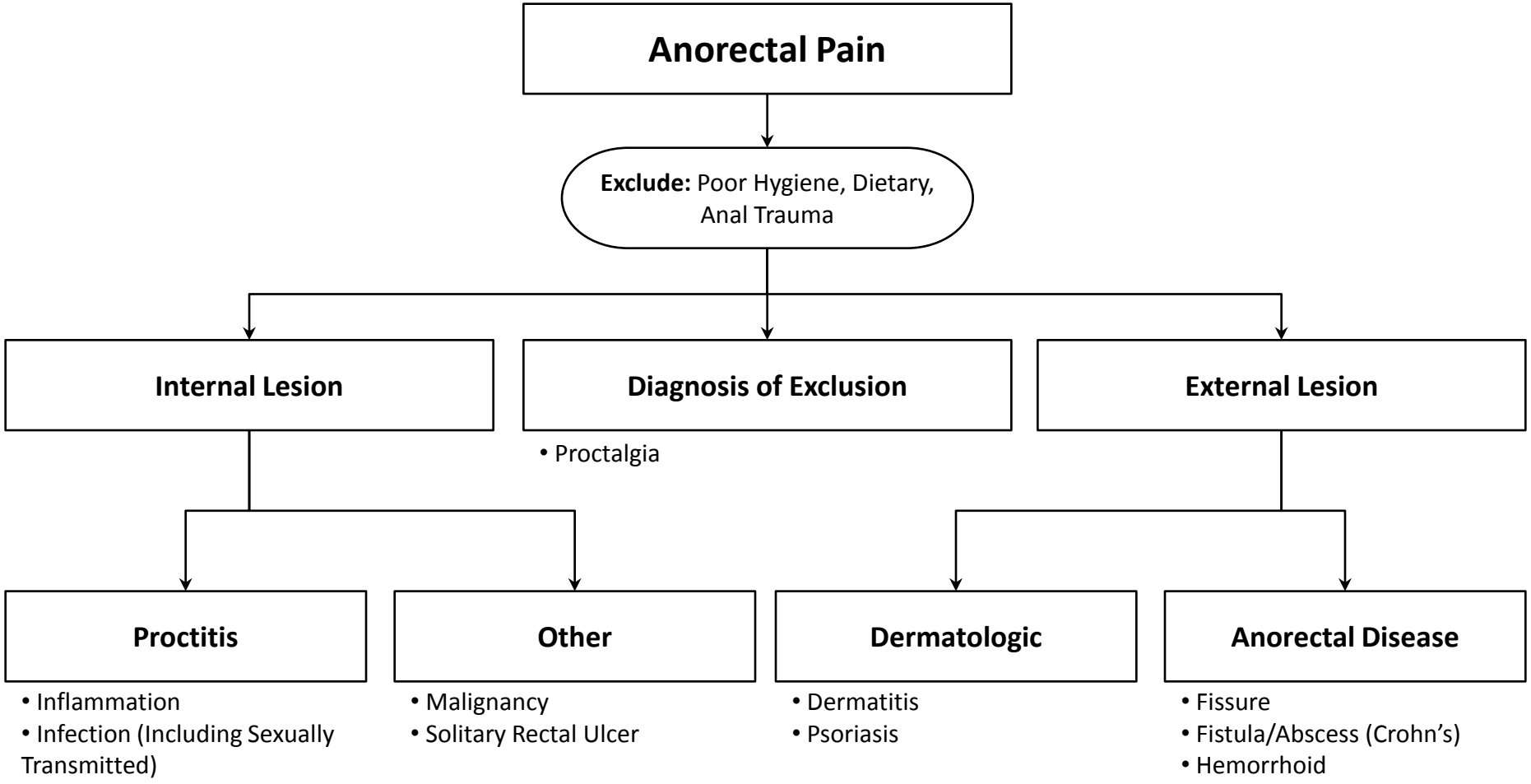
ABDOMINAL PAIN (ADULT): Chronic – Crampy/Fleeting



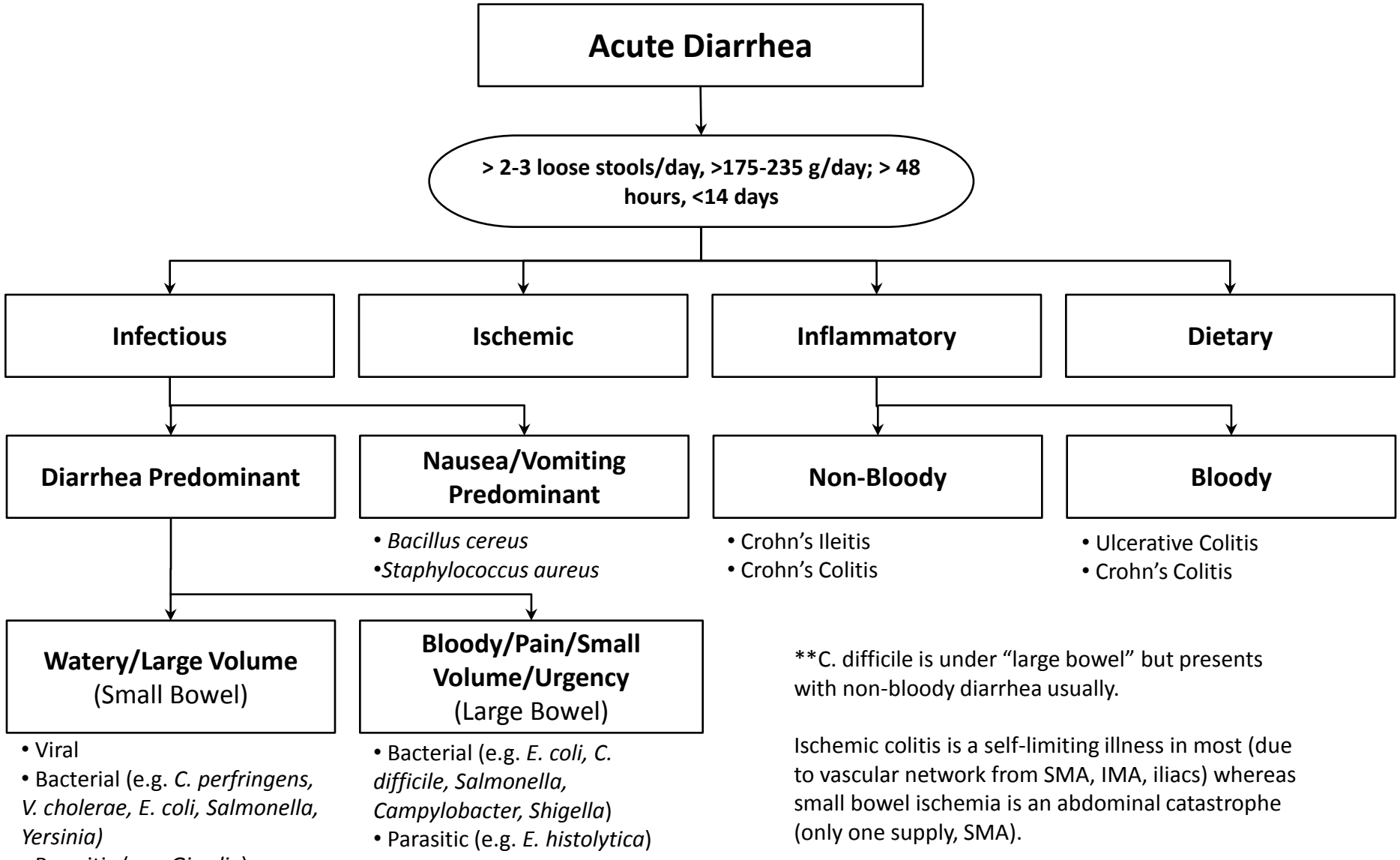
ABDOMINAL PAIN (ADULT): Chronic – Post-Prandial



ANORECTAL PAIN



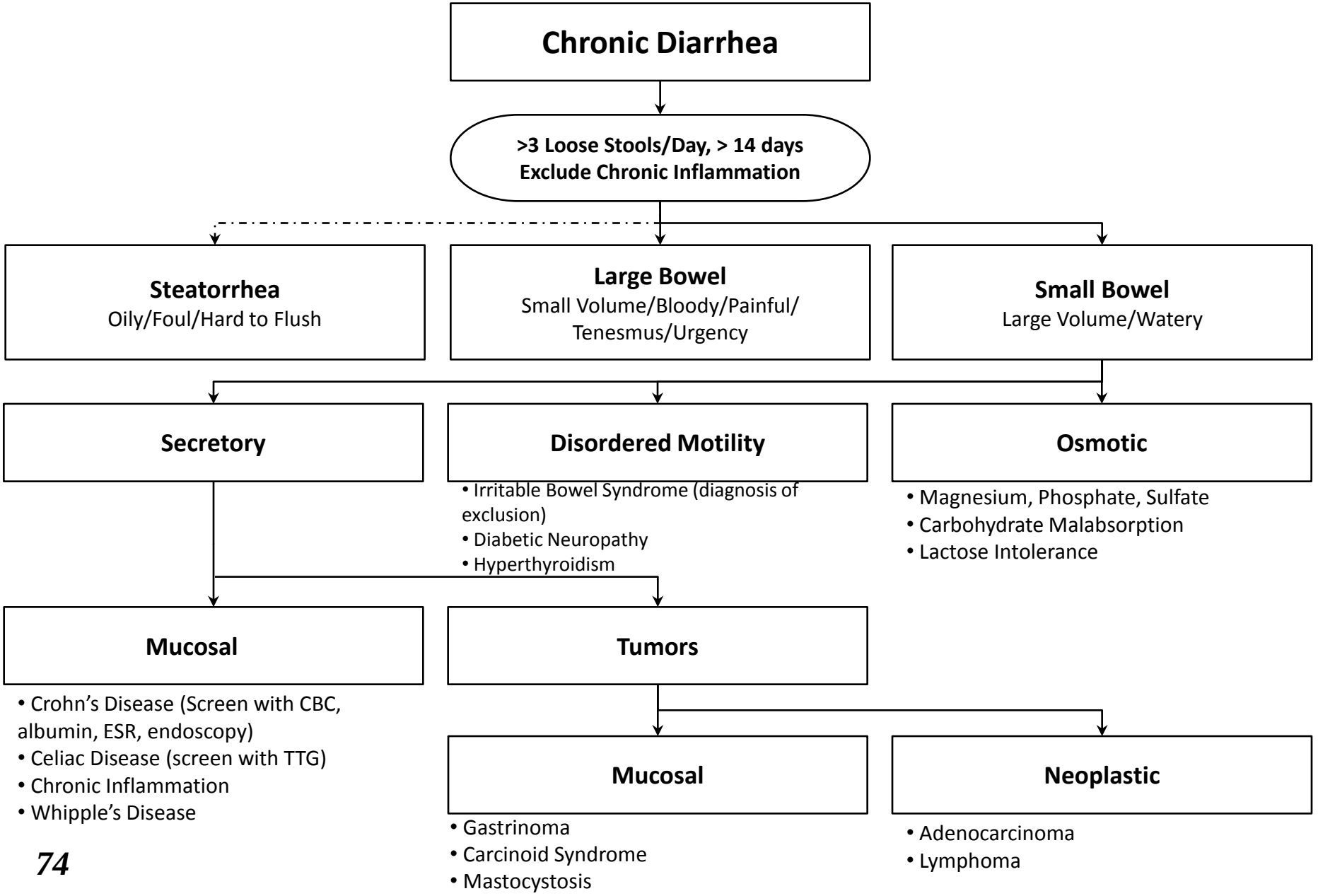
ACUTE DIARRHEA



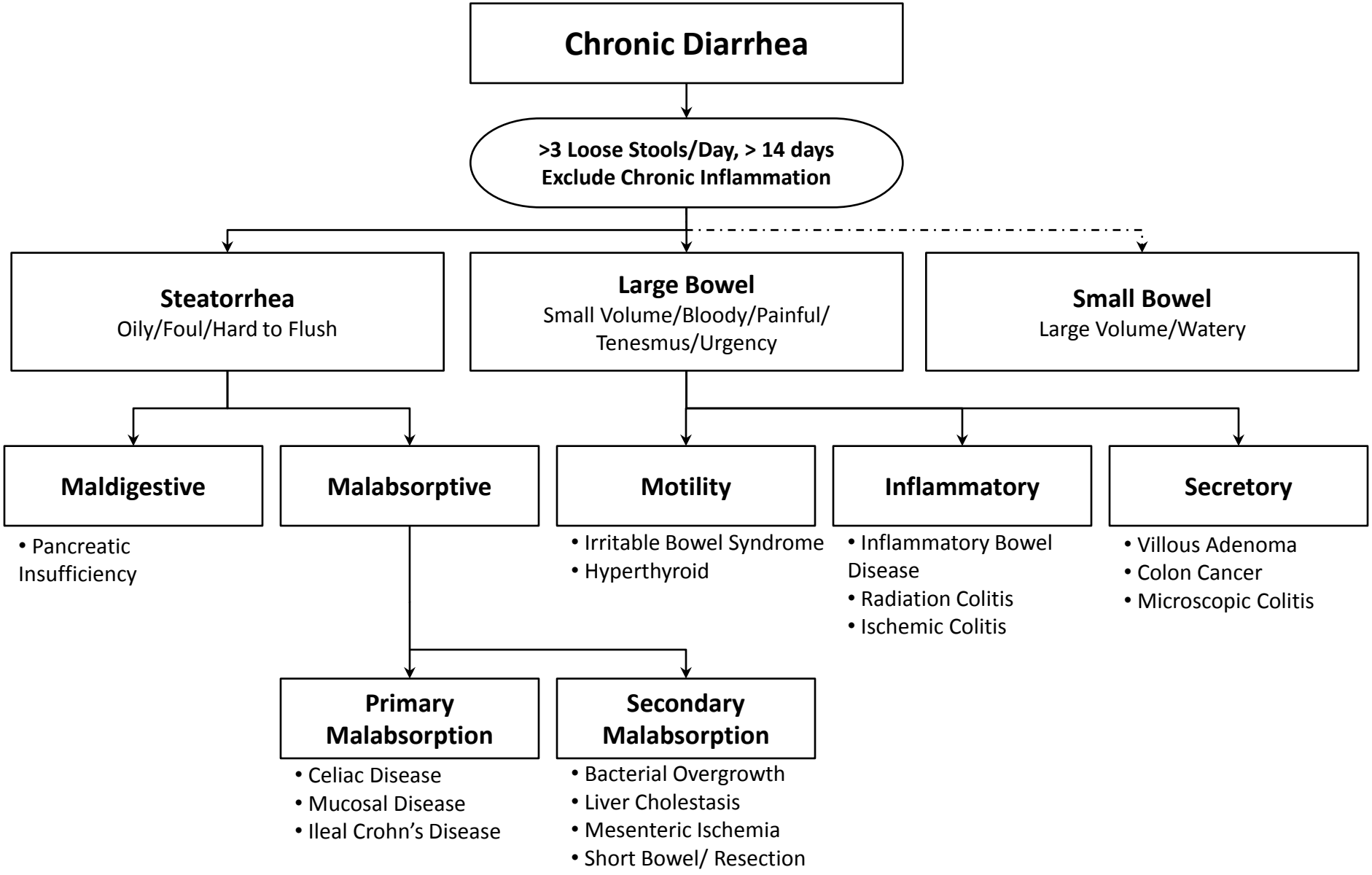
**C. difficile is under "large bowel" but presents with non-bloody diarrhea usually.

Ischemic colitis is a self-limiting illness in most (due to vascular network from SMA, IMA, iliacs) whereas small bowel ischemia is an abdominal catastrophe (only one supply, SMA).

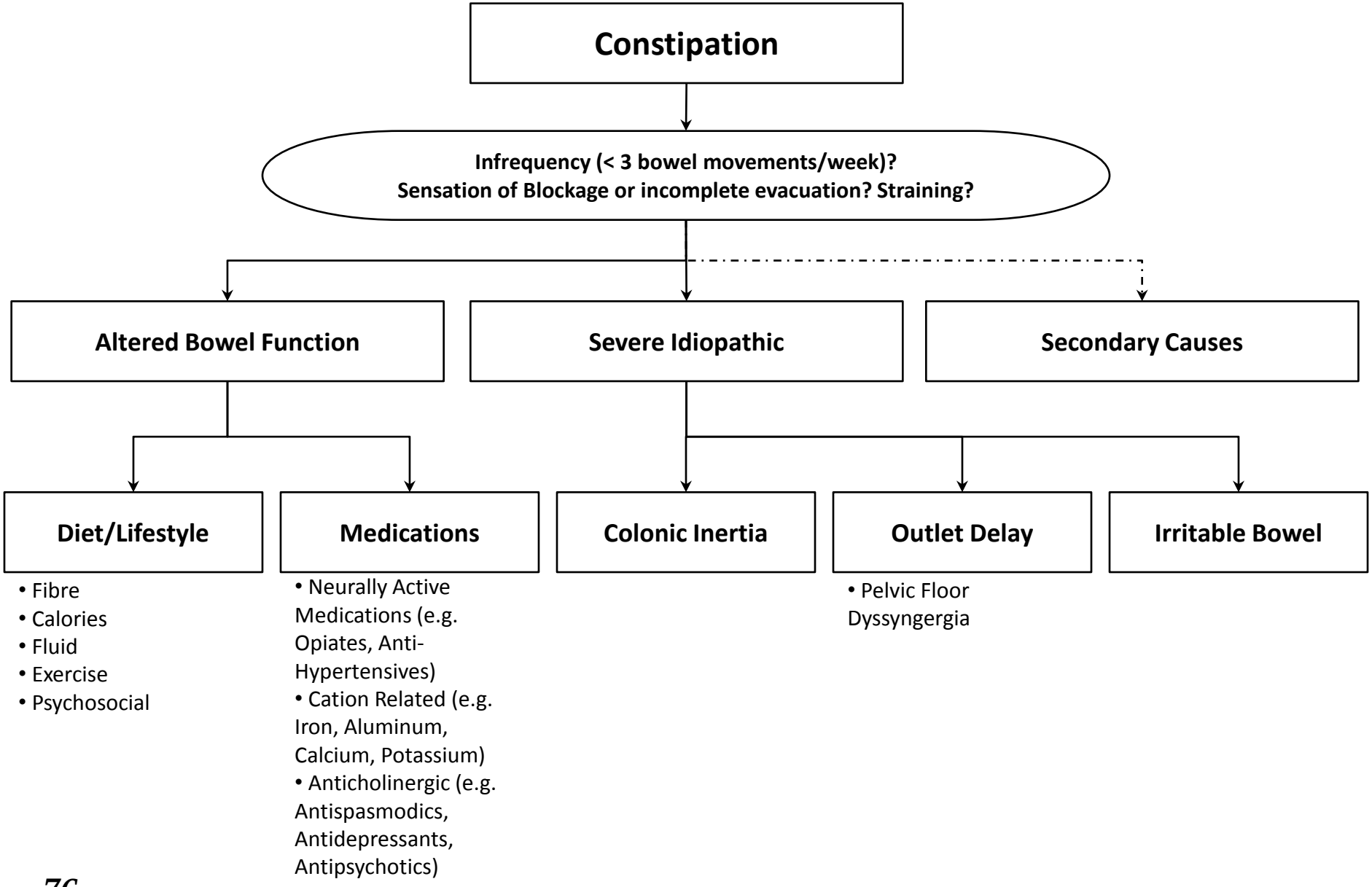
CHRONIC DIARRHEA: Small Bowel



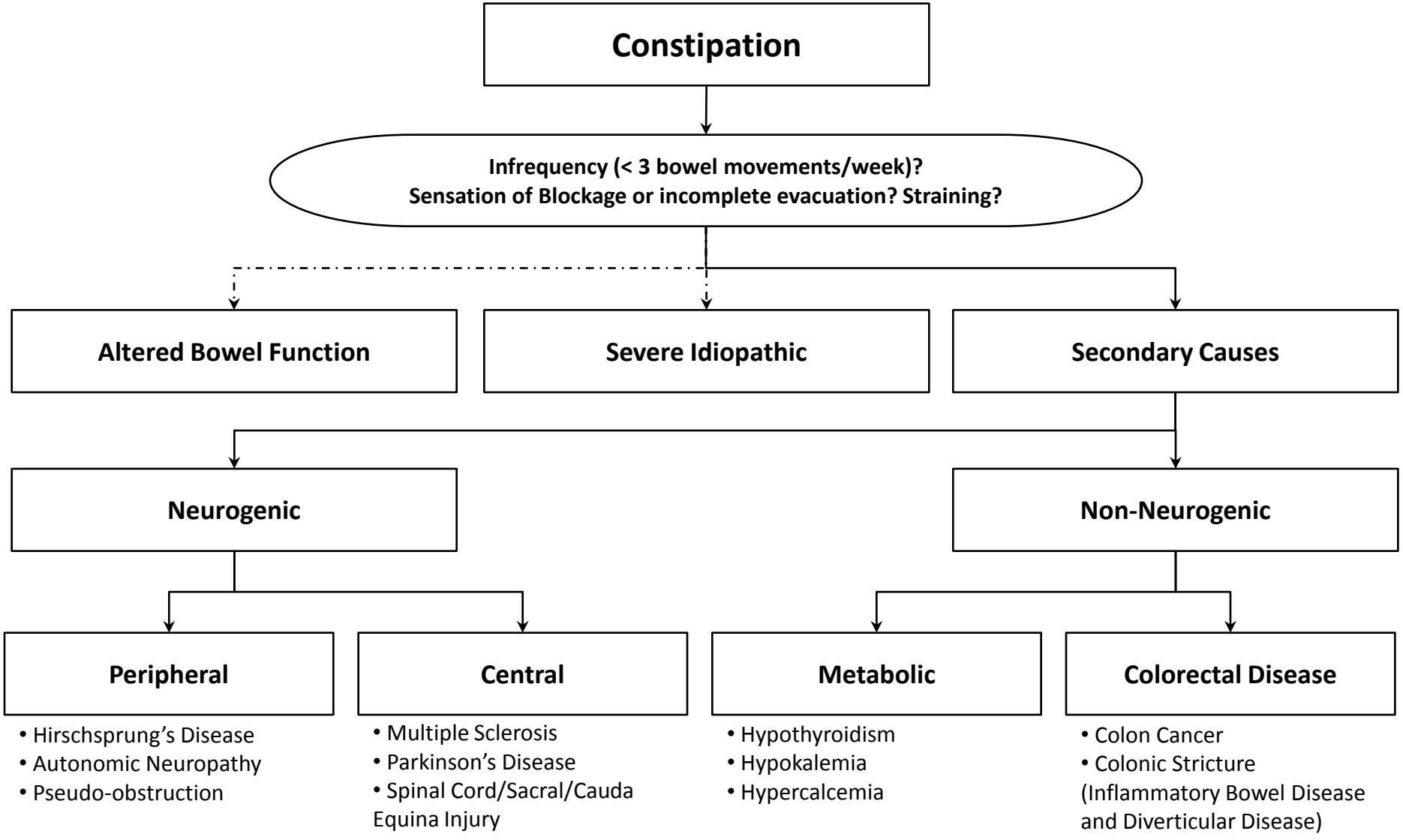
CHRONIC DIARRHEA: Steatorrhea & Large Bowel



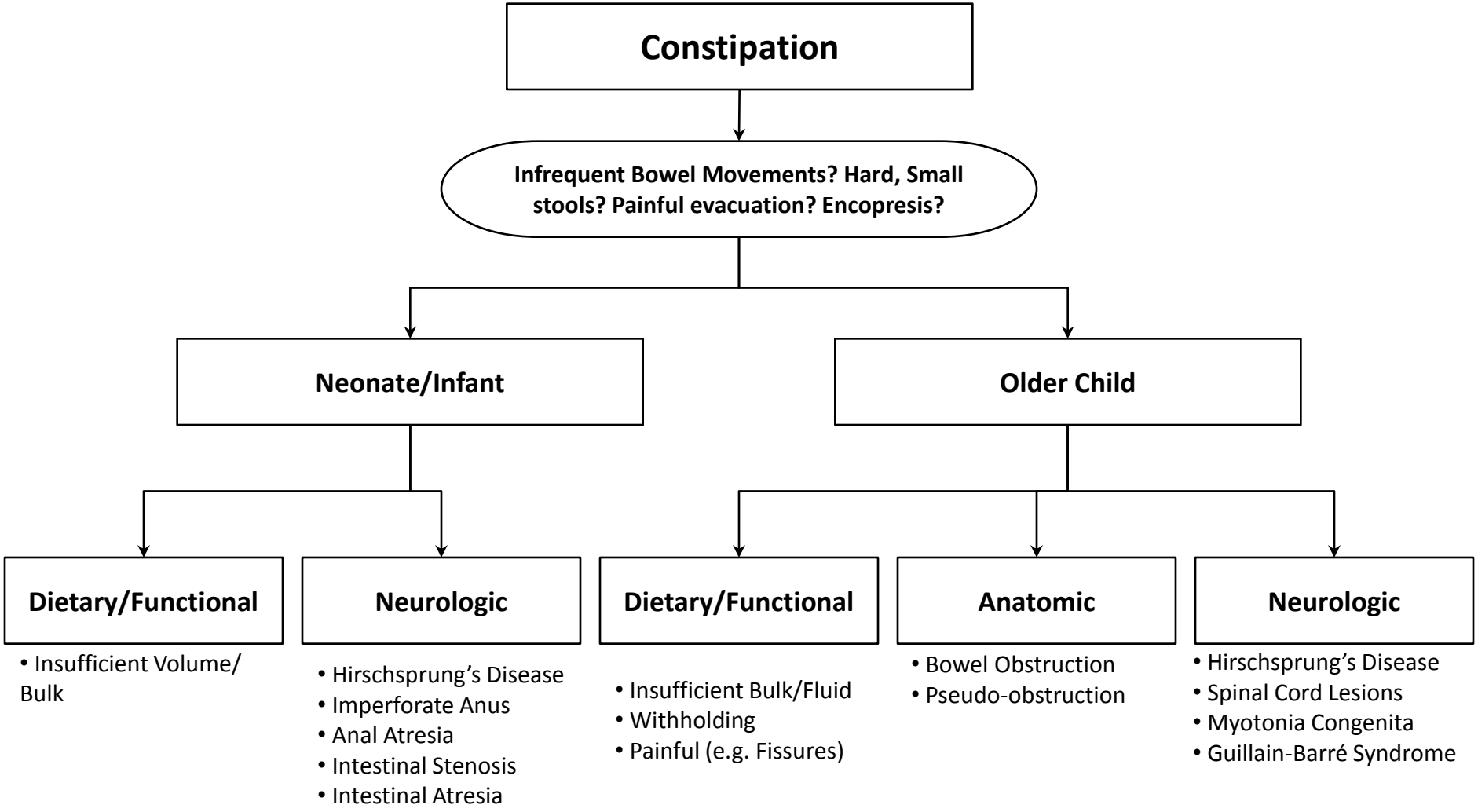
CONSTIPATION (ADULT): Altered Bowel Function & Idiopathic



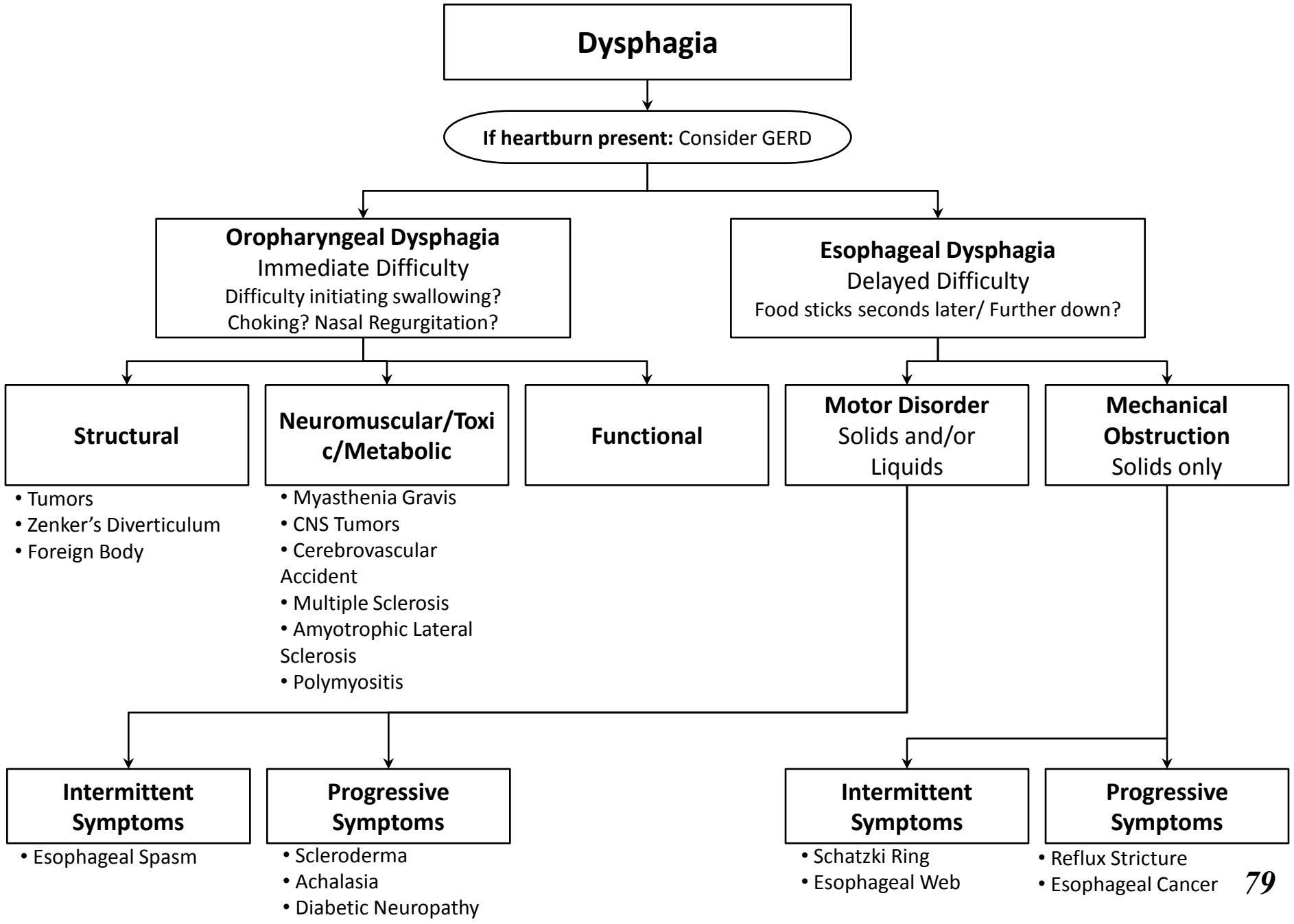
CONSTIPATION (ADULT): Secondary Causes



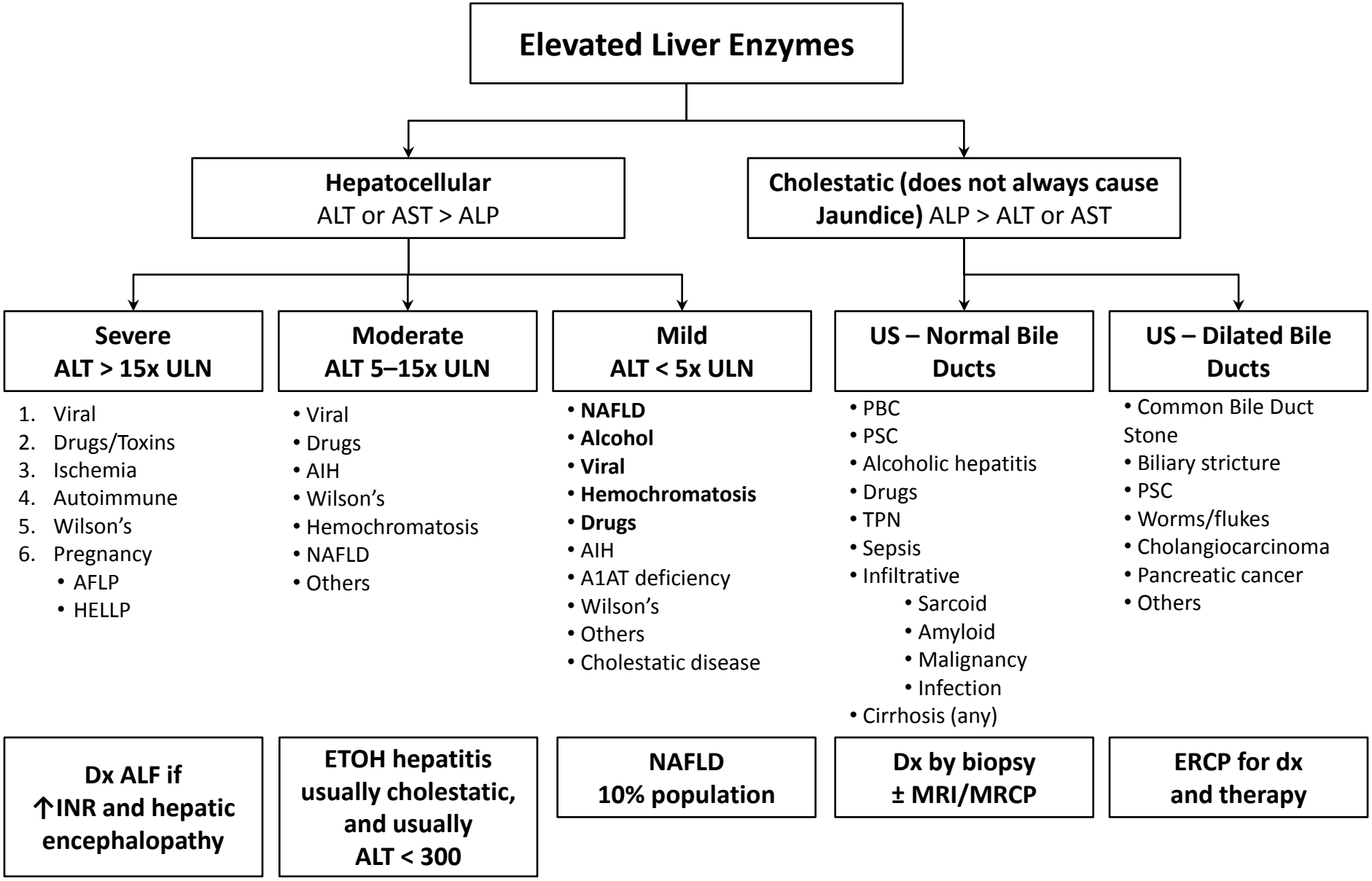
CONSTIPATION (PEDIATRIC)



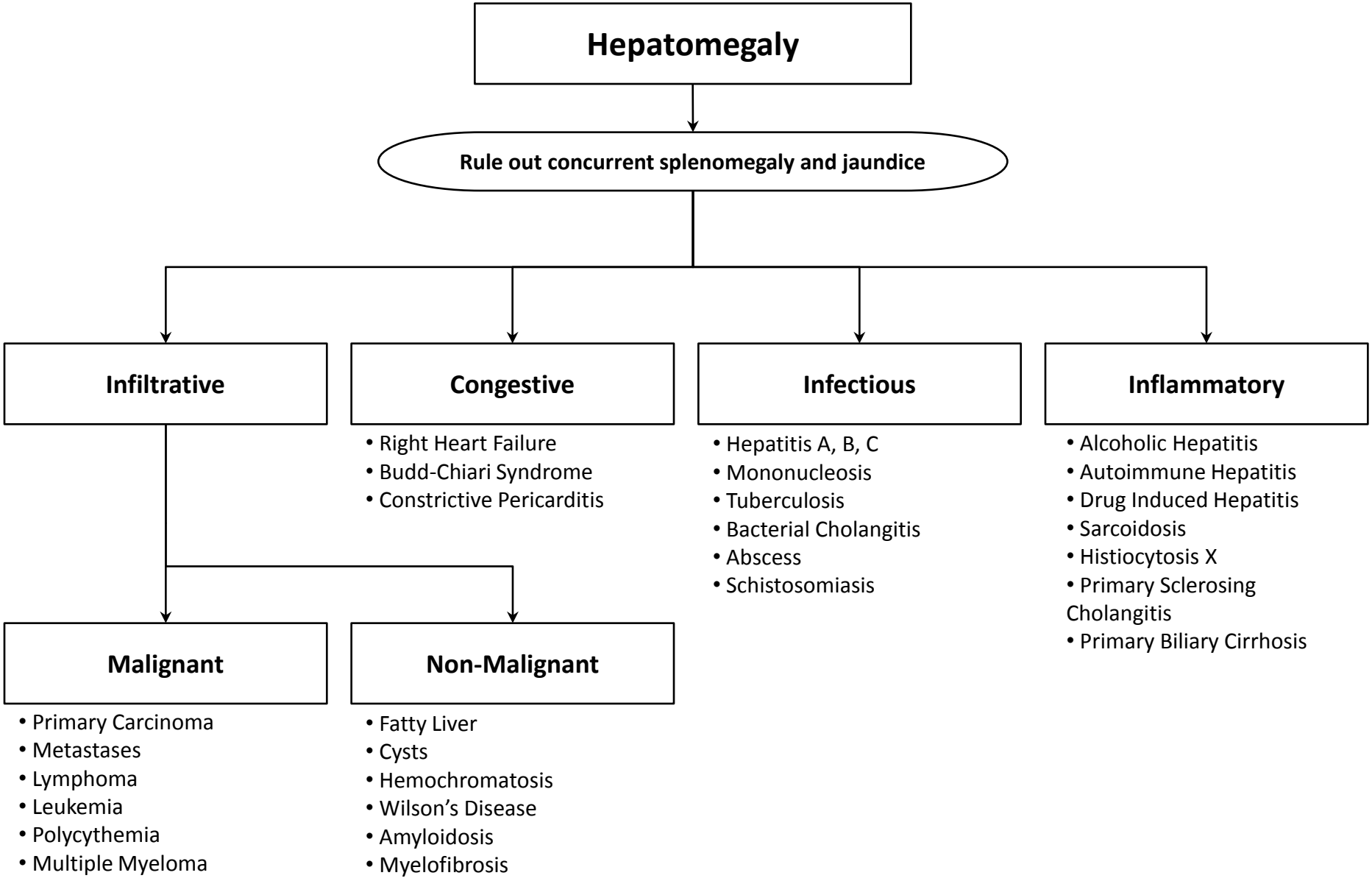
DYSPHAGIA


Dysphagia
If heartburn present: Consider GERD
Oropharyngeal Dysphagia
Immediate Difficulty
Difficulty initiating swallowing?
Choking? Nasal Regurgitation?
Esophageal Dysphagia
Delayed Difficulty
Food sticks seconds later/ Further down?
Structural
• Tumors
• Zenker's Diverticulum
• Foreign Body
Neuromuscular/Toxic/Metabolic
• Myasthenia Gravis
• CNS Tumors
• Cerebrovascular Accident
• Multiple Sclerosis
• Amyotrophic Lateral Sclerosis
• Polymyositis
Functional
Motor Disorder
Solids and/or Liquids
Mechanical Obstruction
Solids only
Intermittent Symptoms
• Esophageal Spasm
Progressive Symptoms
• Scleroderma
• Achalasia
• Diabetic Neuropathy
Intermittent Symptoms
• Schatzki Ring
• Esophageal Web
Progressive Symptoms
• Reflux Stricture
• Esophageal Cancer

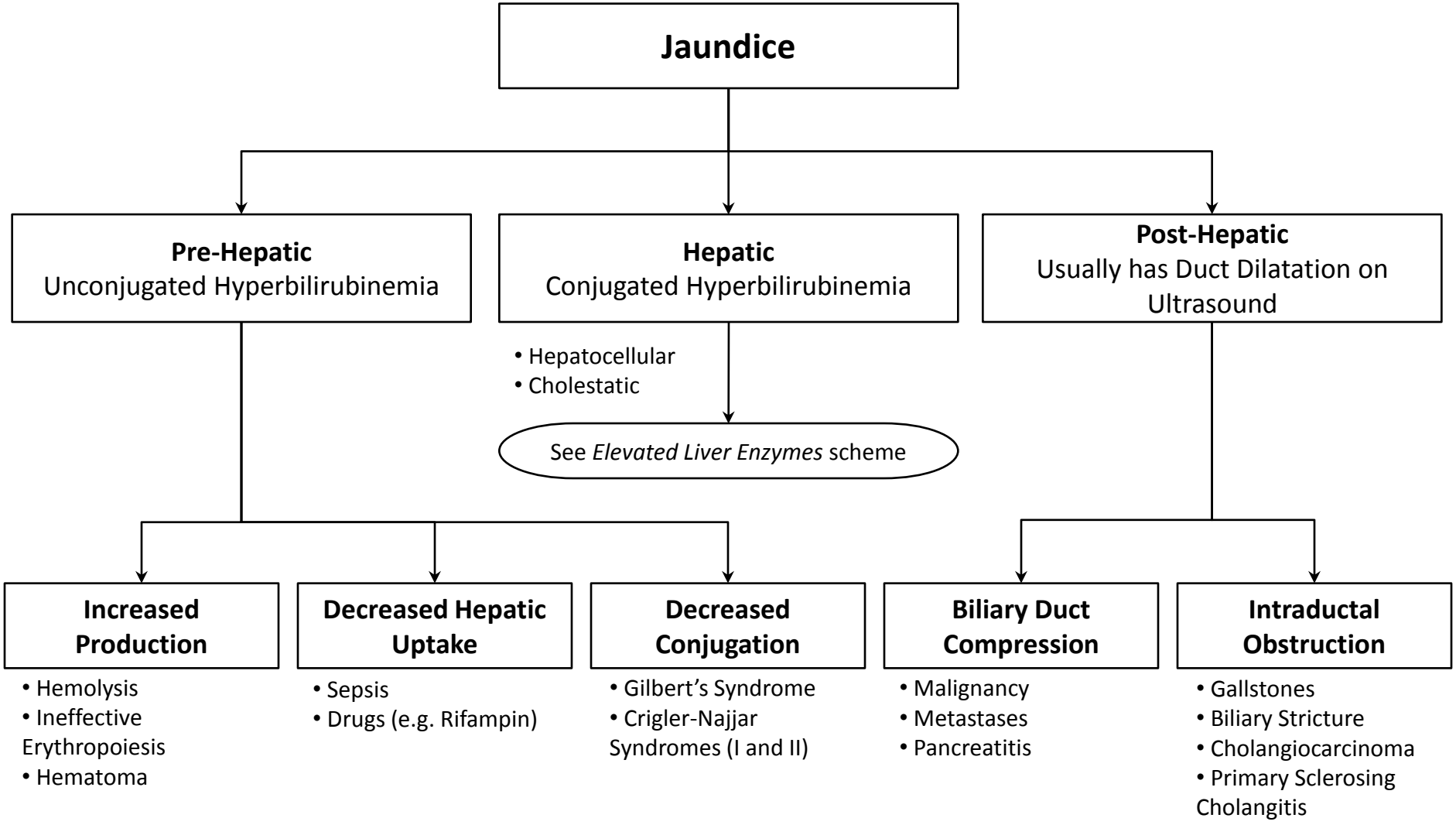
ELEVATED LIVER ENZYMES



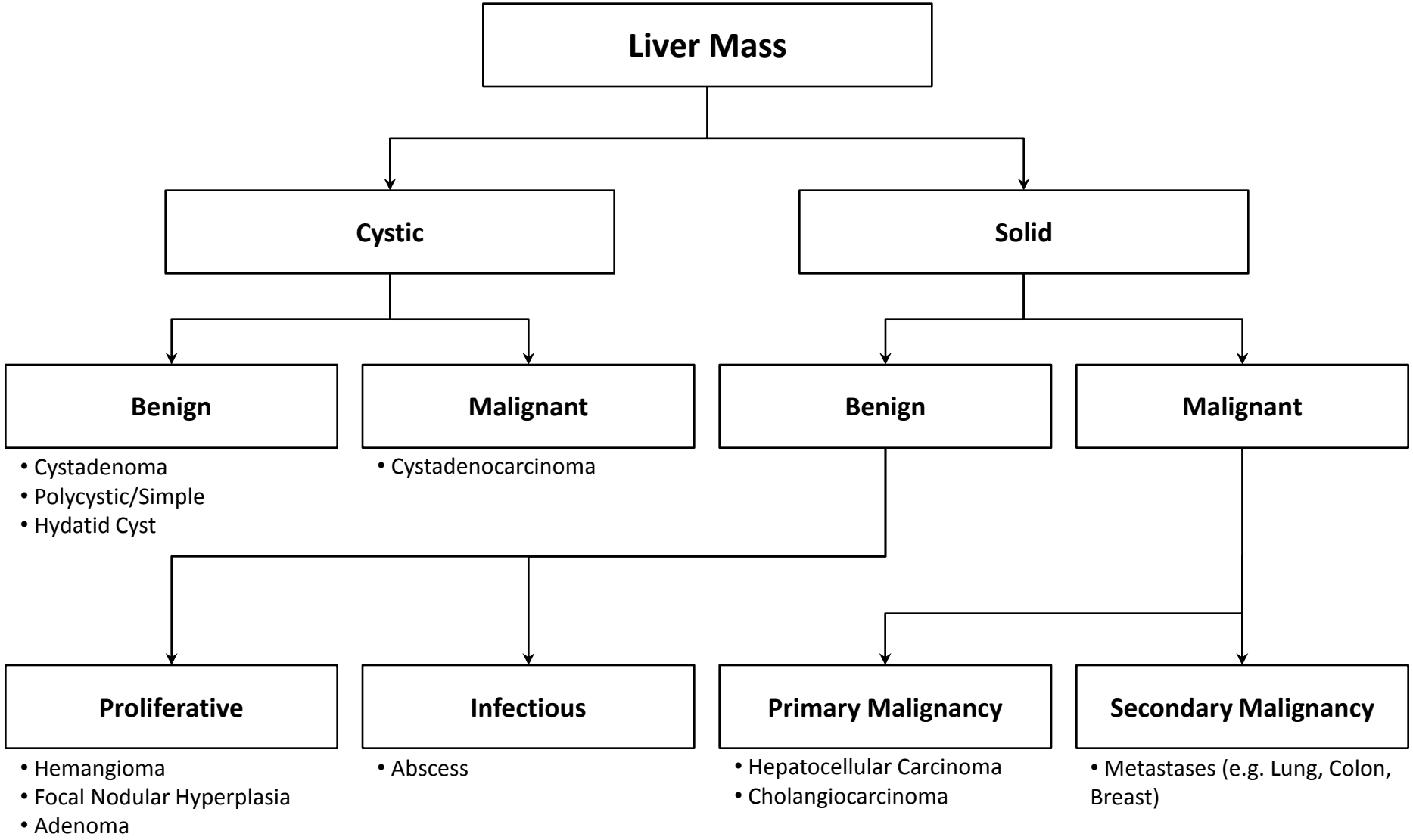
HEPATOMEGALY



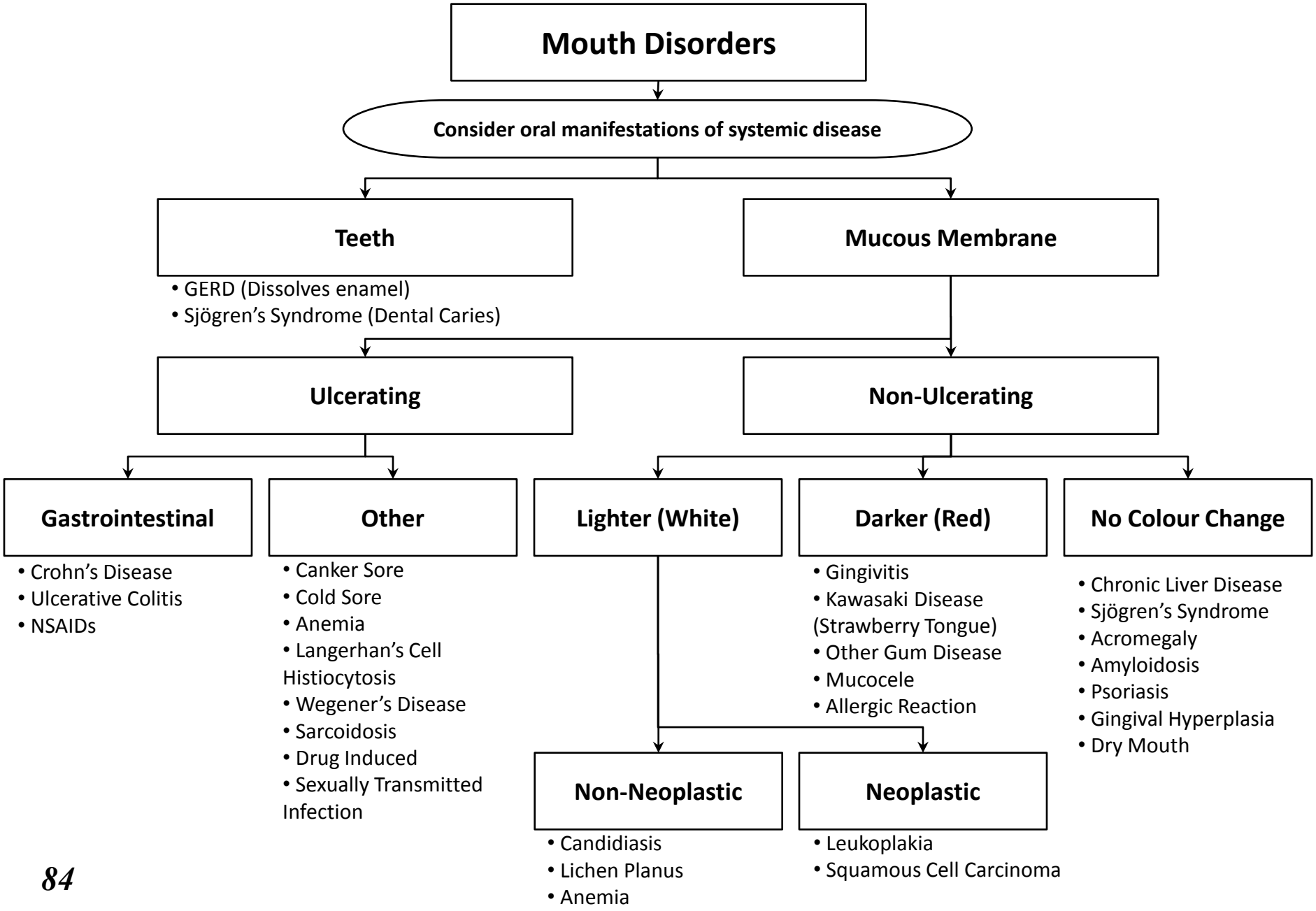
JAUNDICE


Jaundice
Pre-Hepatic
Unconjugated Hyperbilirubinemia
Hepatic
Conjugated Hyperbilirubinemia
Post-Hepatic
Usually has Duct Dilatation on Ultrasound
• Hepatocellular
• Cholestatic
See *Elevated Liver Enzymes* scheme
Increased Production
• Hemolysis
• Ineffective Erythropoiesis
• Hematoma
Decreased Hepatic Uptake
• Sepsis
• Drugs (e.g. Rifampin)
Decreased Conjugation
• Gilbert's Syndrome
• Crigler-Najjar Syndromes (I and II)
Biliary Duct Compression
• Malignancy
• Metastases
• Pancreatitis
Intraductal Obstruction
• Gallstones
• Biliary Stricture
• Cholangiocarcinoma
• Primary Sclerosing Cholangitis

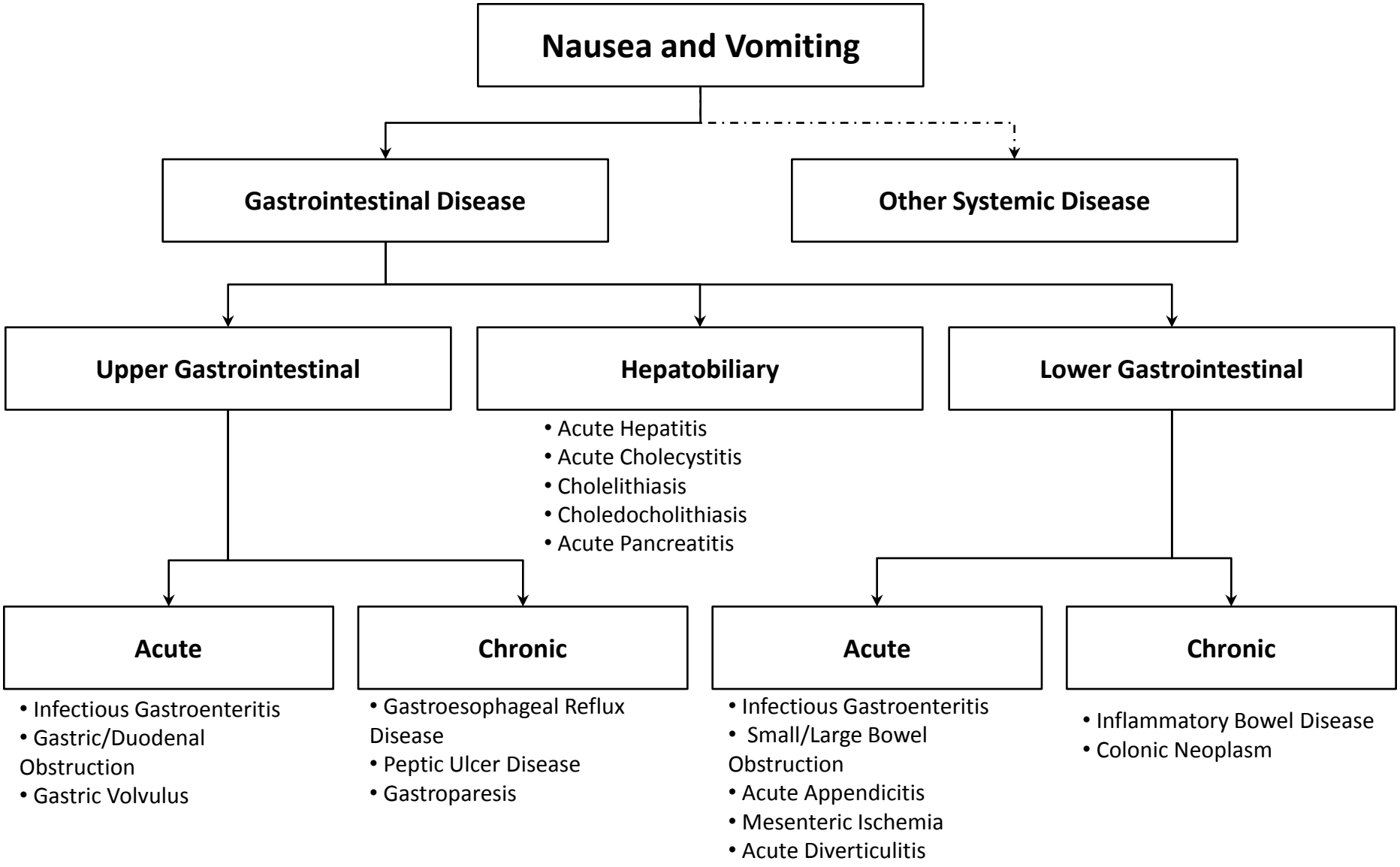
LIVER MASS


Liver Mass
Cystic
Solid
Benign
Malignant
Benign
Malignant
• Cystadenoma
• Polycystic/Simple
• Hydatid Cyst
• Cystadenocarcinoma
Proliferative
Infectious
Primary Malignancy
Secondary Malignancy
• Hemangioma
• Focal Nodular Hyperplasia
• Adenoma
• Abscess
• Hepatocellular Carcinoma
• Cholangiocarcinoma
• Metastases (e.g. Lung, Colon, Breast)

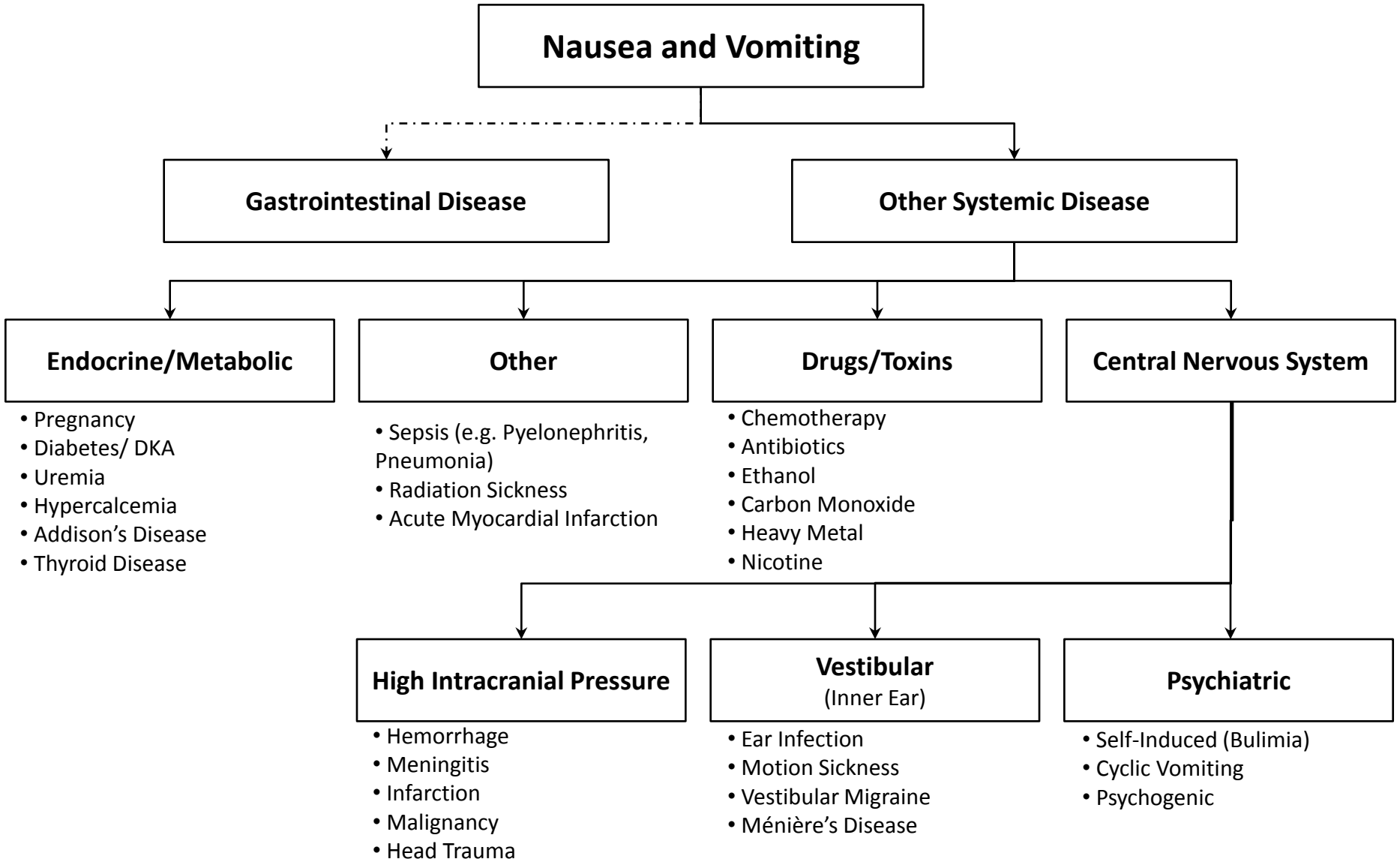
MOUTH DISORDERS: Adult and Elderly



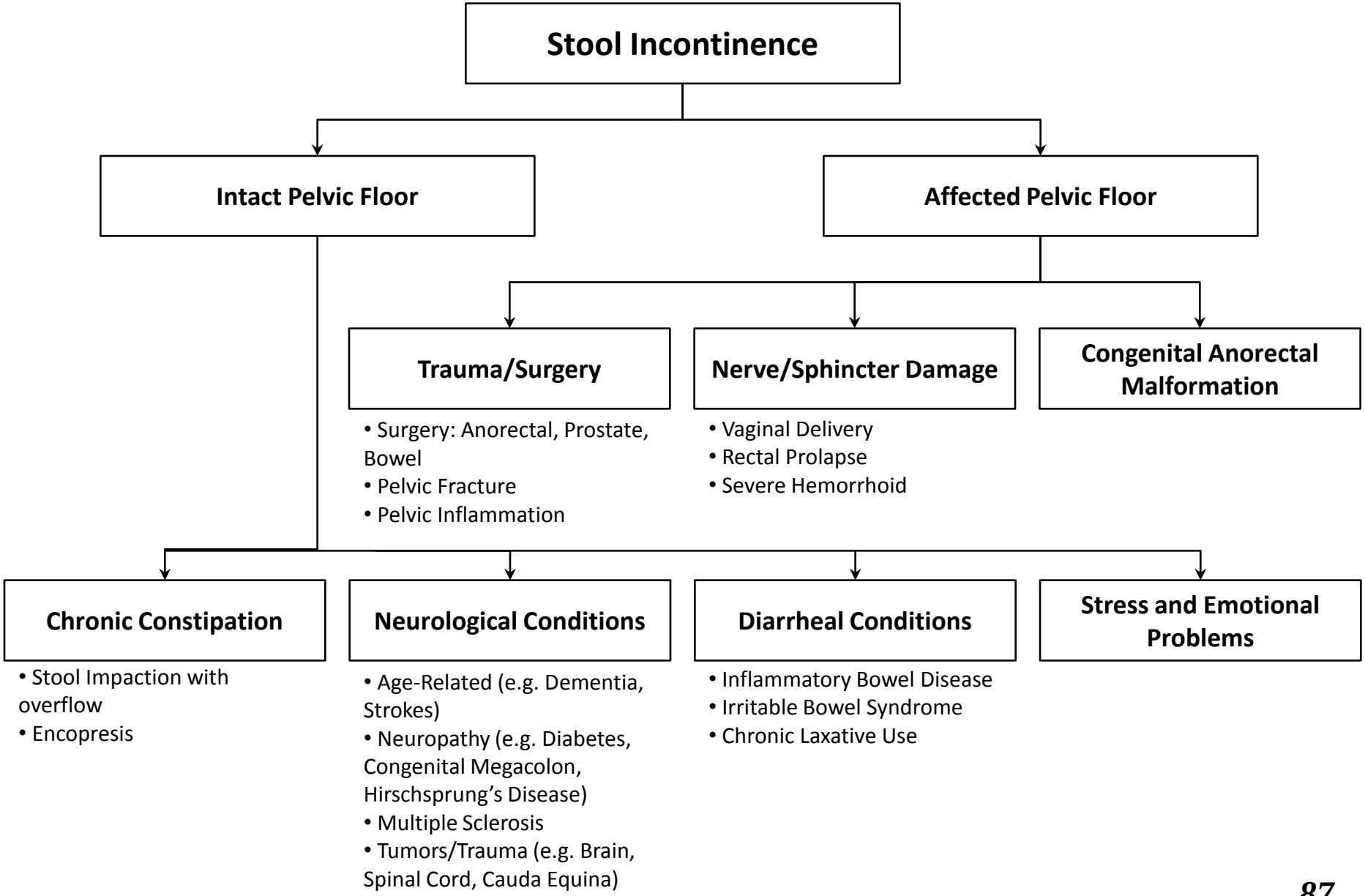
NAUSEA AND VOMITING: Gastrointestinal Disease



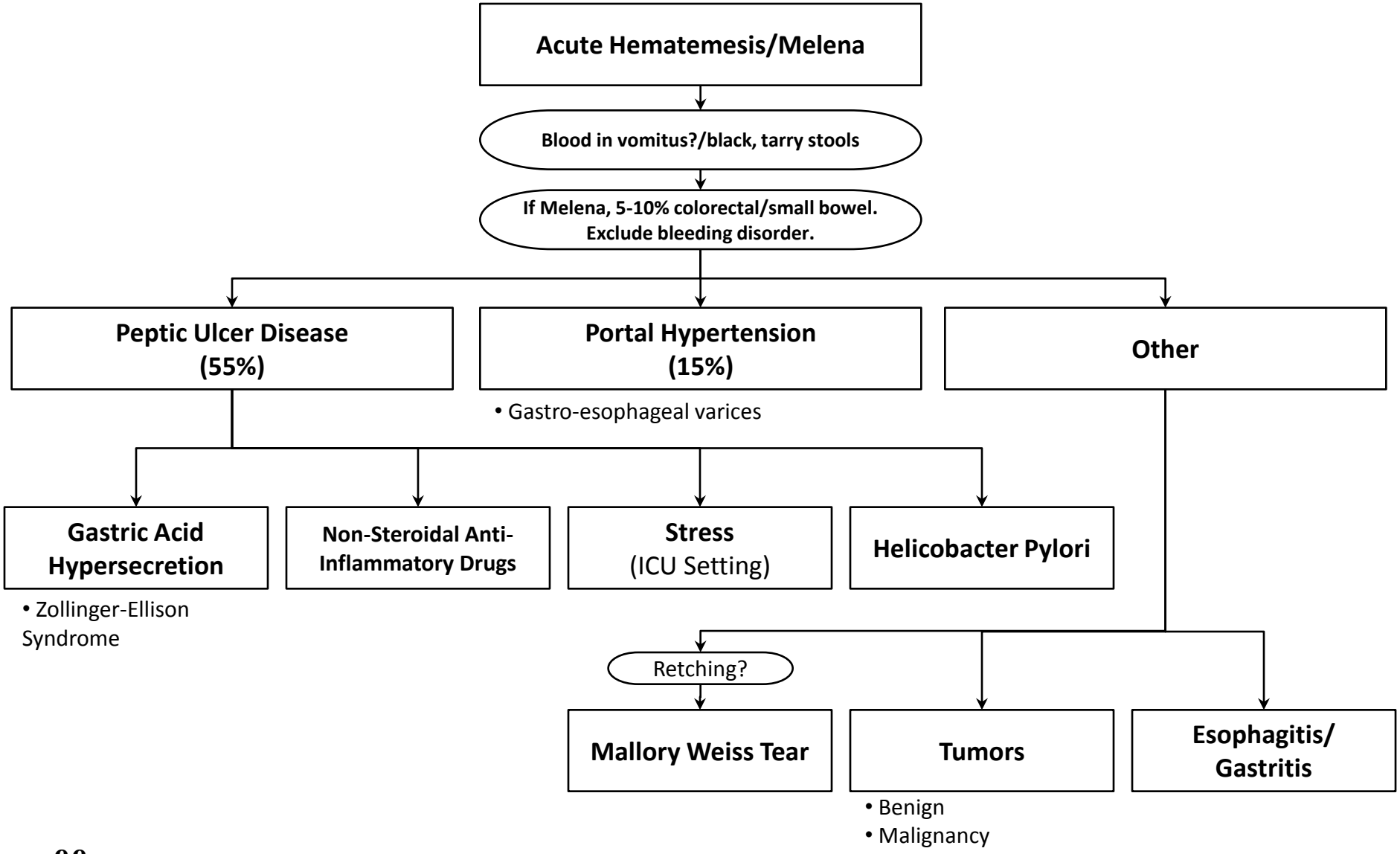
NAUSEA AND VOMITING: Other Systemic Disease



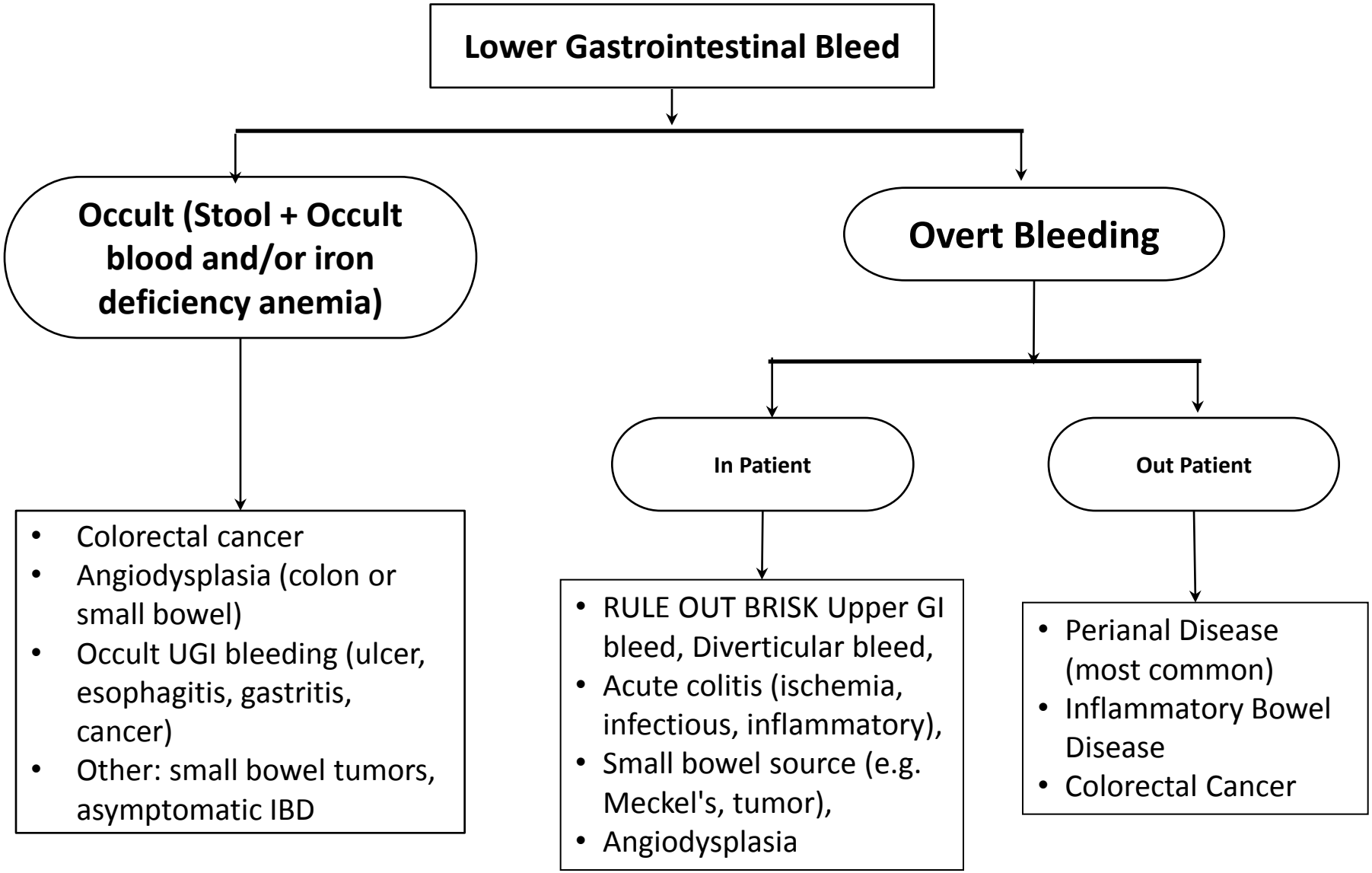
STOOL INCONTINENCE



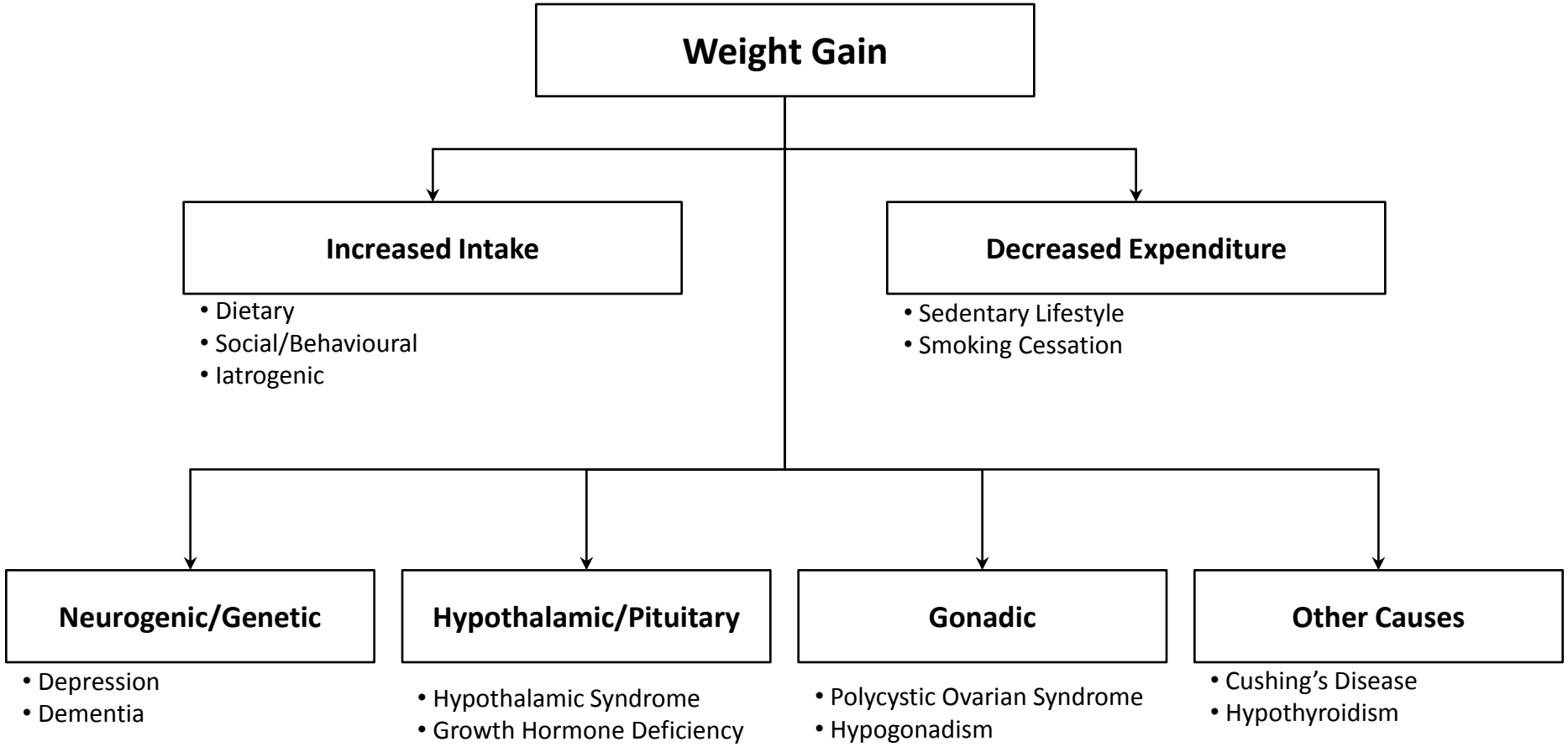
UPPER GASTROINTESTINAL BLEED (HEMATEMESIS/MELENA)



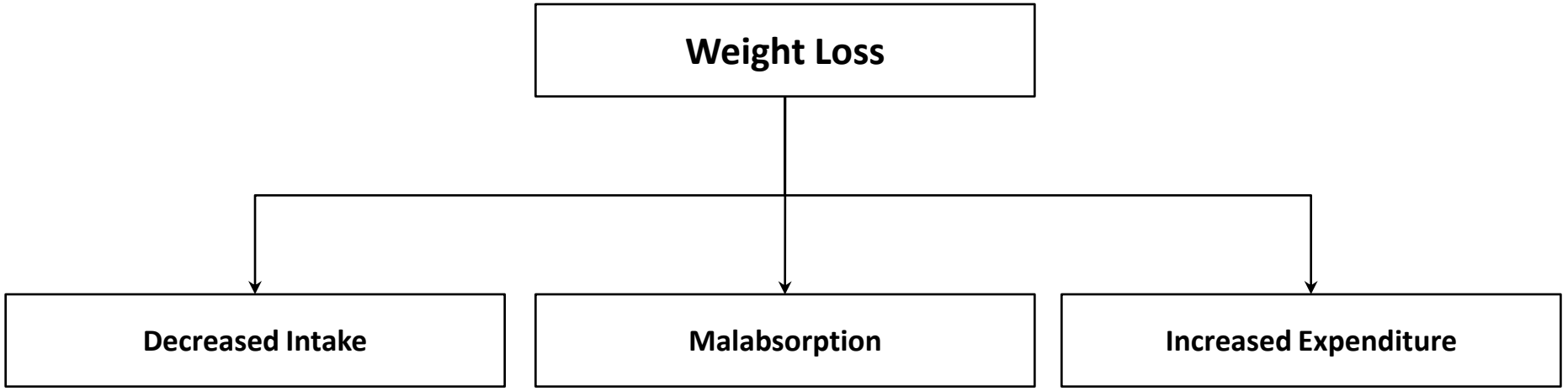
LOWER GASTROINTESTINAL BLEED



WEIGHT GAIN


Weight Gain
Increased Intake
• Dietary
• Social/Behavioural
• Iatrogenic
Decreased Expenditure
• Sedentary Lifestyle
• Smoking Cessation
Neurogenic/Genetic
• Depression
• Dementia
Hypothalamic/Pituitary
• Hypothalamic Syndrome
• Growth Hormone Deficiency
Gonadic
• Polycystic Ovarian Syndrome
• Hypogonadism
Other Causes
• Cushing's Disease
• Hypothyroidism

WEIGHT LOSS



- GI illness (upper and lower)
- Psychiatric (Depression, eating disorders)
- Poverty
- Abuse
- Dementia
- Anorexia as an Adverse Drug Effect

- Small Bowel Disease (e.g. Crohn's Disease, Celiac Disease)
- Pancreatic Insufficiency
- Cholestatic Liver Disease
- Protein-losing Enteropathy (e.g. Inflammatory Bowel Disease)

- Increased Protein/Energy Requirements (e.g. Post-Surgical, Infections, Trauma, Burns)
- Cancer
- Hyperthyroidism
- Chronic Cardiac/Respiratory distress (e.g. COPD)
- Chronic Renal Failure
- Adrenal Insufficiency
- Poorly Controlled Diabetes Mellitus
- HIV

Renal Presentations

Student Editors
Colin Roscher and Mark Elliot (Section Co-Editors)

Faculty Editor
Dr. Kevin McLaughlin

Historical Editors
Dr. Andrew Wade
Dr. Sophia Chou
Dave Campbell
Derrick Chan
Marc Chretien
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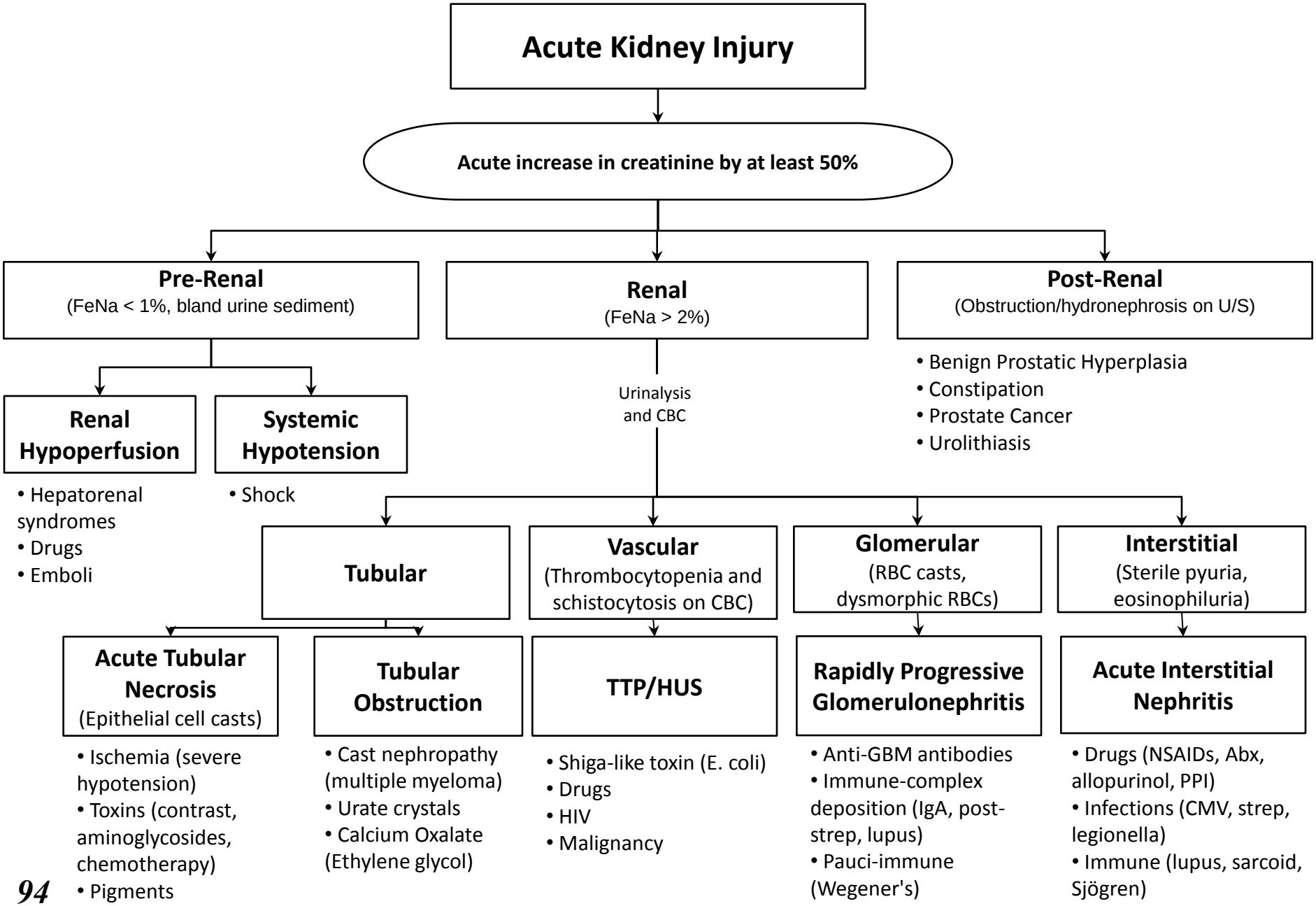
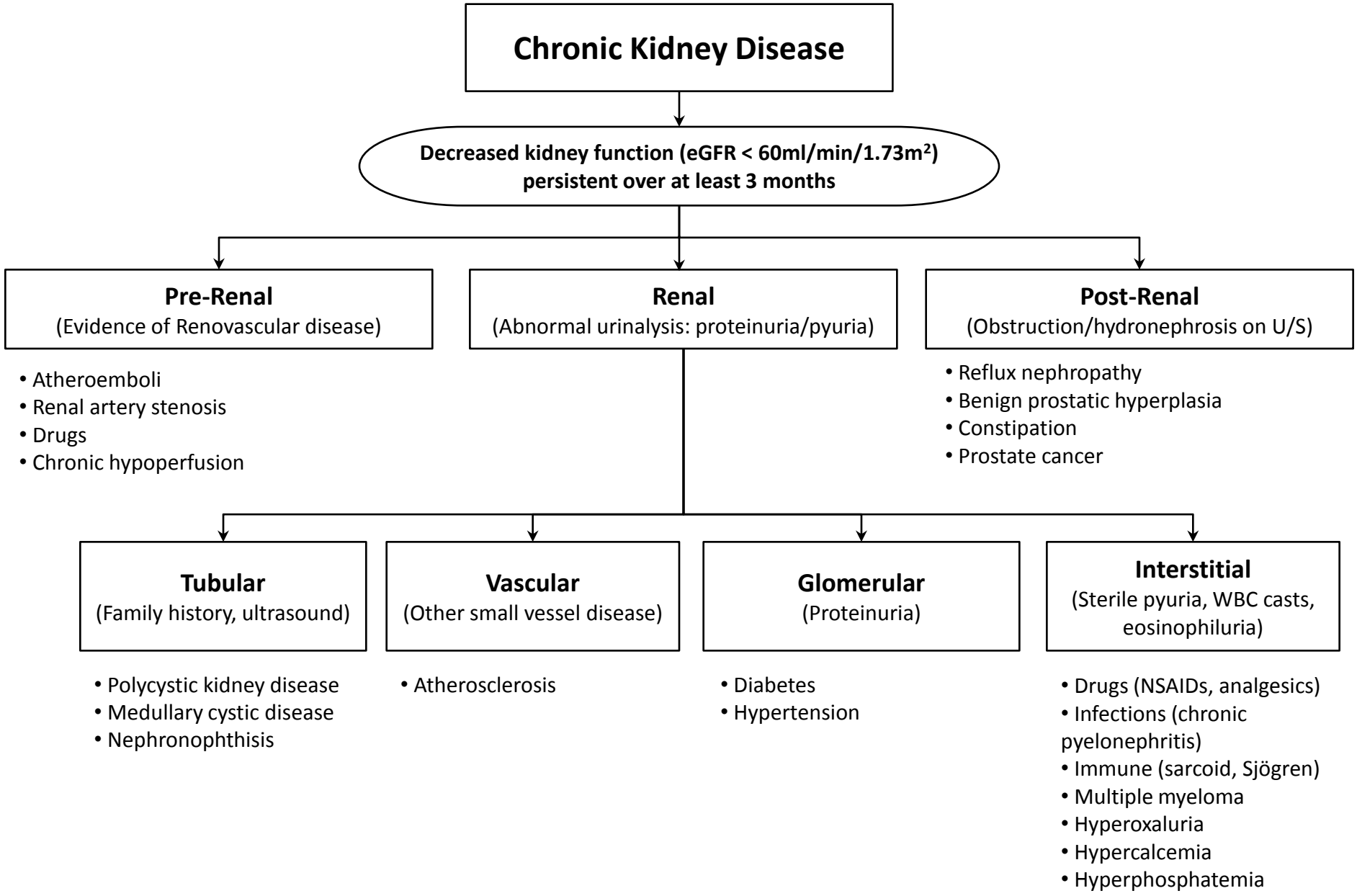
Kody Johnson
Becky Kennedy
Vera Krejcik
Keith Lawson
Vanessa Millar
Eric Sy
Maria Wu

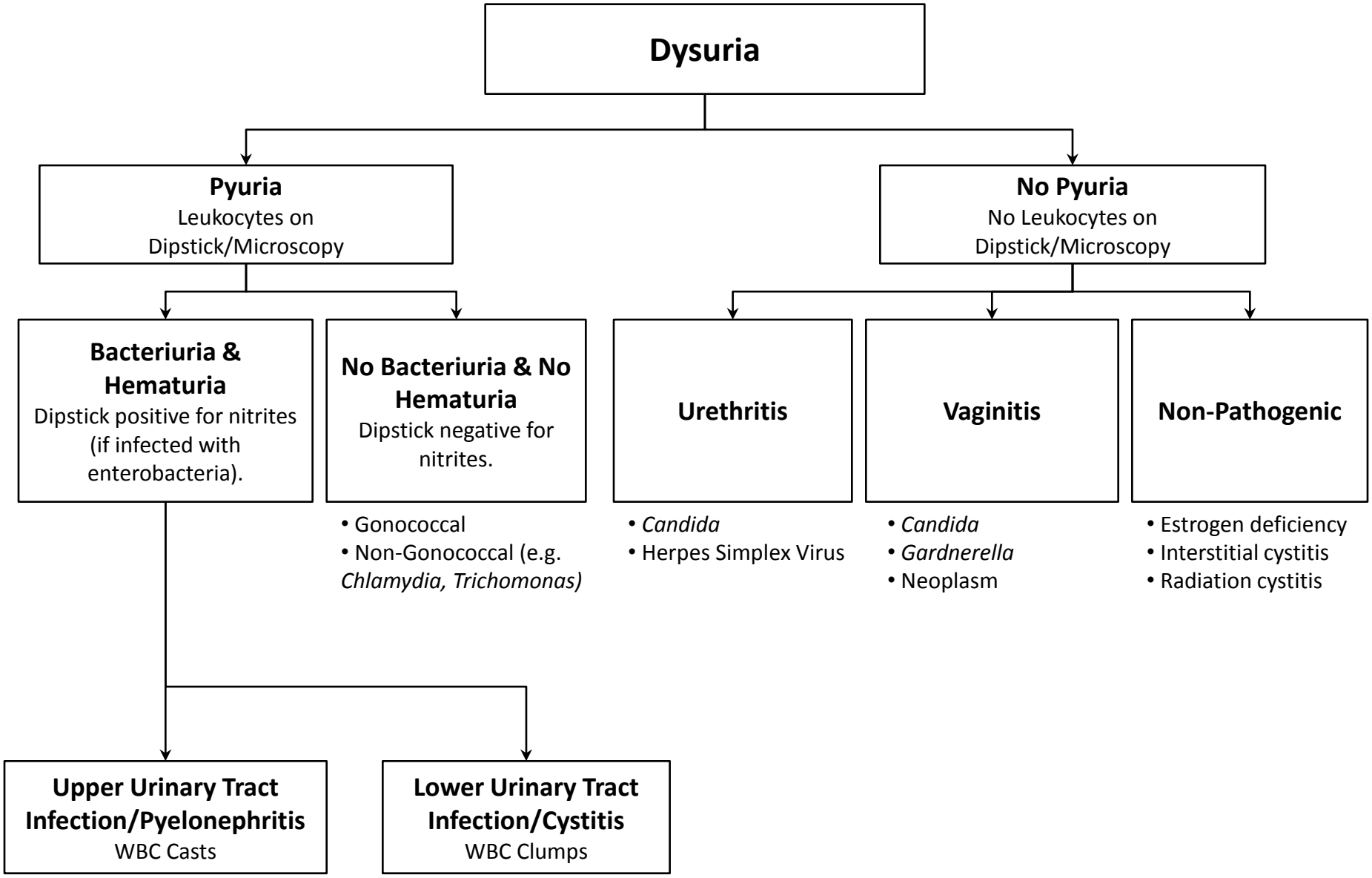
ACUTE KIDNEY INJURY



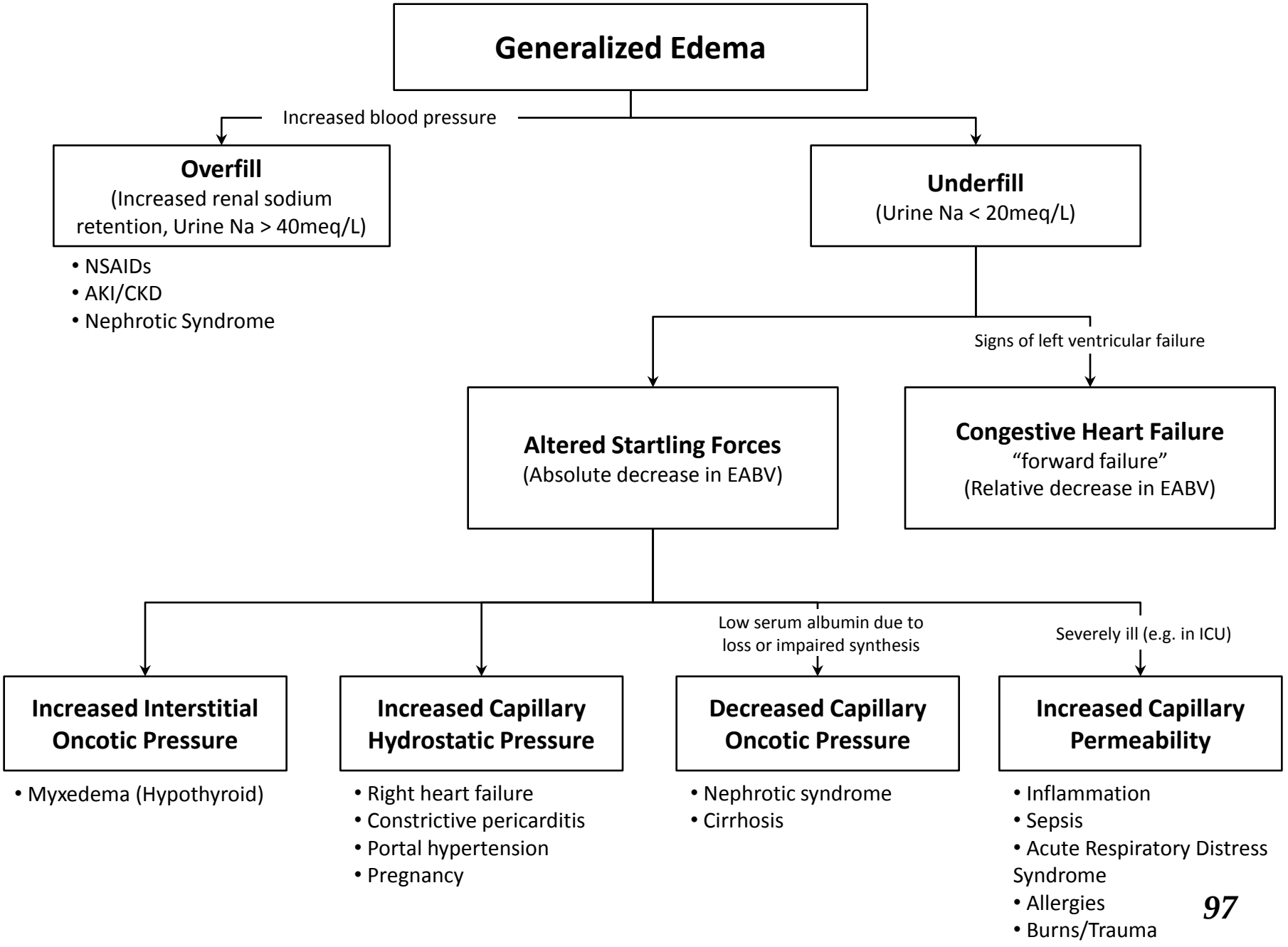
CHRONIC KIDNEY DISEASE



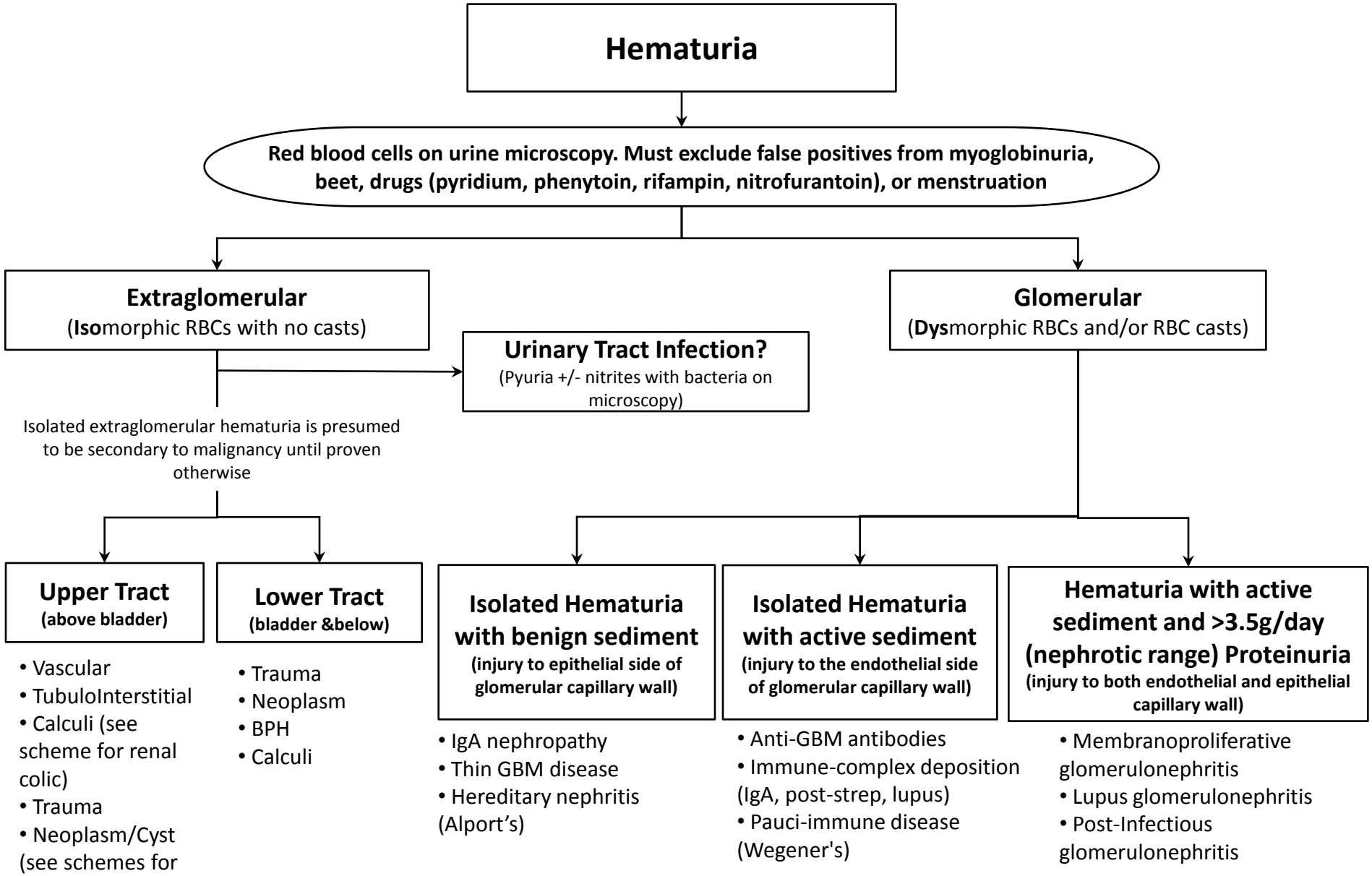
DYSURIA


Dysuria
Pyuria
Leukocytes on Dipstick/Microscopy
No Pyuria
No Leukocytes on Dipstick/Microscopy
Bacteriuria & Hematuria
Dipstick positive for nitrites (if infected with enterobacteria).
No Bacteriuria & No Hematuria
Dipstick negative for nitrites.
Urethritis
Vaginitis
Non-Pathogenic
• Gonococcal
• Non-Gonococcal (e.g. *Chlamydia, Trichomonas)*
• *Candida*
• Herpes Simplex Virus
• *Candida*
• *Gardnerella*
• Neoplasm
• Estrogen deficiency
• Interstitial cystitis
• Radiation cystitis
Upper Urinary Tract Infection/Pyelonephritis
WBC Casts
Lower Urinary Tract Infection/Cystitis
WBC Clumps

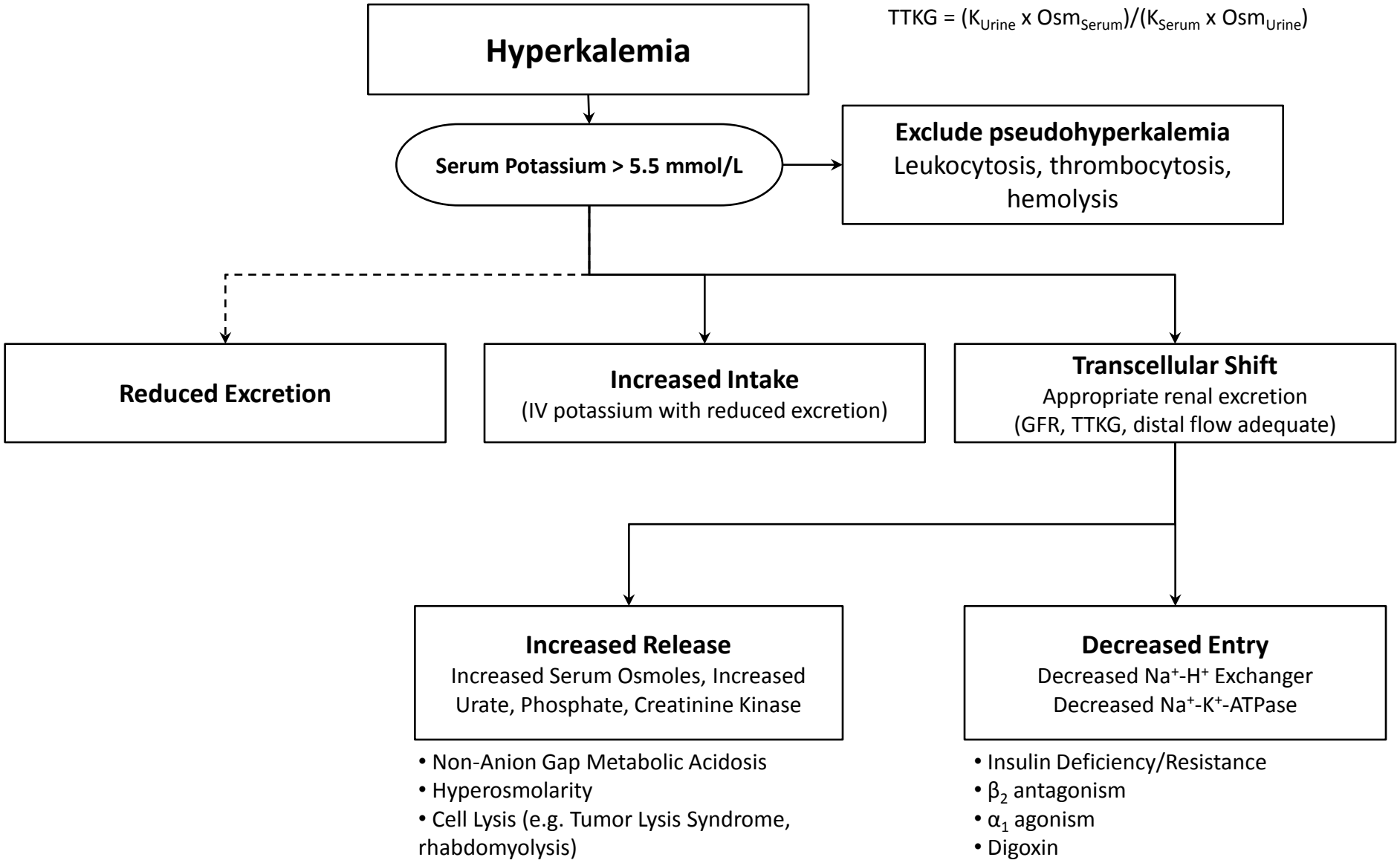
GENERALIZED EDEMA



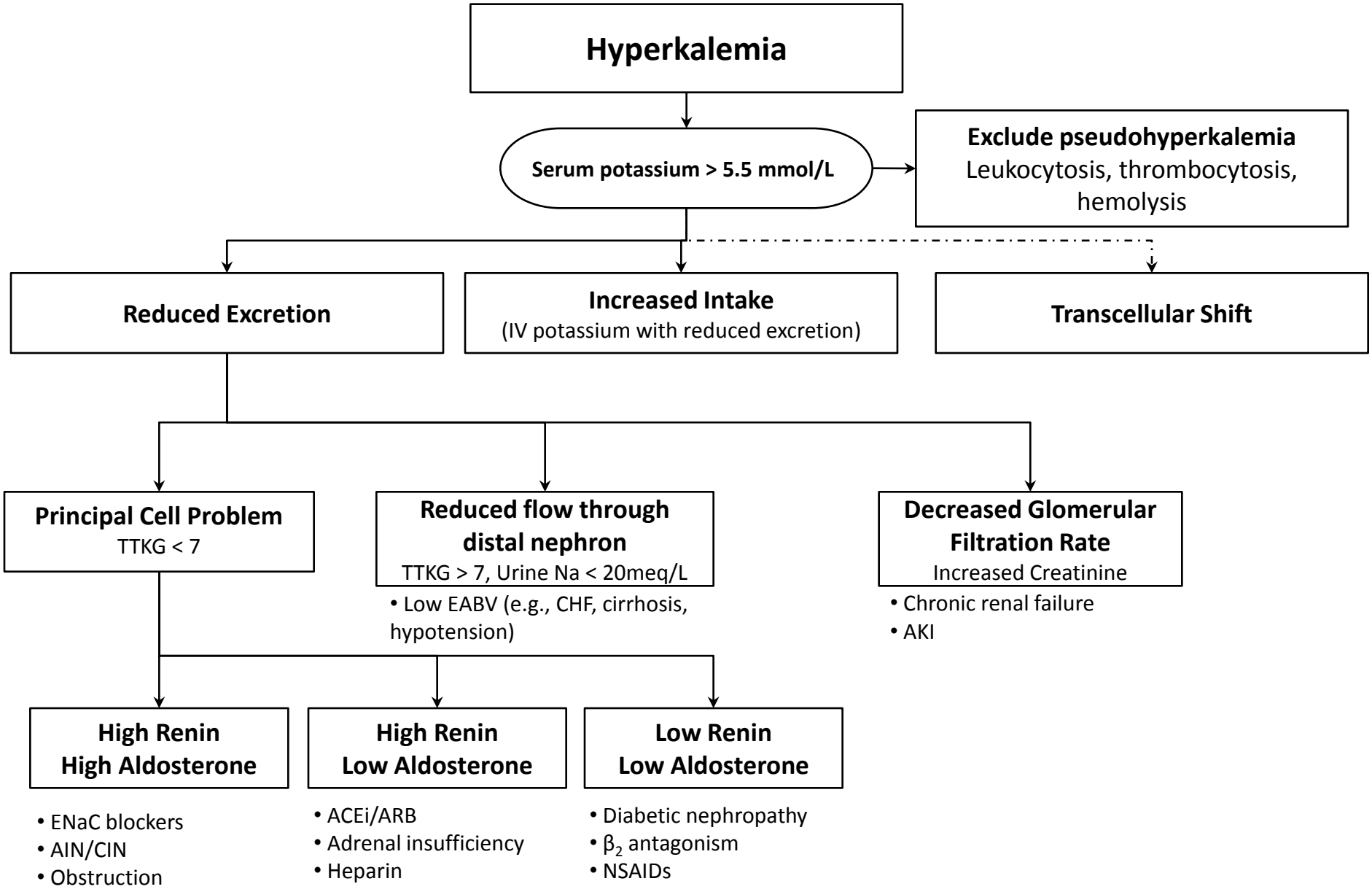
HEMATURIA


Hematuria
Red blood cells on urine microscopy. Must exclude false positives from myoglobinuria, beet, drugs (pyridium, phenytoin, rifampin, nitrofurantoin), or menstruation
Extraglomerular
(Isomorphic RBCs with no casts)
Urinary Tract Infection?
(Pyuria +/- nitrites with bacteria on microscopy)
Glomerular
(Dysmorphic RBCs and/or RBC casts)
Isolated extraglomerular hematuria is presumed to be secondary to malignancy until proven otherwise
Upper Tract
(above bladder)
• Vascular
• TubuloInterstitial
• Calculi (see scheme for renal colic)
• Trauma
• Neoplasm/Cyst (see schemes for renal mass)
Lower Tract
(bladder &below)
• Trauma
• Neoplasm
• BPH
• Calculi
Isolated Hematuria with benign sediment
(injury to epithelial side of glomerular capillary wall)
• IgA nephropathy
• Thin GBM disease
• Hereditary nephritis (Alport's)
Isolated Hematuria with active sediment
(injury to the endothelial side of glomerular capillary wall)
• Anti-GBM antibodies
• Immune-complex deposition (IgA, post-strep, lupus)
• Pauci-immune disease (Wegener's)
Hematuria with active sediment and >3.5g/day (nephrotic range) Proteinuria
(injury to both endothelial and epithelial capillary wall)
• Membranoproliferative glomerulonephritis
• Lupus glomerulonephritis
• Post-Infectious glomerulonephritis

HYPERKALEMIA: Transcellular Shift

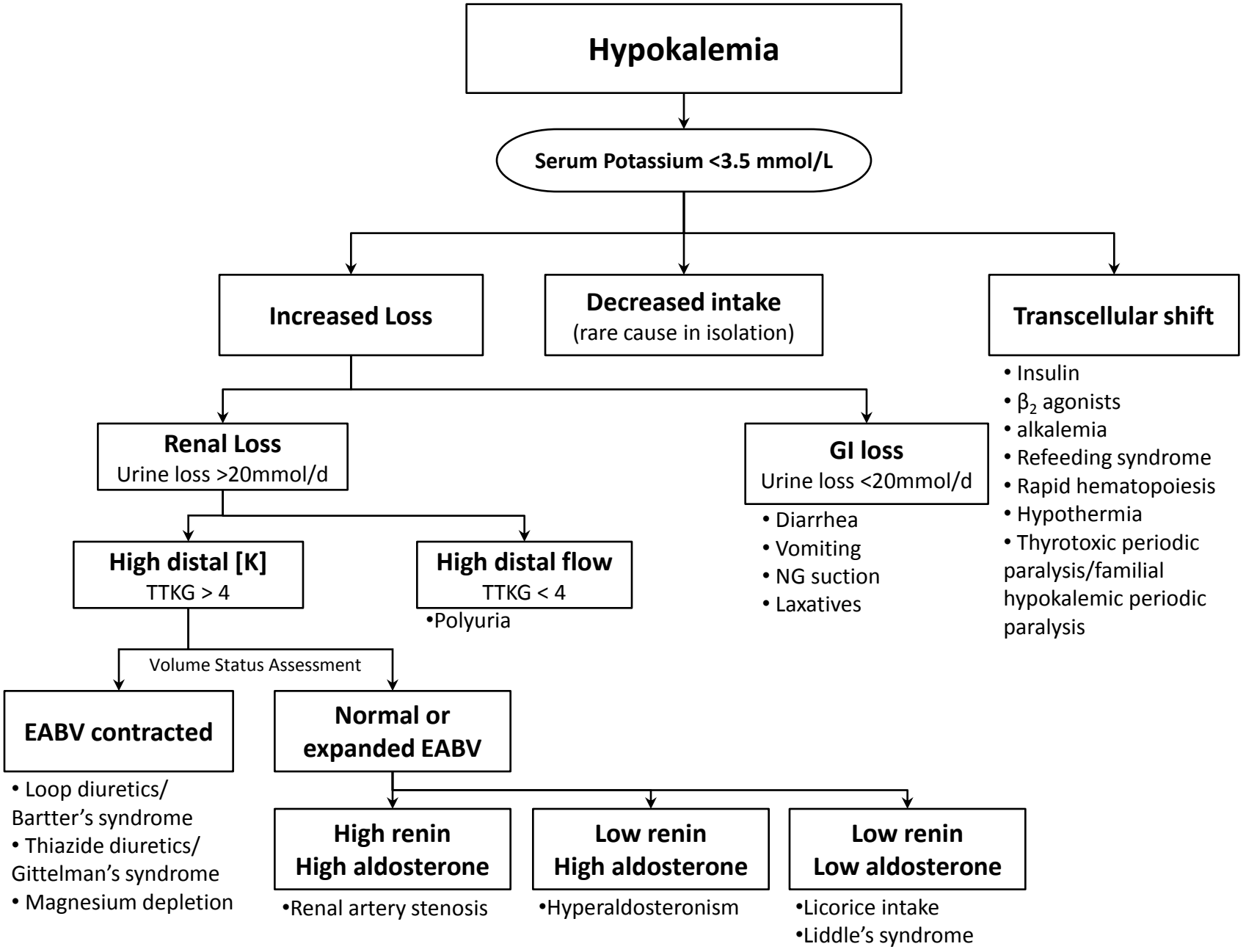


HYPERKALEMIA: Reduced Excretion

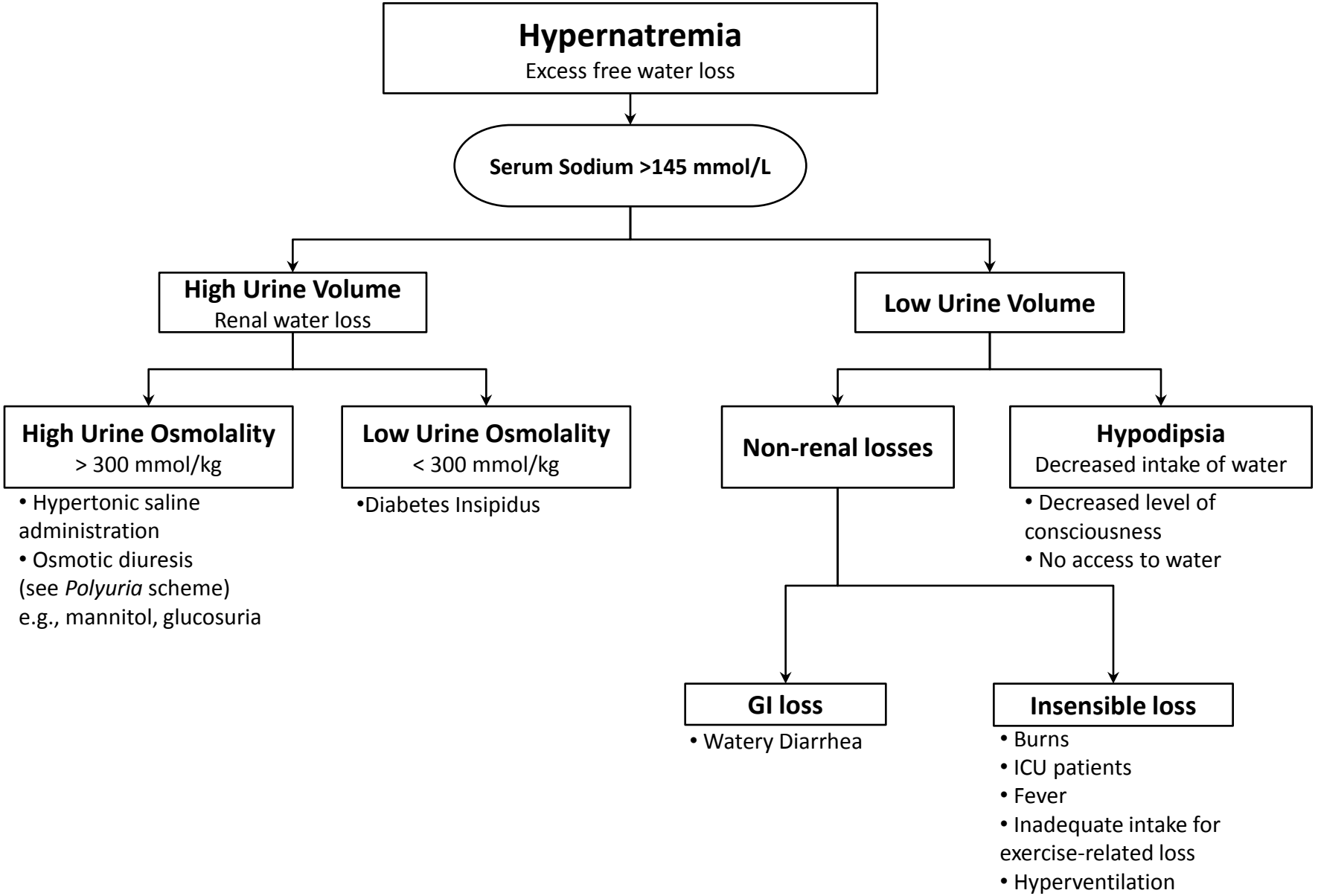


$TTKG = (K_{Urine} \times Osm_{Serum})/(K_{Serum} \times Osm_{Urine})$

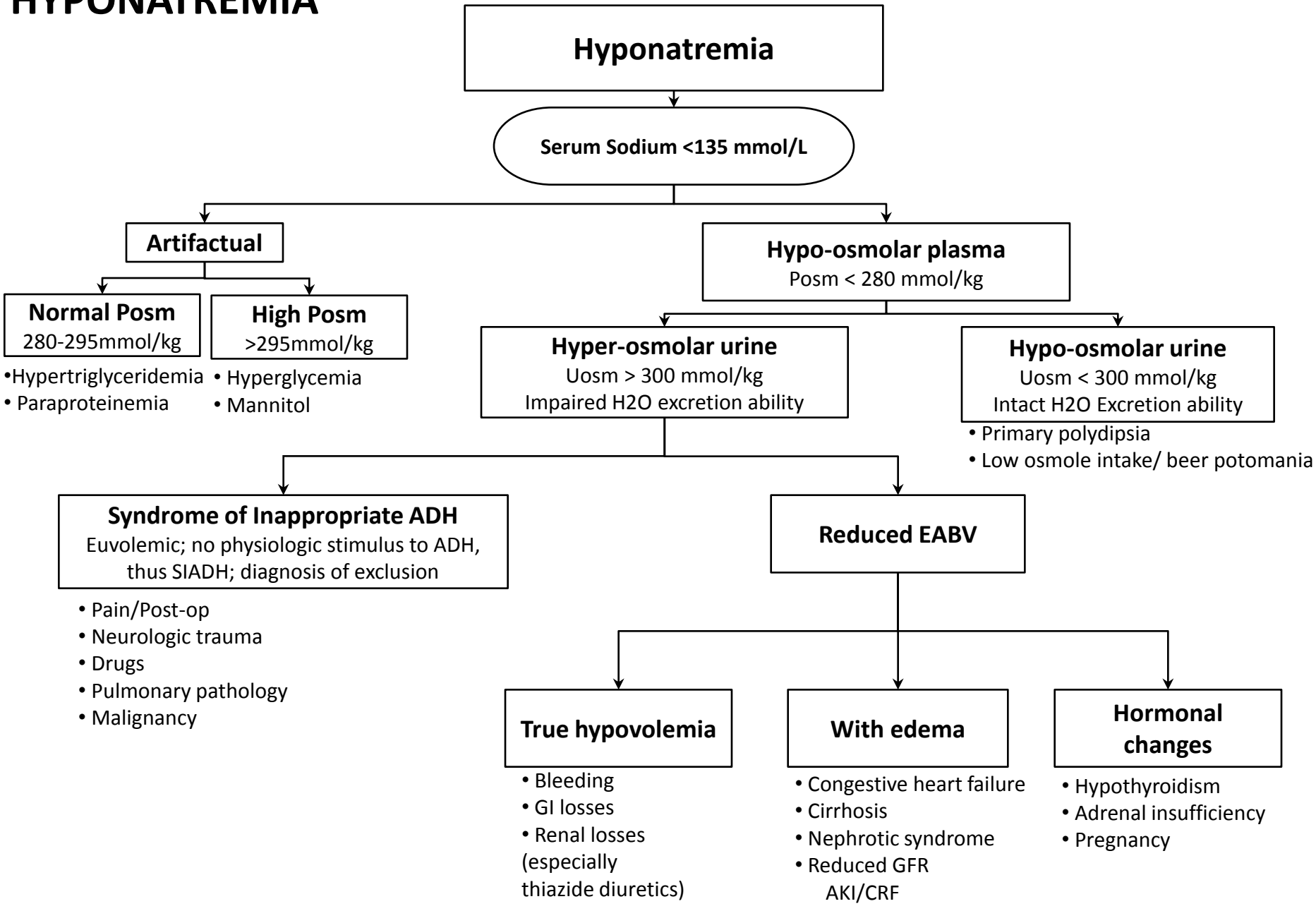
HYPOKALEMIA



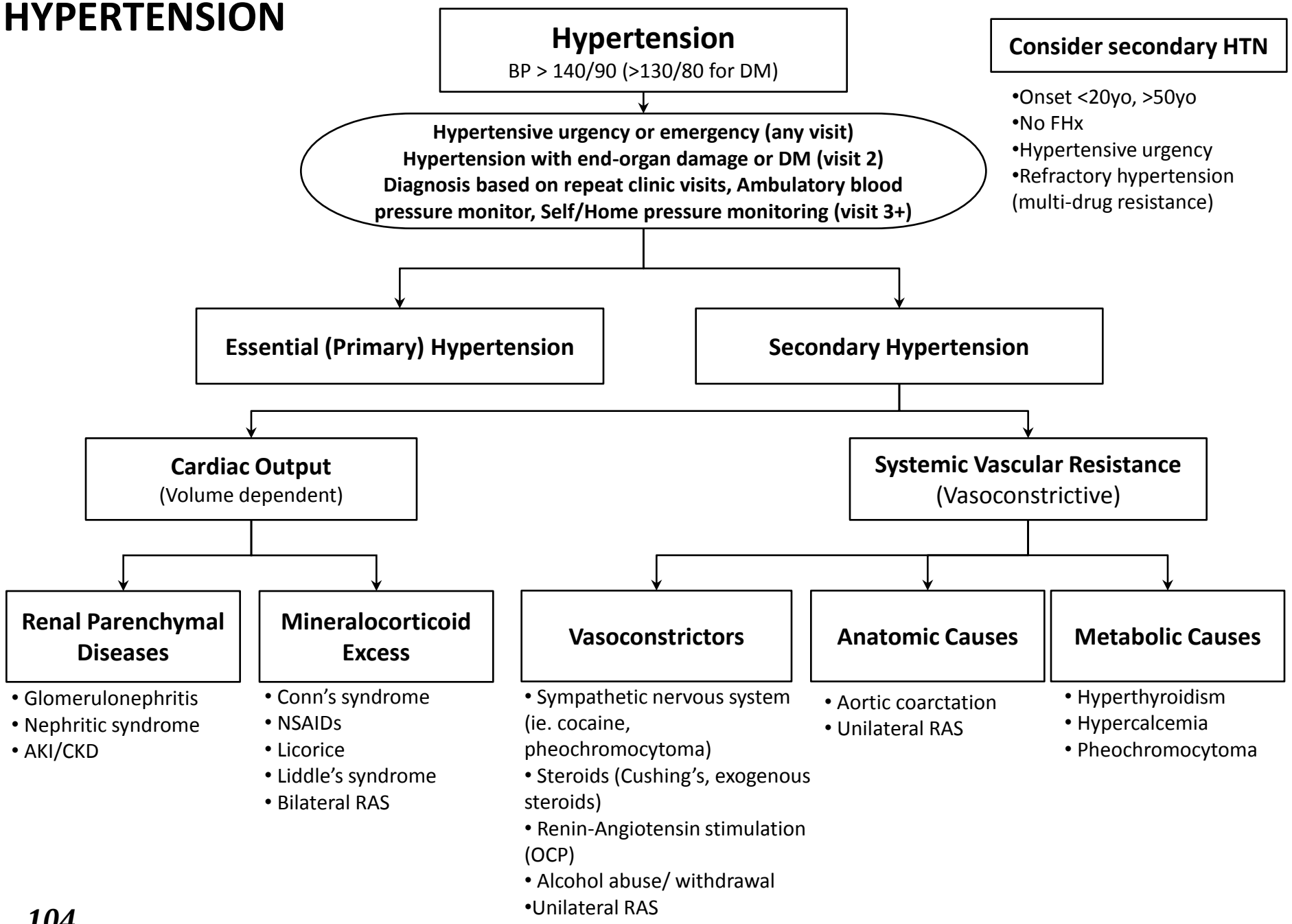
HYPERNATREMIA



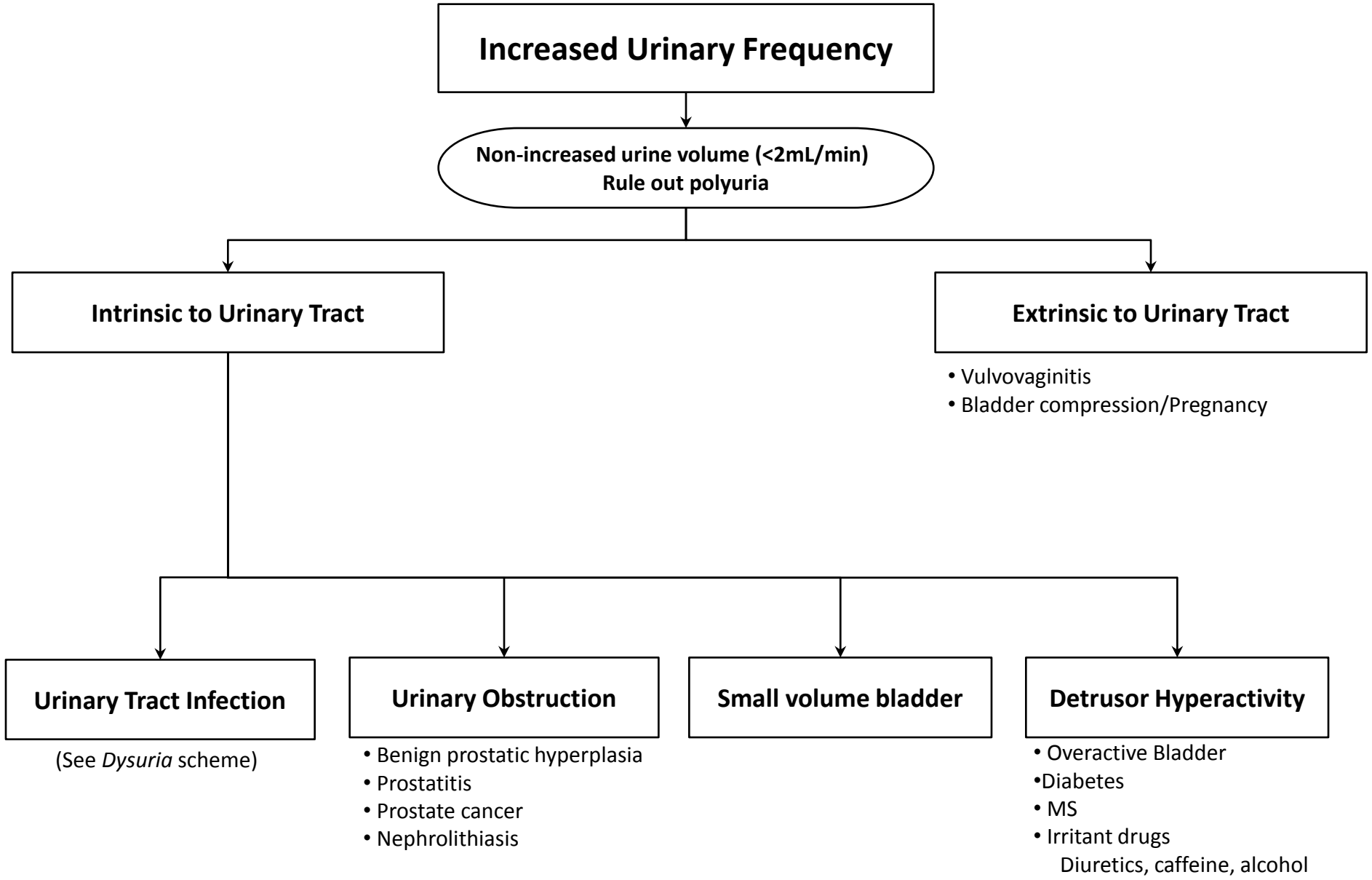
HYPONATREMIA



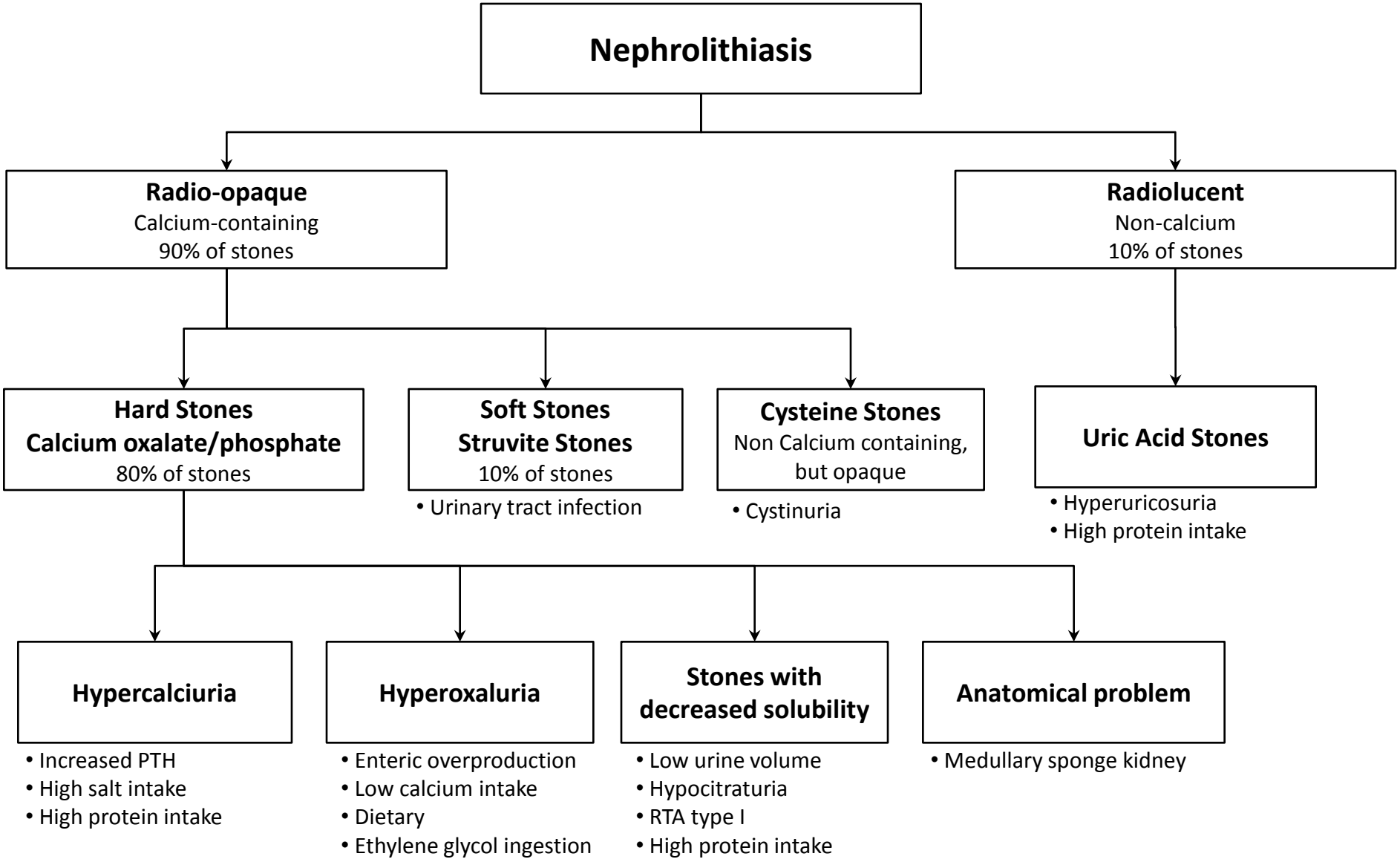
HYPERTENSION



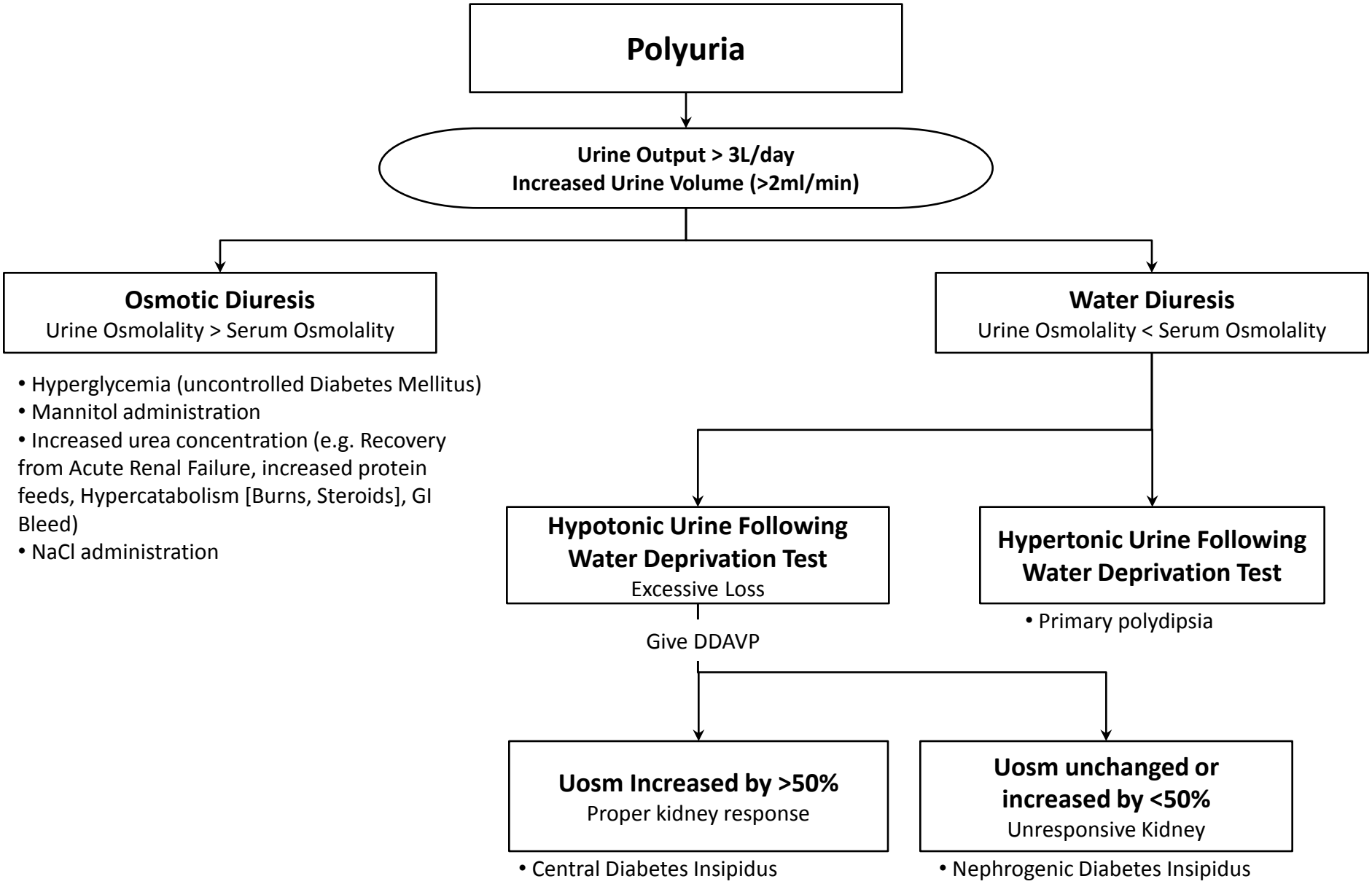
INCREASED URINARY FREQUENCY



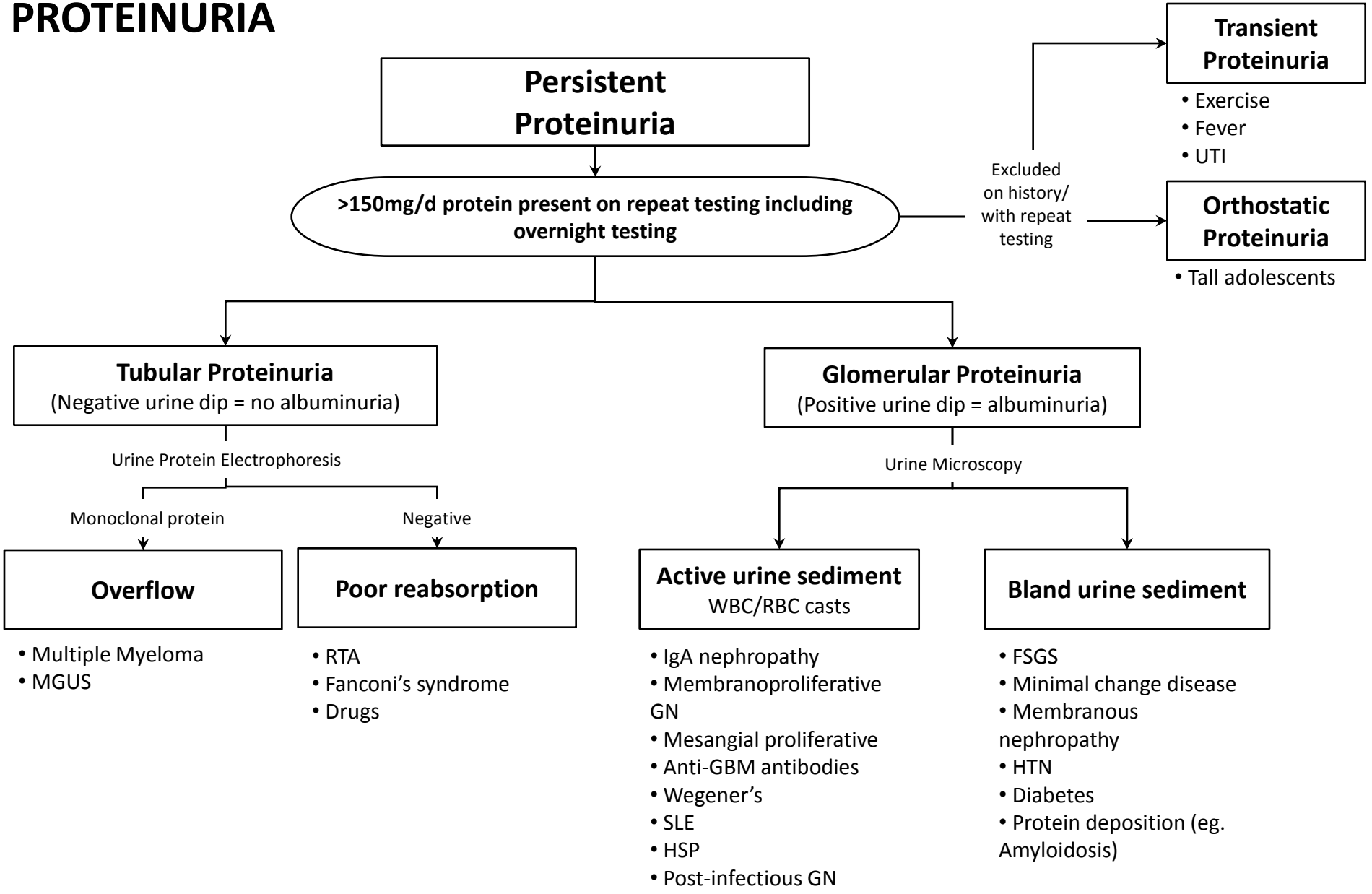
NEPHROLITHIASIS



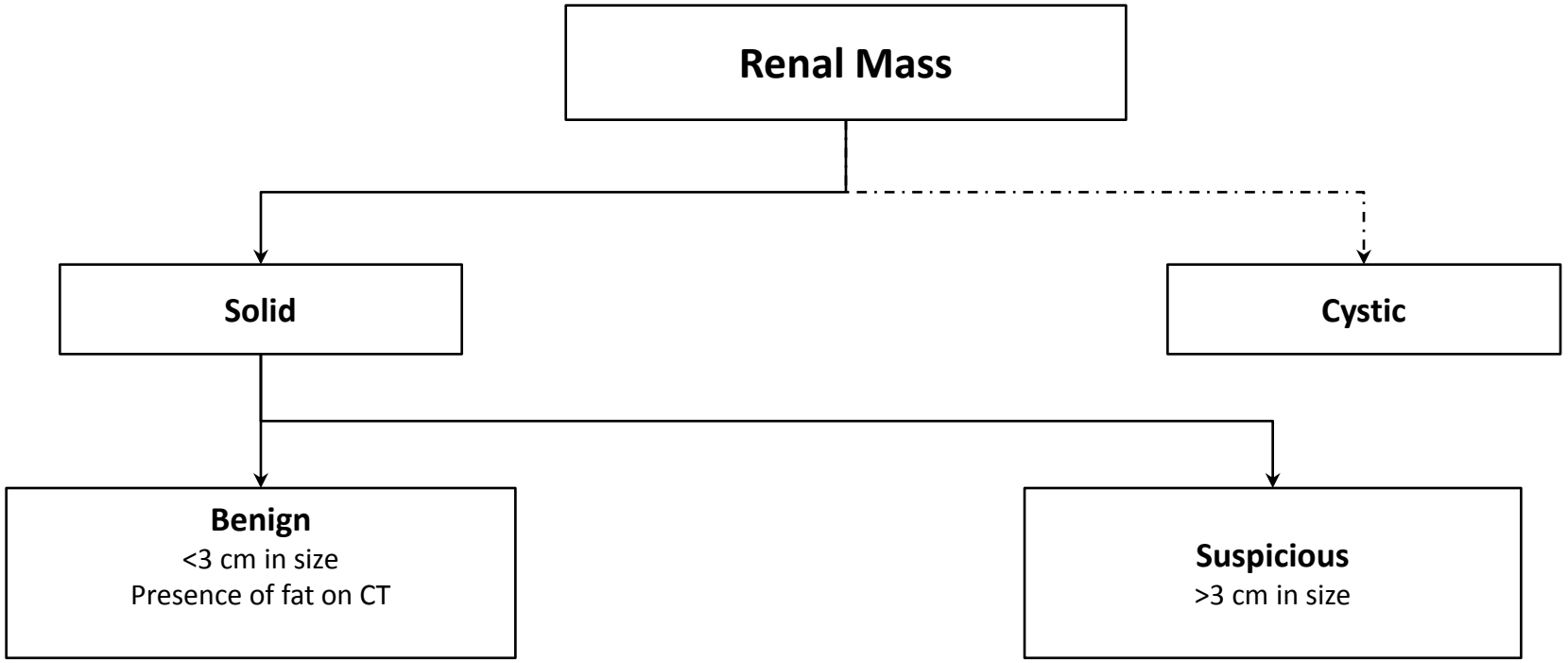
POLYURIA


Polyuria
Urine Output > 3L/day
Increased Urine Volume (>2ml/min)
Osmotic Diuresis
Urine Osmolality > Serum Osmolality
• Hyperglycemia (uncontrolled Diabetes Mellitus)
• Mannitol administration
• Increased urea concentration (e.g. Recovery from Acute Renal Failure, increased protein feeds, Hypercatabolism [Burns, Steroids], GI Bleed)
• NaCl administration
Water Diuresis
Urine Osmolality < Serum Osmolality
Hypotonic Urine Following Water Deprivation Test
Excessive Loss
Give DDAVP
Hypertonic Urine Following Water Deprivation Test
• Primary polydipsia
Uosm Increased by >50%
Proper kidney response
• Central Diabetes Insipidus
Uosm unchanged or increased by <50%
Unresponsive Kidney
• Nephrogenic Diabetes Insipidus

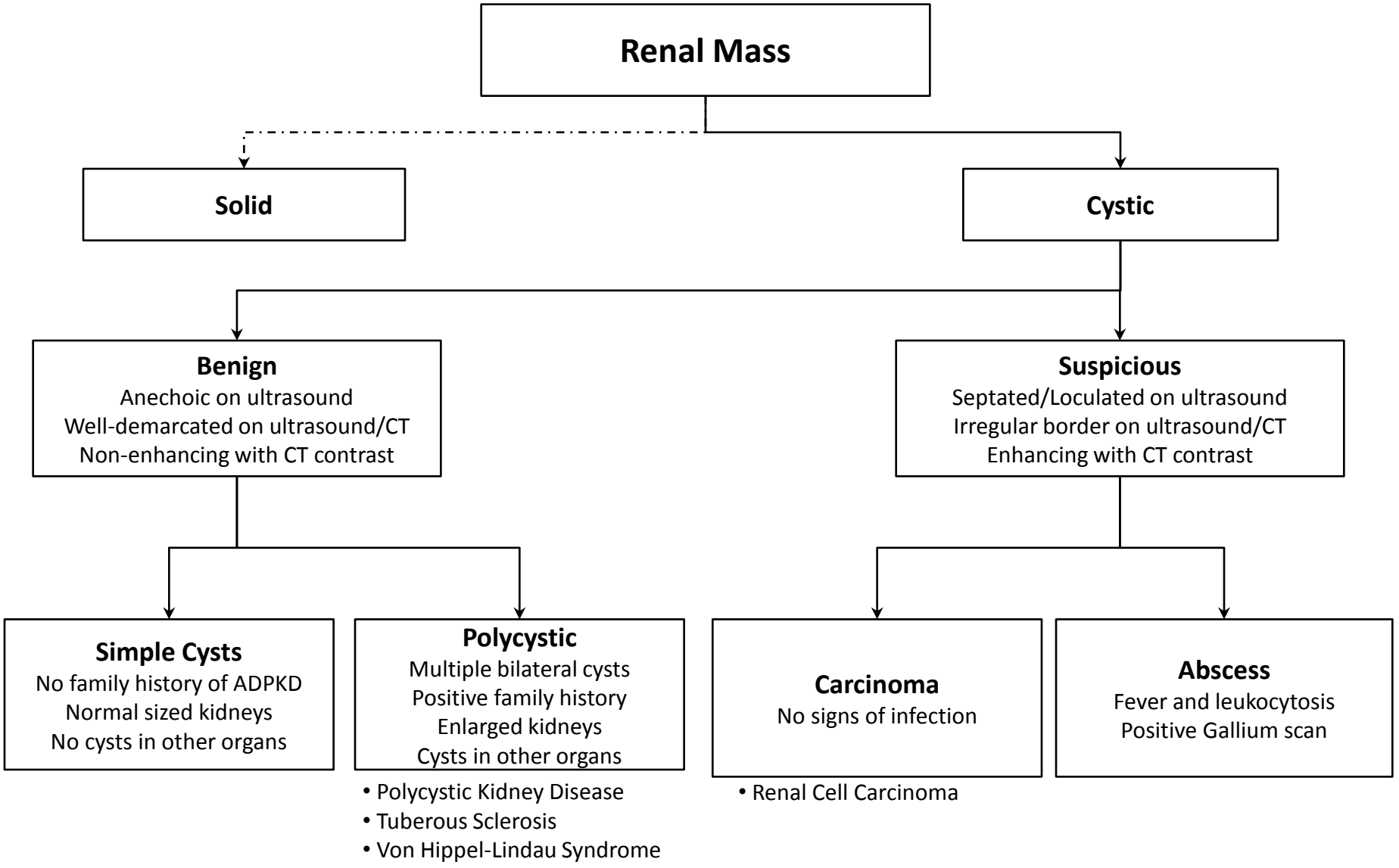
PROTEINURIA



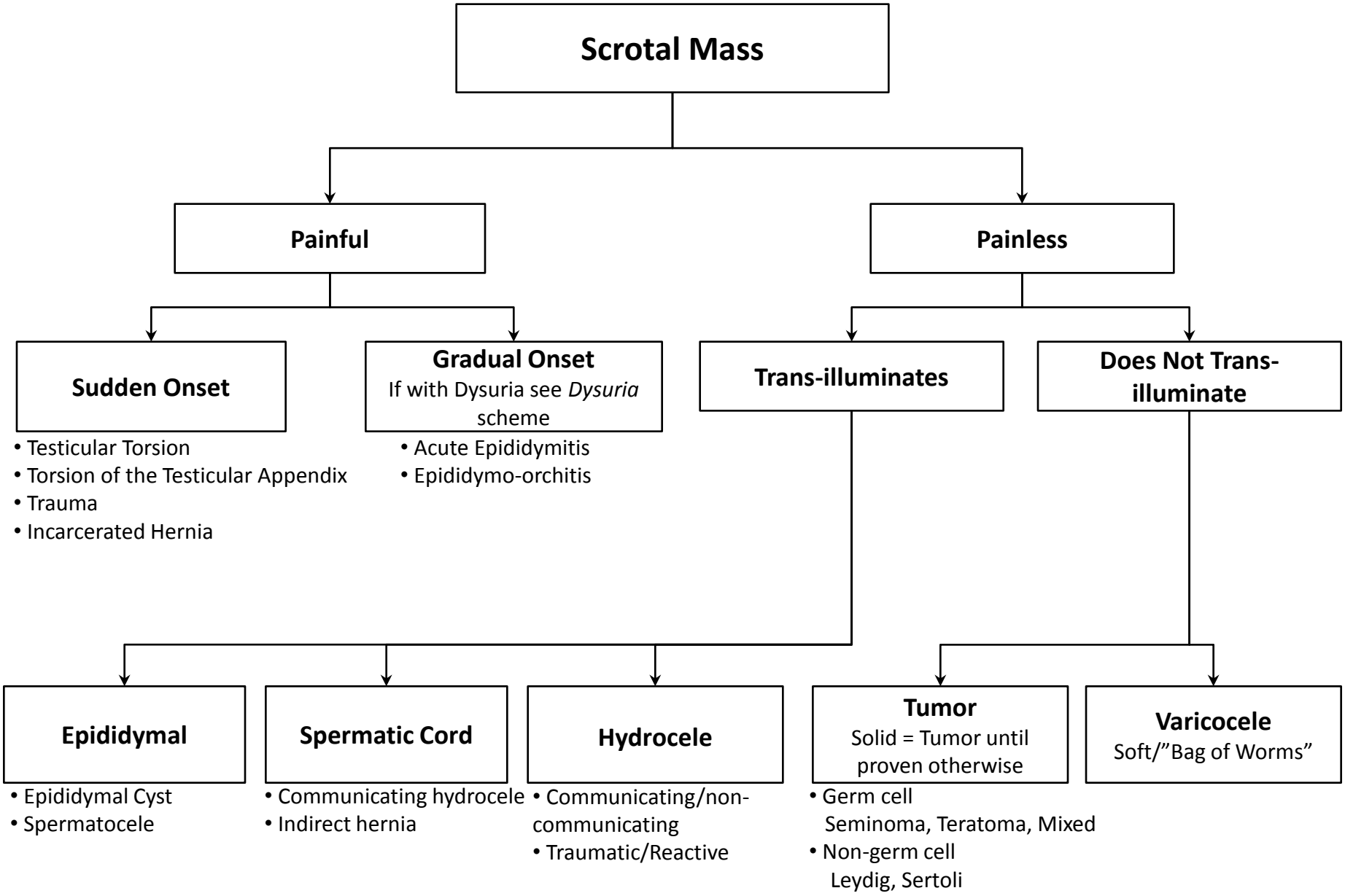
RENAL MASS: Solid



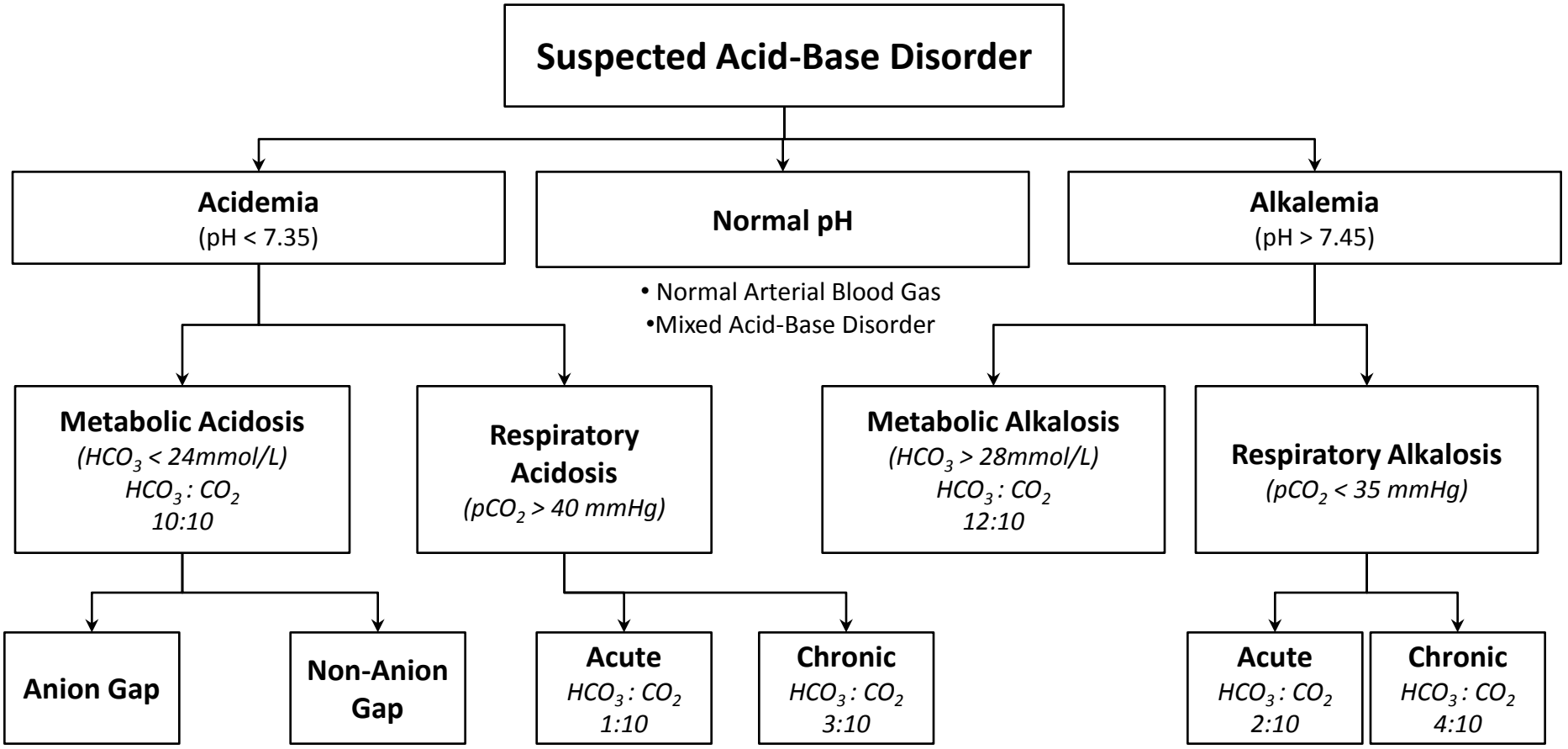
RENAL MASS: Cystic



SCROTAL MASS



SUSPECTED ACID-BASE DISTURBANCE



Diagnosis of Mixed Metabolic Disorders in Patients with Metabolic Acidosis:

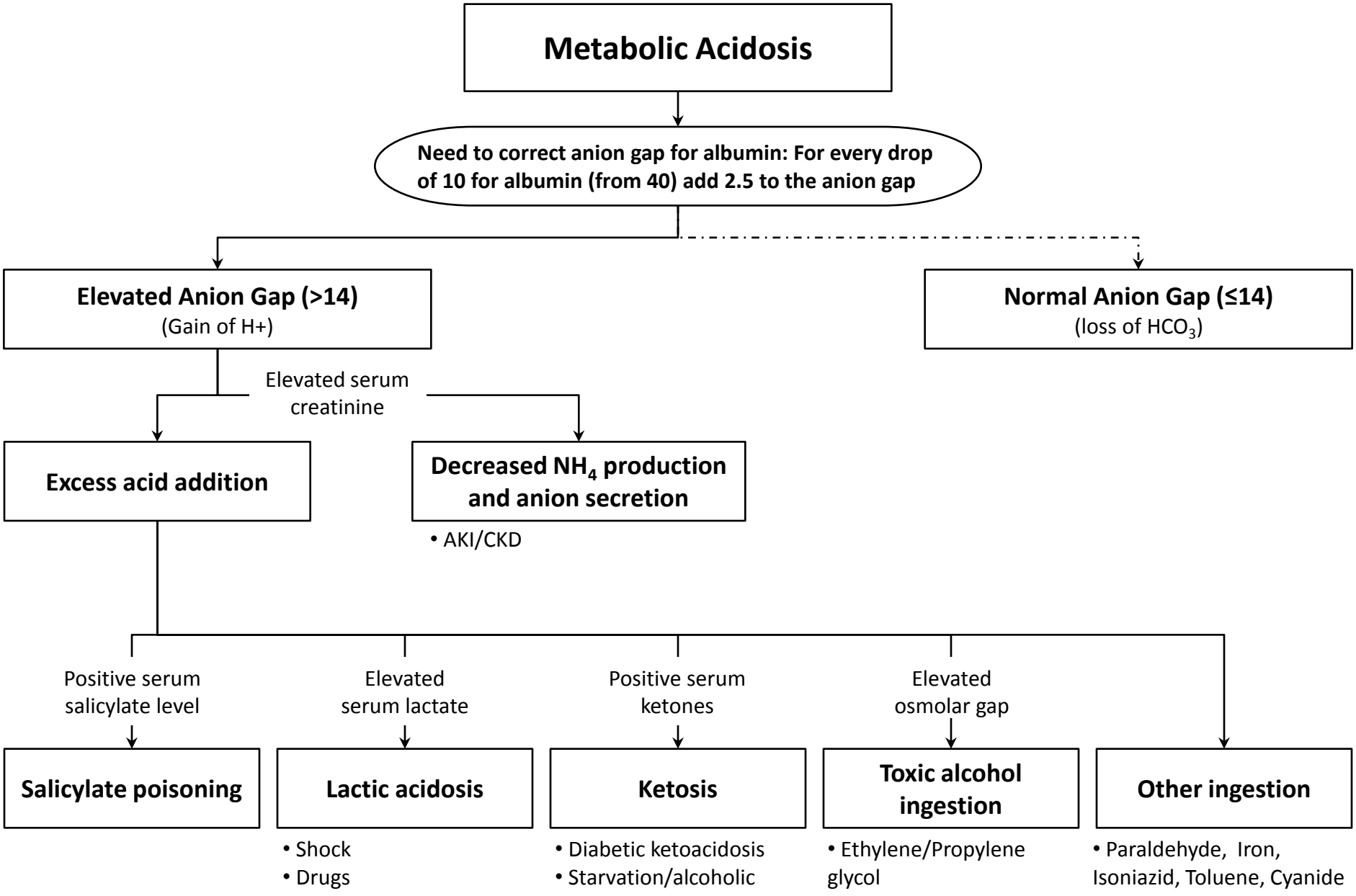
Anion Gap Not Increased *Non-Anion Gap Acidosis Alone*

ΔAnion Gap = ΔHCO_3 *Anion Gap Acidosis Alone*

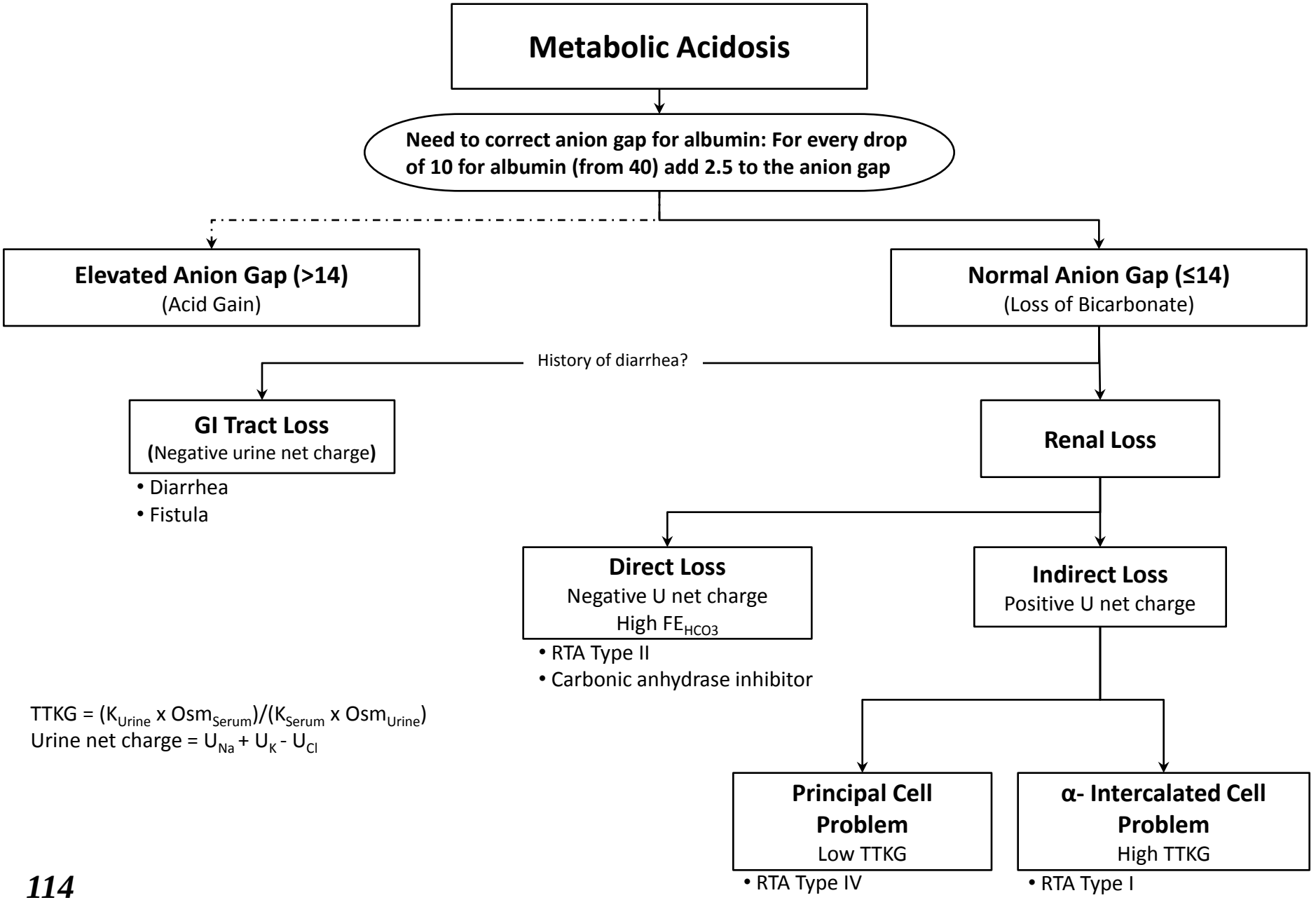
ΔAnion Gap < ΔHCO_3 *Mixed Anion Gap Acidosis + Non-Anion Gap Acidosis*

ΔAnion Gap > ΔHCO_3 *Mixed Anion Gap Acidosis + Metabolic Alkalosis*

METABOLIC ACIDOSIS: Elevated Anion Gap



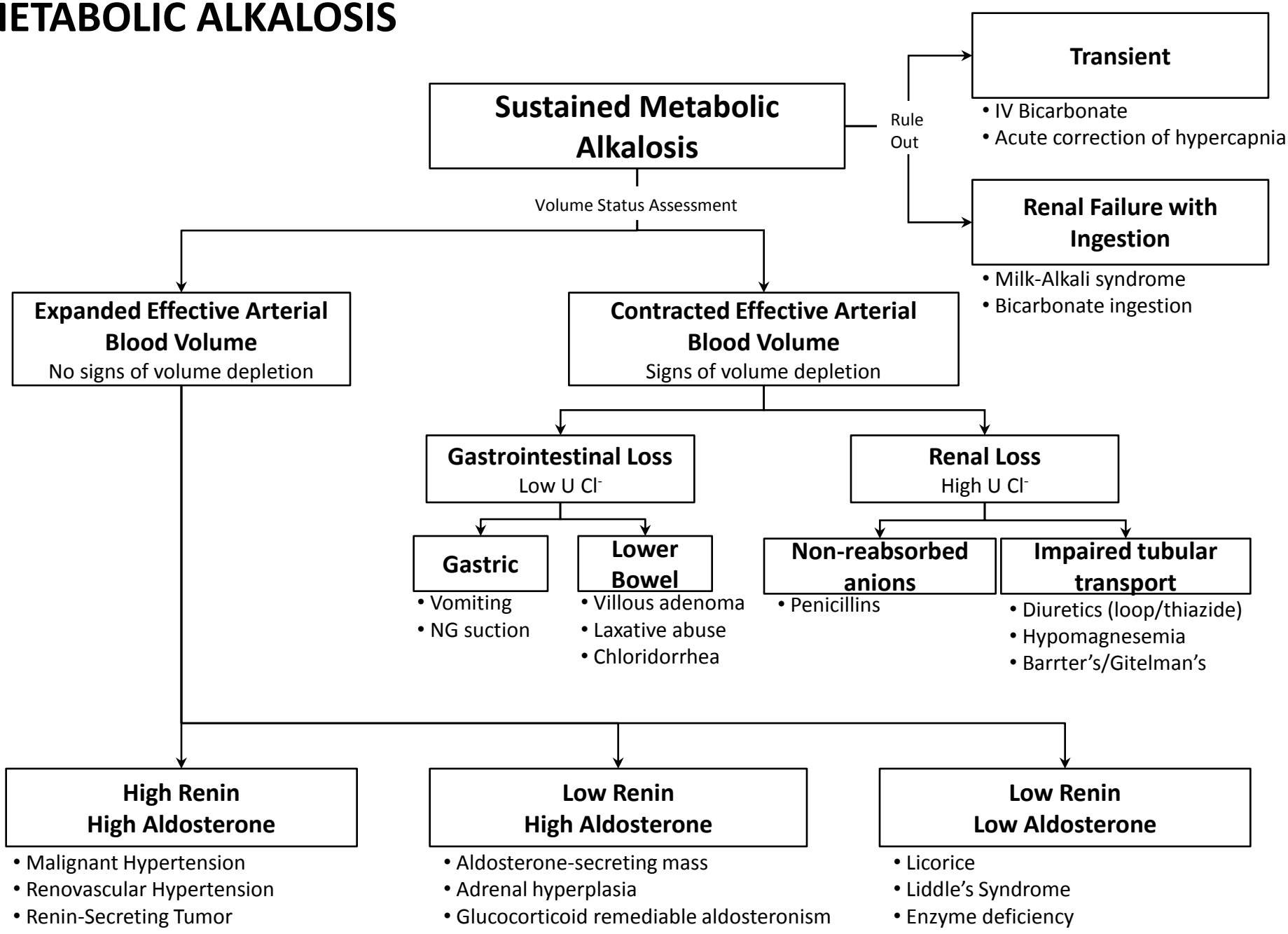
METABOLIC ACIDOSIS: Normal Anion Gap



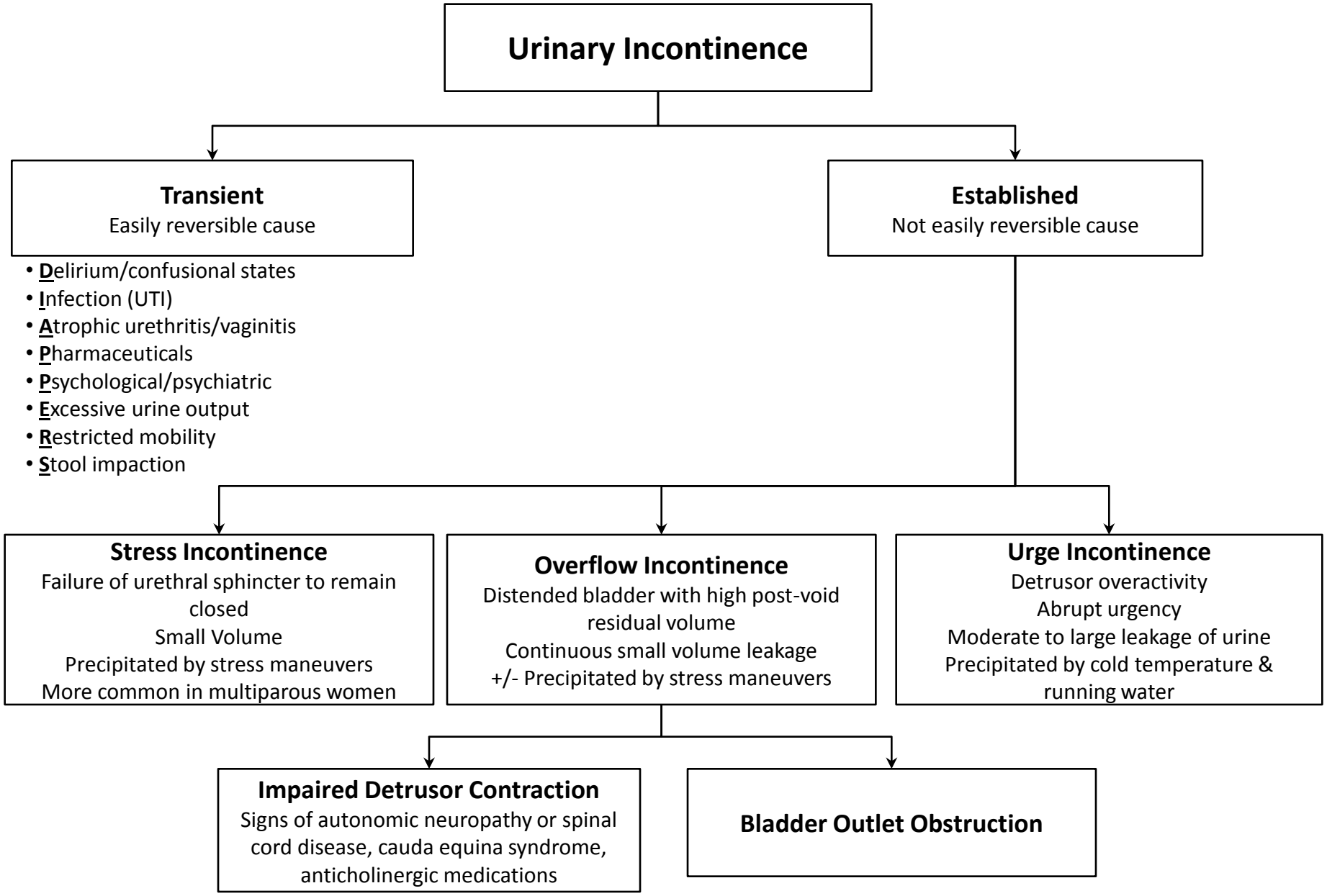
$TTKG = (K_{Urine} \times Osm_{Serum})/(K_{Serum} \times Osm_{Urine})$

Urine net charge = $U_{Na} + U_K - U_{Cl}$

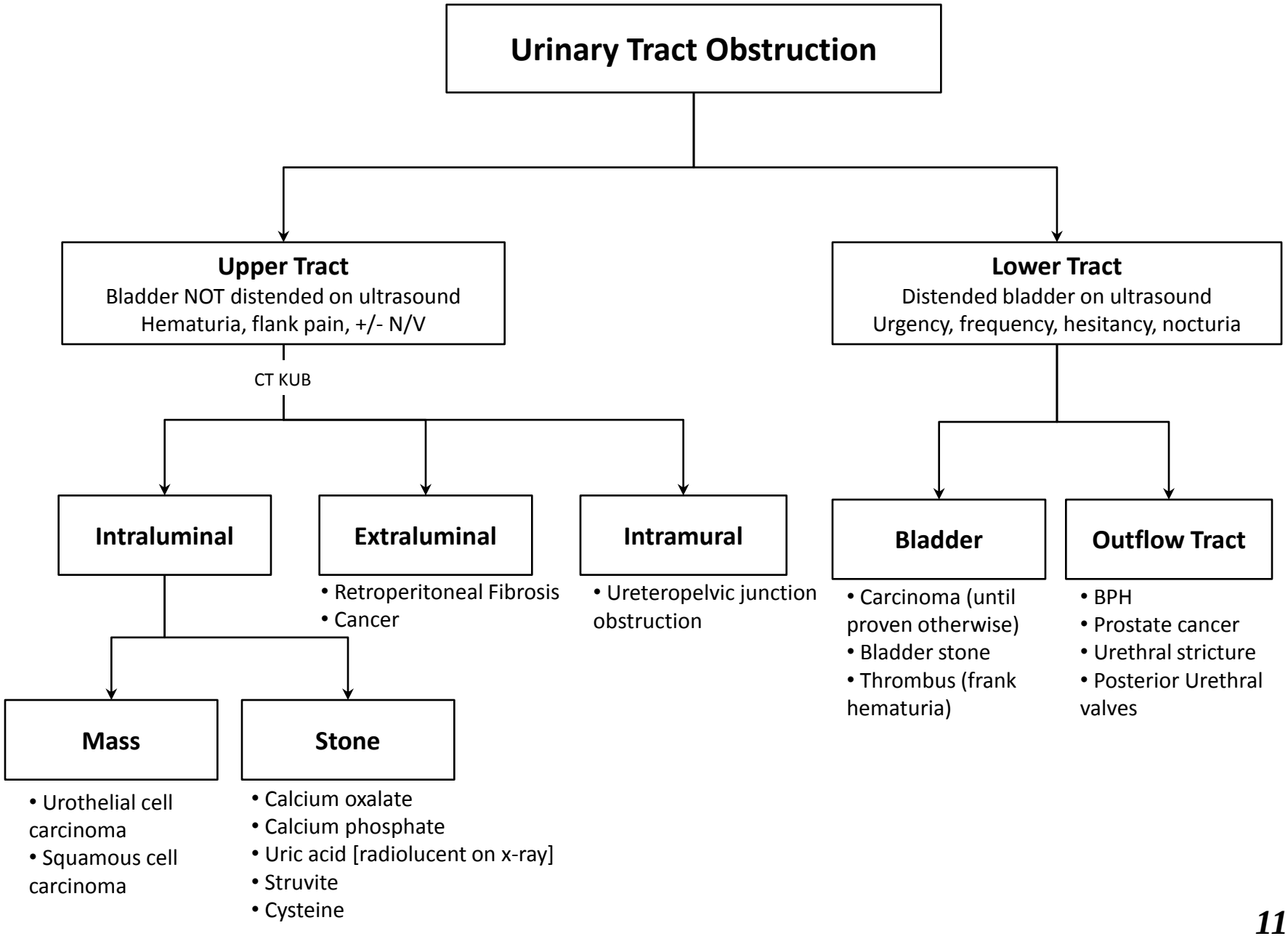
METABOLIC ALKALOSIS



URINARY INCONTINENCE



URINARY TRACT OBSTRUCTION



Endocrinology Presentations

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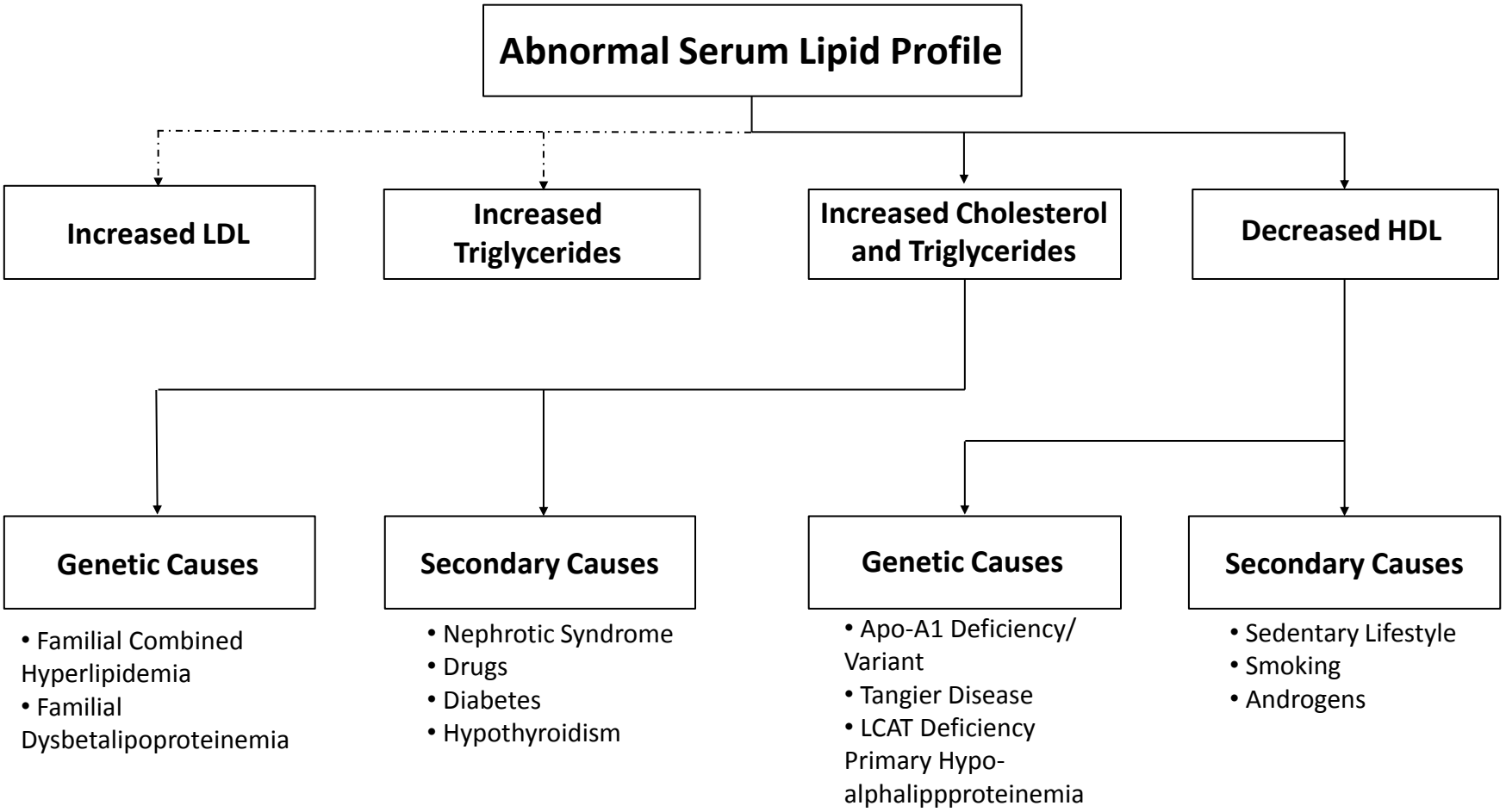
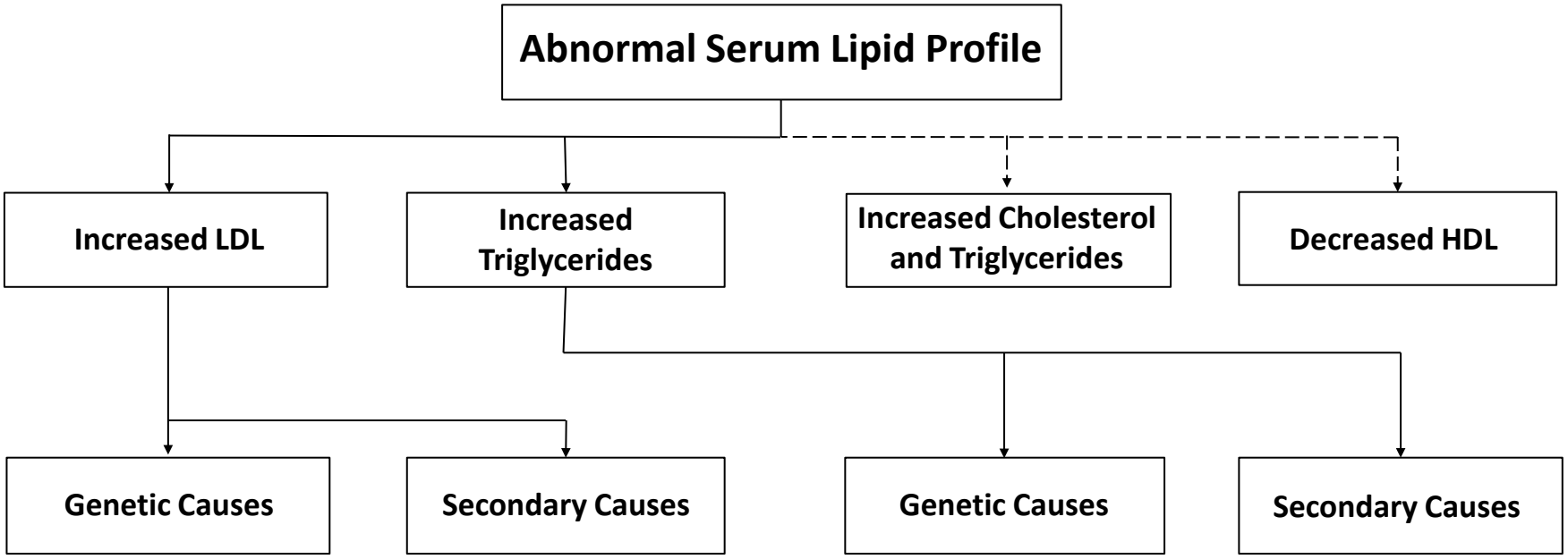
ABNORMAL LIPID PROFILE: Combined & Decreased HDL



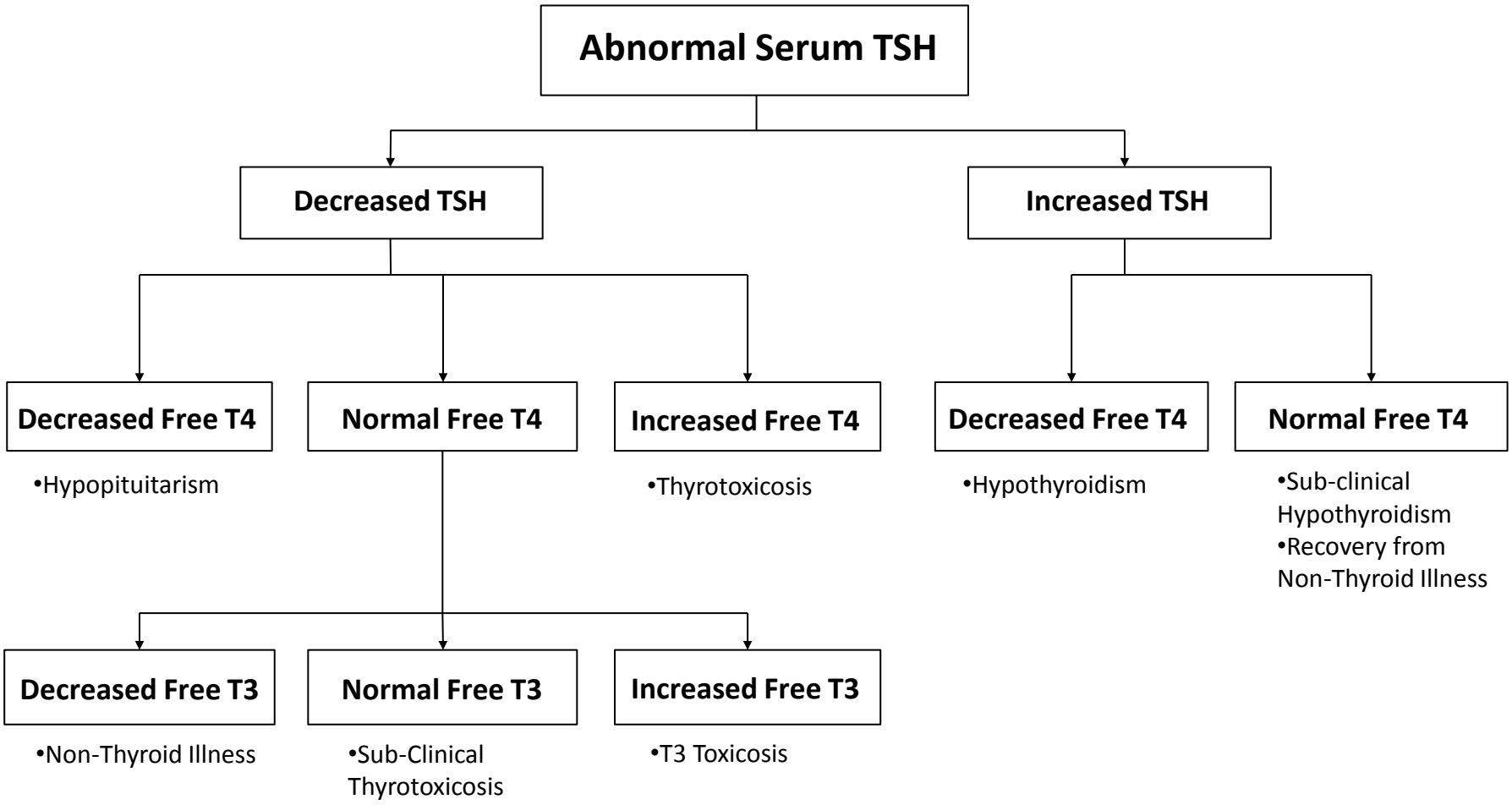
Physical signs:
Hypertriglyceridemia: eruptive xanthoma, lipemia retinalis
Increased IDL: palmar crease xanthoma, tuberous xanthoma
Increased LDL: tendon xanthomata on Achilles tendon, knuckles

ABNORMAL LIPID PROFILE: Increased LDL & Increased Triglycerides



Physical signs:
Hypertriglyceridemia: eruptive xanthoma, lipemia retinalis
Increased IDL: palmar crease xanthoma, tuberous xanthoma
Increased LDL: tendon xanthomata on Achilles tendon, knuckles

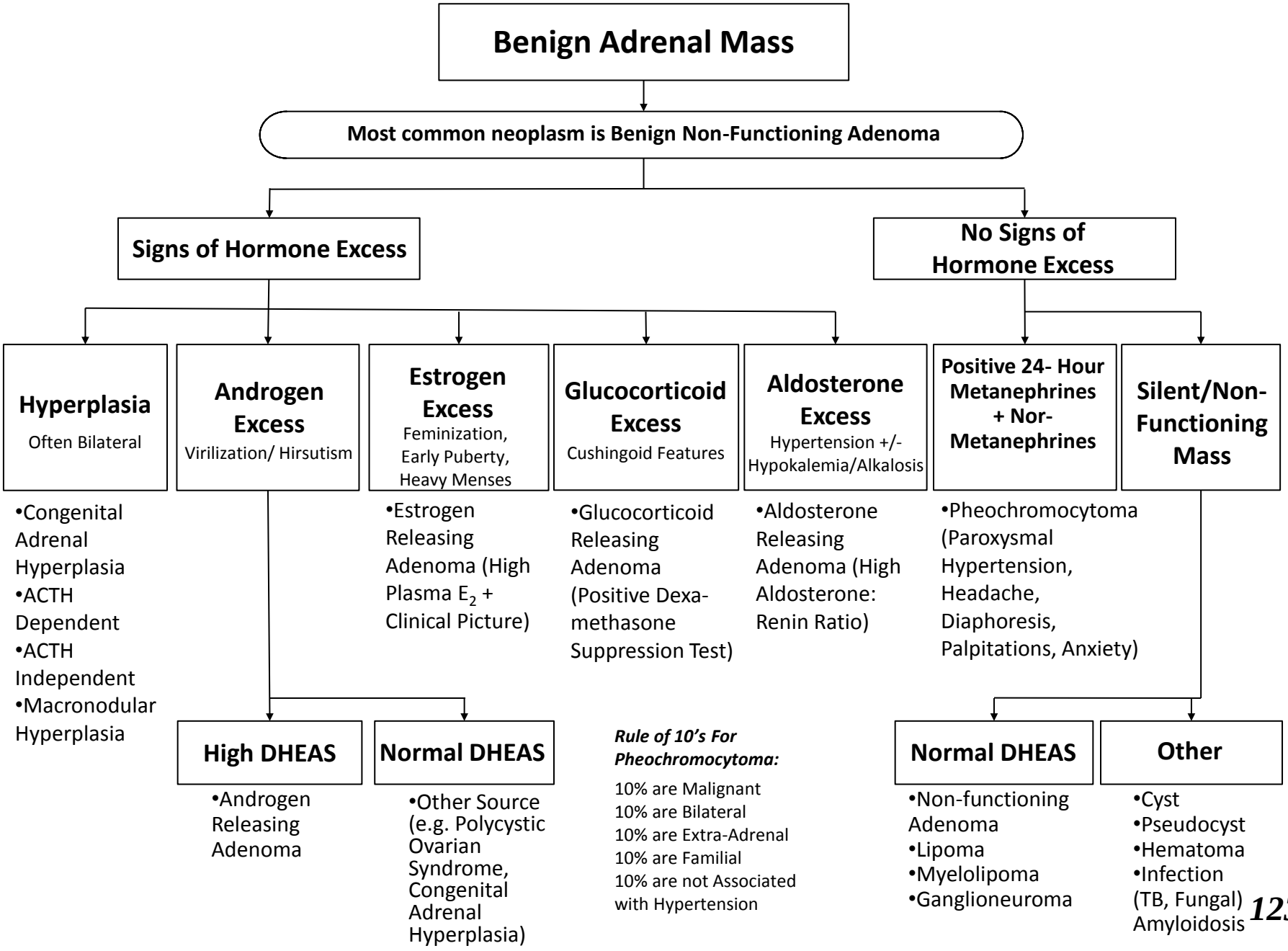
ABNORMAL SERUM TSH



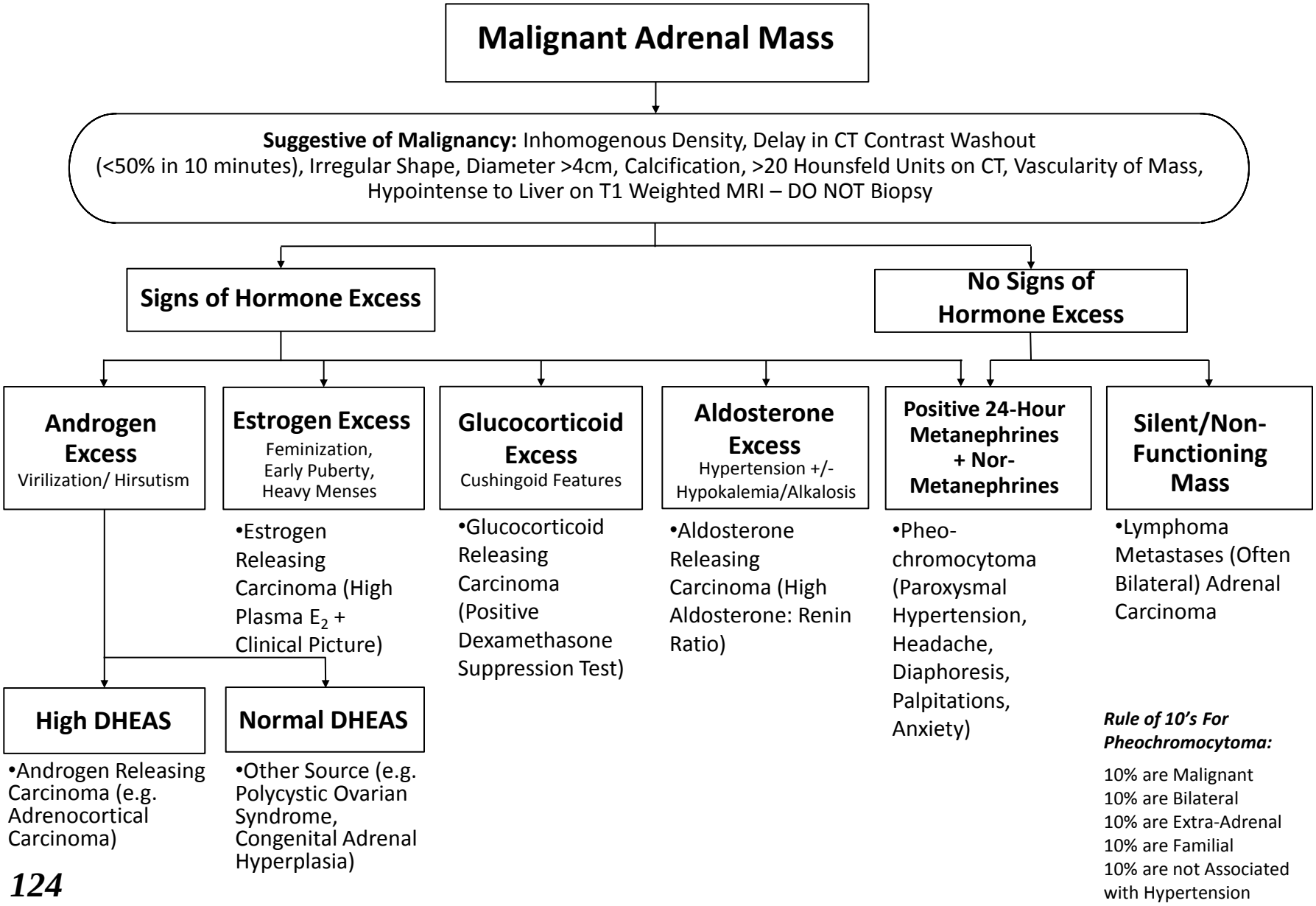
*refer to hyperthyroidism scheme pg 142

*refer to hypothyroidism scheme pg 143

ADRENAL MASS: Benign



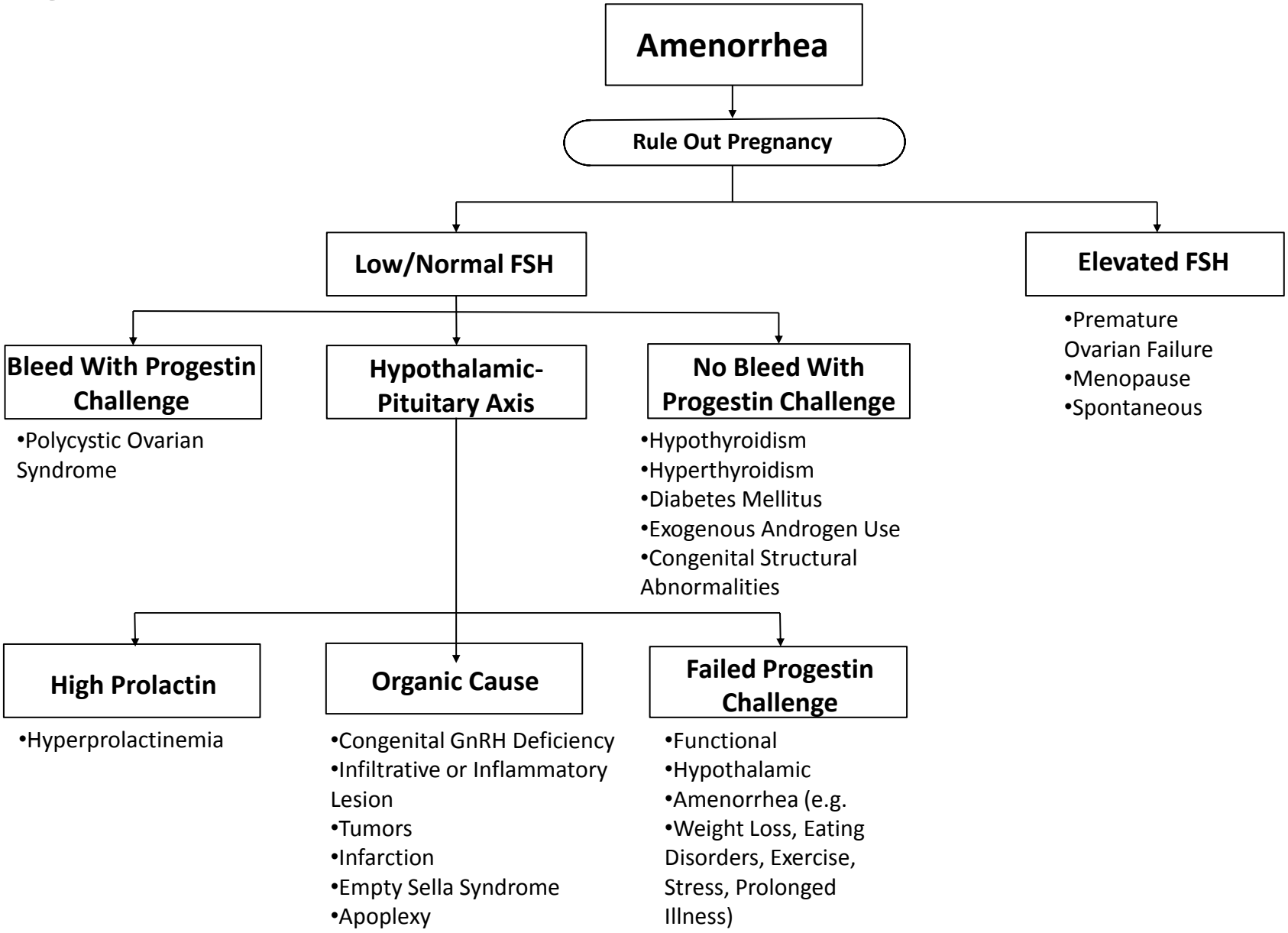
ADRENAL MASS: Malignant



Rule of 10's For Pheochromocytoma:

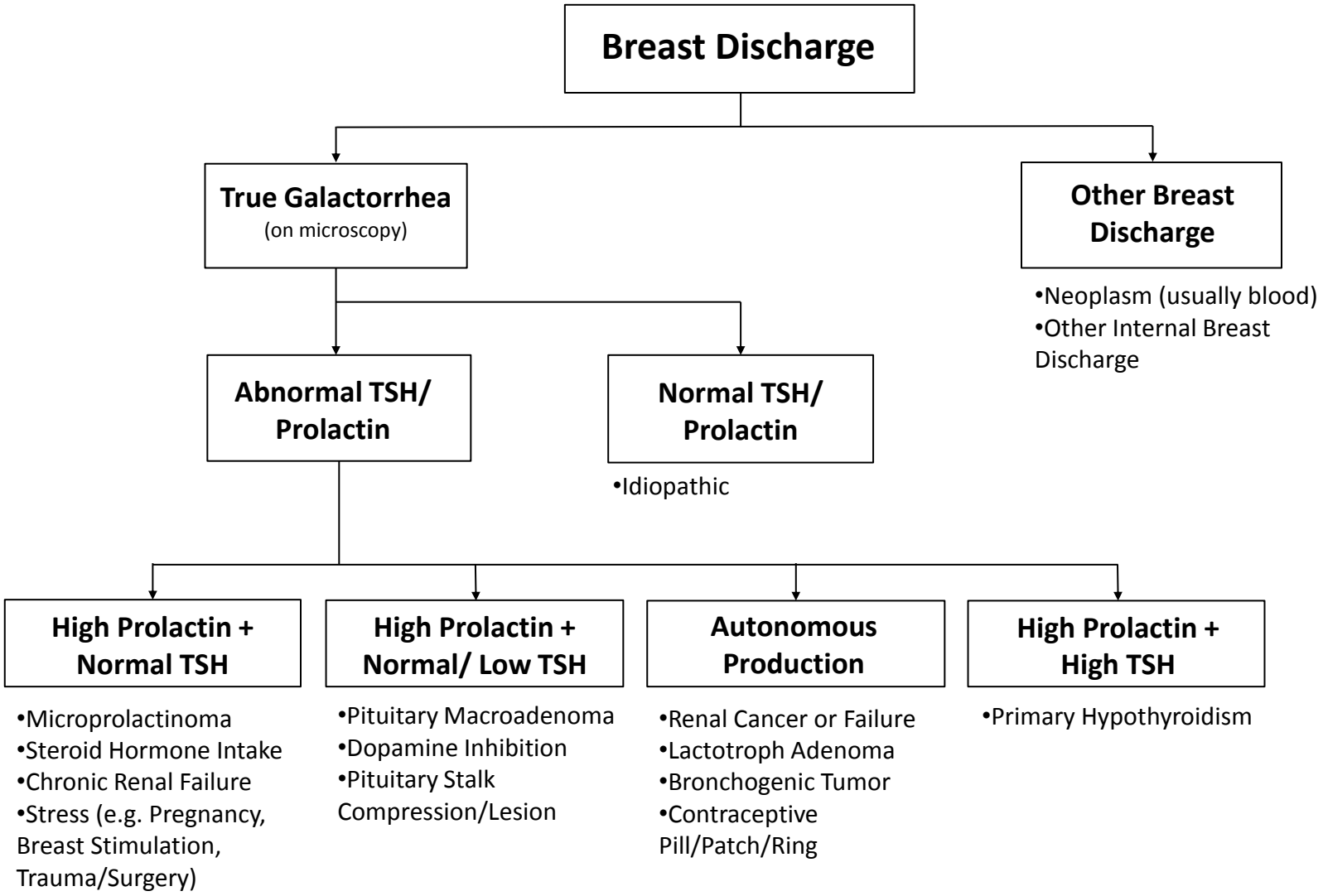
10% are Malignant
10% are Bilateral
10% are Extra-Adrenal
10% are Familial
10% are not Associated with Hypertension

AMENORRHEA

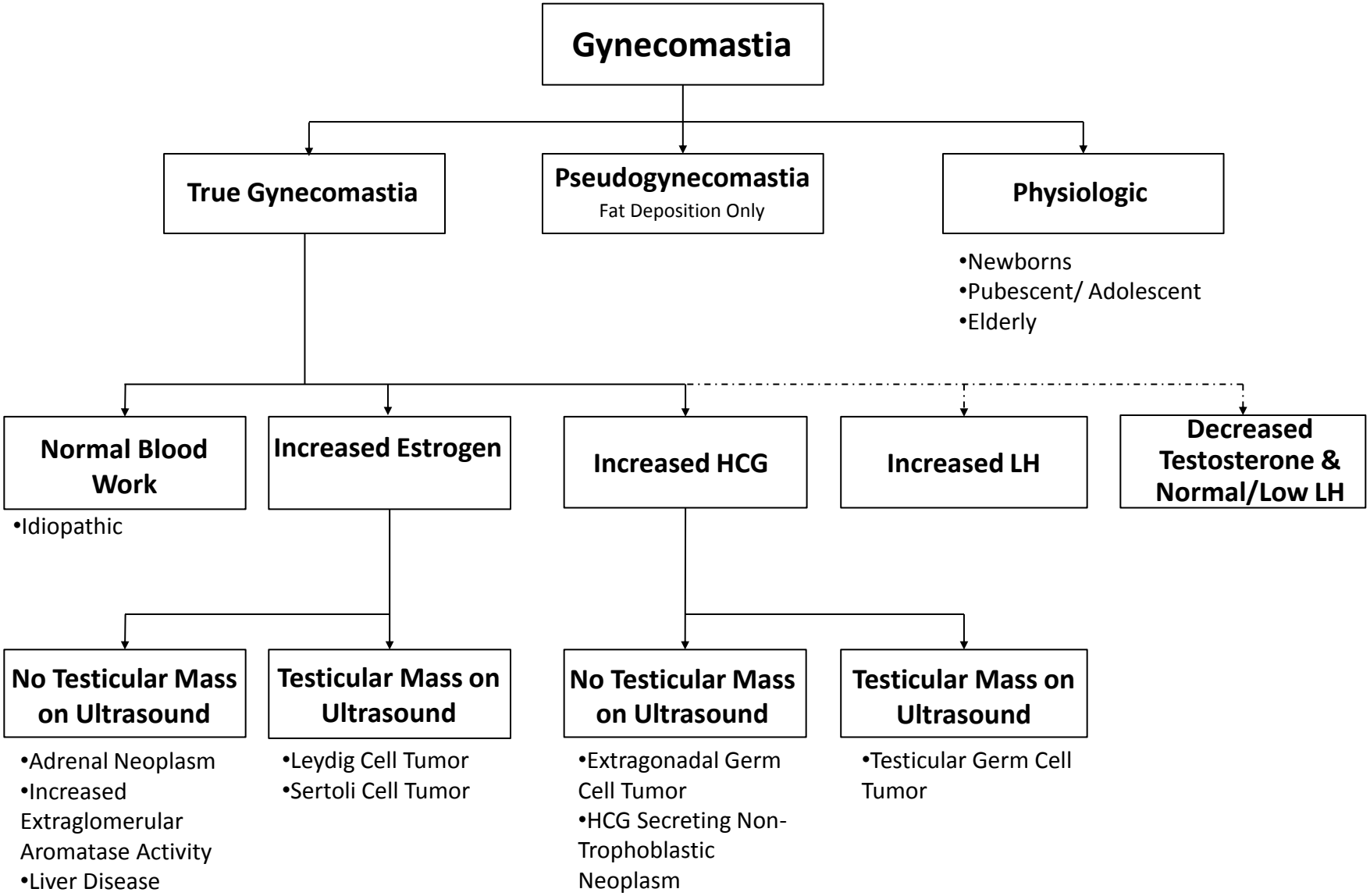


If bleed with progestin challenge = estrogenized
If no bleed with progestin challenge = non-estrogenized

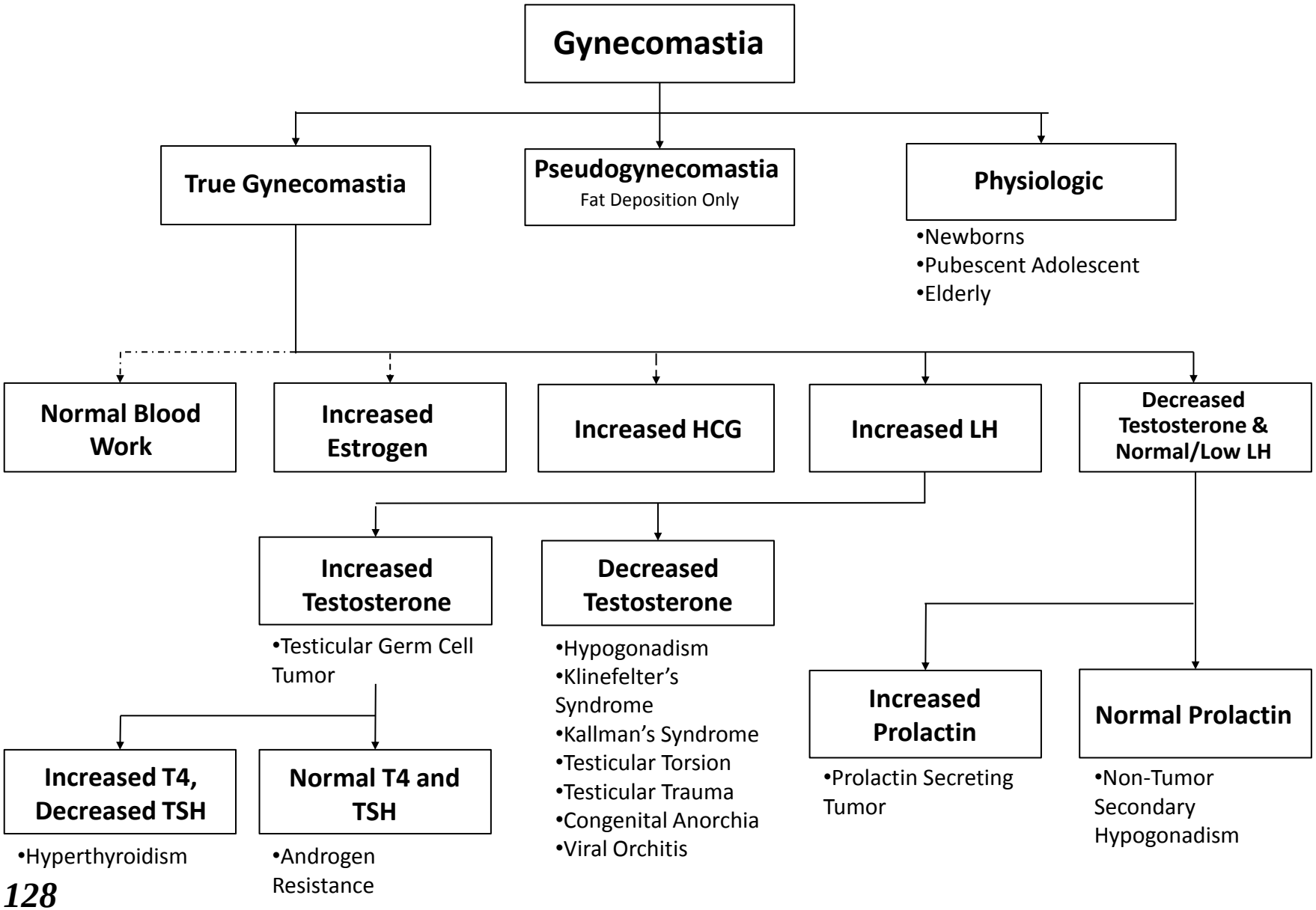
BREAST DISCHARGE



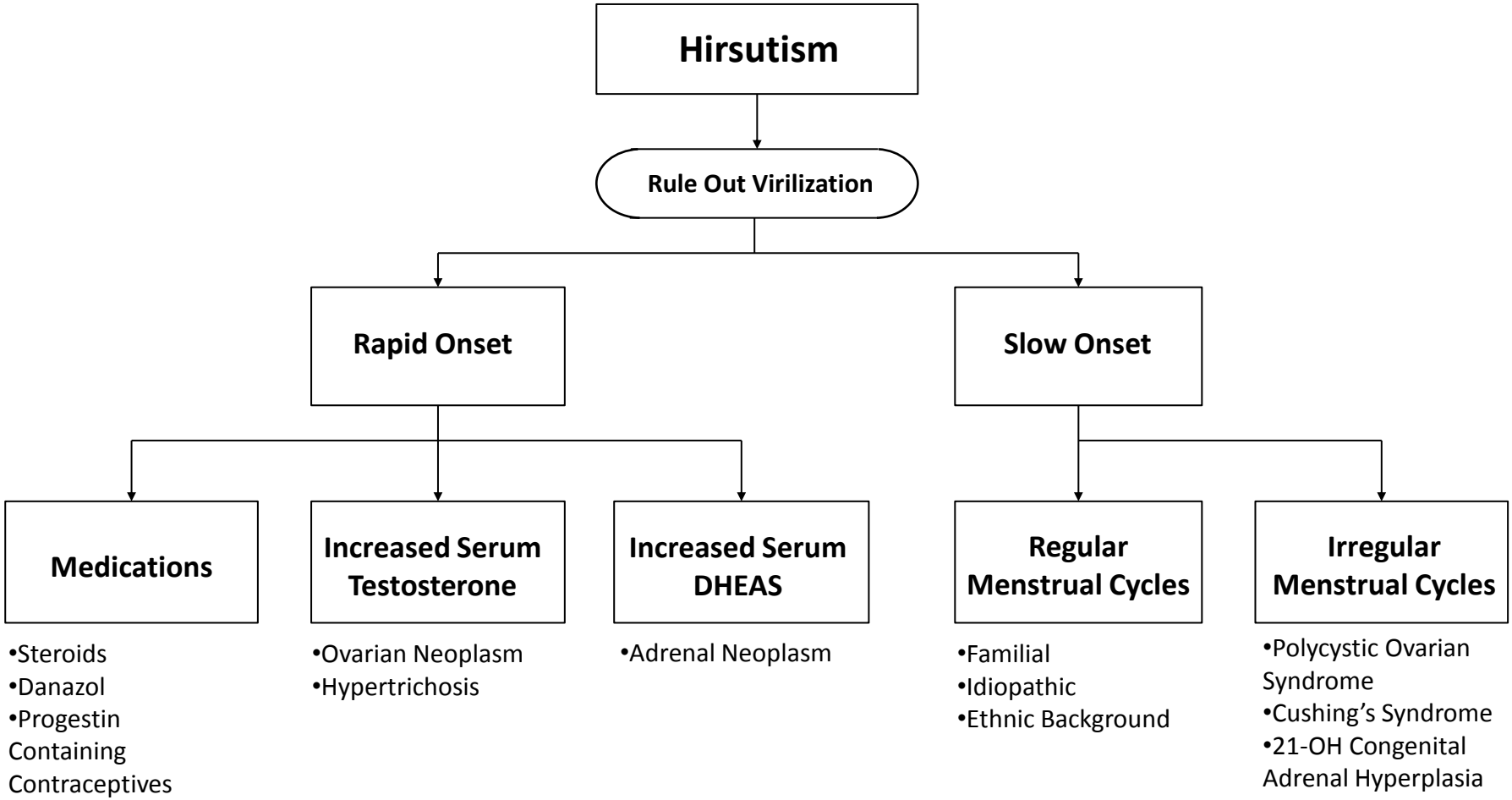
GYNECOMASTIA: Increased Estrogen & Increased HCG



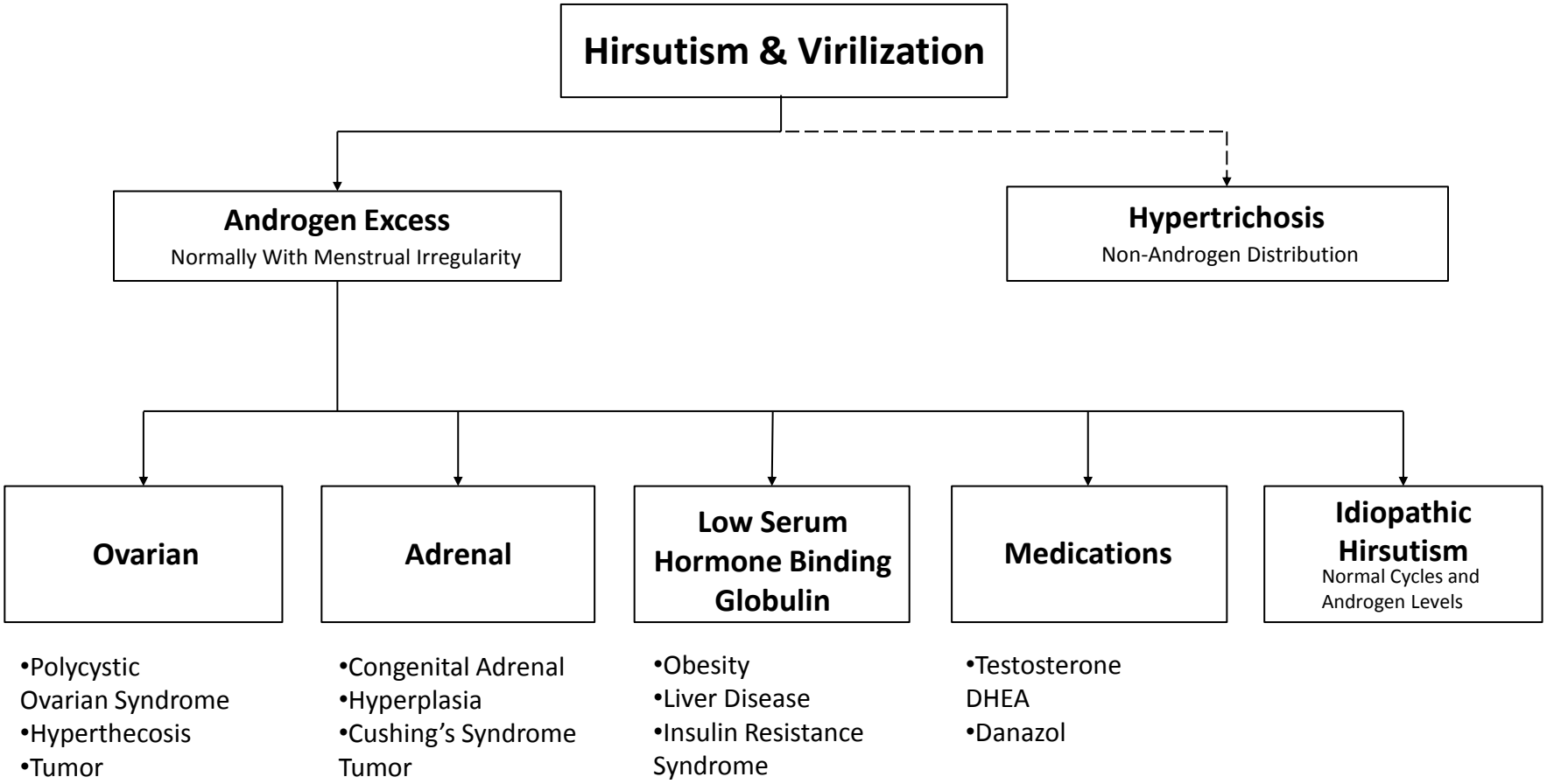
GYNECOMASTIA: Increased LH & Decreased Testosterone



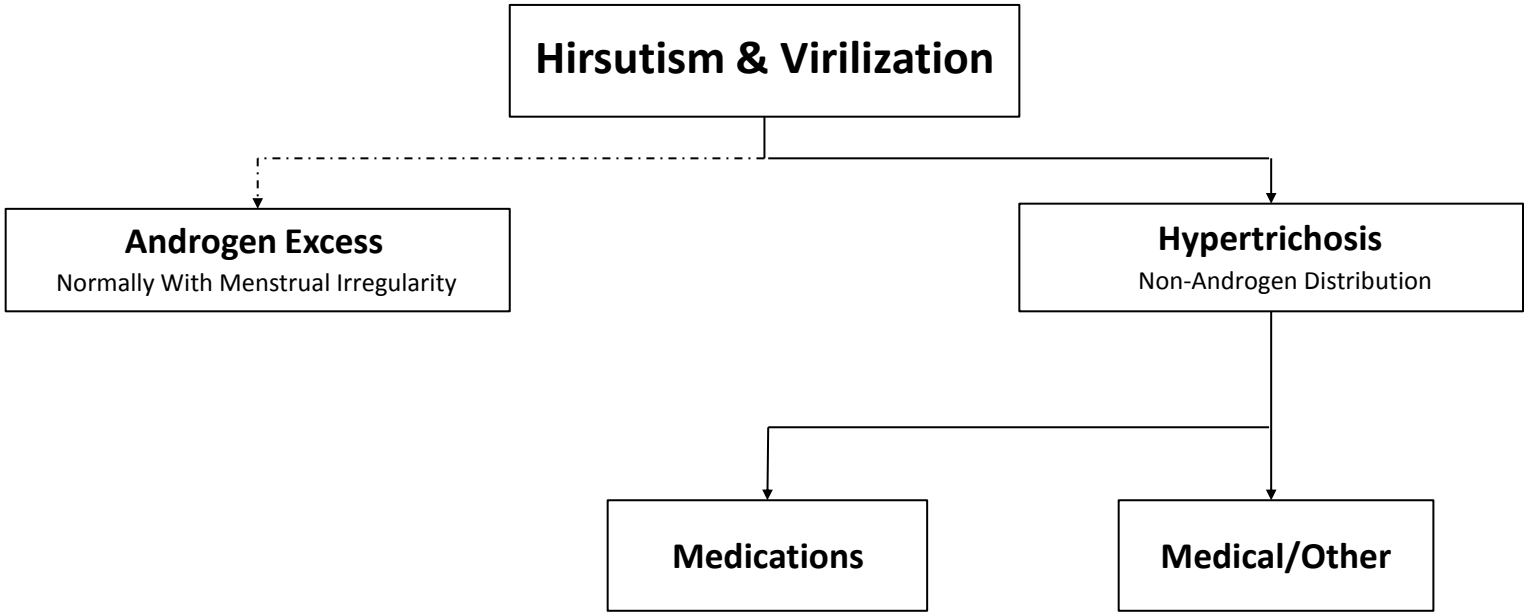
HIRSUTISM


Hirsutism
Rule Out Virilization
Rapid Onset
Slow Onset
Medications
Increased Serum Testosterone
Increased Serum DHEAS
Regular Menstrual Cycles
Irregular Menstrual Cycles
•Steroids
•Danazol
•Progestin Containing Contraceptives
•Ovarian Neoplasm
•Hypertrichosis
•Adrenal Neoplasm
•Familial
•Idiopathic
•Ethnic Background
•Polycystic Ovarian Syndrome
•Cushing's Syndrome
•21-OH Congenital Adrenal Hyperplasia

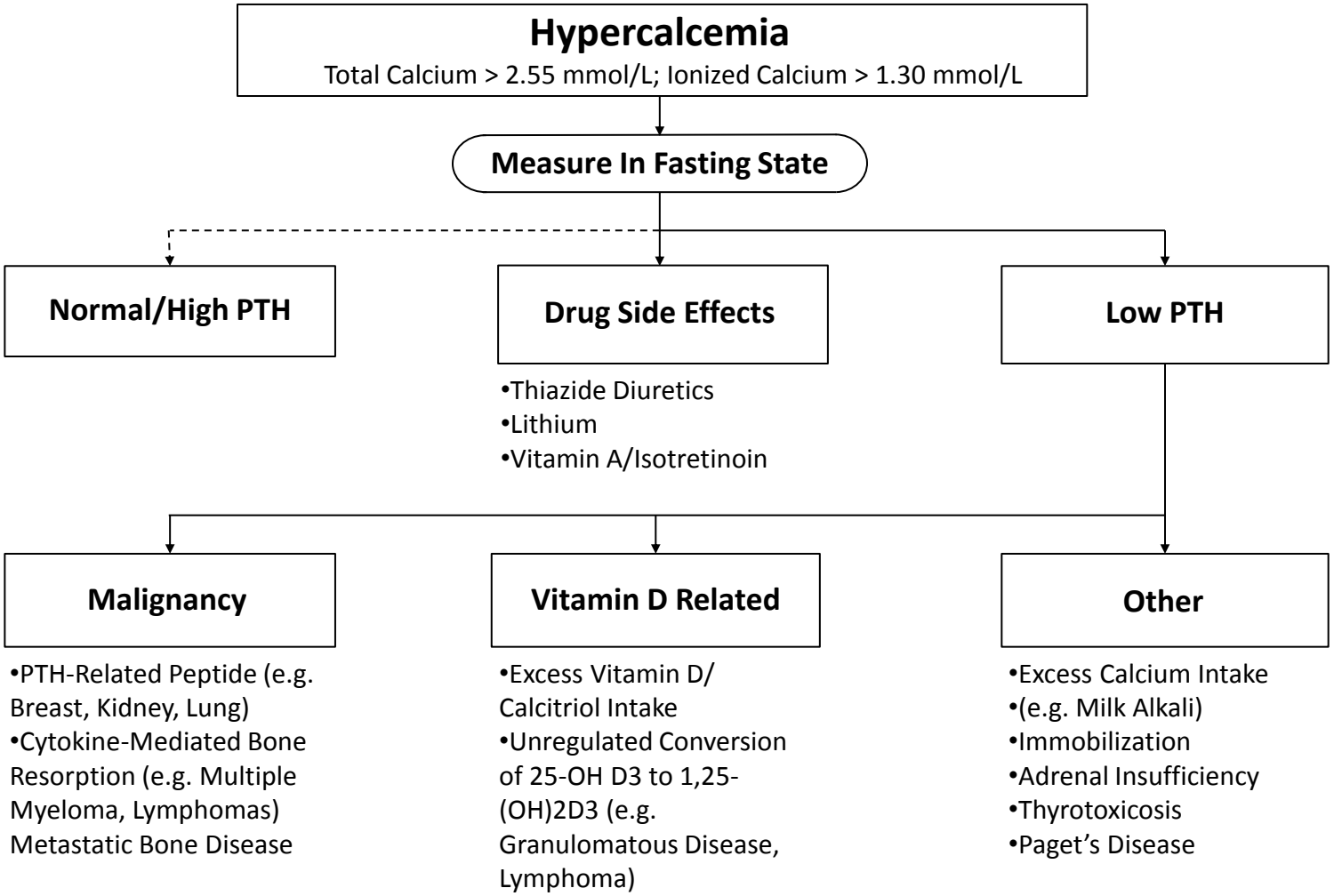
HIRSUTISM & VIRILIZATION: Androgen Excess



HIRSUTISM & VIRILIZATION: Hypertrichosis

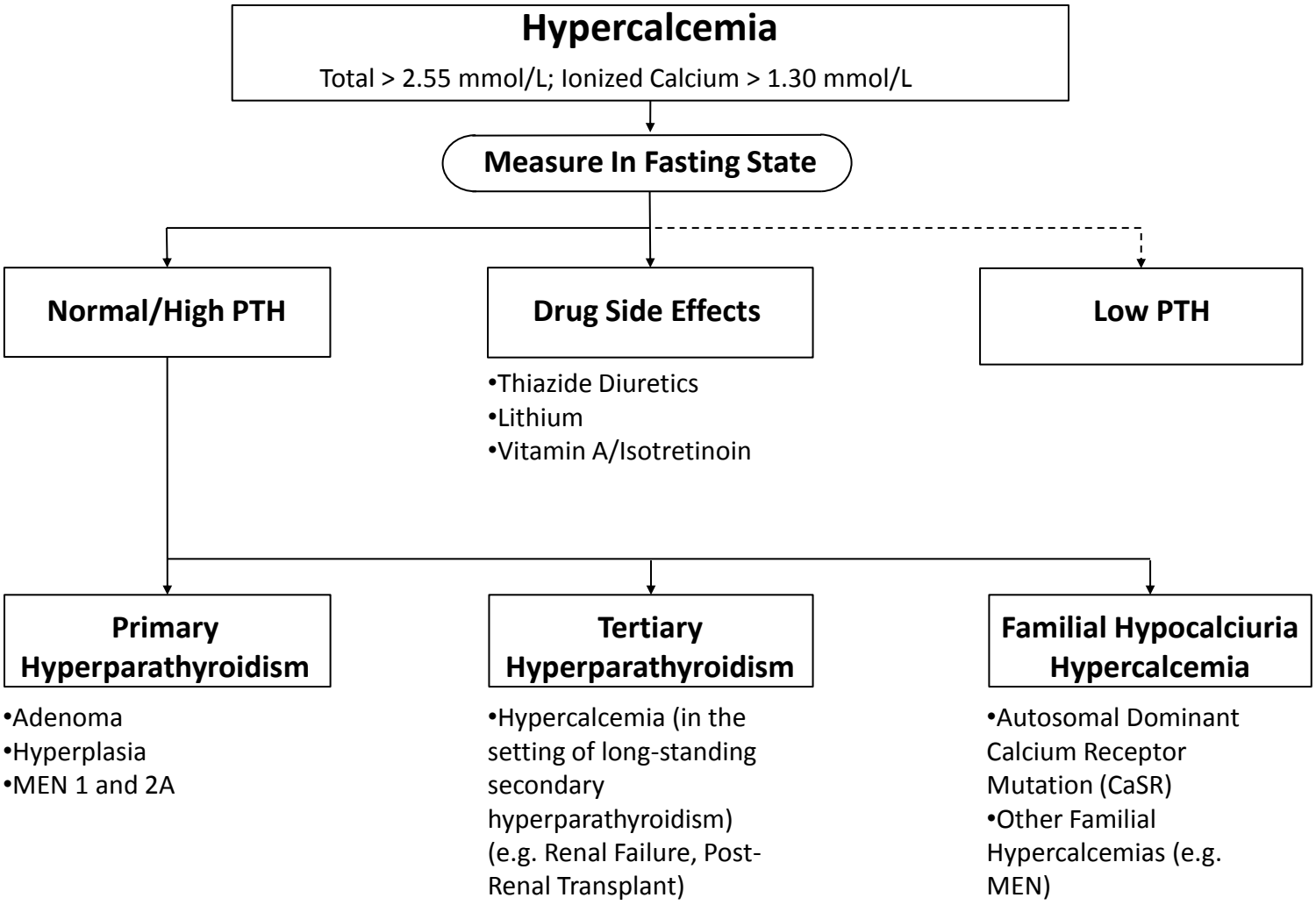


HYPERCALCEMIA: Low PTH



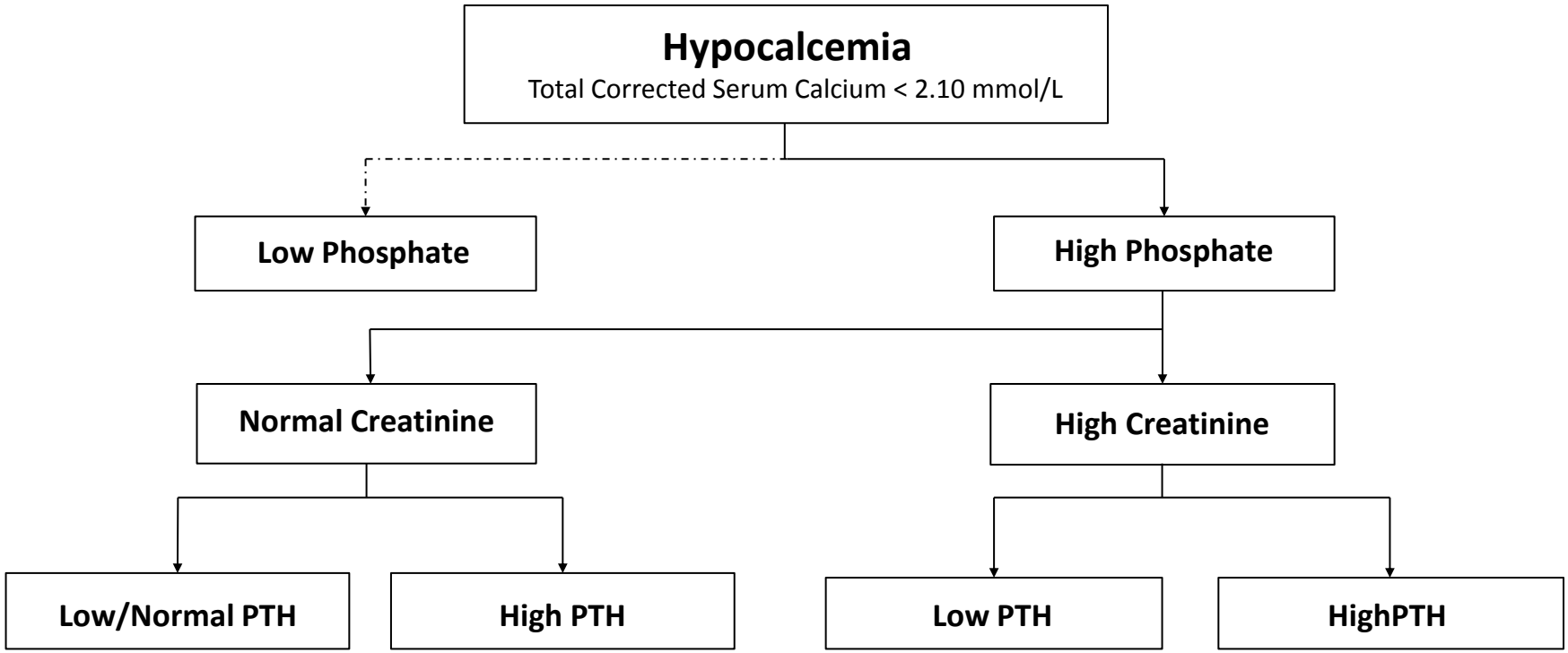
Corrected total serum calcium concentration (mmol/L) =
measured total serum calcium concentration (mmol/L) + 0.02[40 g/L – albumin(g/L)]

HYPERCALCEMIA: Normal/High PTH



Corrected total serum calcium concentration (mmol/L) =
measured total serum calcium concentration (mmol/L) + 0.02[40 g/L – albumin(g/L)]

HYPOCALCEMIA: High Phosphate



- Hypoparathyroidism (e.g. Acquired, Autoimmune, Idiopathic, Congenital, Infiltrative)
- Activating Mutation in Calcium Sensing Receptor (CaSR)
- Hypomagnesemia

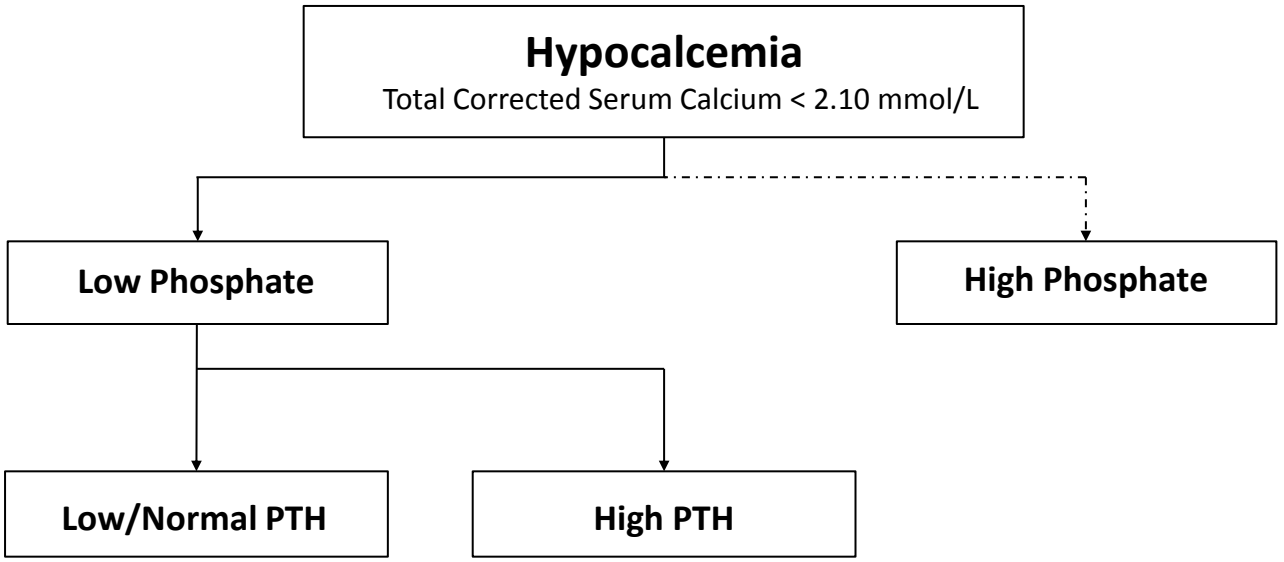
- PTH Resistance (Pseudo-hypoparathyroidism)
- Calcium Complexing
- (Citrate Infusion, Pancreatitis)

- Hypoparathyroidism with Chronic Kidney Disease

- Secondary Hyperparathyroidism
- Rhabdomyolysis
- Phosphate Poisoning

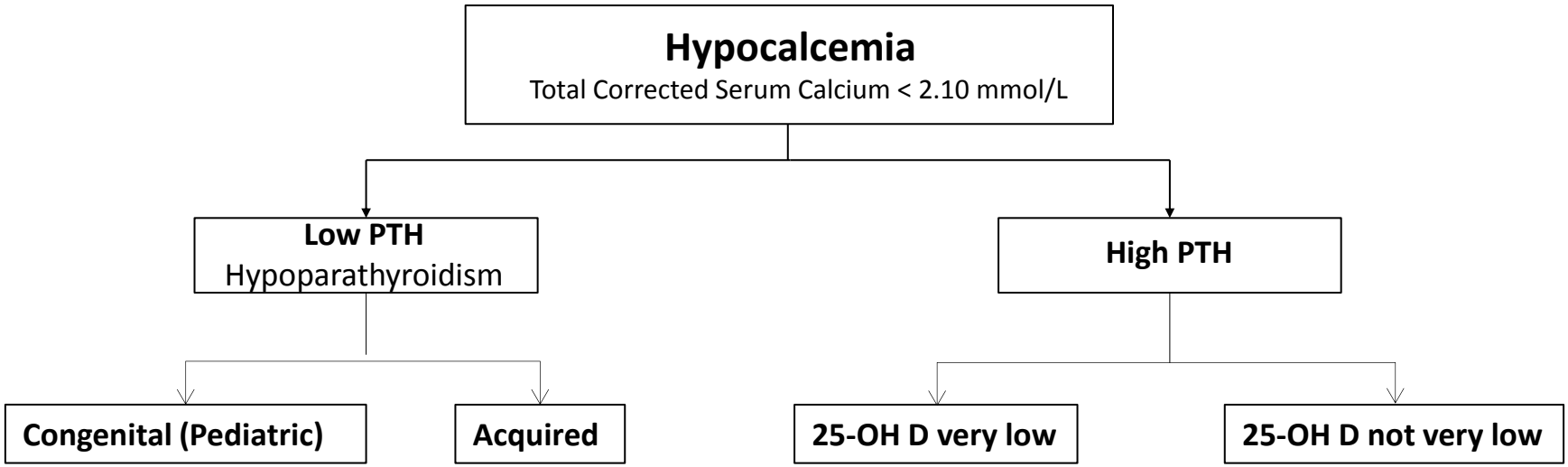
Corrected total serum calcium concentration (mmol/L) =
measured total serum calcium concentration (mmol/L) + 0.02[40 g/L – albumin(g/L)]

HYPOCALCEMIA: Low Phosphate



Corrected total serum calcium concentration (mmol/L) =
measured total serum calcium concentration (mmol/L) + 0.02[40 g/L – albumin(g/L)]

HYPOCALCEMIA: High/Low PTH



- Ca-S-R
- DiGeorge

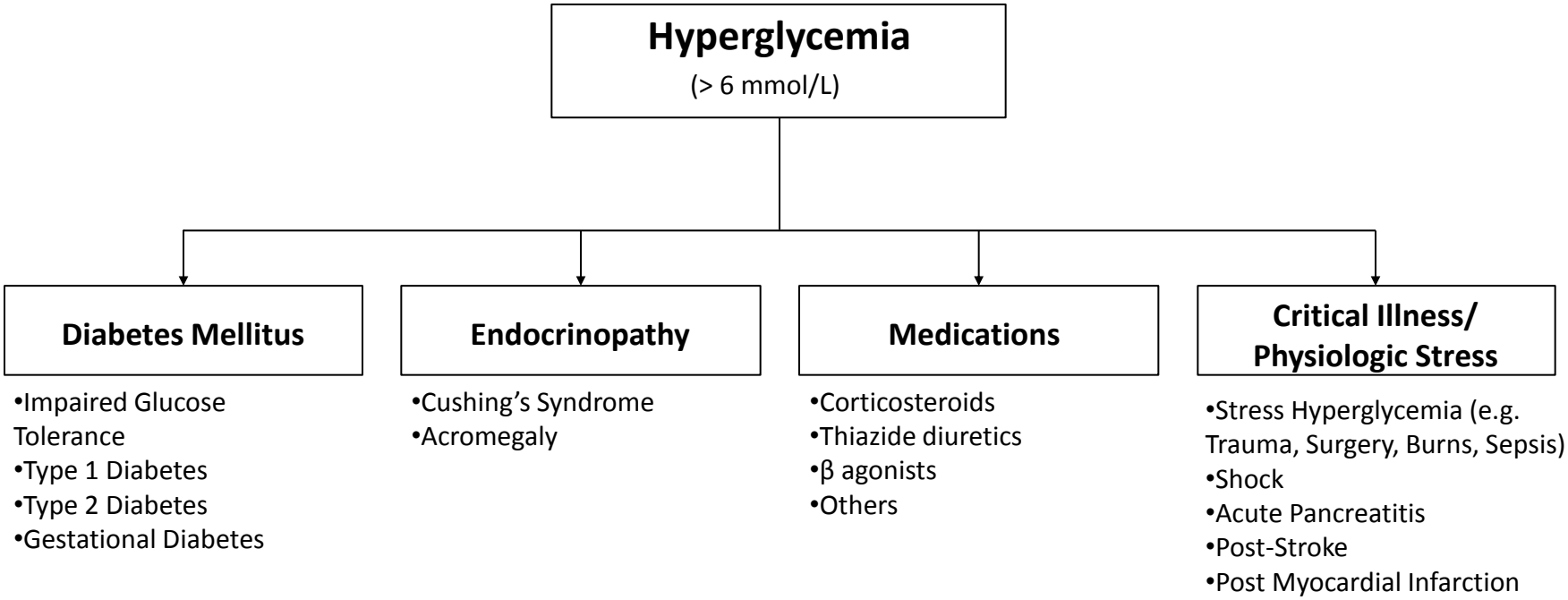
- Post-operative neck
- Radiation
- Infiltrative disease
- Autoimmune polyendocrinopathy
- Hypomagnesemia

- Malabsorption
- Short gut
- Gastric bypass
- Liver disease
- Increased Vit-D degradation (eg. anti-convulsants)

- Chronic Renal Failure
- Severe hyperphosphatemia (eg. Tumor lysis syndrome, rhabdomyolysis, oral phosphate abuse/laxatives)

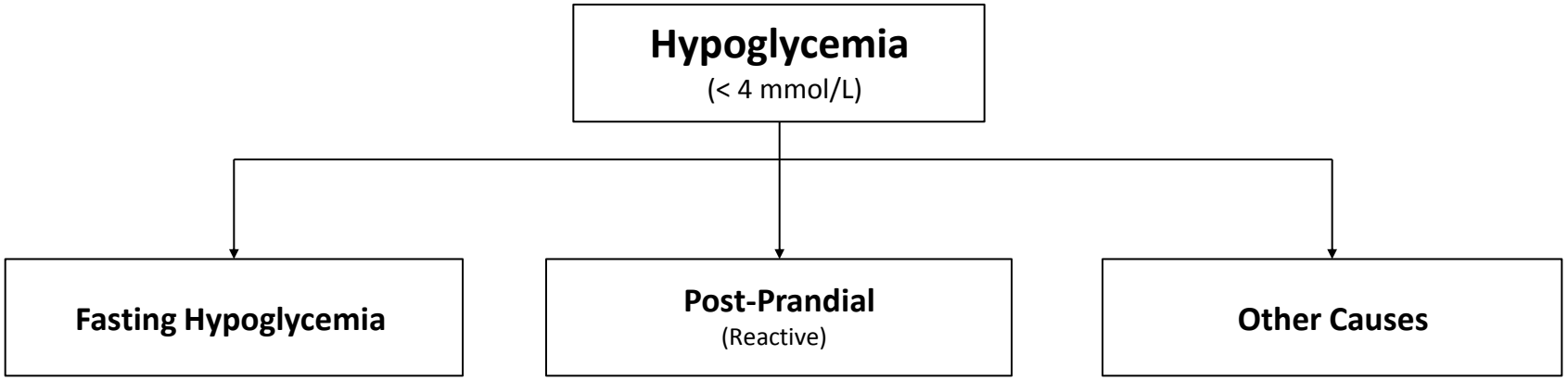
Corrected total serum calcium concentration (mmol/L) =
measured total serum calcium concentration (mmol/L) + 0.02[40 g/L – albumin(g/L)]

HYPERGLYCEMIA



Signs/Symptoms of Hyperglycemia:
Polyphagia, polydipsia, polyuria, blurred vision, fatigue and weight loss

HYPOGLYCEMIA



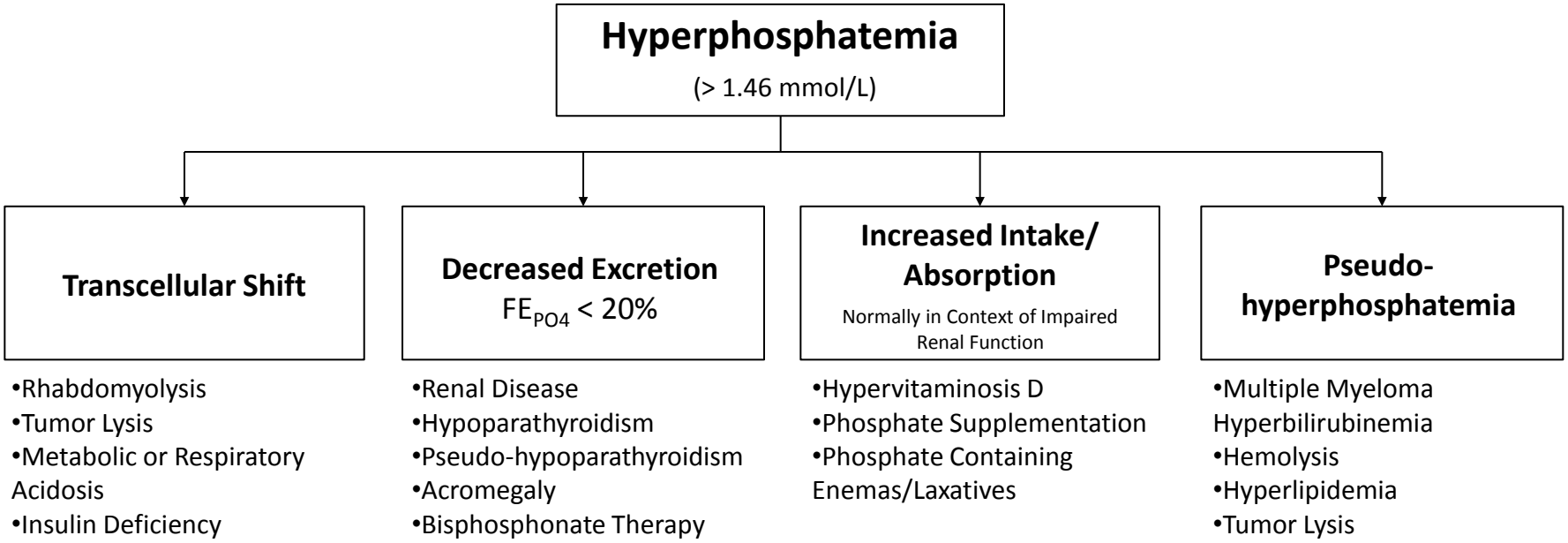
- Excess Insulin
- Medications (e.g. Insulin Secretagogues, β-Adrenergic Antagonists, Quinine, Salicylates, Pentamidine)
- Alcohol

- Alimentary (e.g. in the setting of Gastric Surgery)
- Congenital Enzyme Deficiencies
- Idiopathic

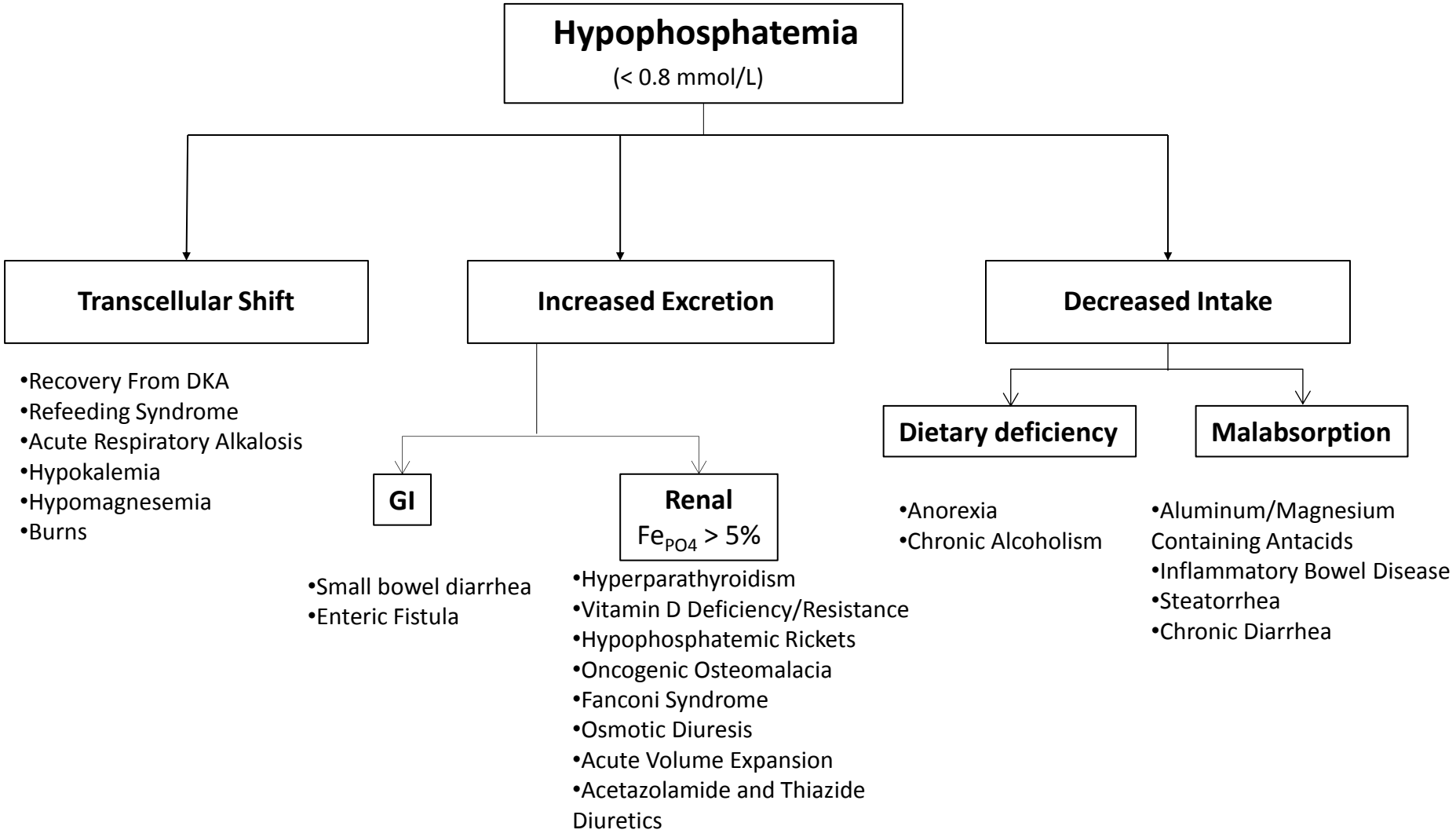
- Critical Illness (e.g. Hepatic Failure, Renal Failure, Cardiac Failure)
- Sepsis
- Hypopituitarism
- Adrenal Insufficiency
- Hyperinsulinemic States (e.g. Glucagon, Catecholamine Deficiency, Insulinoma)
- Malnutrition/Anorexia Nervosa

Signs/Symptoms of Hypoglycemia:
Neurogenic: irritability, tremor, anxiety, palpitations, tachycardia, sweating, pallor, paresthesias
Neuroglycopenia: confusion, lethargy, abnormal behaviour, amnesia, weakness, blurred vision, seizures

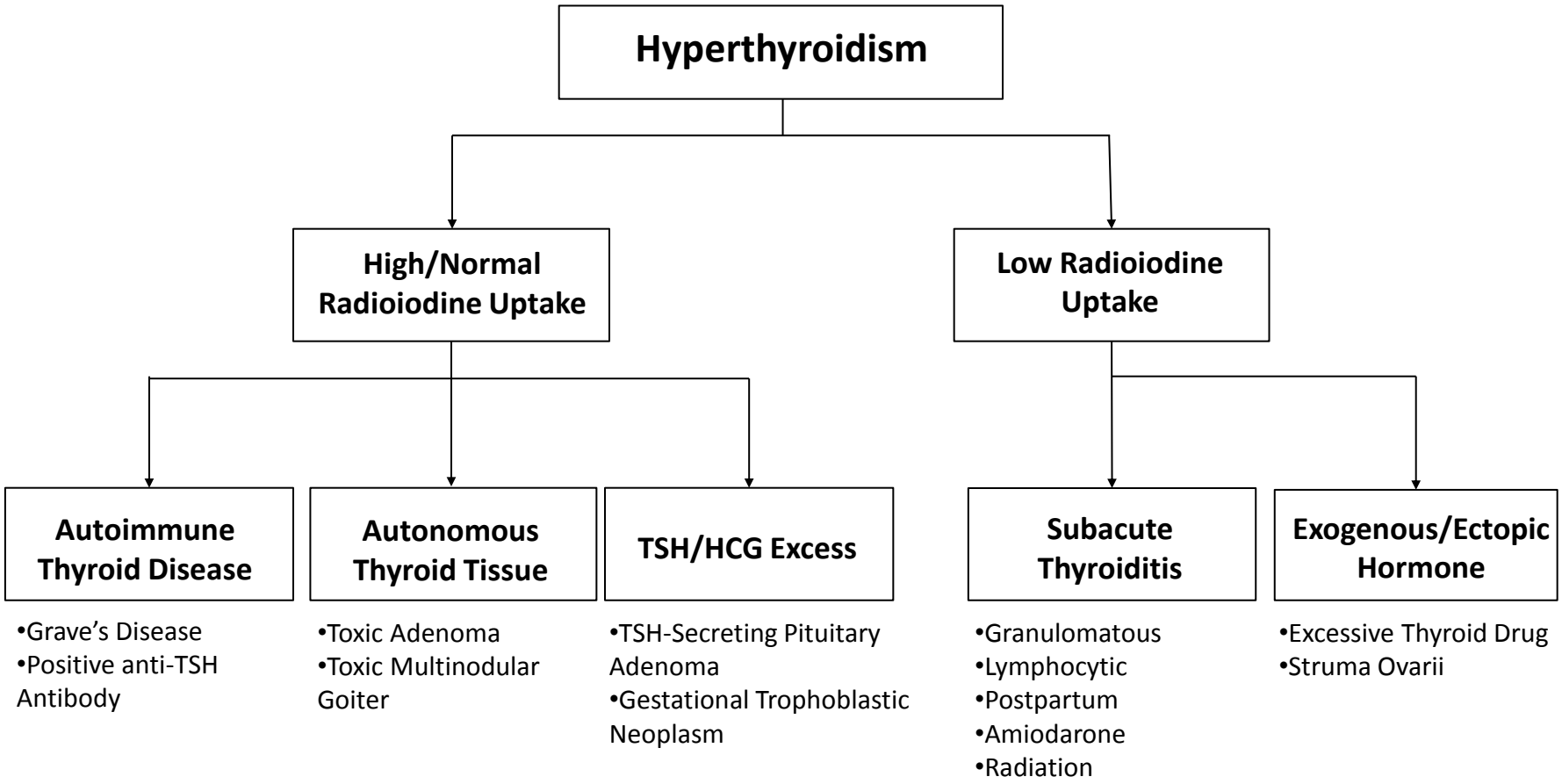
HYPERPHOSPHATEMIA



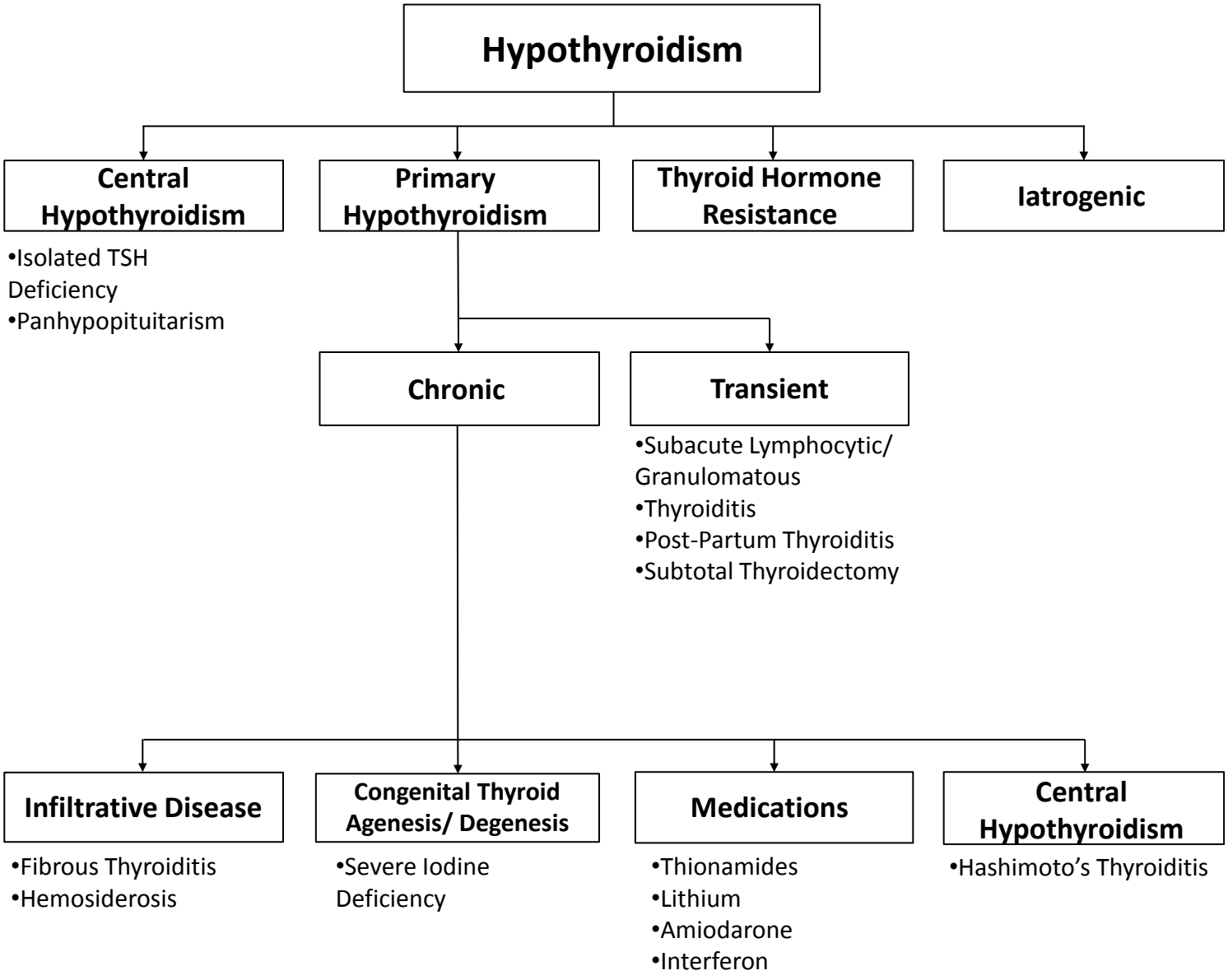
HYPOPHOSPHATEMIA



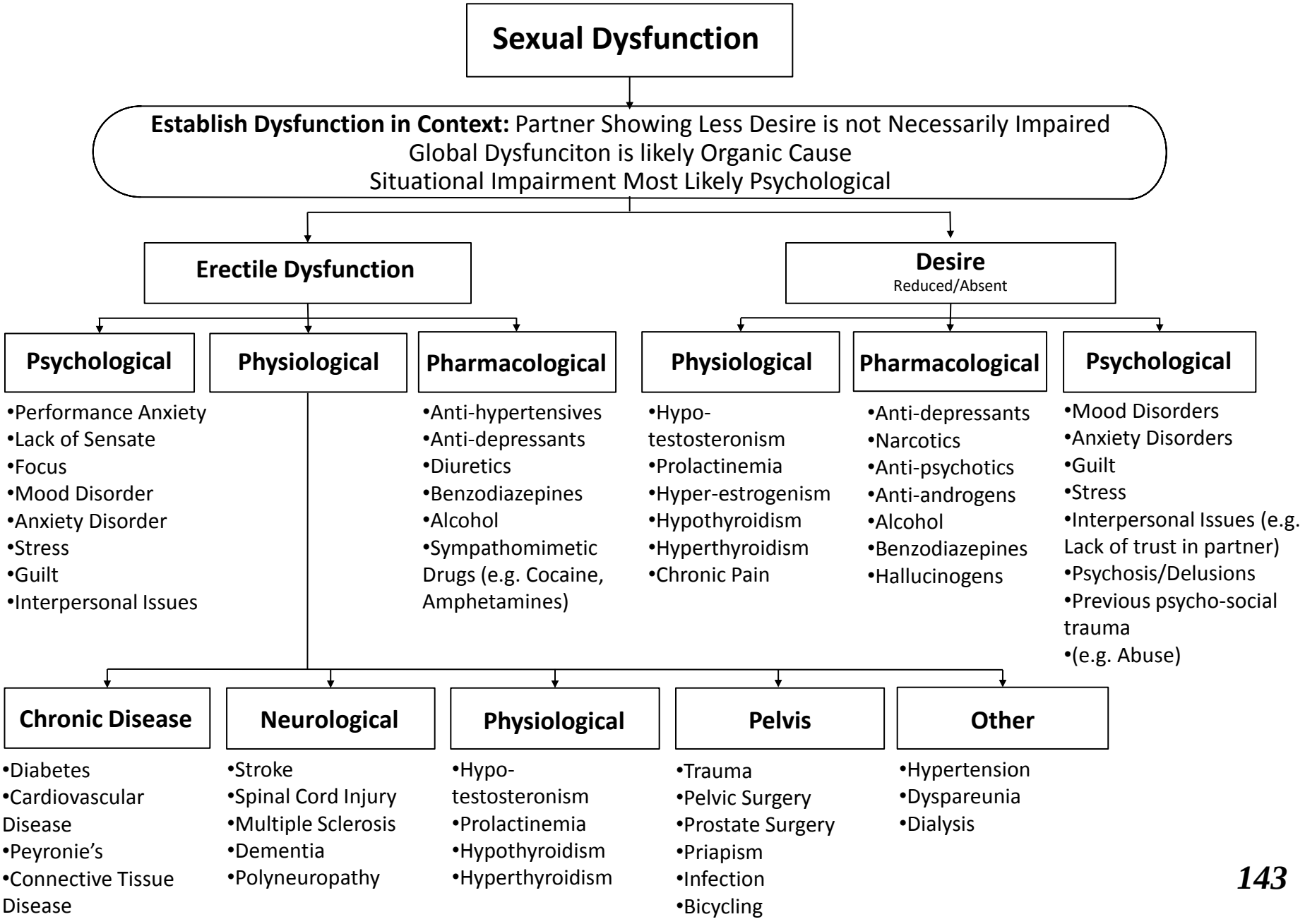
HYPERTHYROIDISM



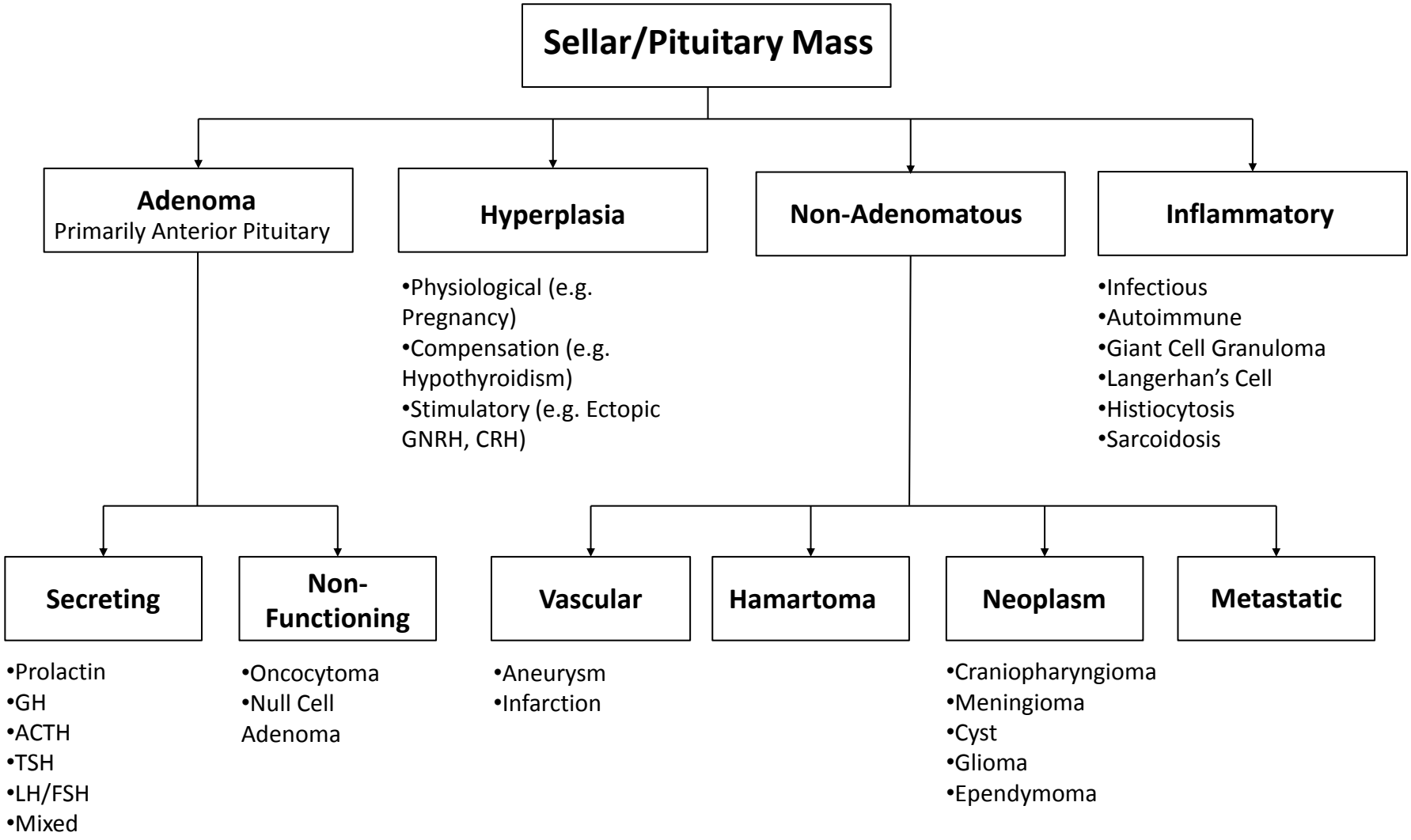
HYPOTHYROIDISM



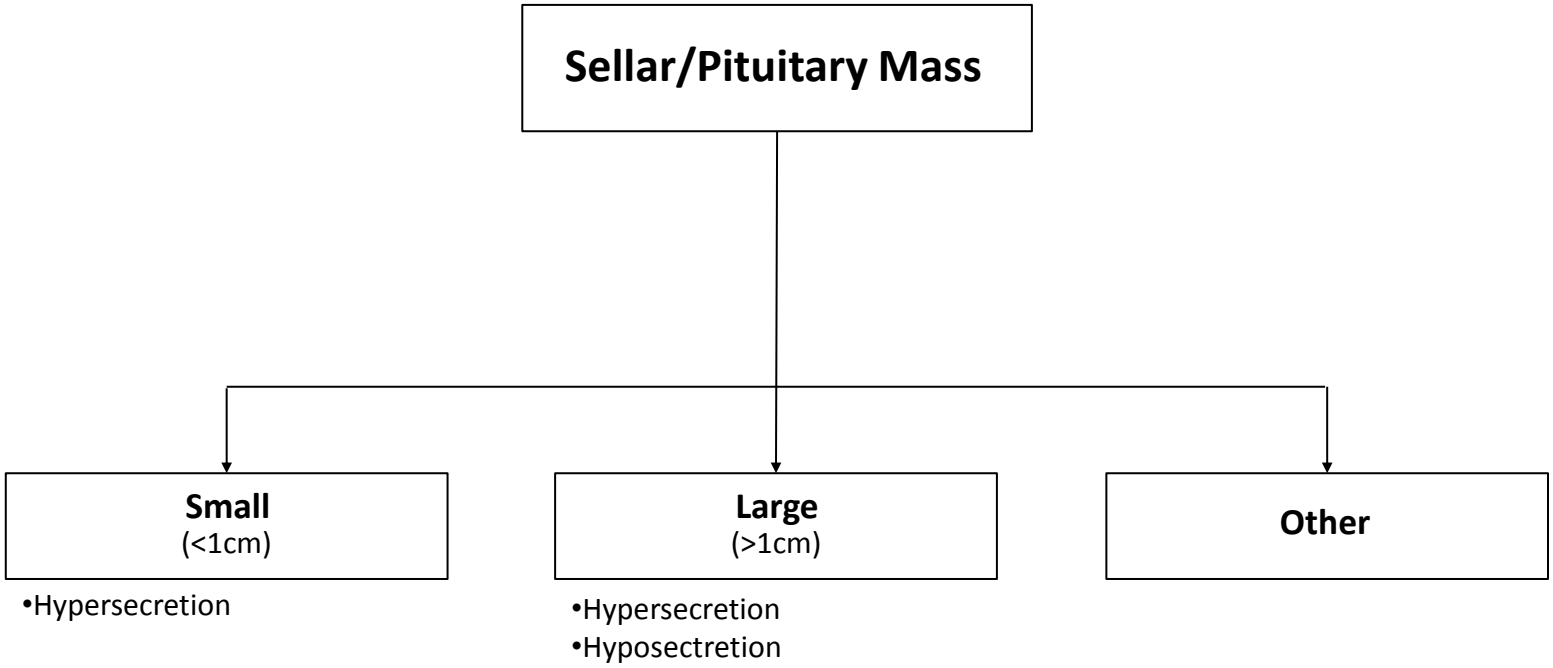
MALE SEXUAL DYSFUNCTION



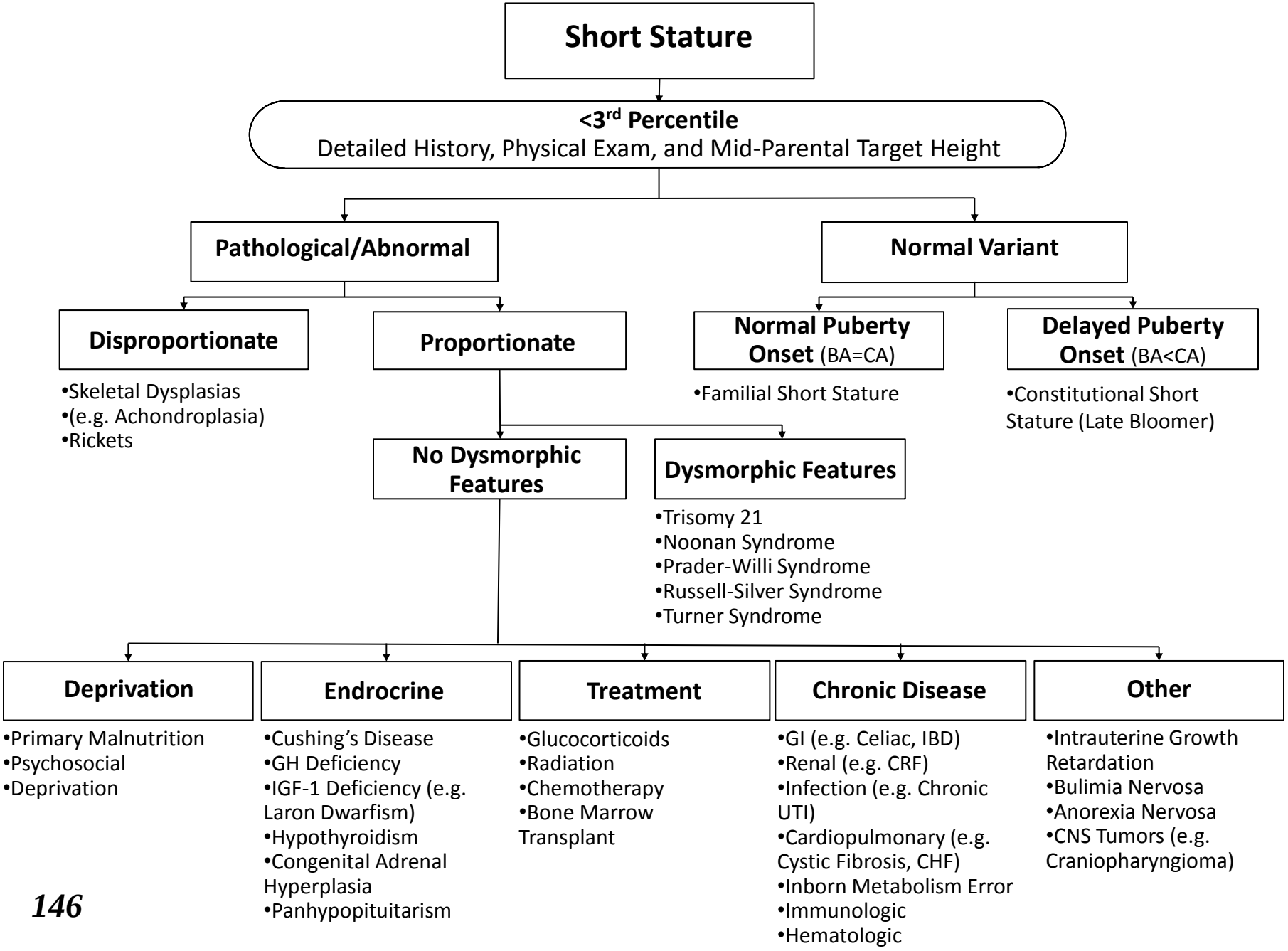
SELLAR/PITUITARY MASS



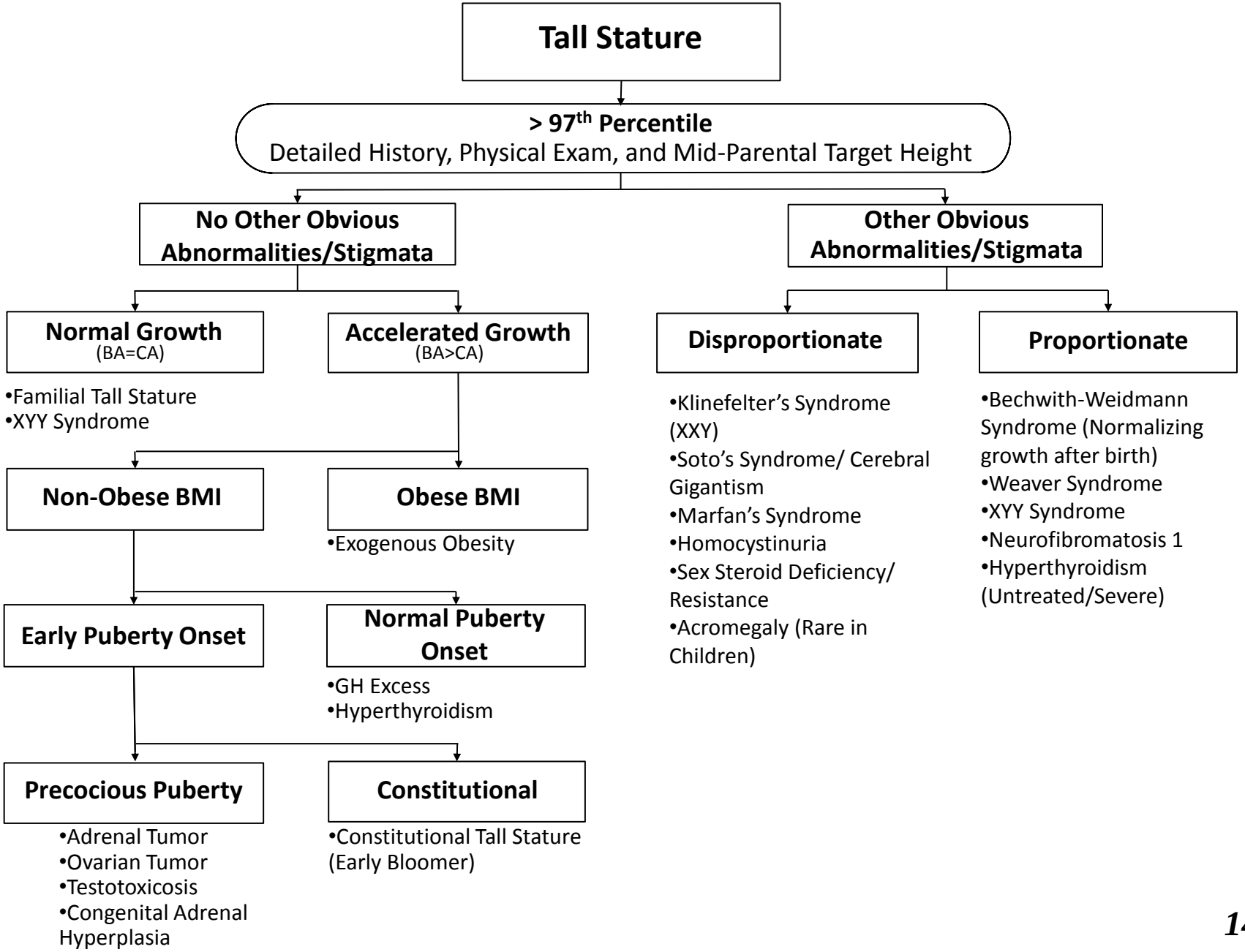
SELLAR/PITUITARY MASS: Size



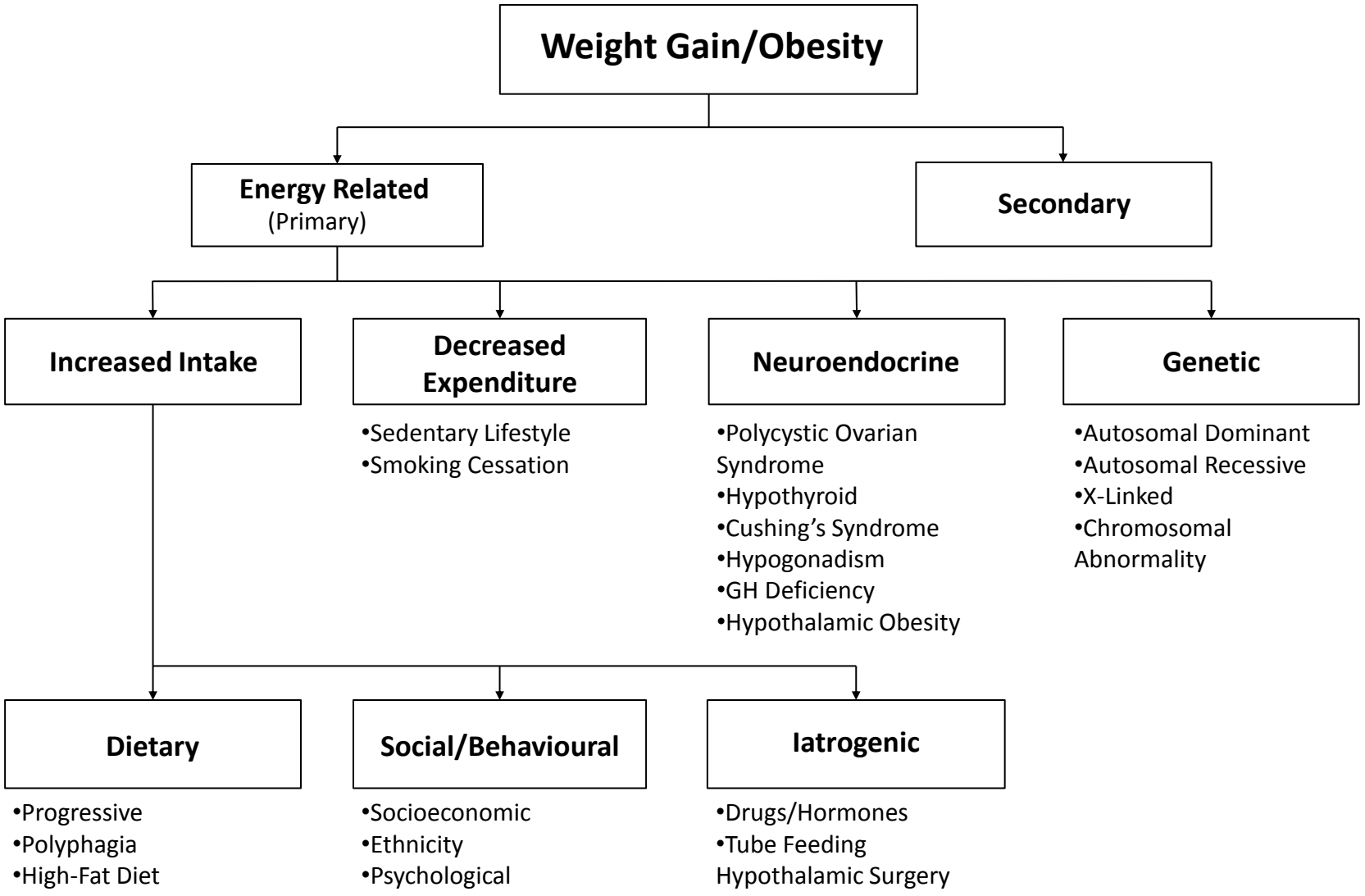
SHORT STATURE



TALL STATURE



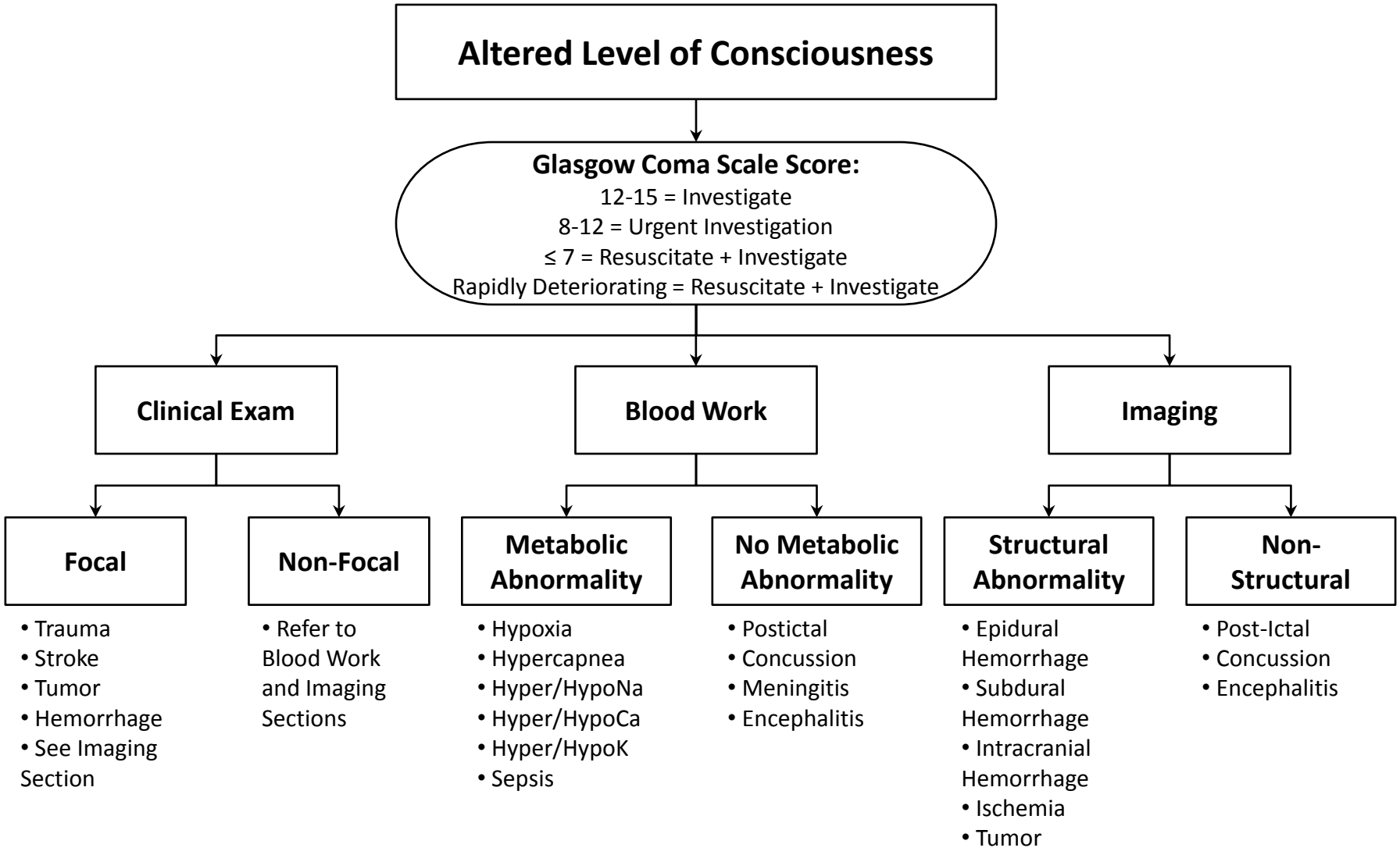
WEIGHT GAIN/OBESITY



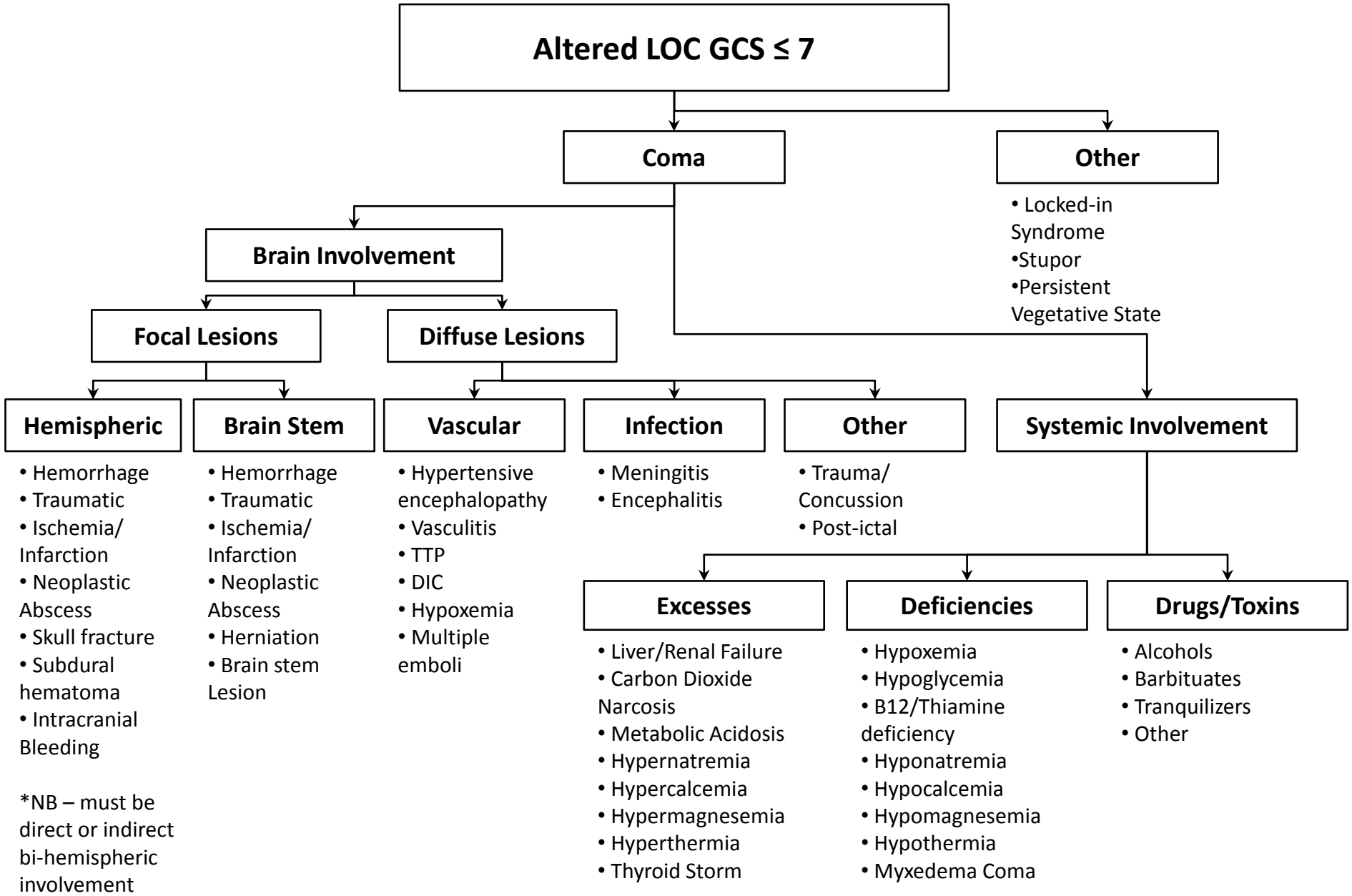
Neurologic Presentations

Neurologic Presentations

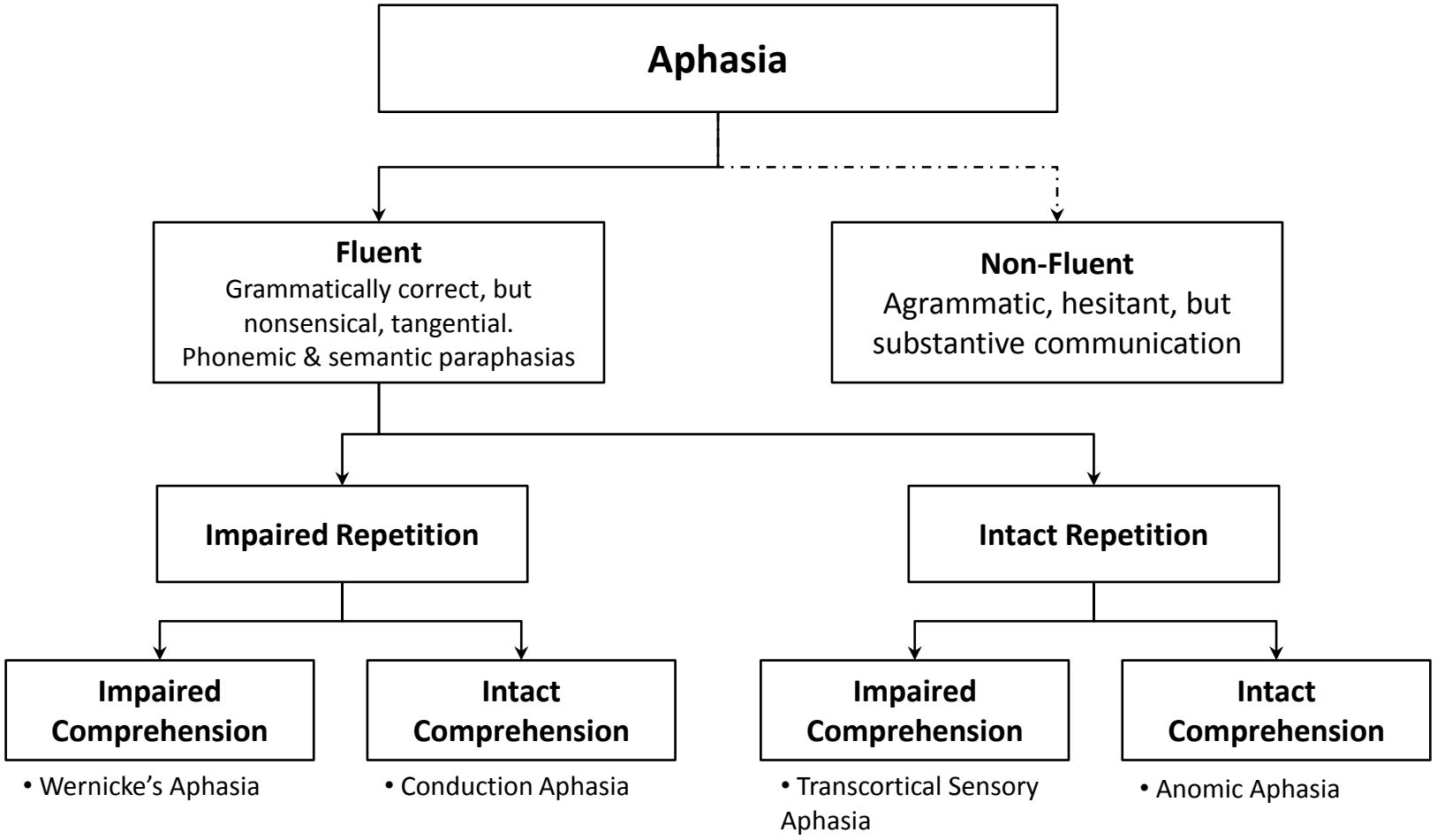
ALTERED LEVEL OF CONSCIOUSNESS: Approach



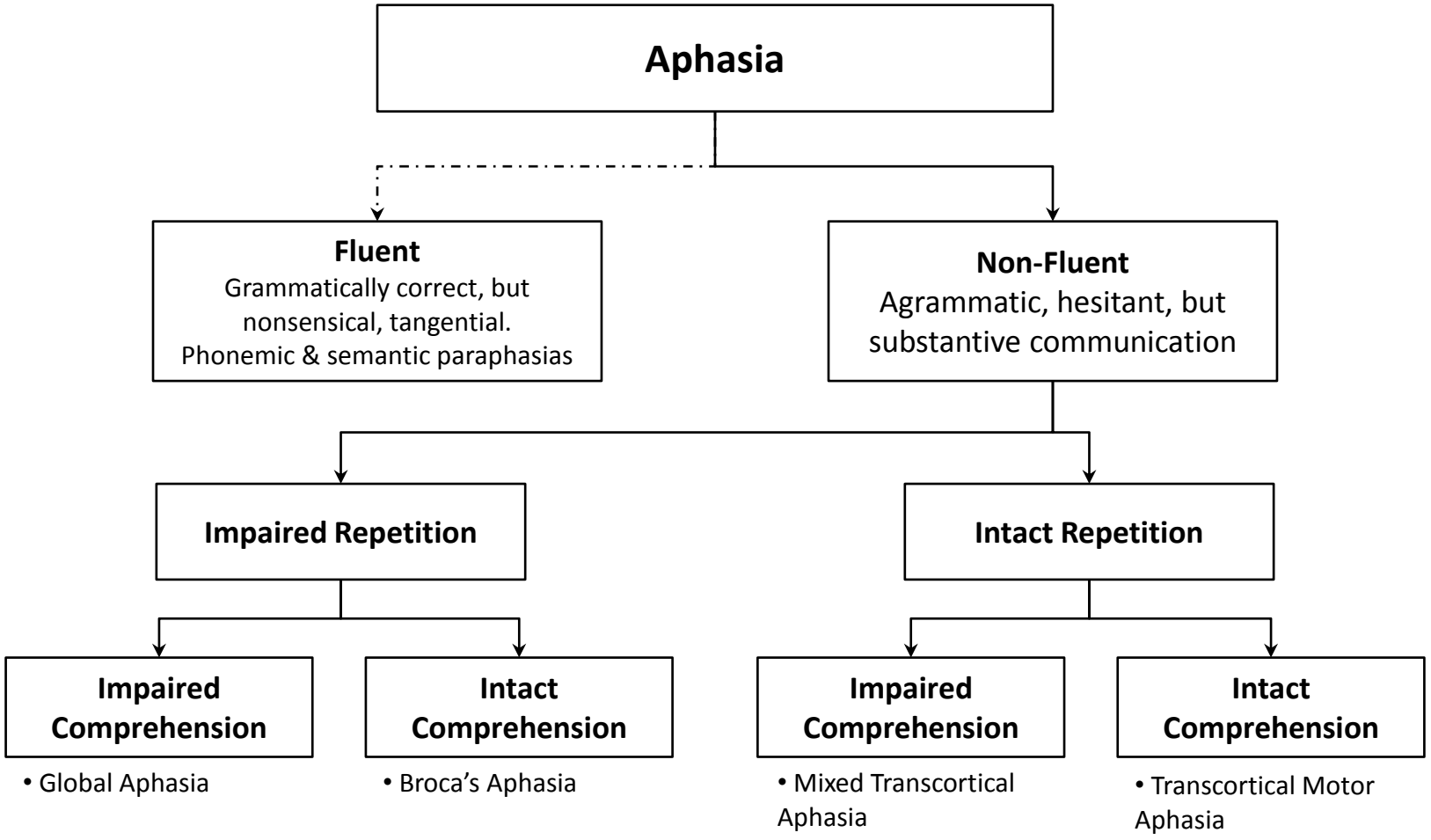
ALTERED LEVEL OF CONSCIOUSNESS: GCS ≤ 7



APHASIA: Fluent

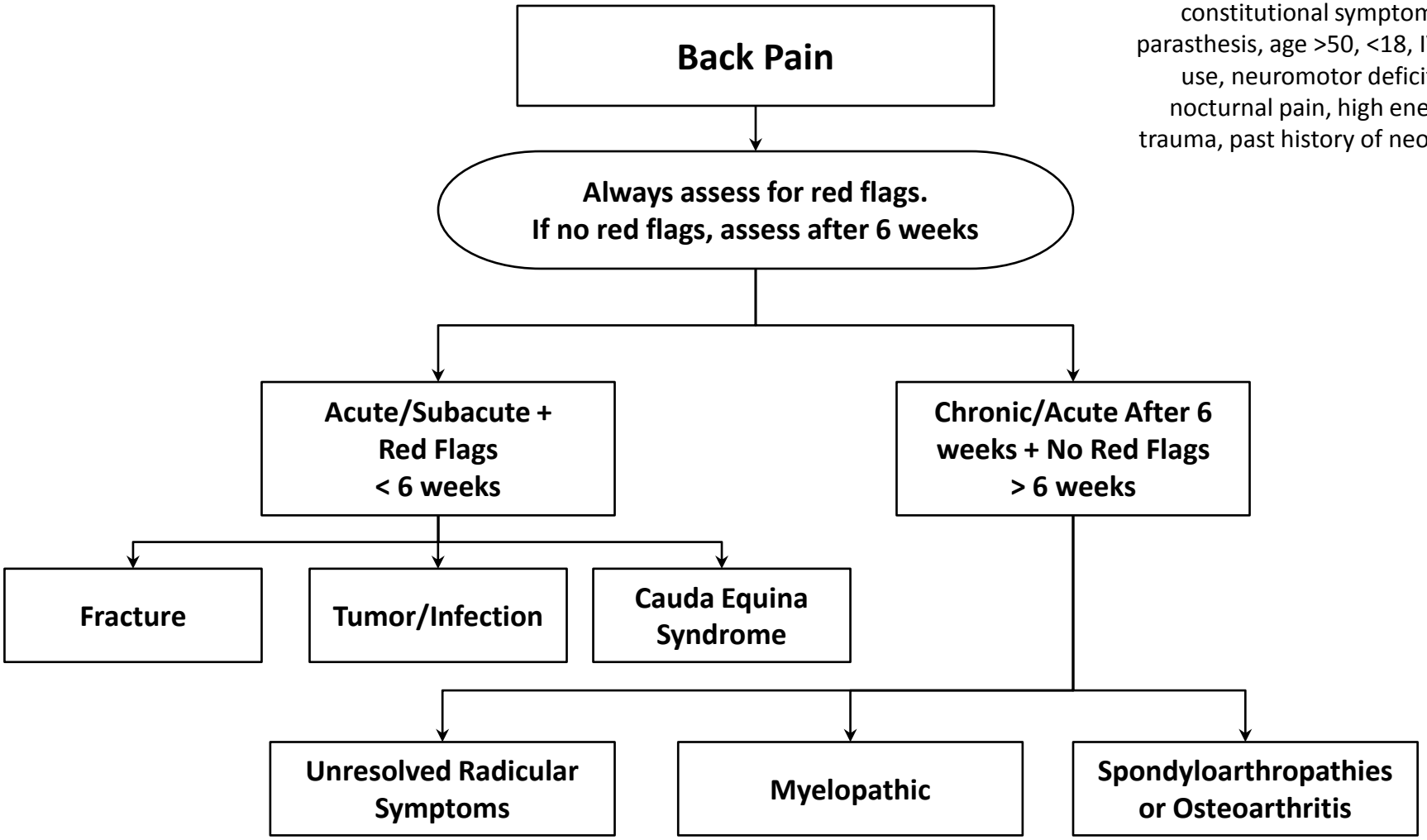


APHASIA: Non-Fluent

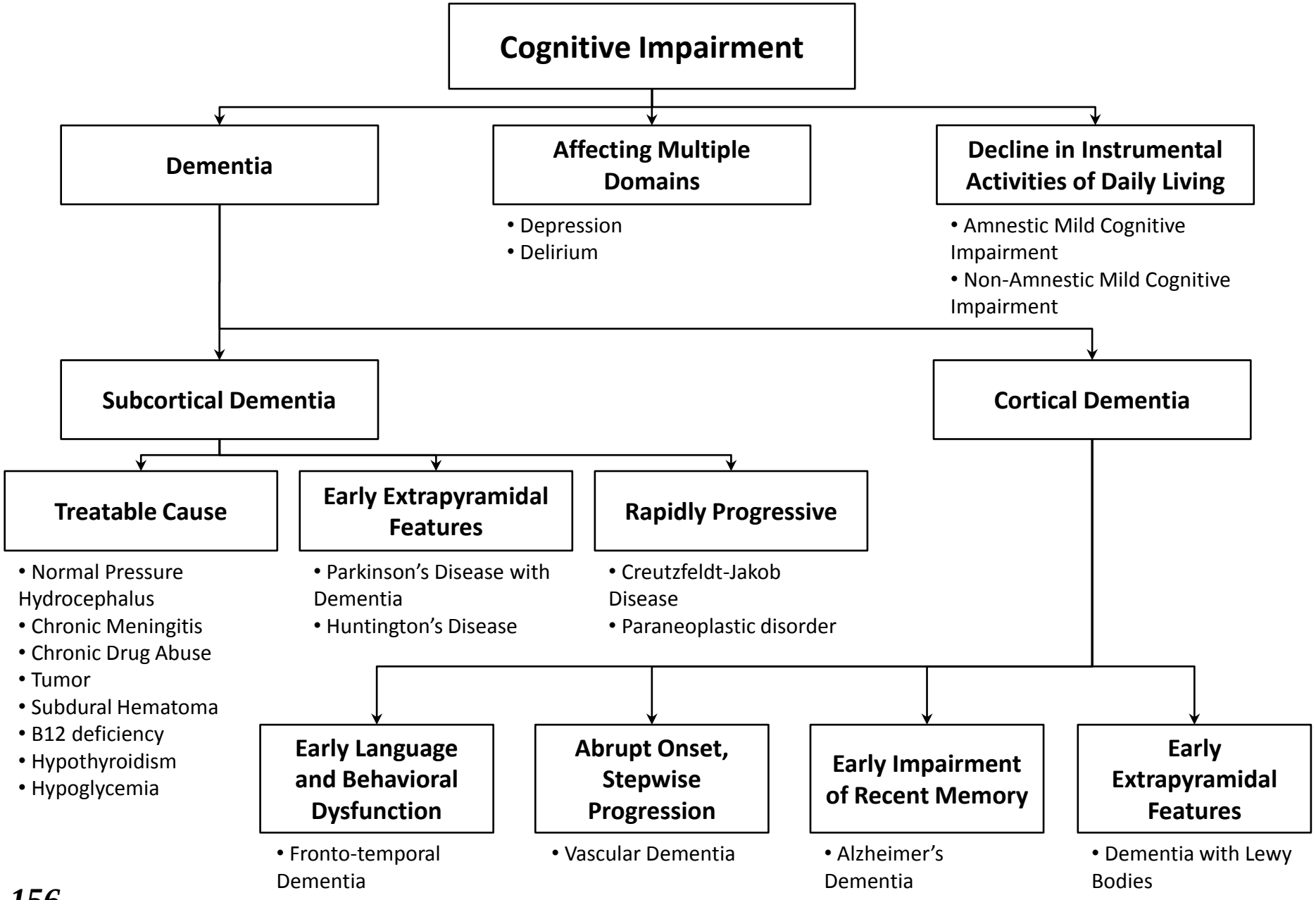


BACK PAIN

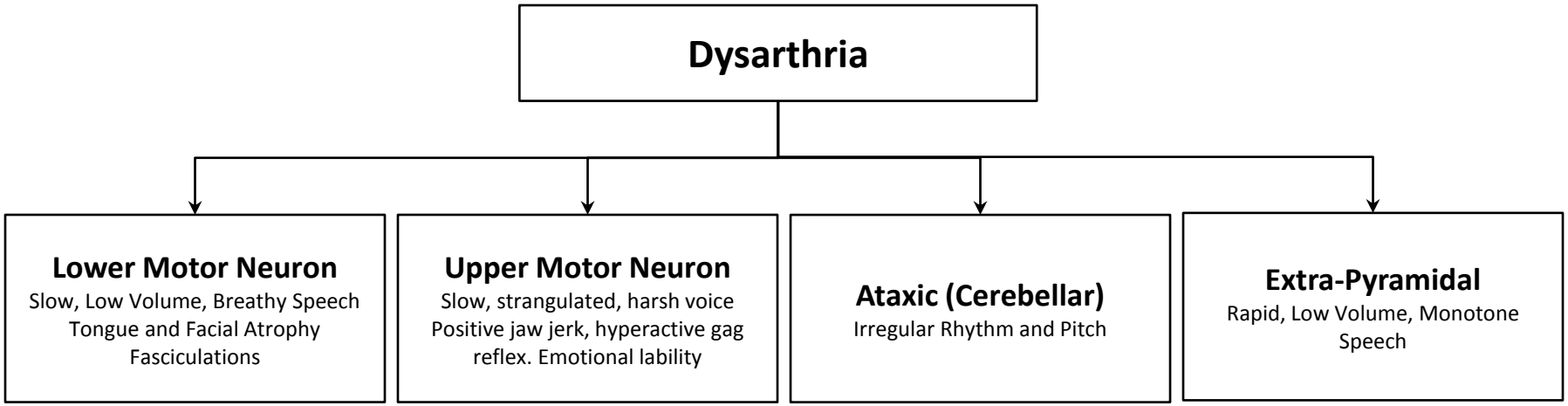
Red Flags: bowel or bladder dysfunction, saddle anesthesia, constitutional symptoms, parasthesis, age >50, <18, IV drug use, neuromotor deficits, nocturnal pain, high energy trauma, past history of neoplasm



COGNITIVE IMPAIRMENT



DYSARTHRIA



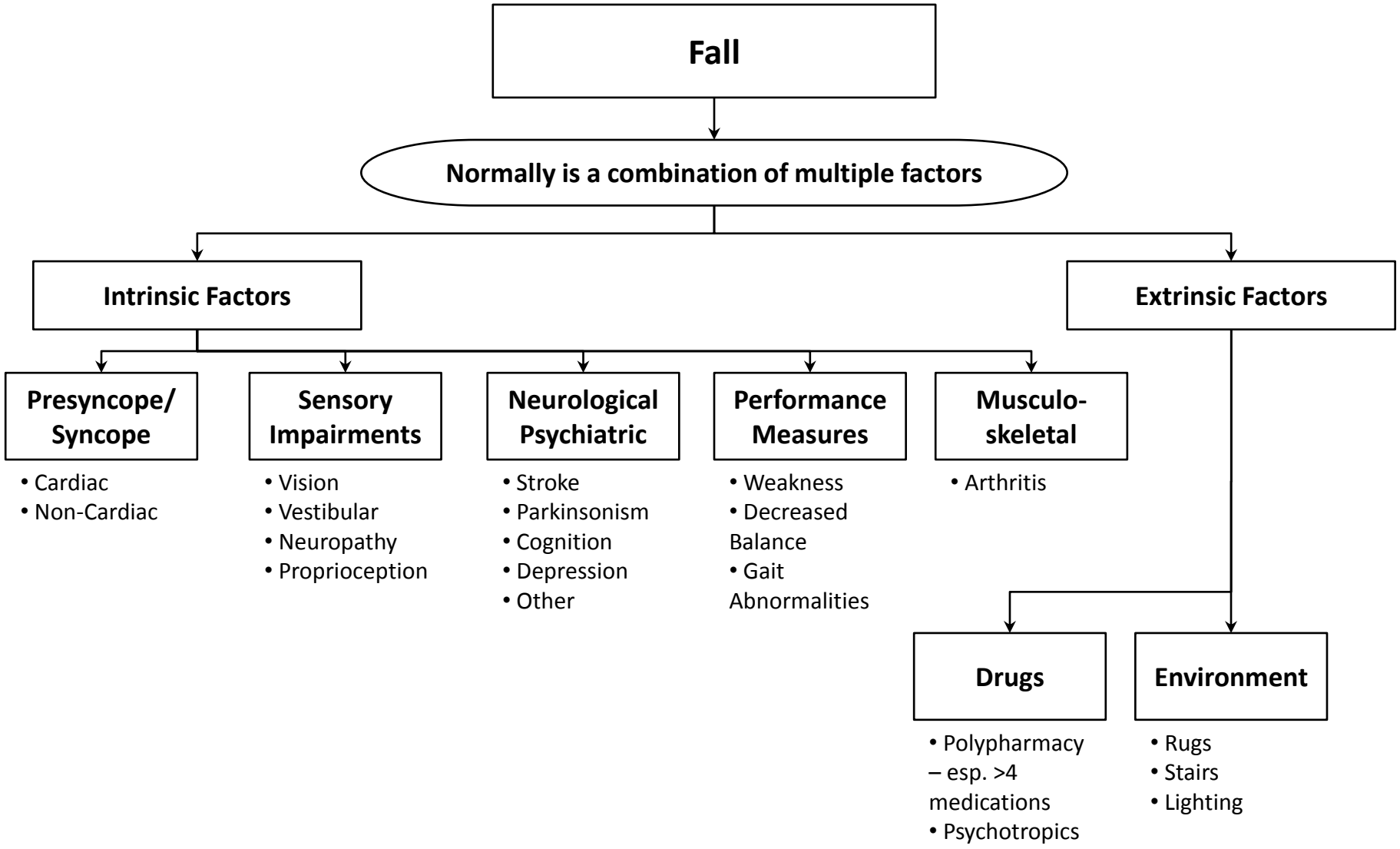
- Motor Neuron Disease
- Lesions of Cranial Nerves VII, IX, X, XII
- Myasthenia Gravis
- Muscular Dystrophy

- Bilateral Lacunar Internal Capsule Strokes
- Multiple Sclerosis
- Amyotrophic Lateral Sclerosis

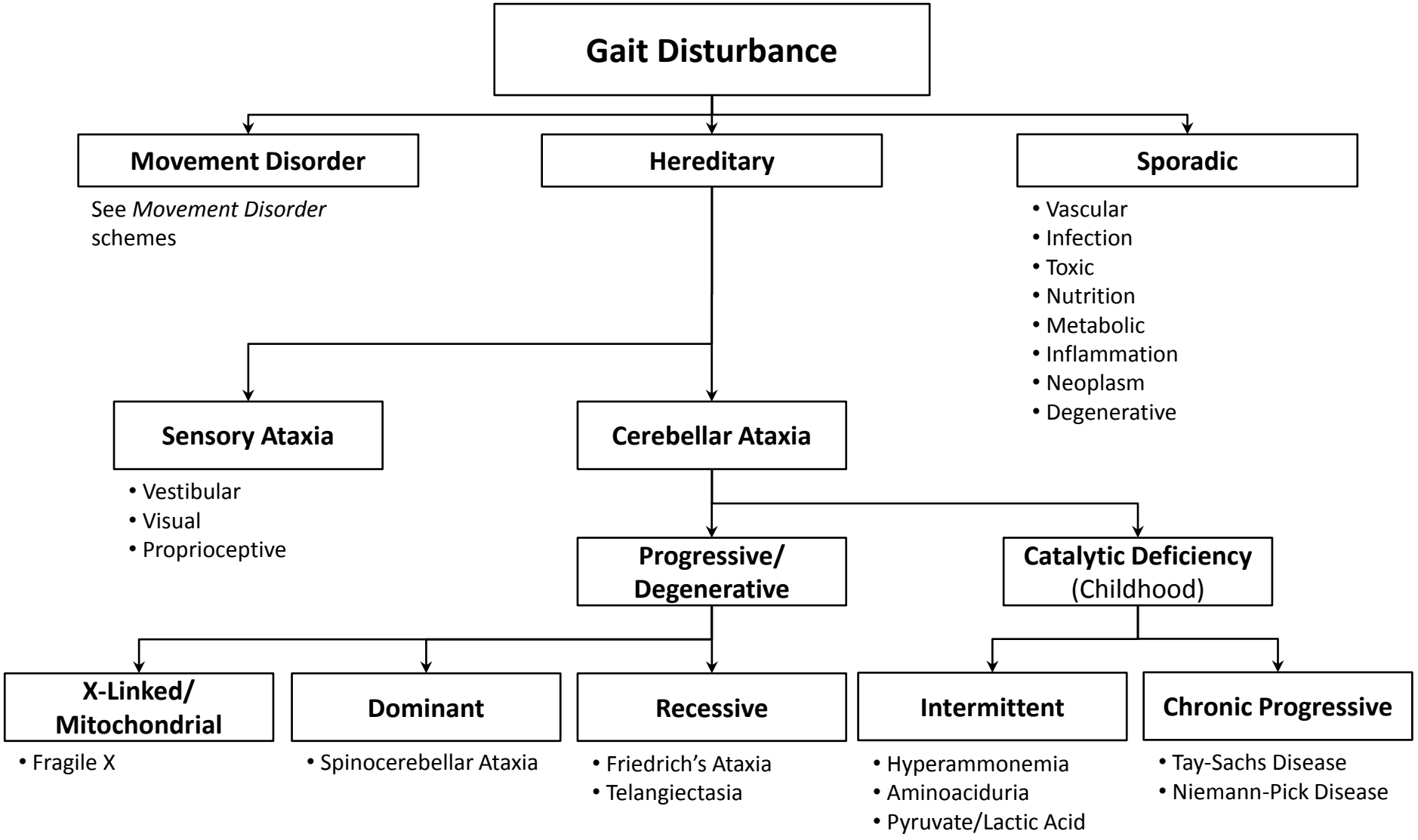
- Spinal-Cerebellar Ataxia
- Multiple Sclerosis
- Alcohol
- Tumour
- Paraneoplastic Disorder

- Parkinson's Disease

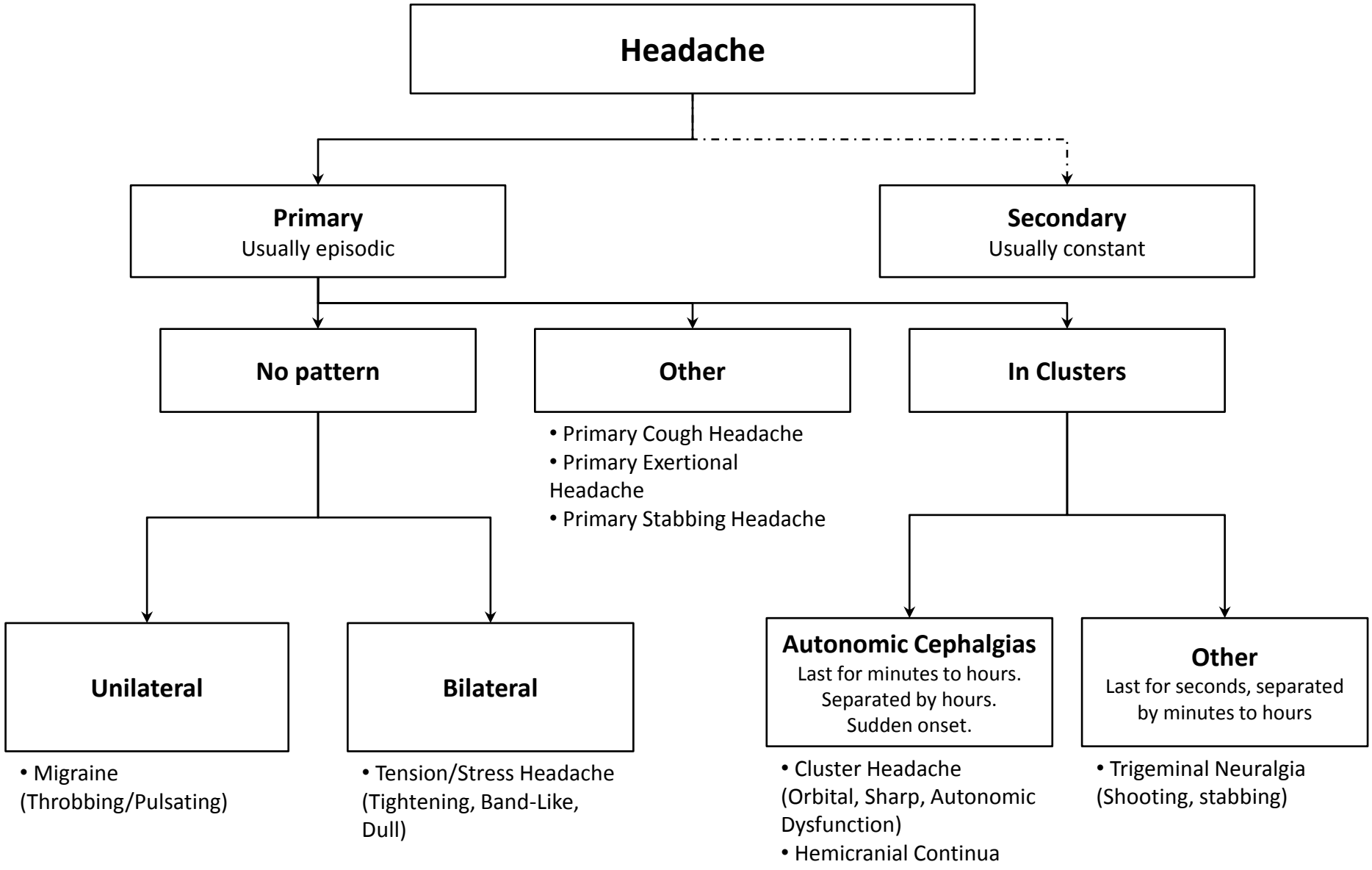
FALLS IN THE ELDERLY



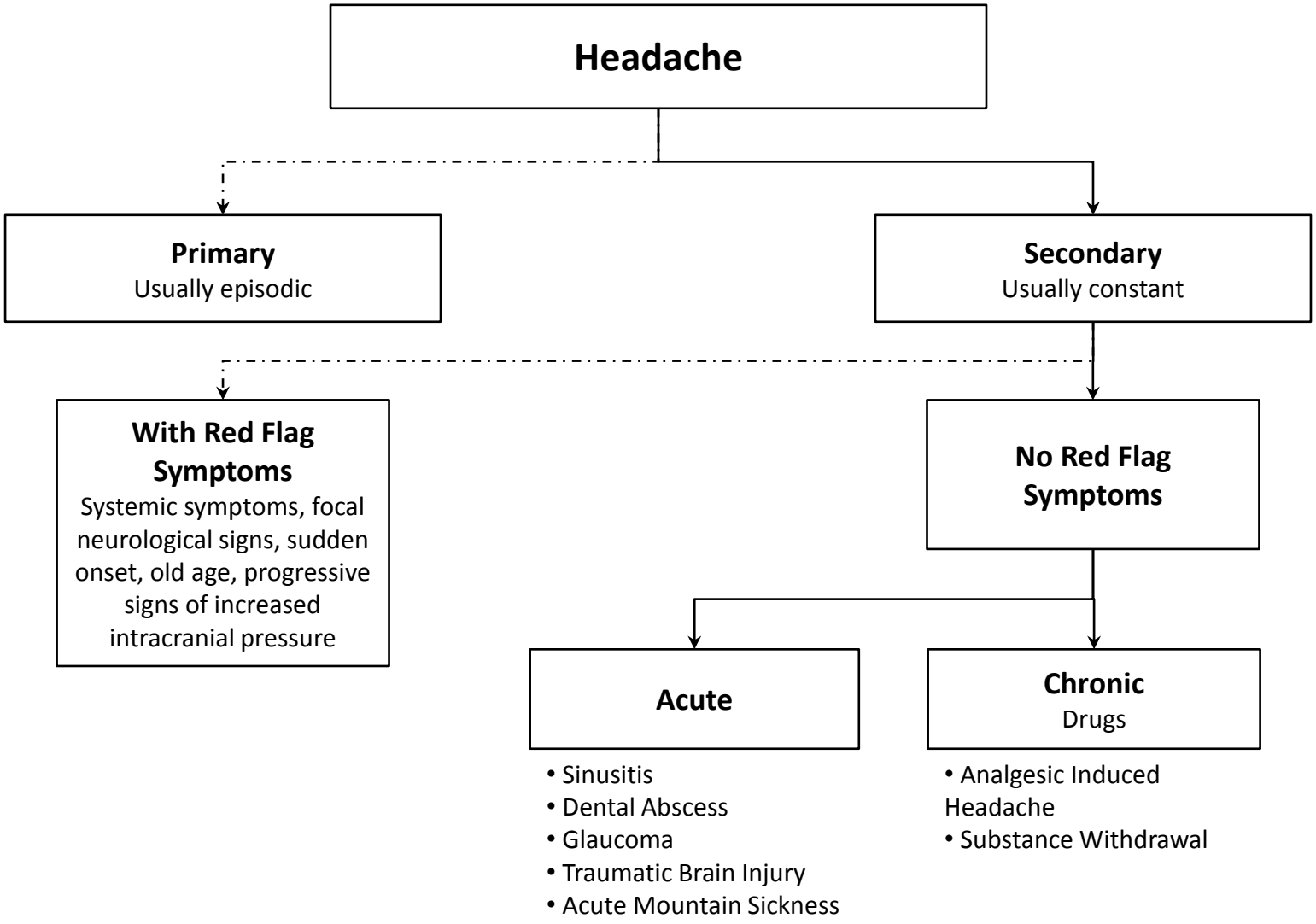
GAIT DISTURBANCE



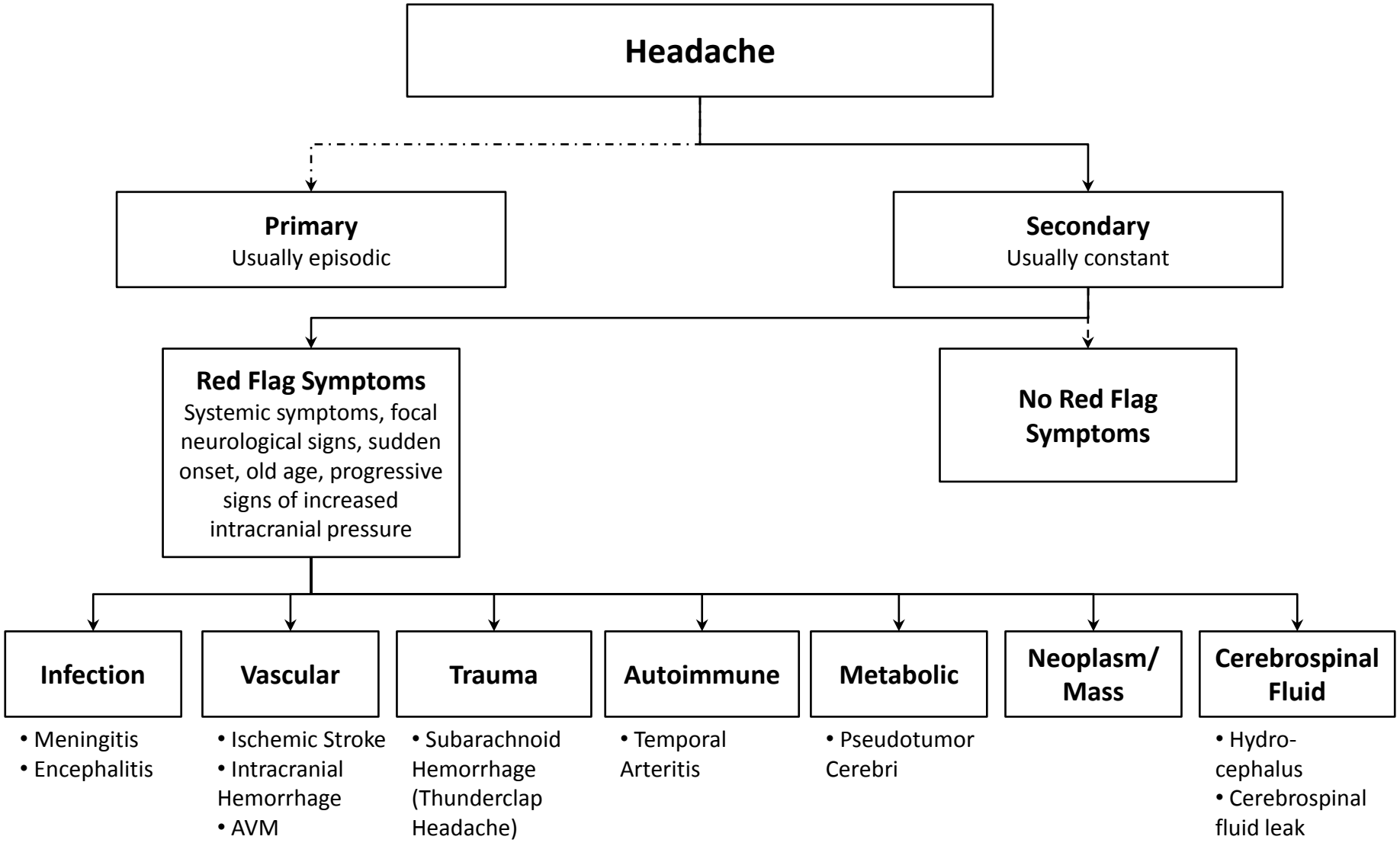
HEADACHE: Primary



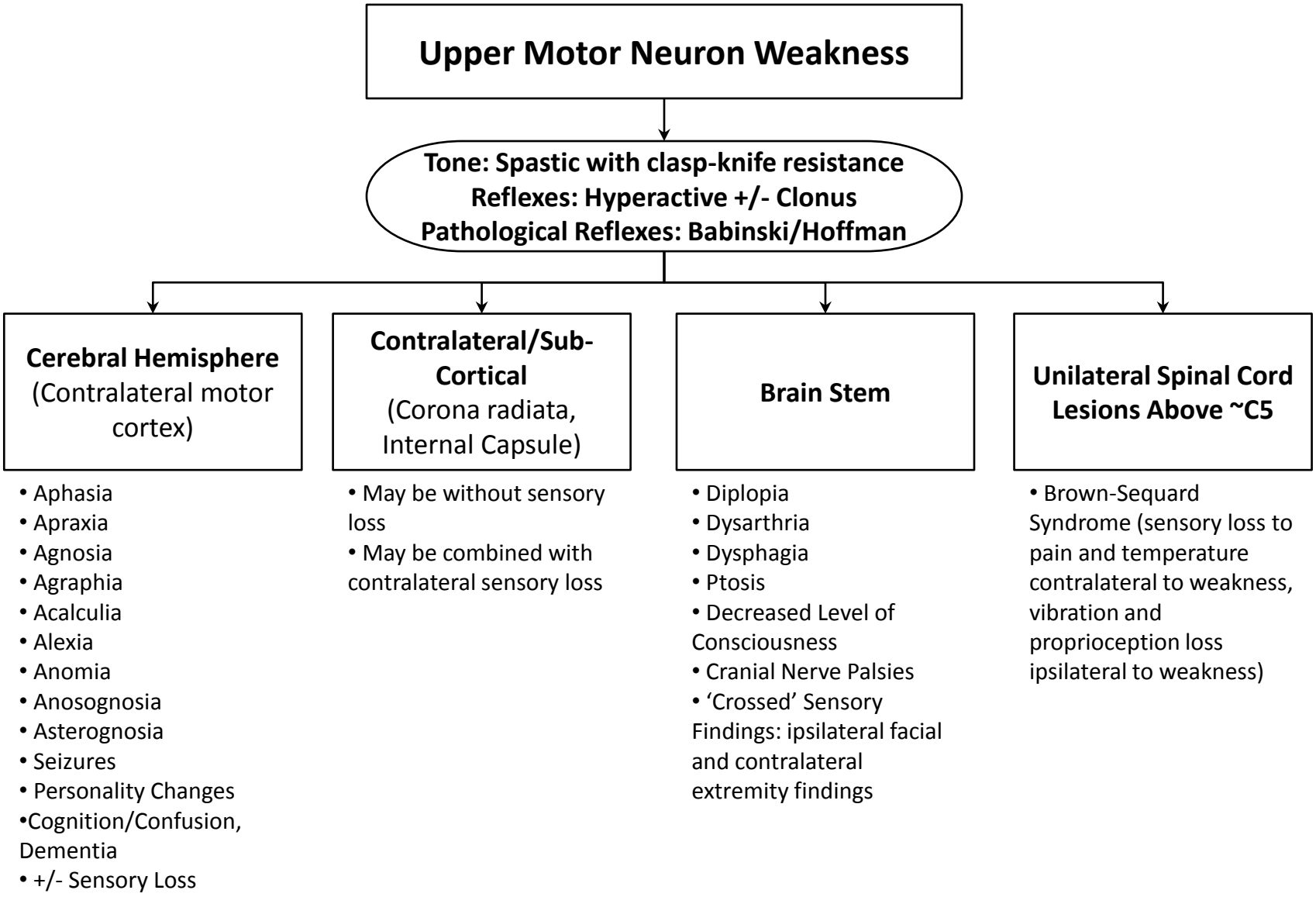
HEADACHE: Secondary, without Red Flag Symptoms



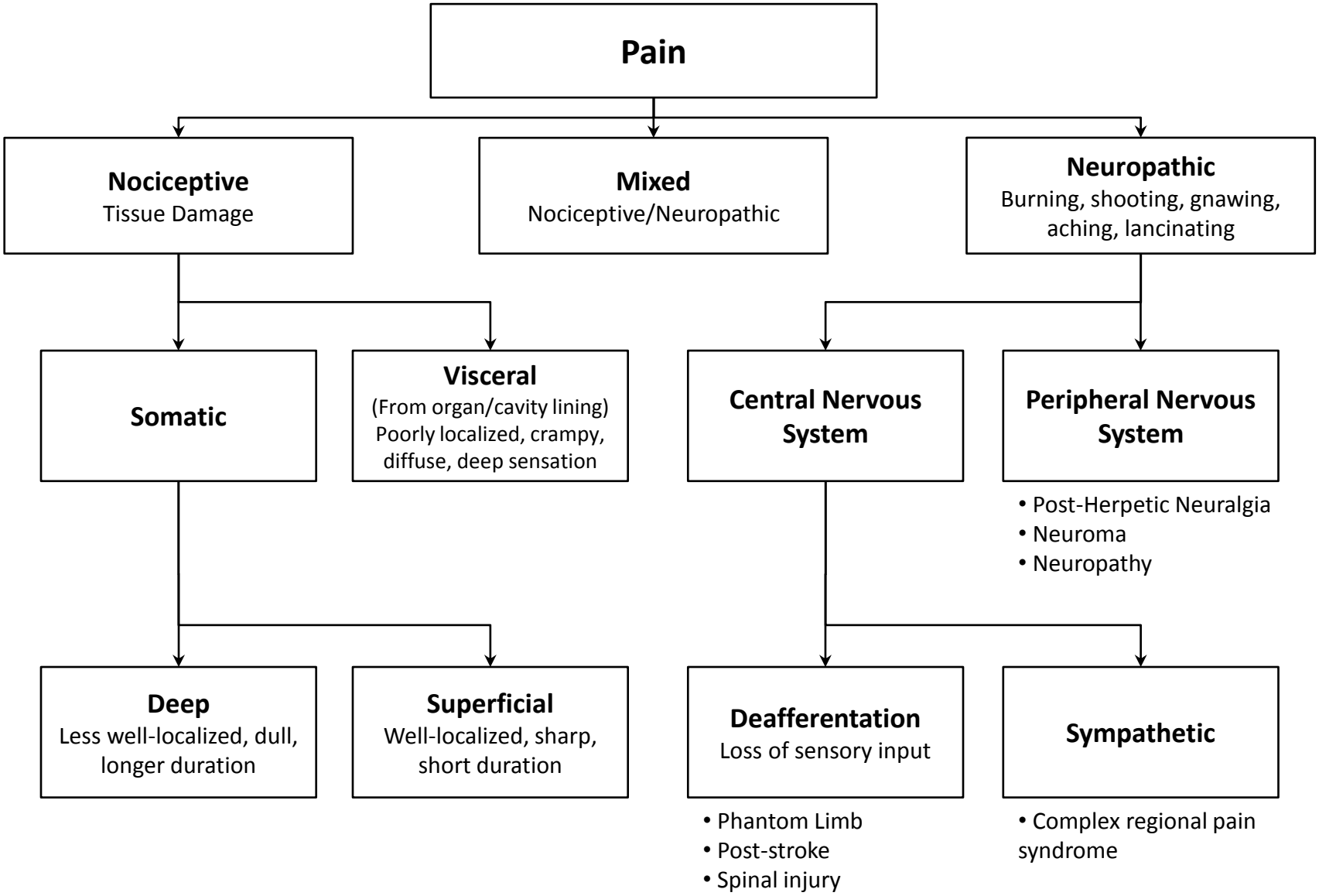
HEADACHE: Secondary, with Red Flag Symptoms



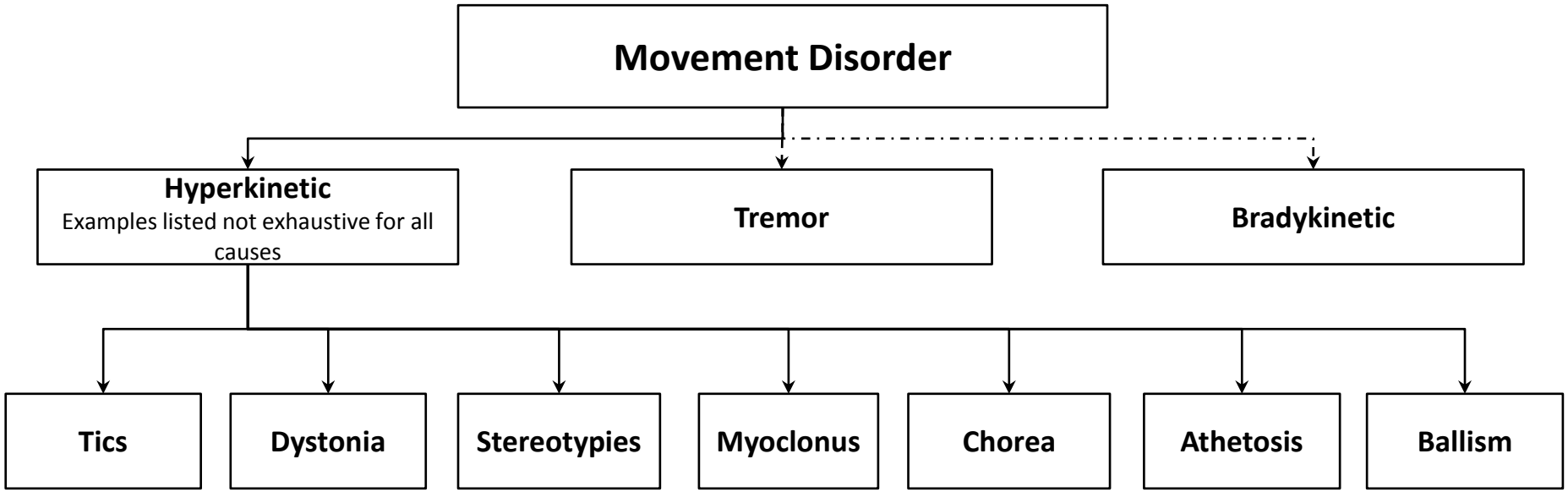
HEMIPLEGIA


Upper Motor Neuron Weakness
Tone: Spastic with clasp-knife resistance
Reflexes: Hyperactive +/- Clonus
Pathological Reflexes: Babinski/Hoffman
Cerebral Hemisphere (Contralateral motor cortex)
• Aphasia
• Apraxia
• Agnosia
• Agraphia
• Acalculia
• Alexia
• Anomia
• Anosognosia
• Asterognosia
• Seizures
• Personality Changes
•Cognition/Confusion, Dementia
• +/- Sensory Loss
Contralateral/Sub-Cortical (Corona radiata, Internal Capsule)
• May be without sensory loss
• May be combined with contralateral sensory loss
Brain Stem
• Diplopia
• Dysarthria
• Dysphagia
• Ptosis
• Decreased Level of Consciousness
• Cranial Nerve Palsies
• 'Crossed' Sensory Findings: ipsilateral facial and contralateral extremity findings
Unilateral Spinal Cord Lesions Above ~C5
• Brown-Sequard Syndrome (sensory loss to pain and temperature contralateral to weakness, vibration and proprioception loss ipsilateral to weakness)

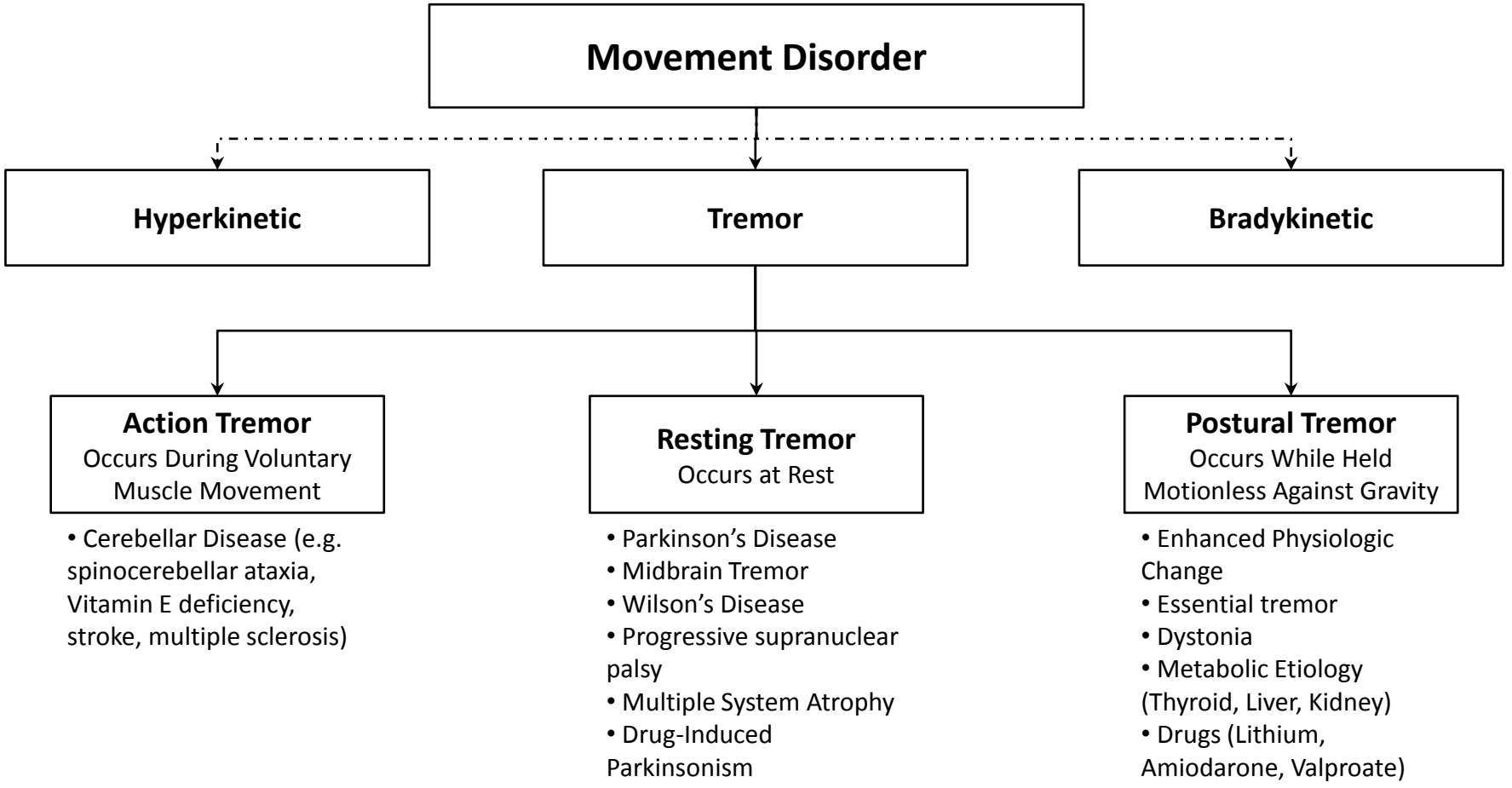
MECHANISMS OF PAIN



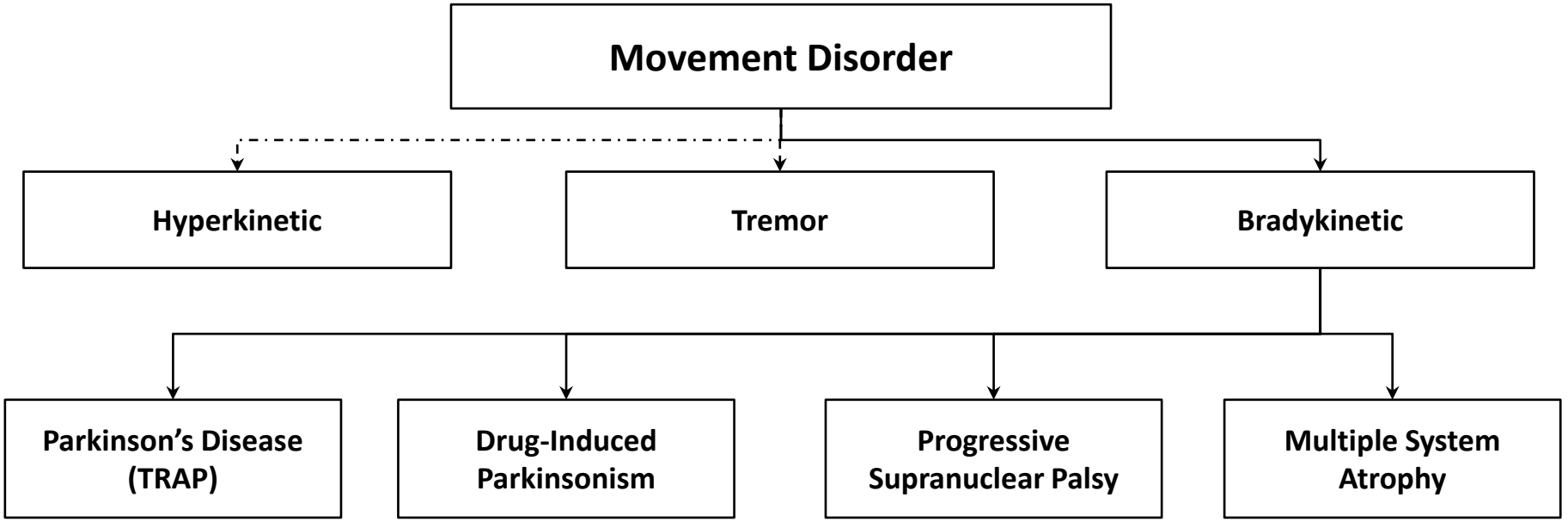
MOVEMENT DISORDER: Hyperkinetic



MOVEMENT DISORDER: Tremor



MOVEMENT DISORDER: Bradykinetic



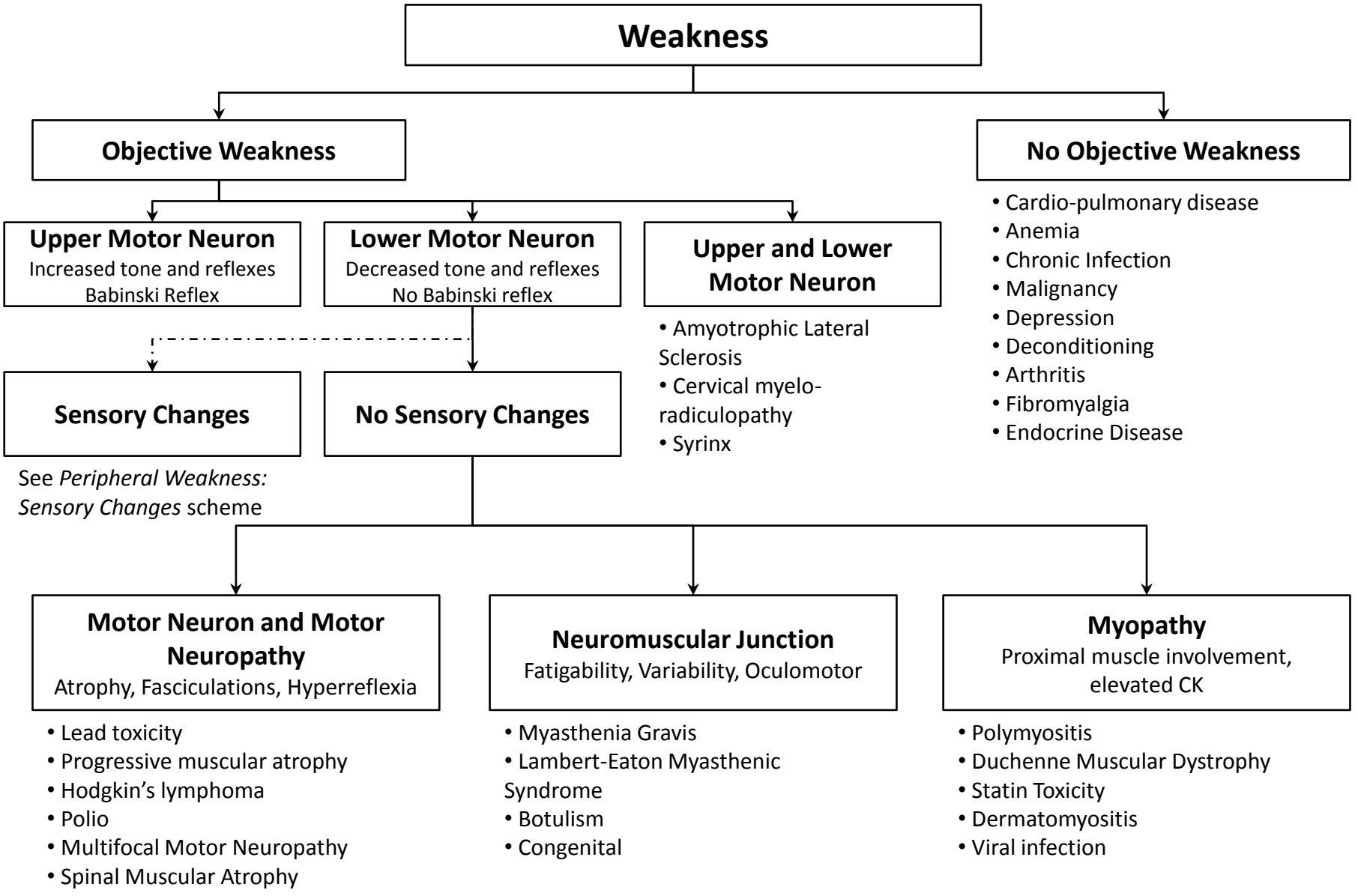
- Resting **T**remor
- Cogwheel **R**igidity
- **A**kinesia/Bradykinesia
- **P**ostural Instability

- Neuroleptics
- Haloperidol
- Metoclopramide
- Prochlorperazine
- Amiodarone
- Verapamil

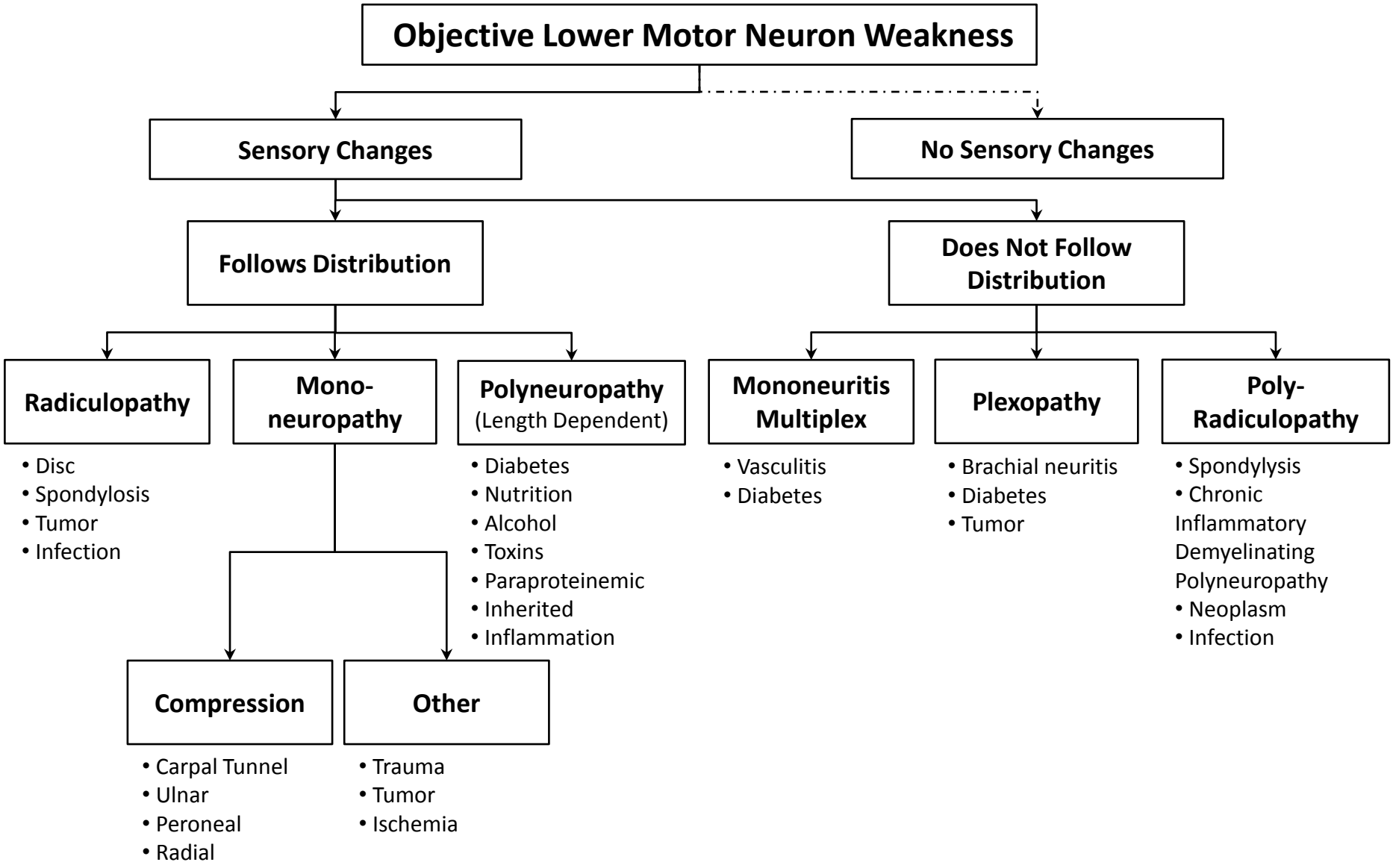
Characteristics:
- Vertical Gaze Palsy
- Axial rigidity > limb rigidity
- +/- Tremor
- Bradykinesia
- Falling backwards

Characteristics:
- Bradykinesia
- +/- tremor
- Cerebellar signs
- Postural Hypotension

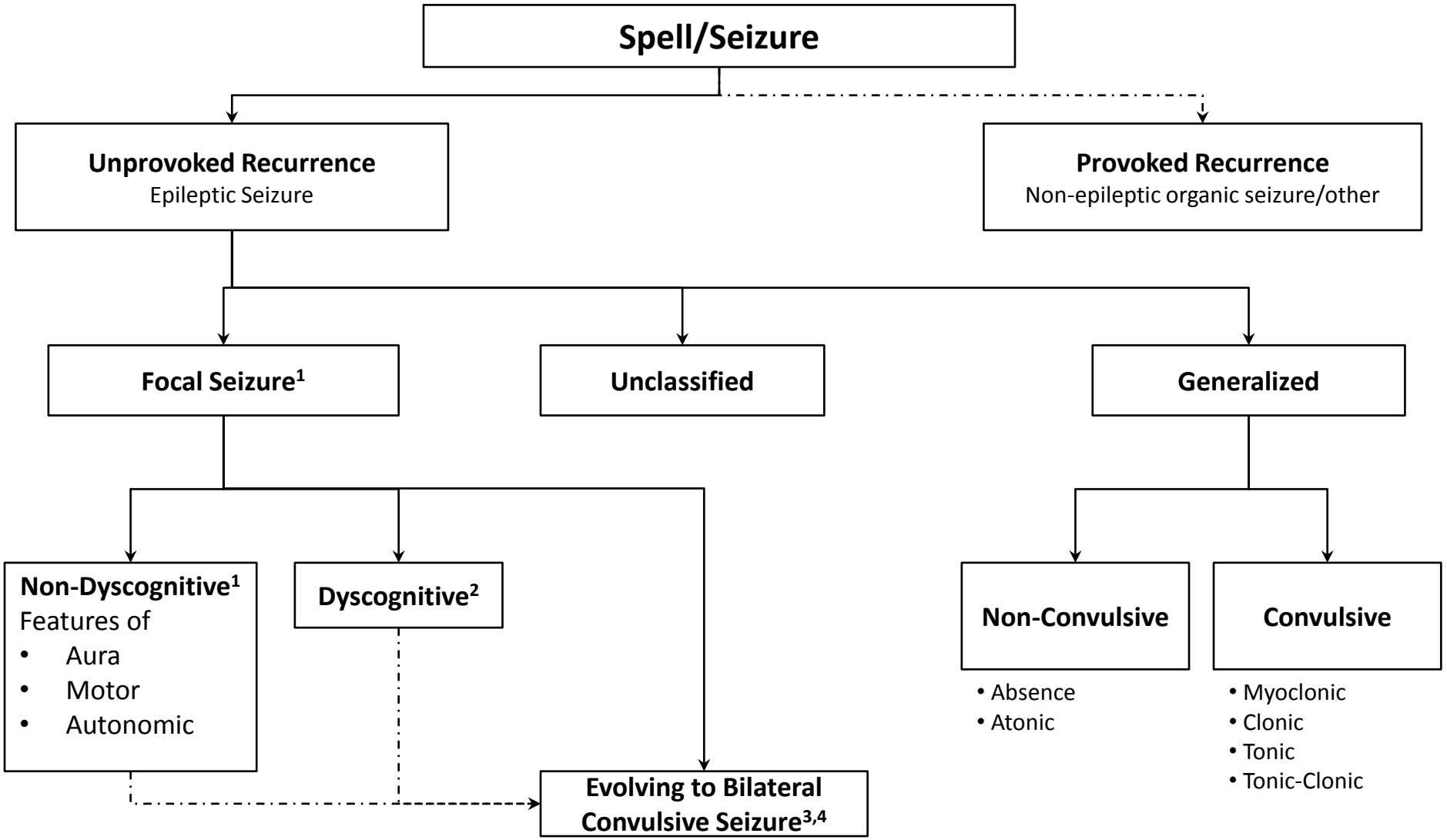
PERIPHERAL WEAKNESS



PERIPHERAL WEAKNESS: Sensory Changes

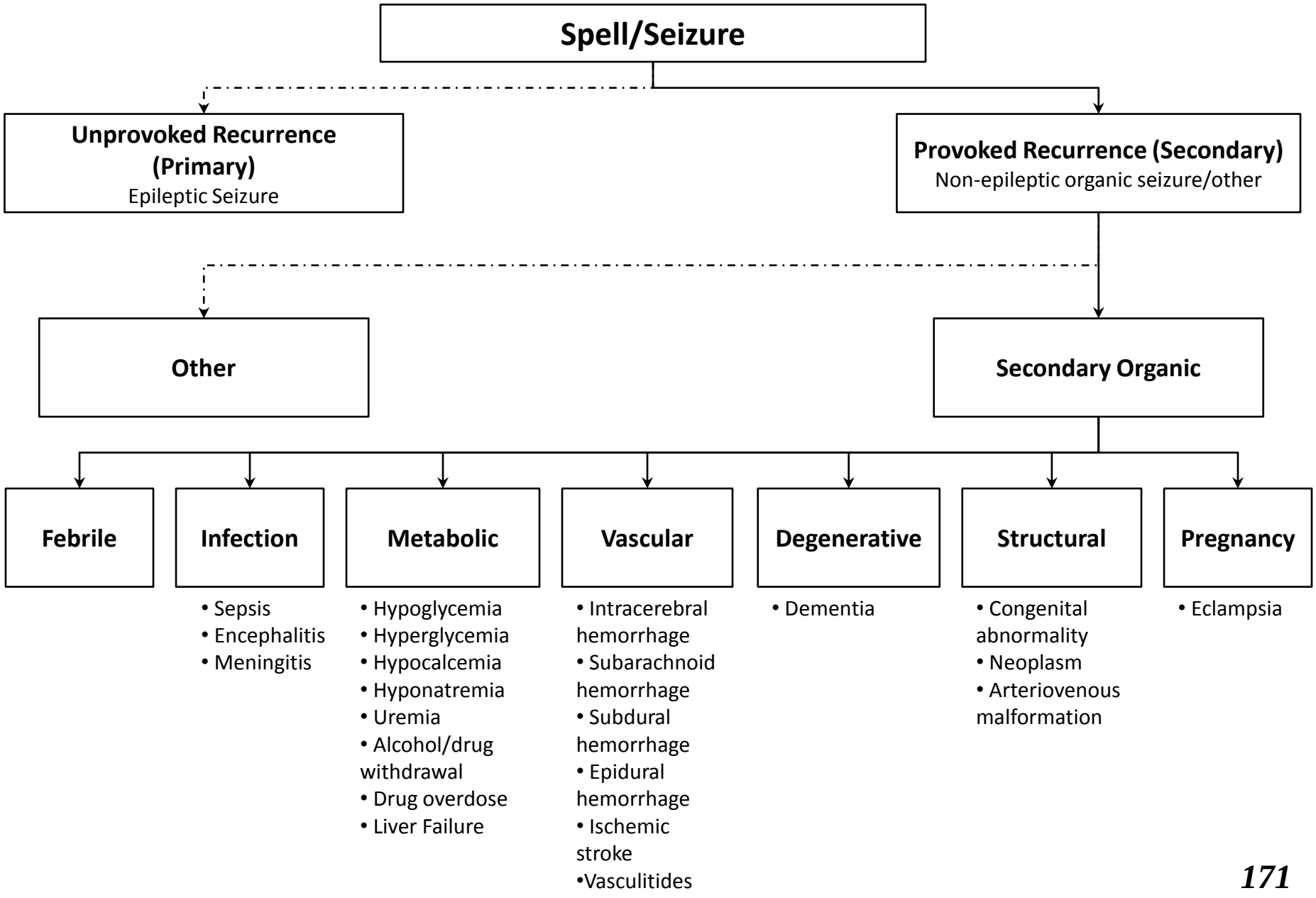


SPELL/SEIZURE: Epileptic Seizure

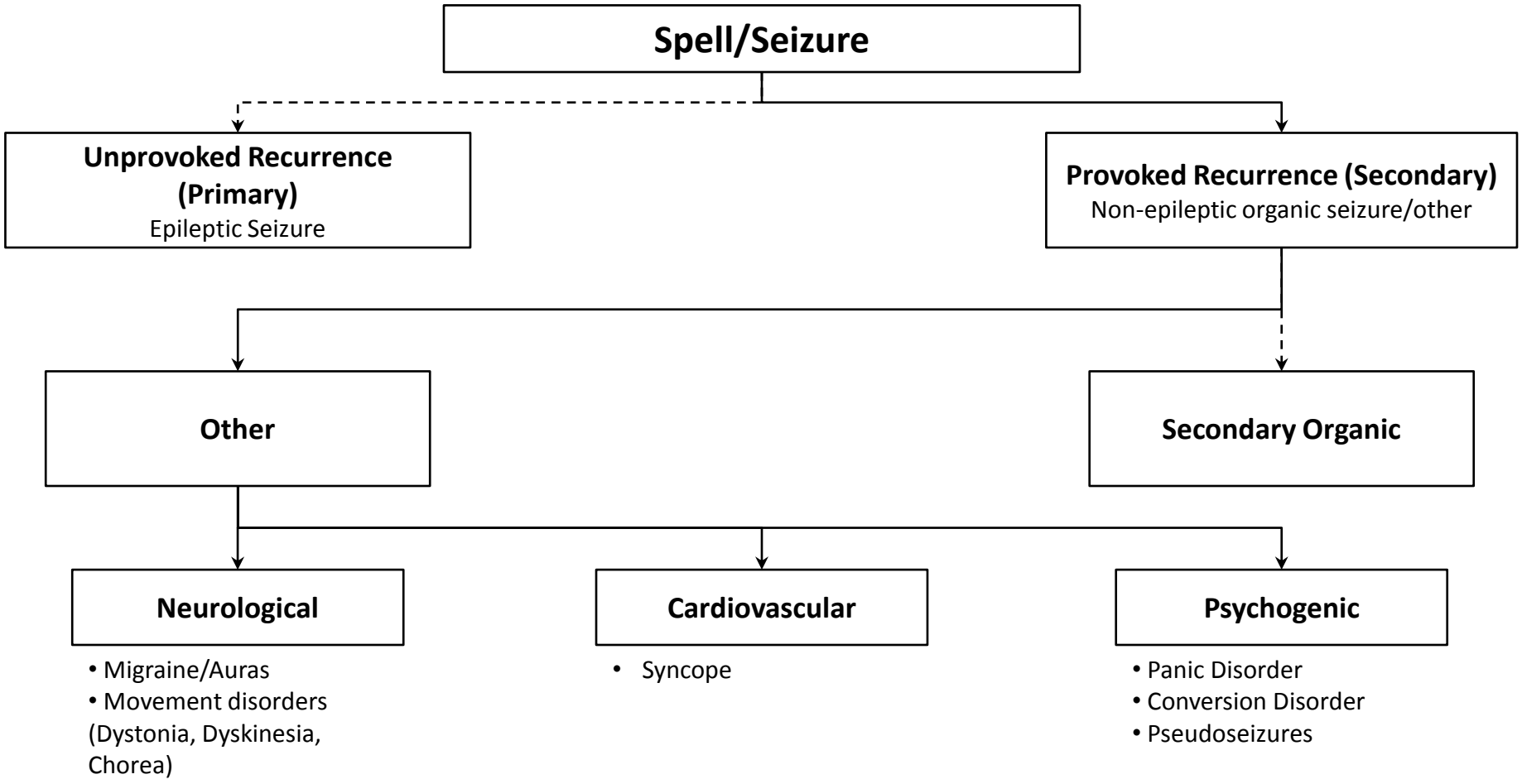


1 Previously named Simple Partial Seizure
2 Previously named Complex Partial Seizure
3 Previously named Secondary Generalized Tonic-Clonic Seizure
4 A focal seizure may evolve so rapidly to a bilateral convulsive seizure that no initial distinguishing features are apparent.

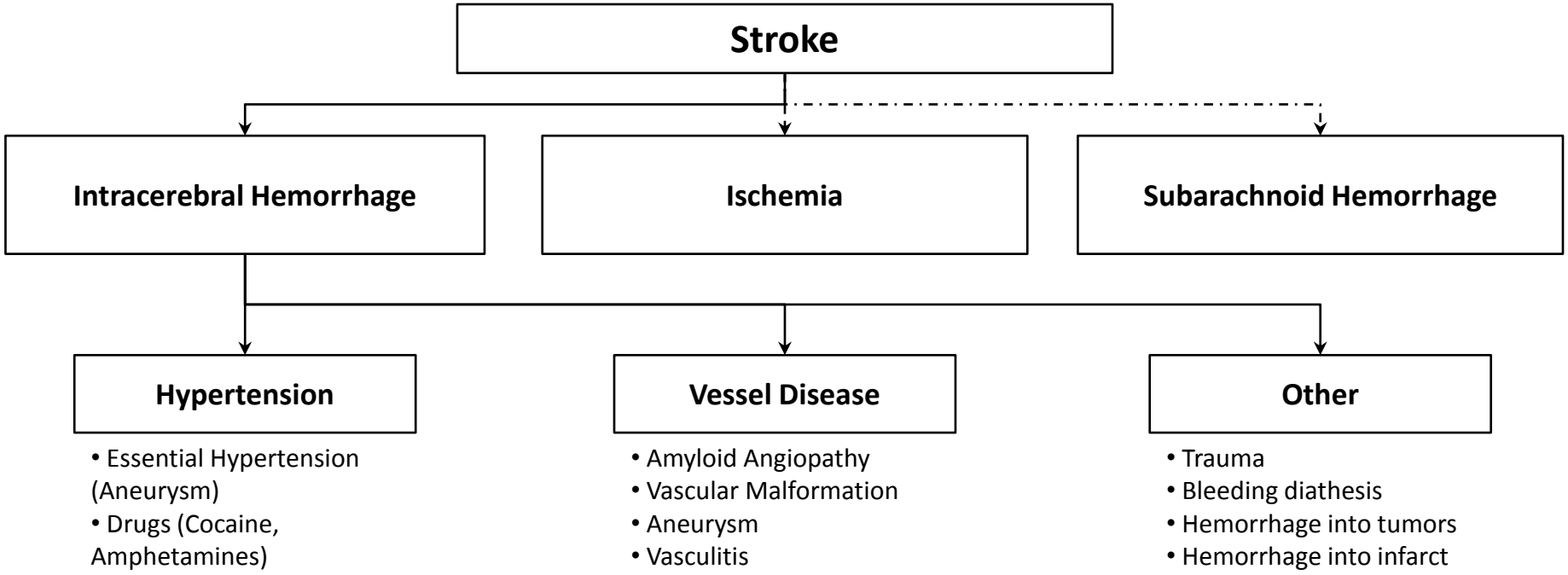
SPELL/SEIZURE: Secondary Organic



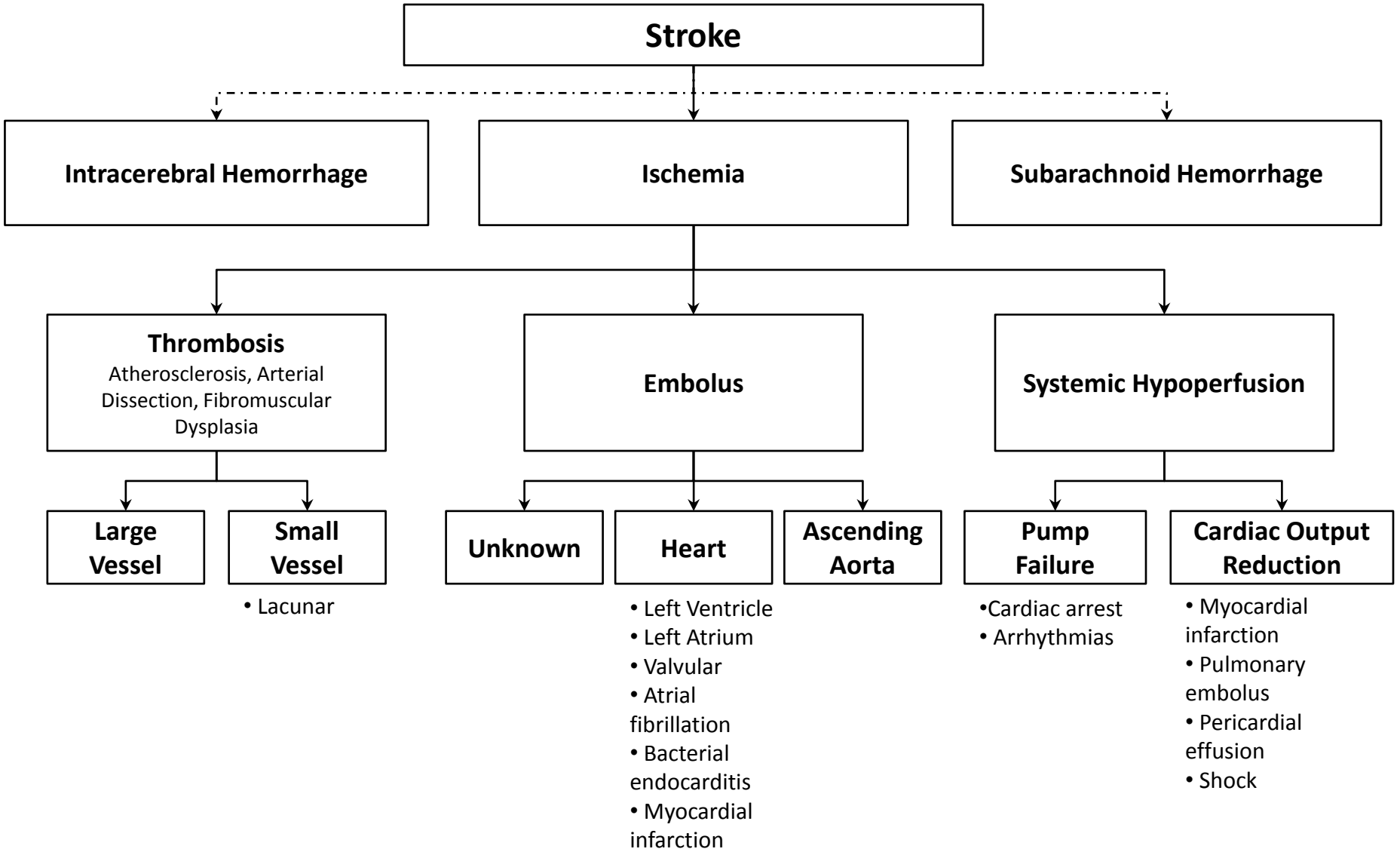
SPELL/SEIZURE: Other



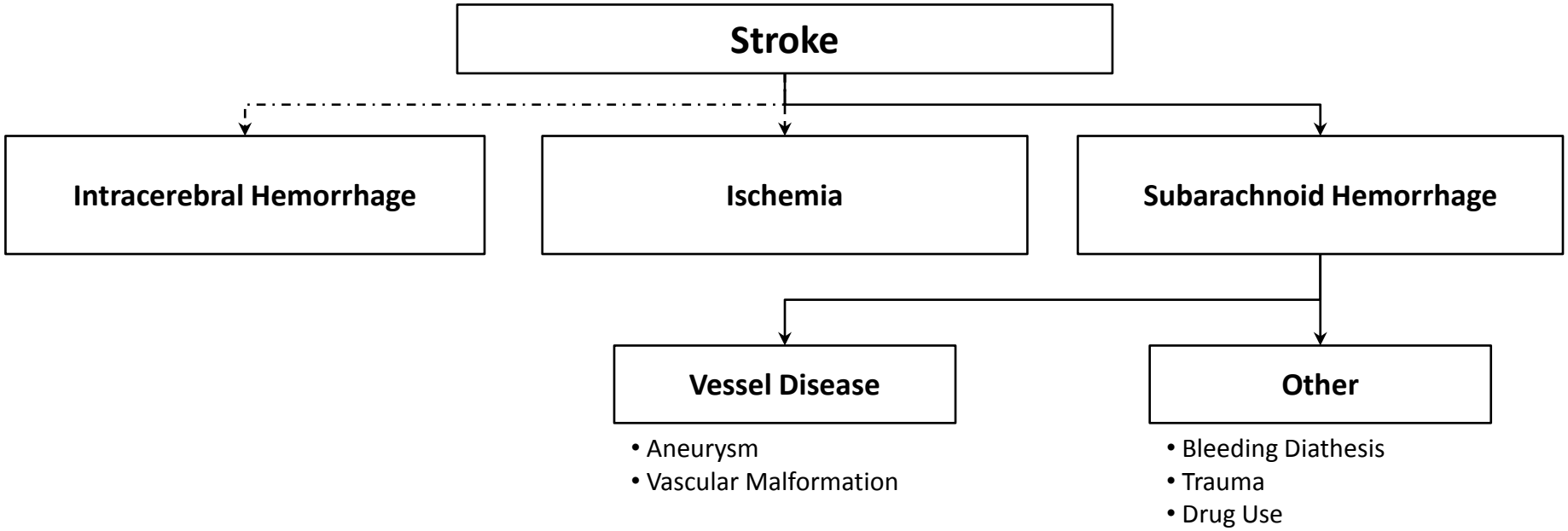
STROKE: Intracerebral Hemorrhage



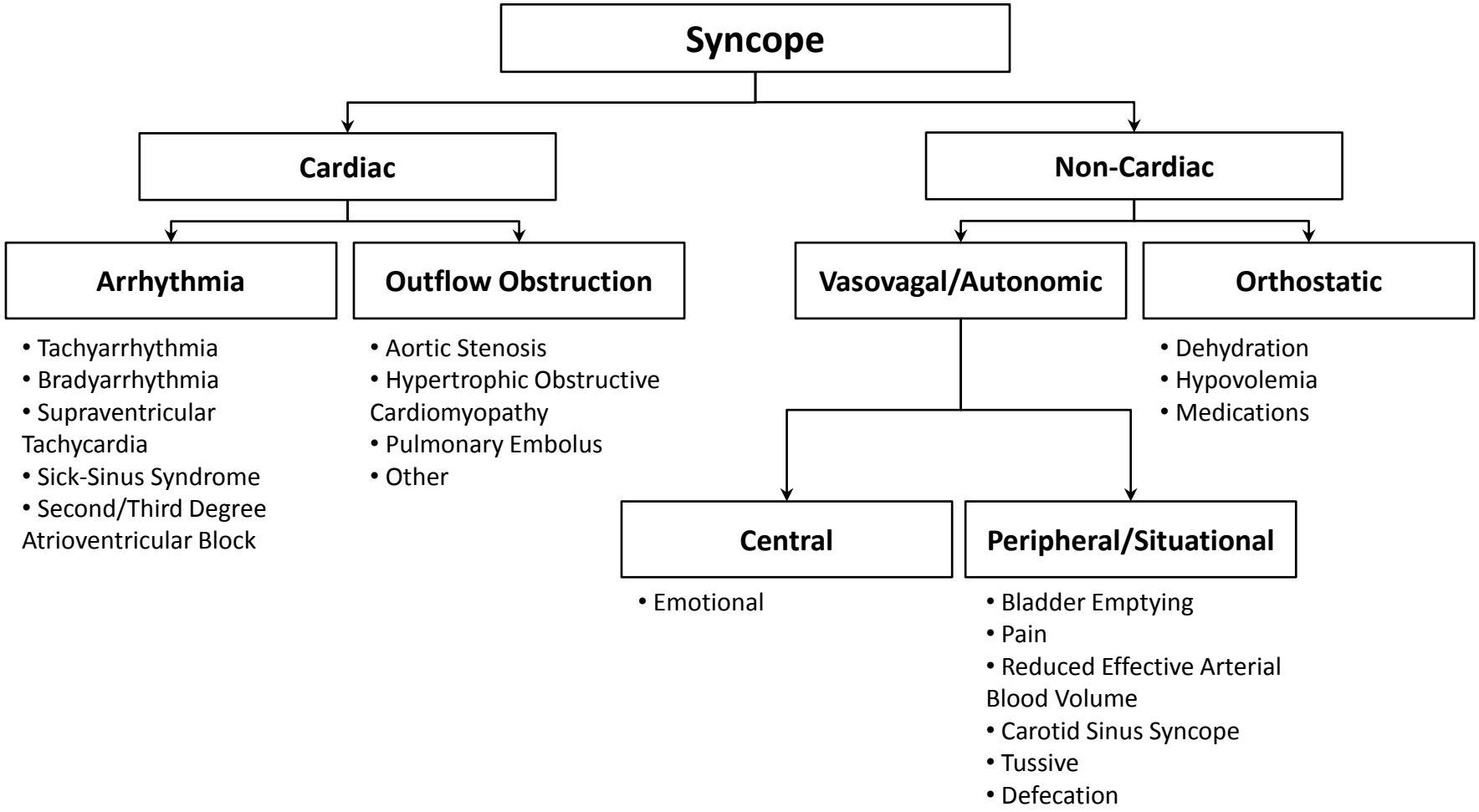
STROKE: Ischemia



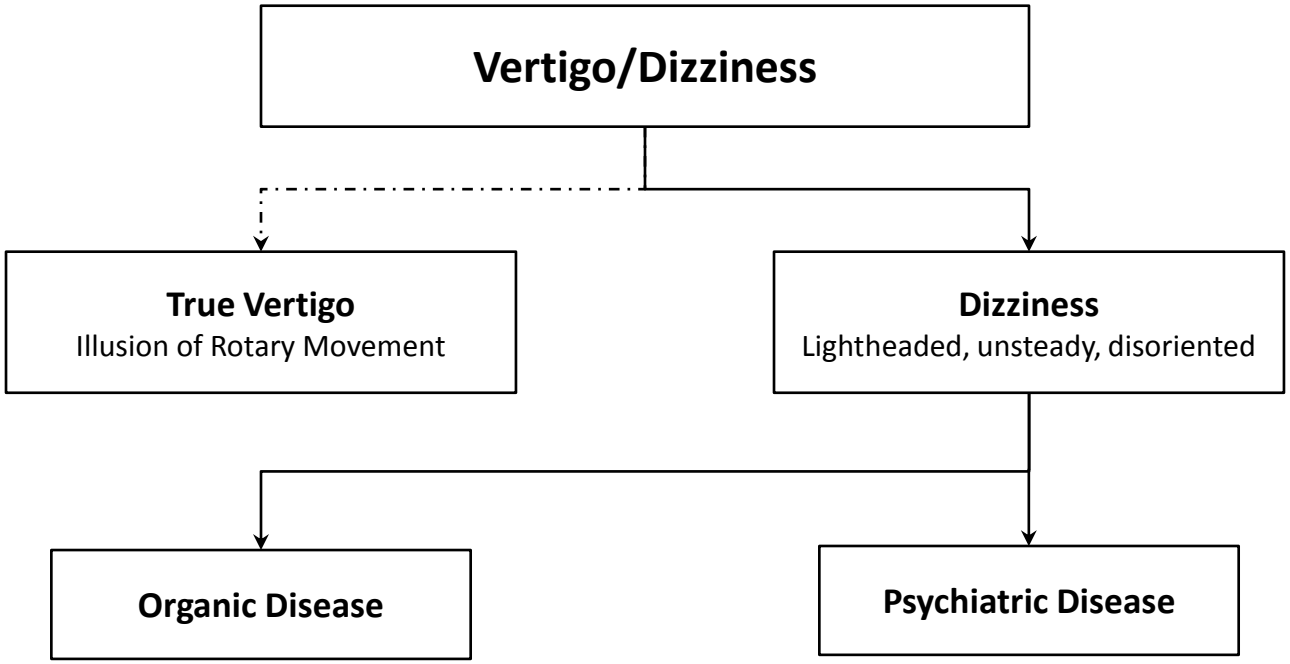
STROKE: Subarachnoid Hemorrhage



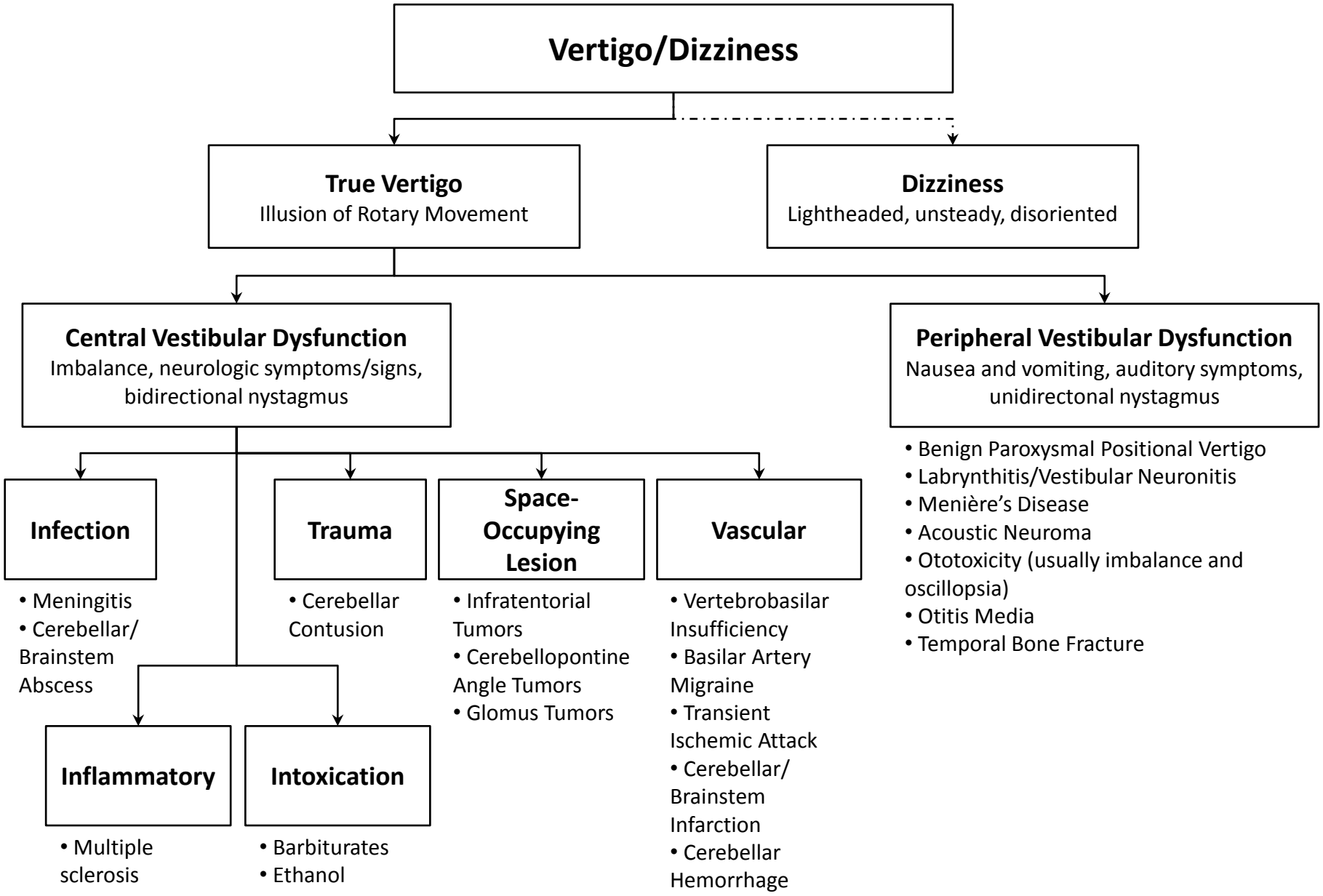
SYNCOPE


Syncope
Cardiac
Non-Cardiac
Arrhythmia
Outflow Obstruction
Vasovagal/Autonomic
Orthostatic
• Tachyarrhythmia
• Bradyarrhythmia
• Supraventricular Tachycardia
• Sick-Sinus Syndrome
• Second/Third Degree Atrioventricular Block
• Aortic Stenosis
• Hypertrophic Obstructive Cardiomyopathy
• Pulmonary Embolus
• Other
• Dehydration
• Hypovolemia
• Medications
Central
Peripheral/Situational
• Emotional
• Bladder Emptying
• Pain
• Reduced Effective Arterial Blood Volume
• Carotid Sinus Syncope
• Tussive
• Defecation

VERTIGO/DIZZINESS: Dizziness



VERTIGO/DIZZINESS: Vertigo



Obstetrical & Gynecological Presentations

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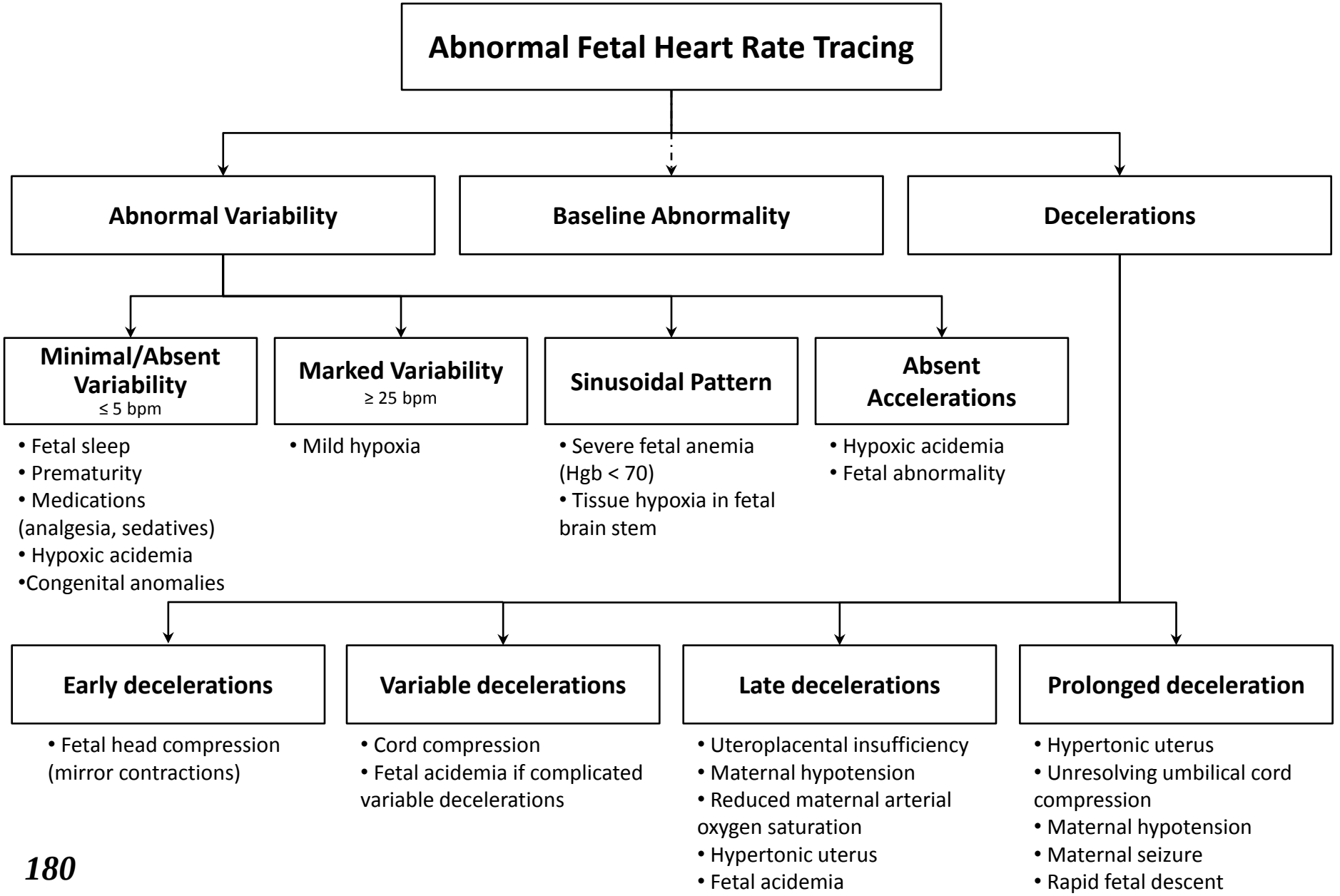
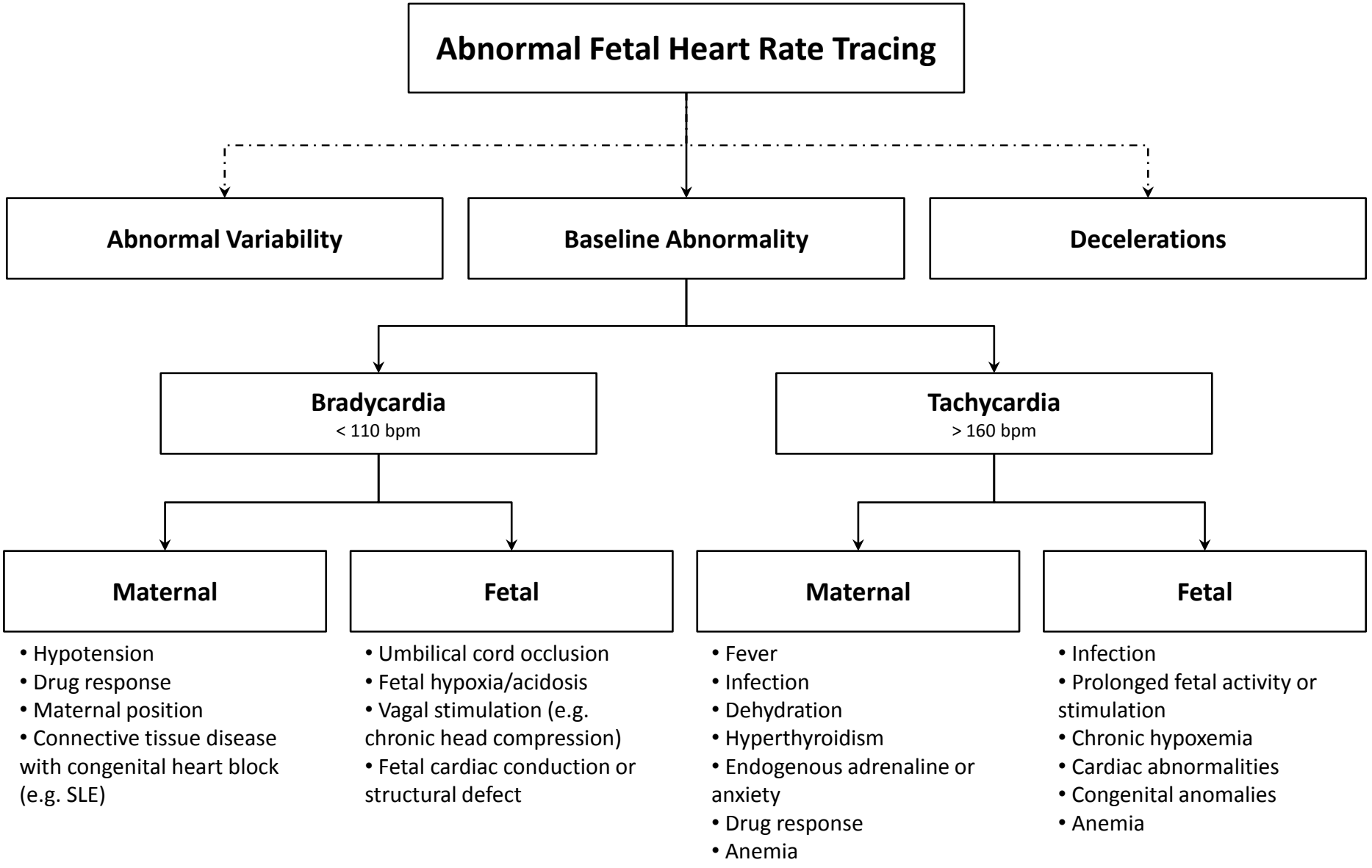
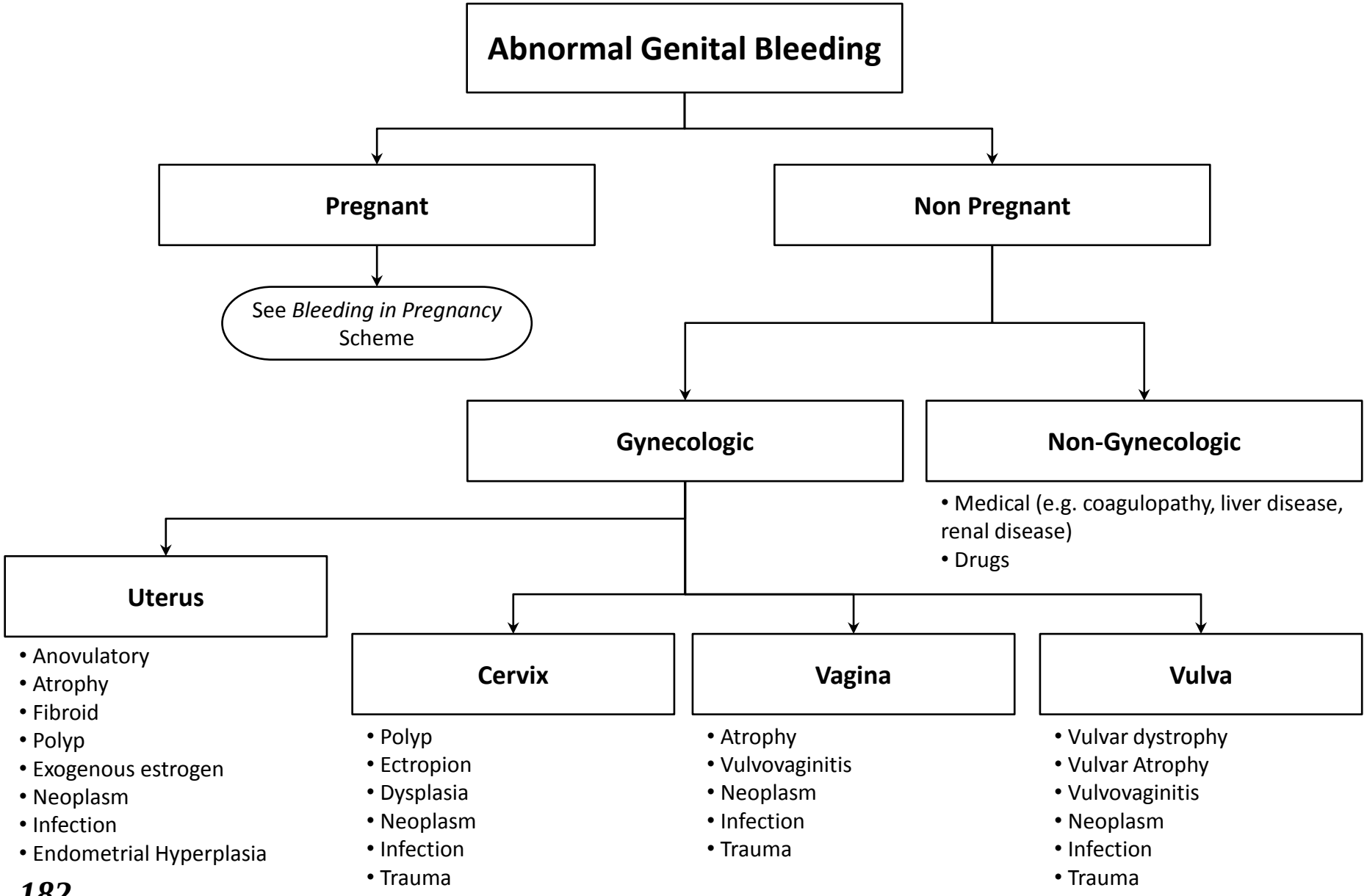
INTRAPARTUM ABNORMAL FETAL HEART RATE TRACING: Variability & Decelerations



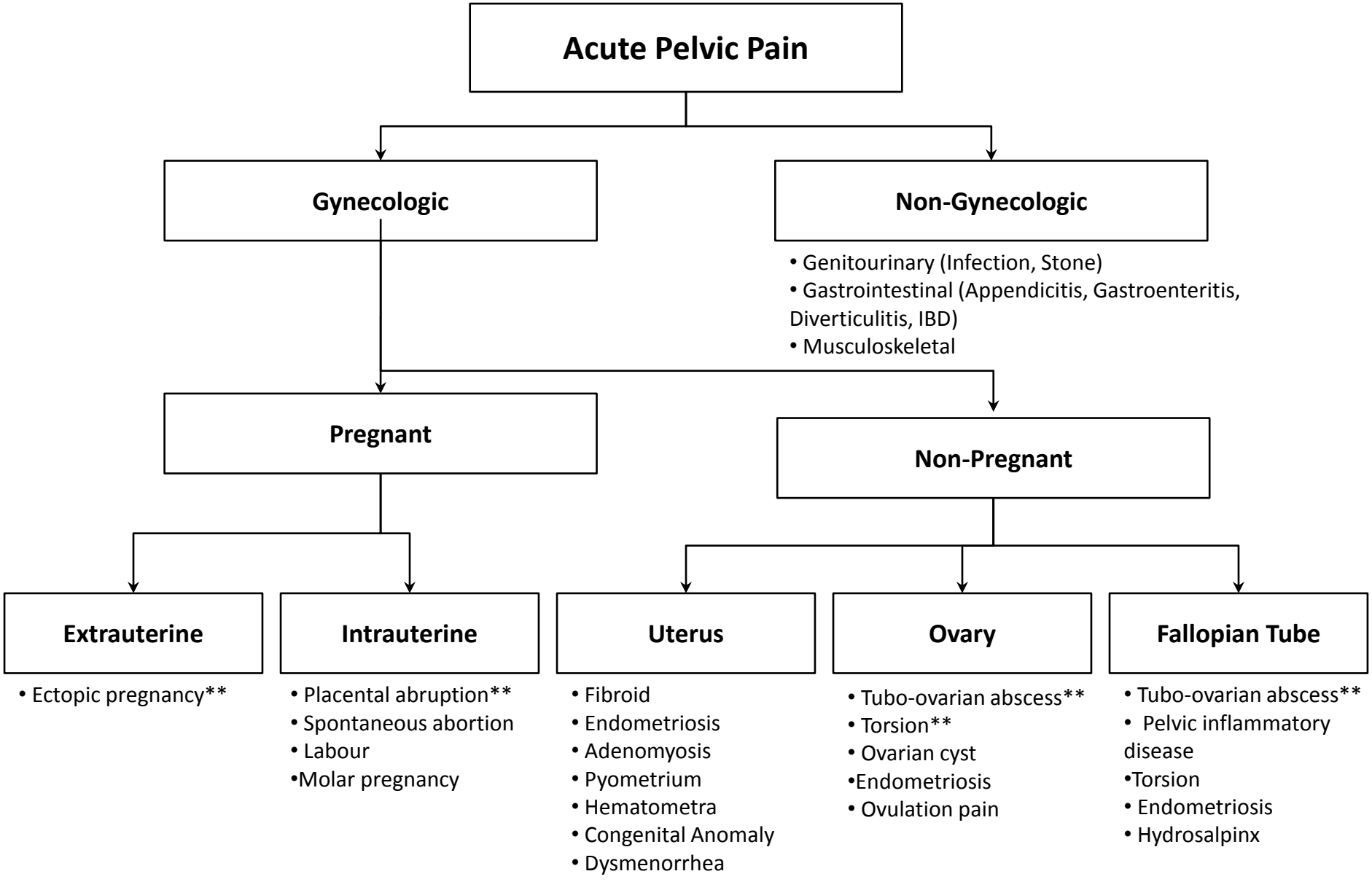
INTRAPARTUM ABNORMAL FETAL HEART RATE TRACING: Baseline



ABNORMAL GENITAL BLEEDING

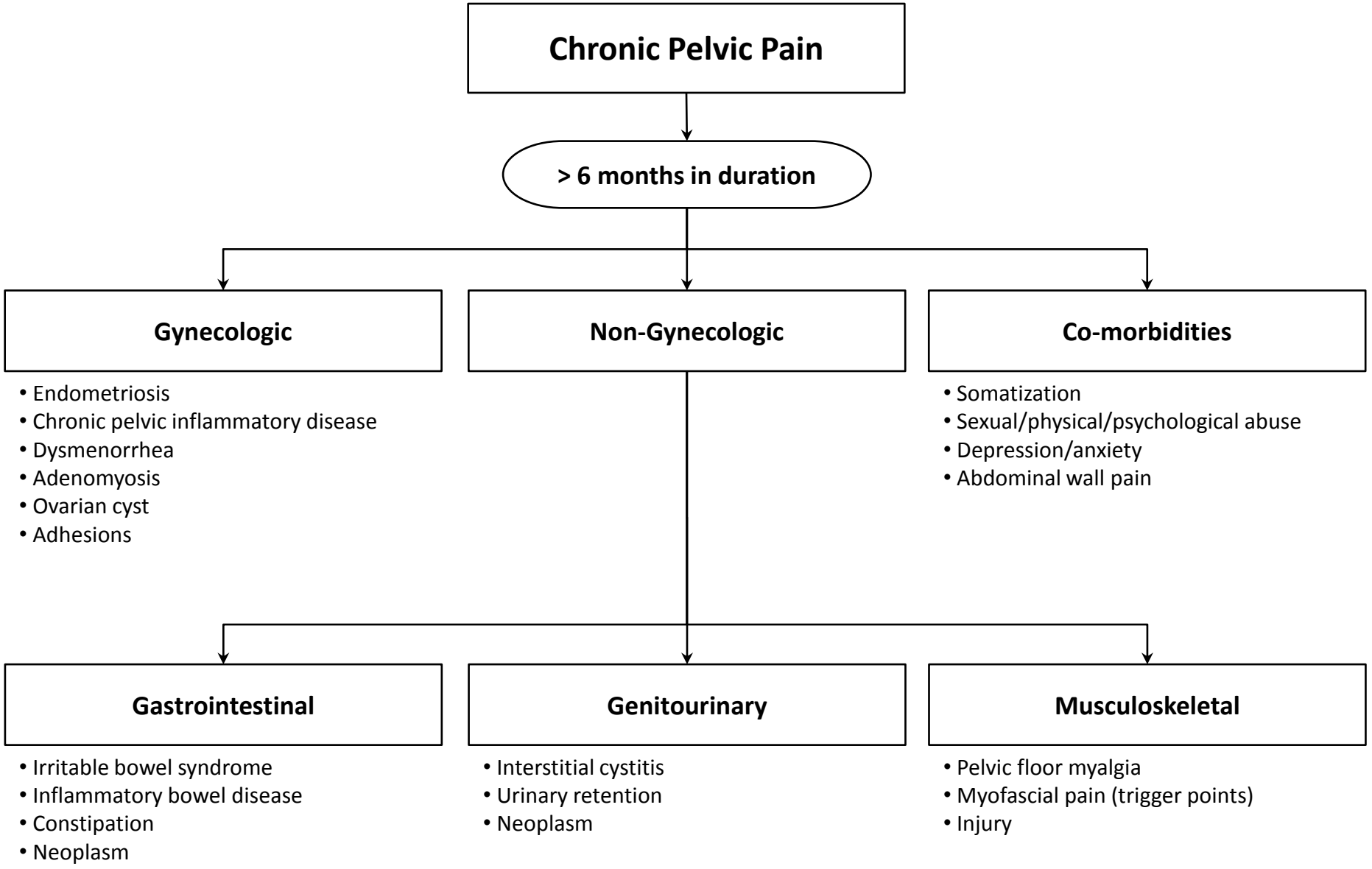


ACUTE PELVIC PAIN

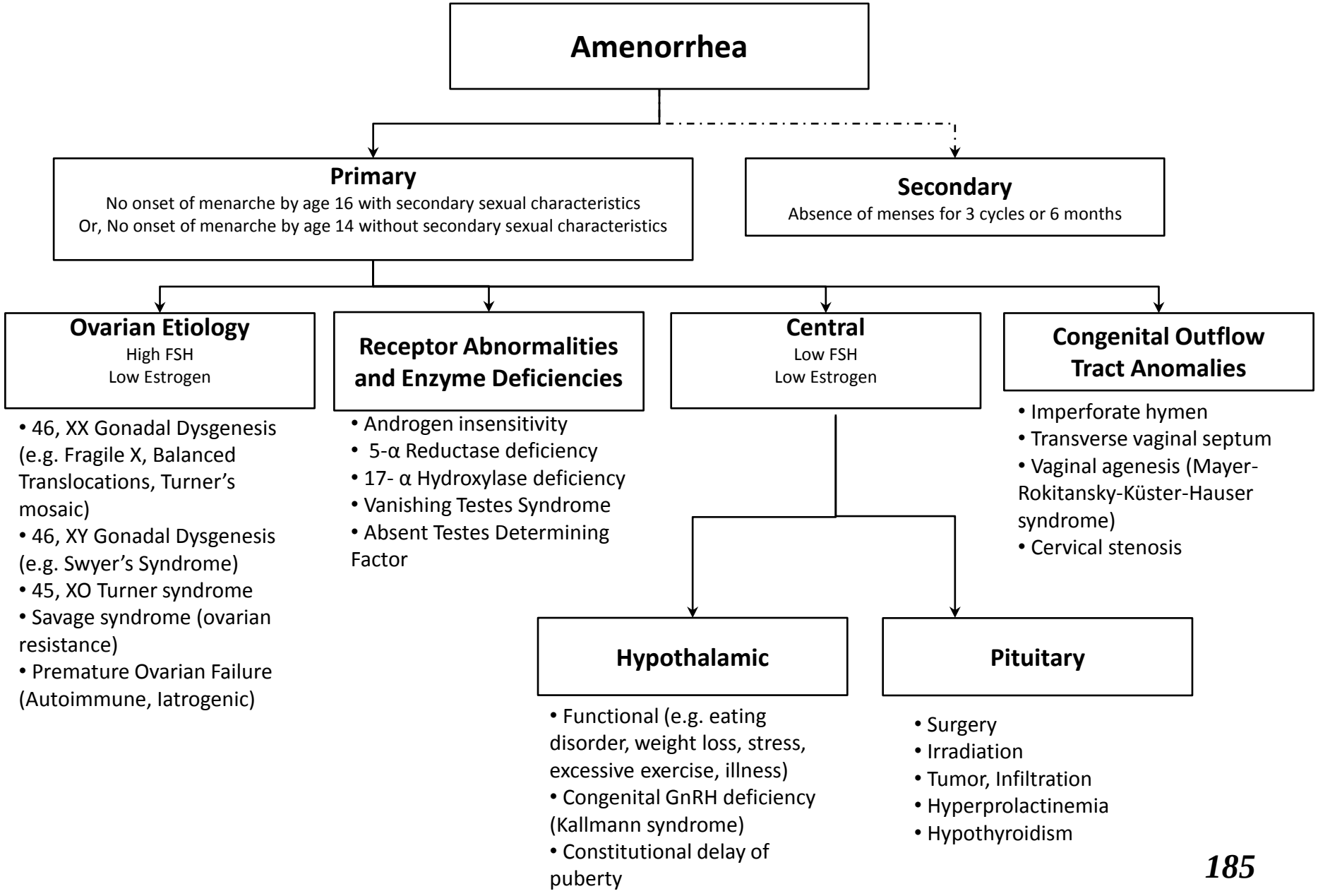


**Obstetrical Emergencies

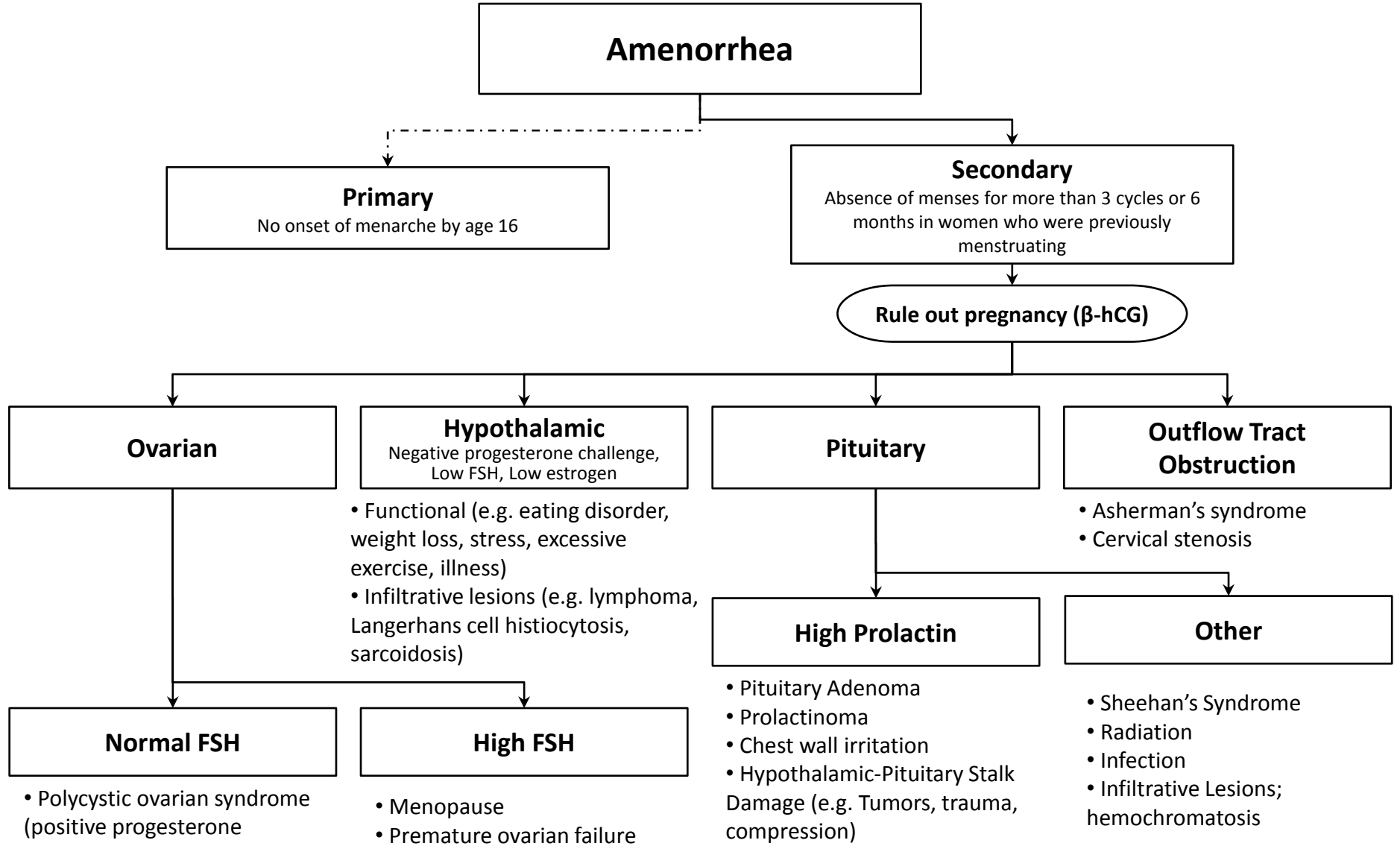
CHRONIC PELVIC PAIN



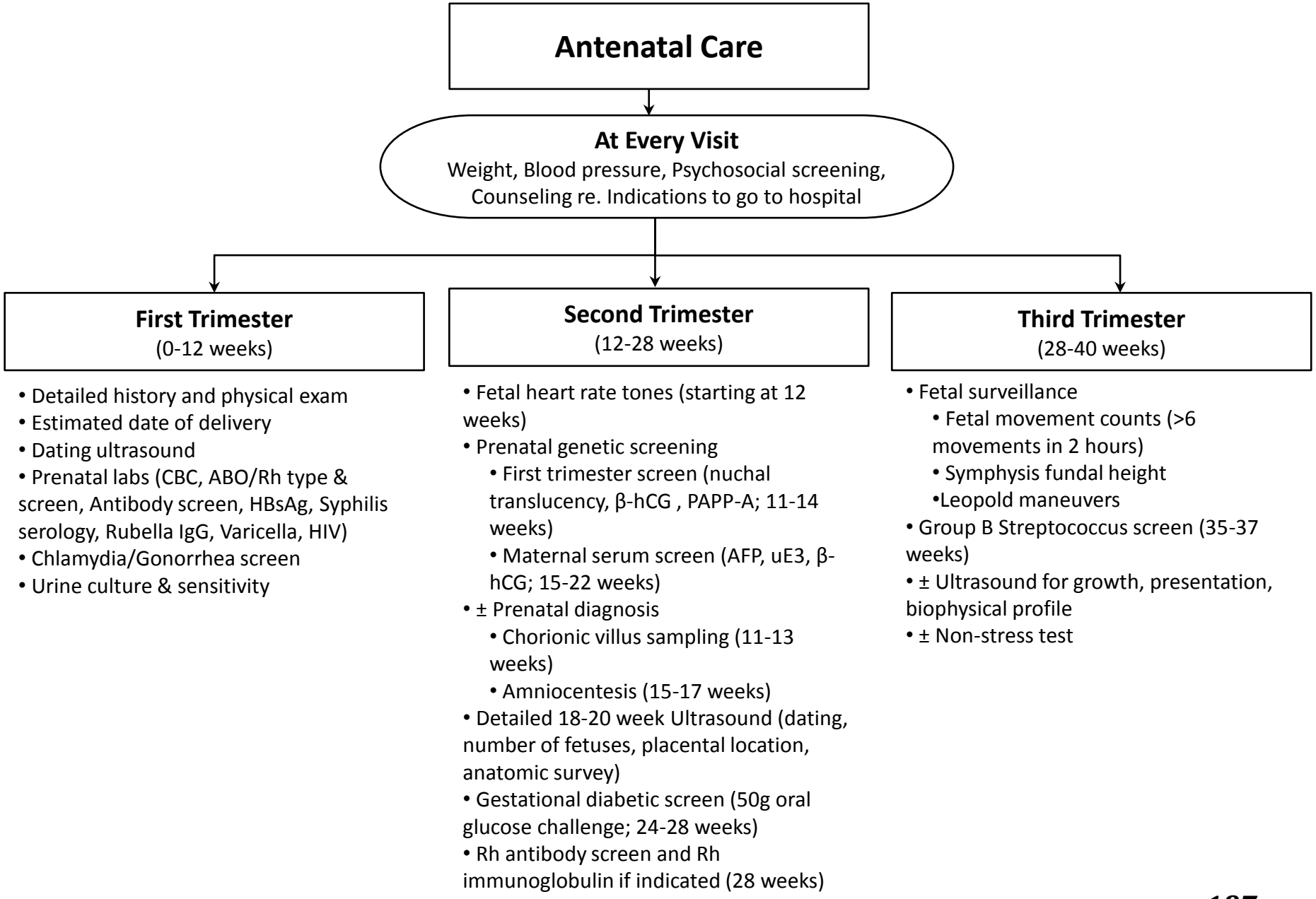
AMENORRHEA: Primary



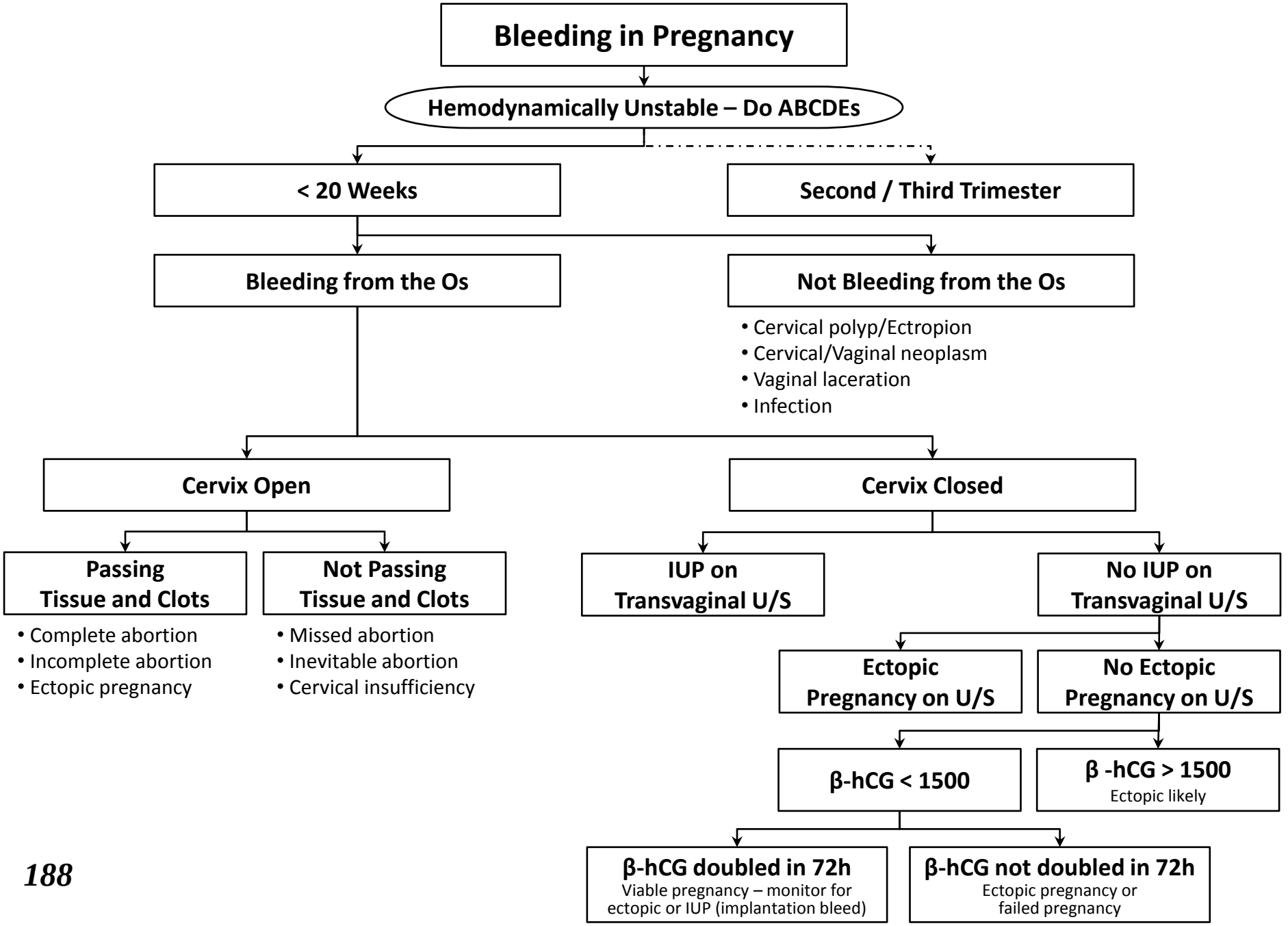
AMENORRHEA: Secondary



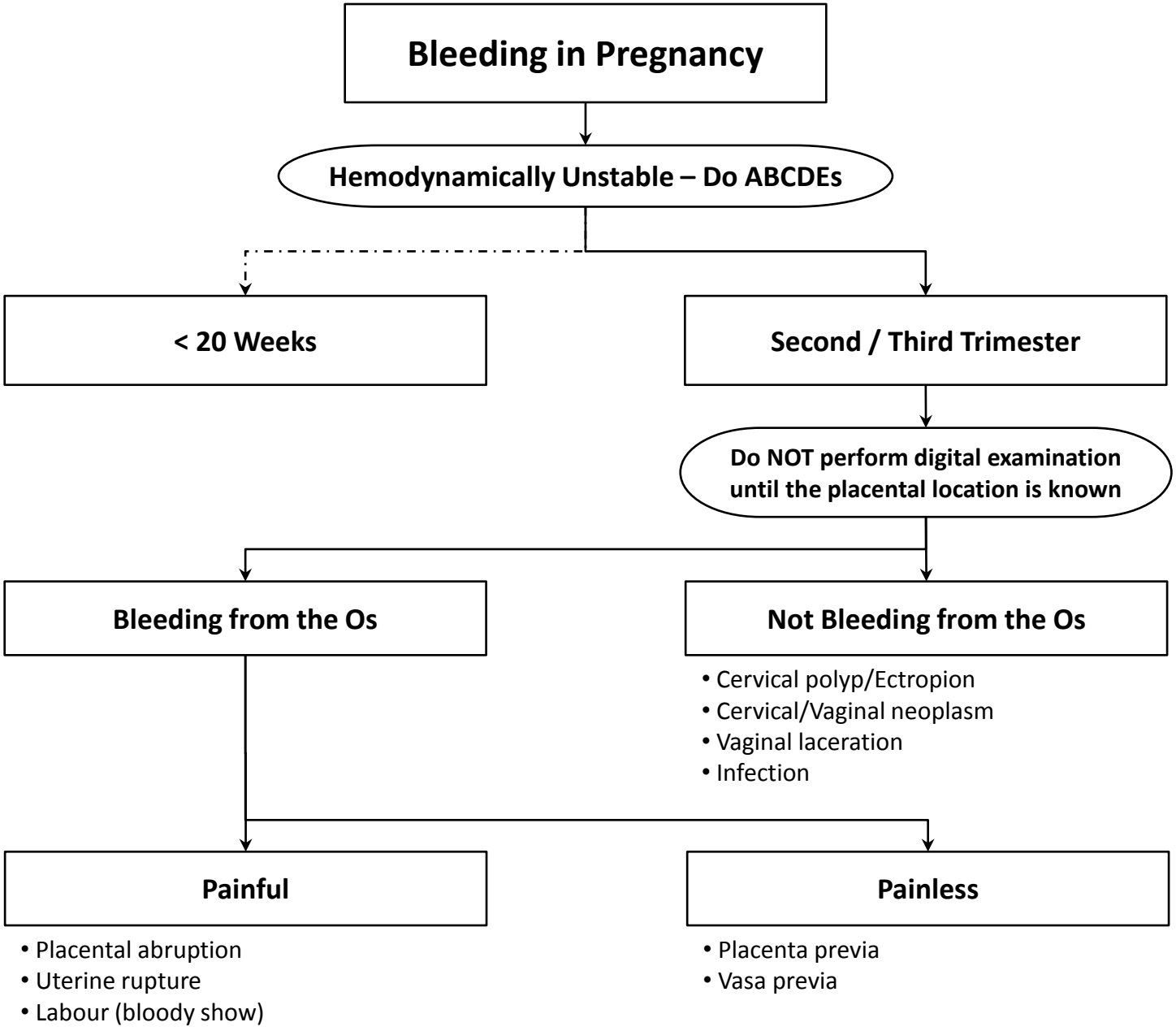
ANTENATAL CARE



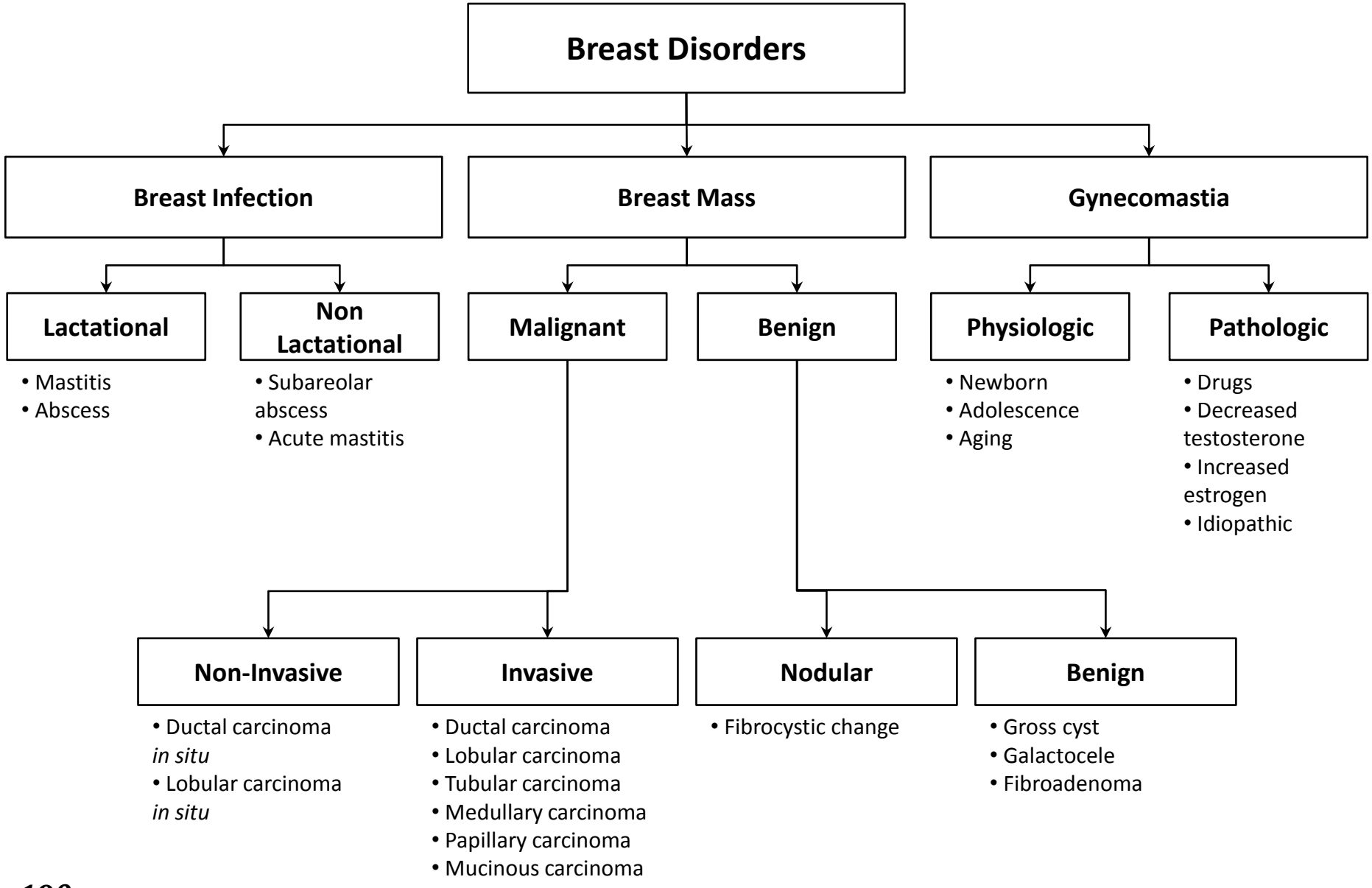
BLEEDING IN PREGNANCY: <20 Weeks



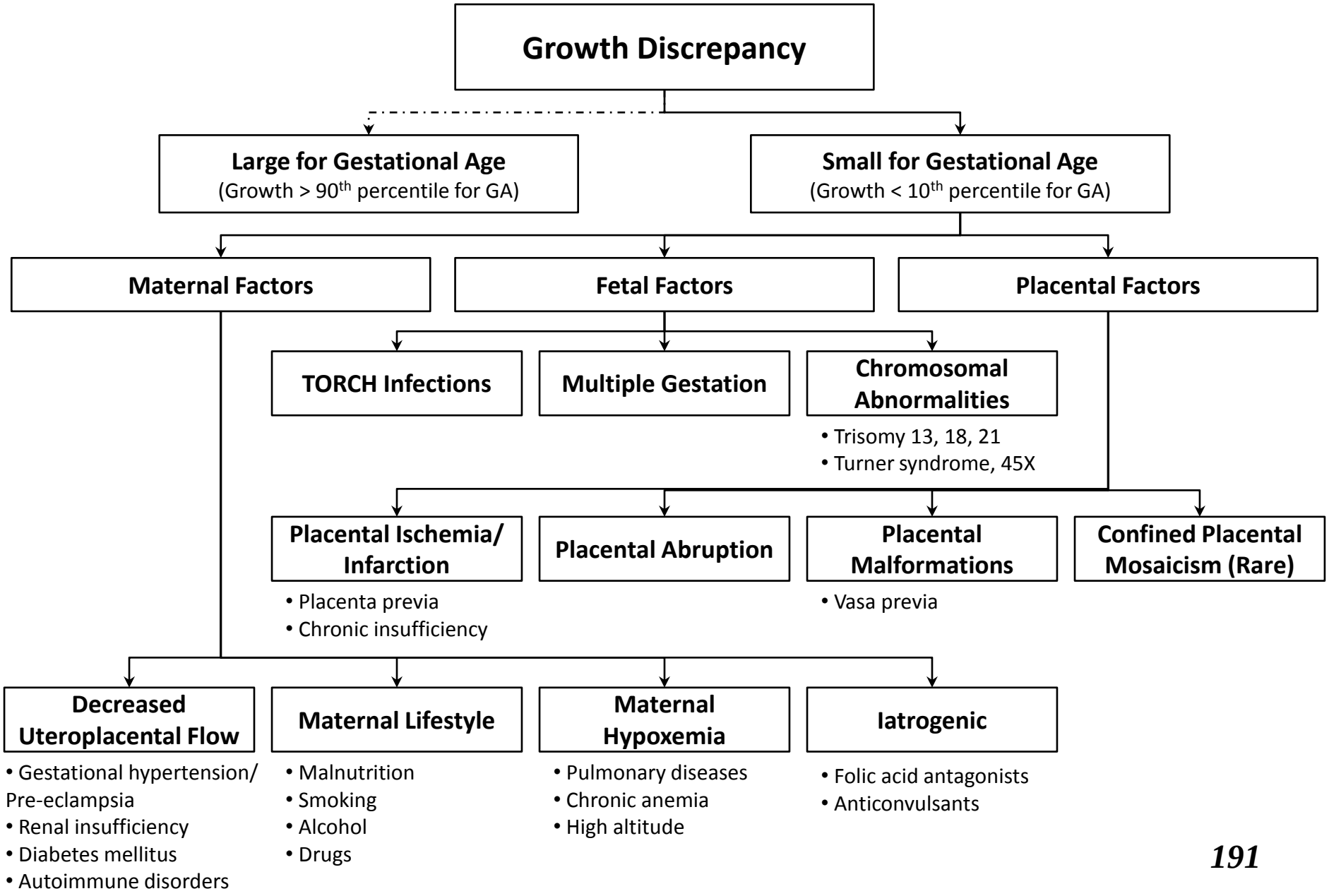
BLEEDING IN PREGNANCY: 2nd and 3rd Trimesters



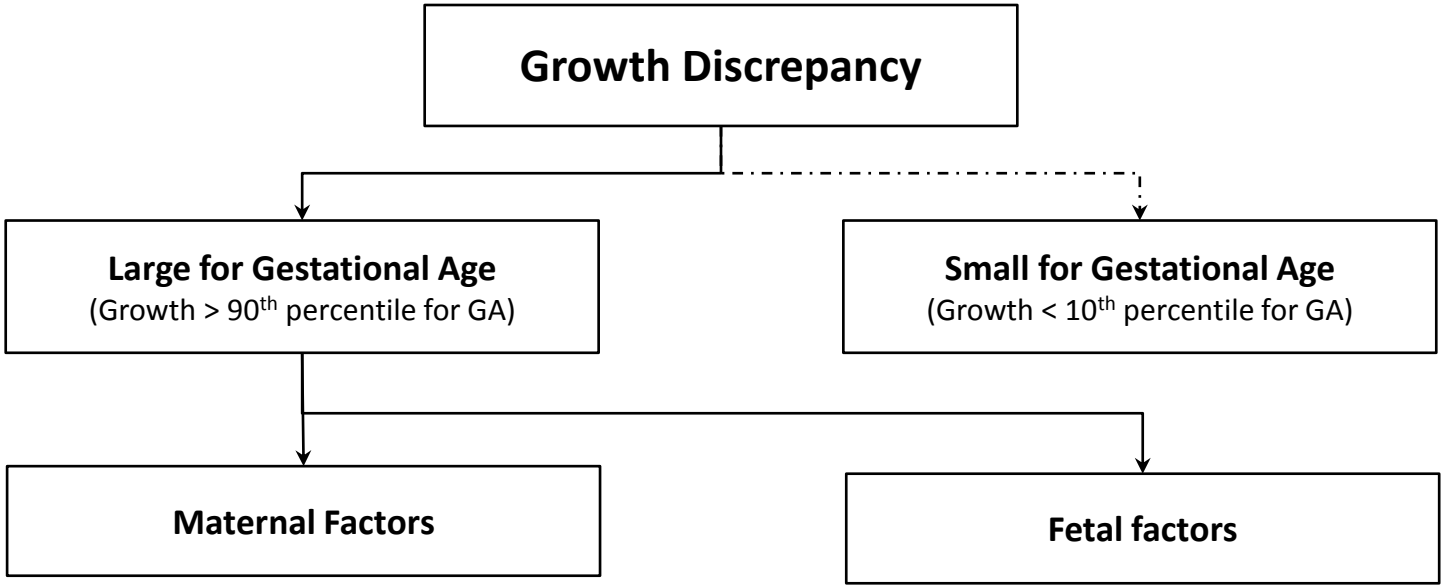
BREAST DISORDERS



GROWTH DISCREPANCY: Small For Gestational Age/ Intrauterine Growth Restriction



GROWTH DISCREPANCY: Large for Gestational Age



- Multiparity
- Previous history of large for gestational age fetus
- Aboriginal, Hispanic, and Caucasian races
- Maternal co-morbidities (e.g. diabetes, obesity)
- Excessive weight gain over course of pregnancy (>40 lbs)

- Male infant
- Prolonged gestation (>41 weeks)
- Genetic disorder (e.g. Sotos syndrome, Beckwith-Wiedemann syndrome, Weaver's syndrome)

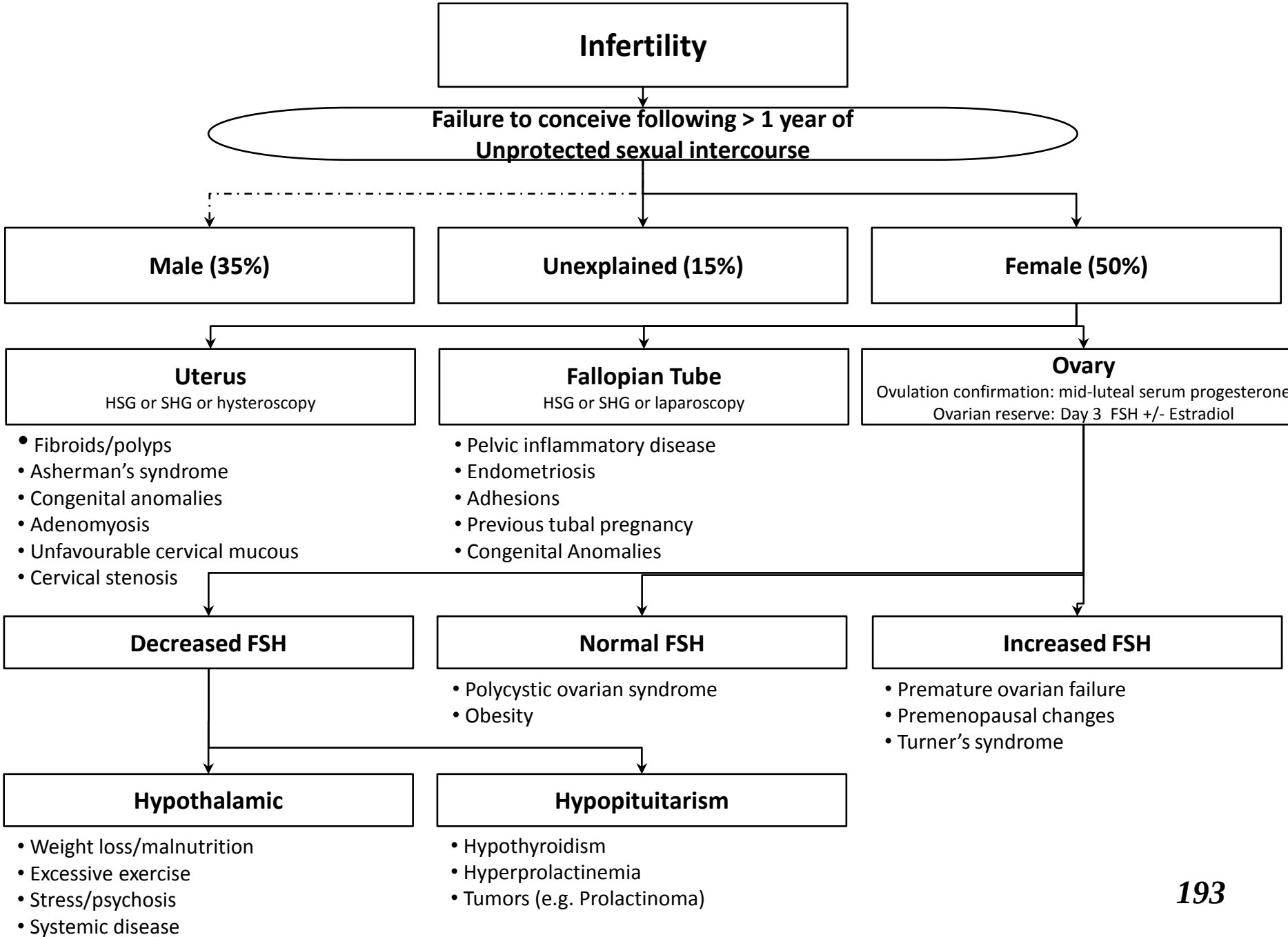
MATERNAL COMPLICATIONS

- Prolonged labour
- Operative vaginal delivery
- Caesarean section
- Genital tract lacerations
- Post-partum hemorrhage
- Uterine rupture

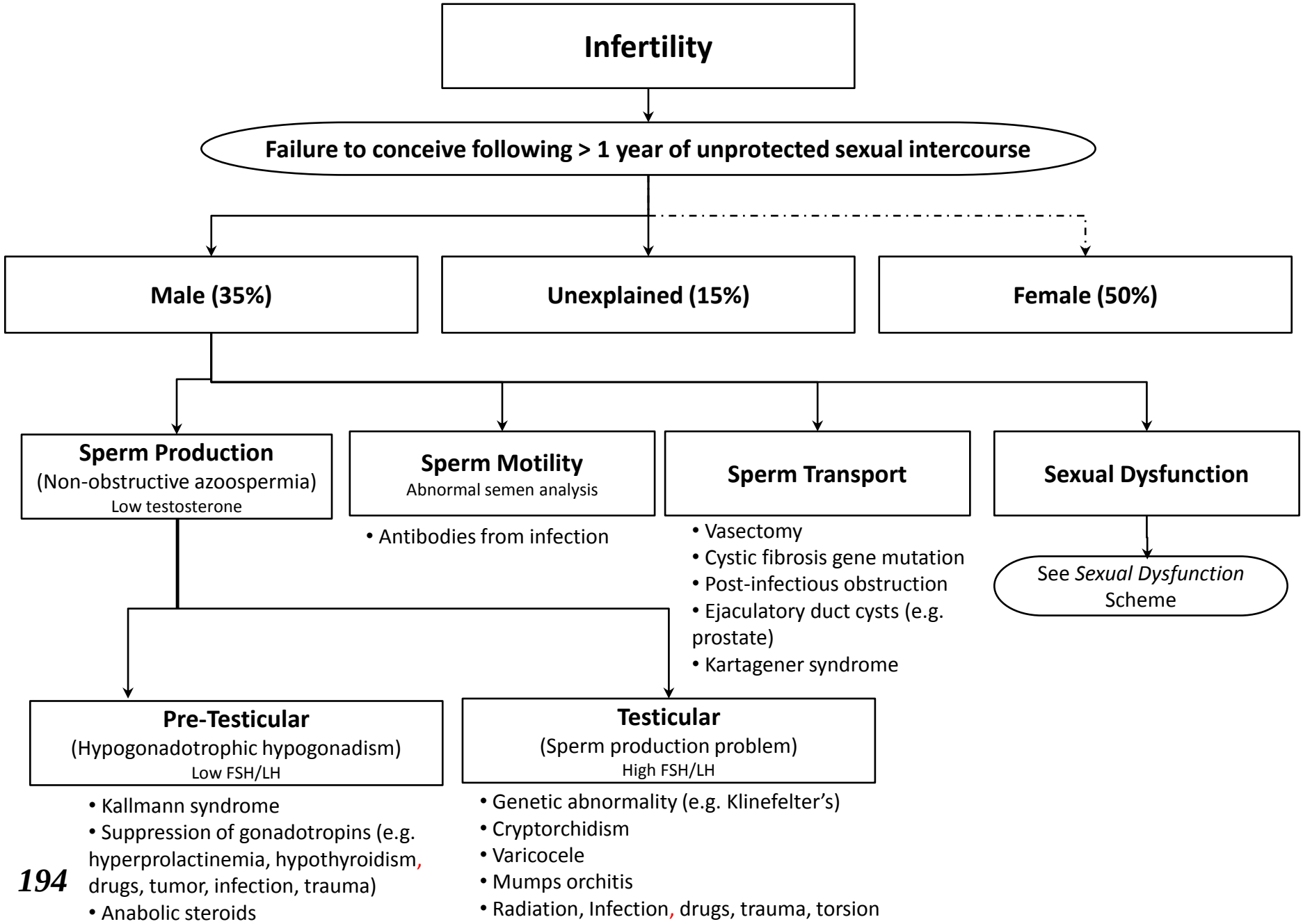
FETAL COMPLICATIONS

- Shoulder dystocia
- Birth injury (brachial plexus injury, clavicular fracture)
- Cerebral palsy secondary to hypoxia
- Hypoglycemia
- Polycythemia
- Perinatal asphyxia
- Hyperbilirubinemia

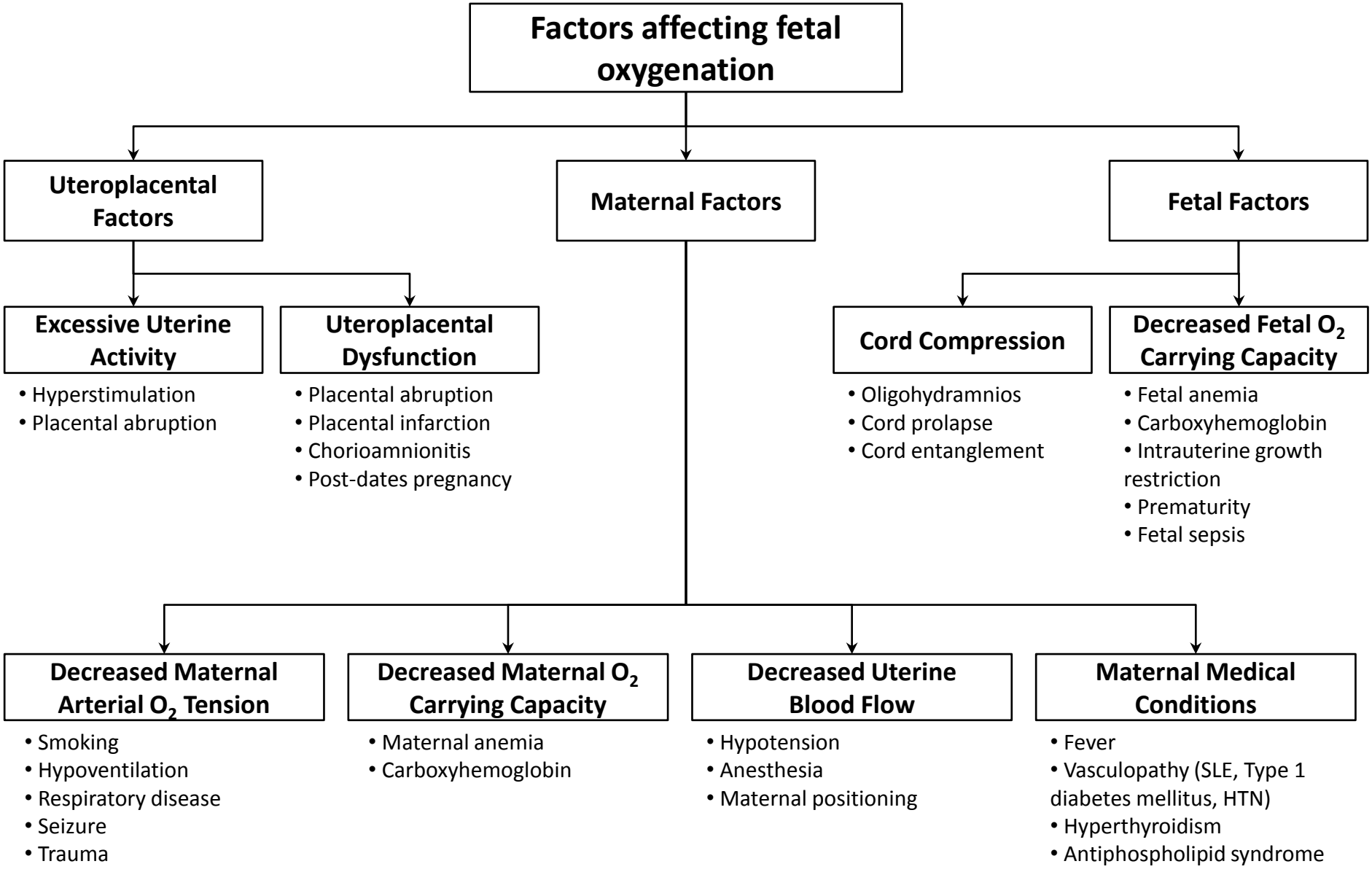
INFERTILITY: Female



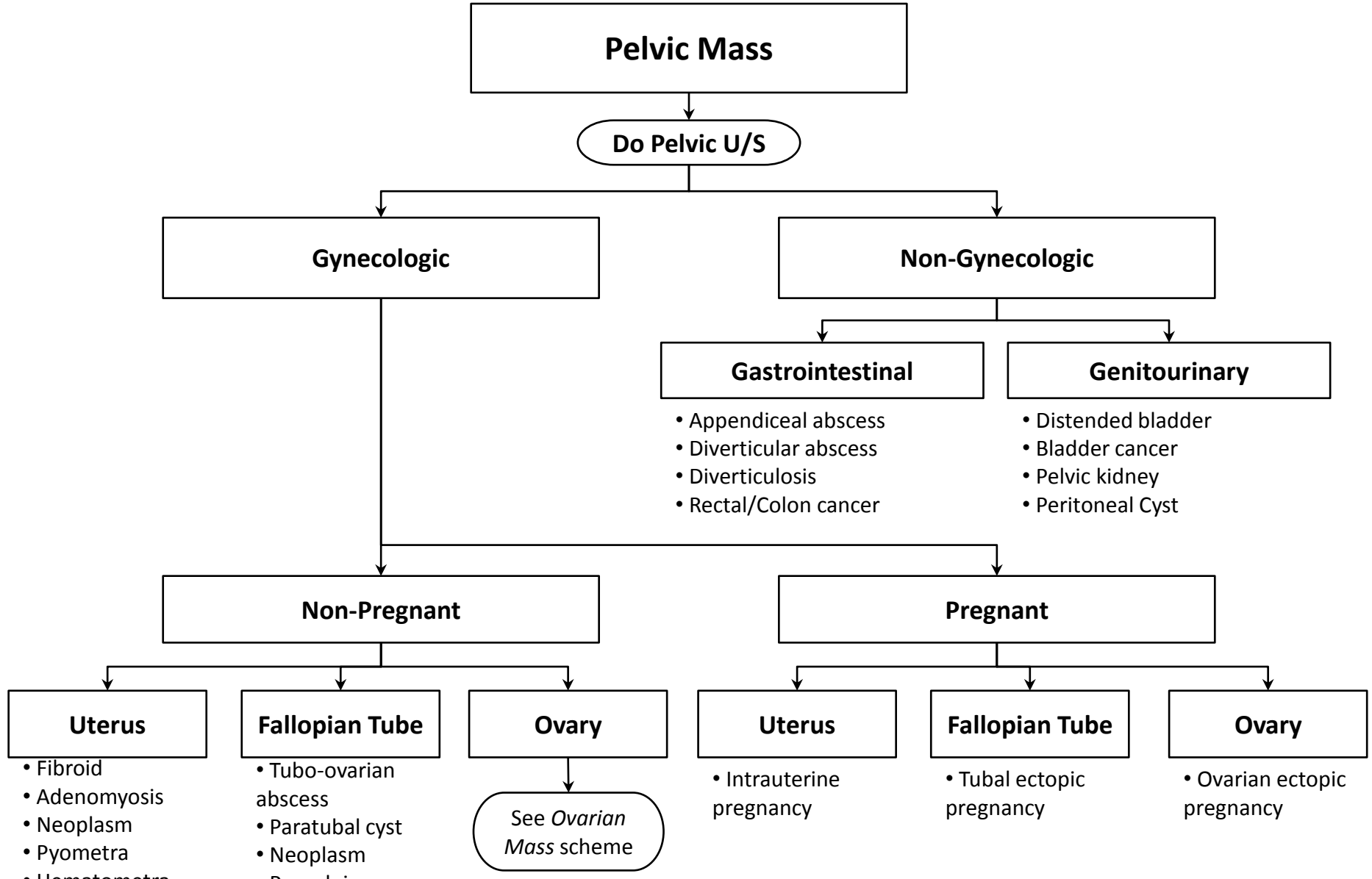
INFERTILITY: Male



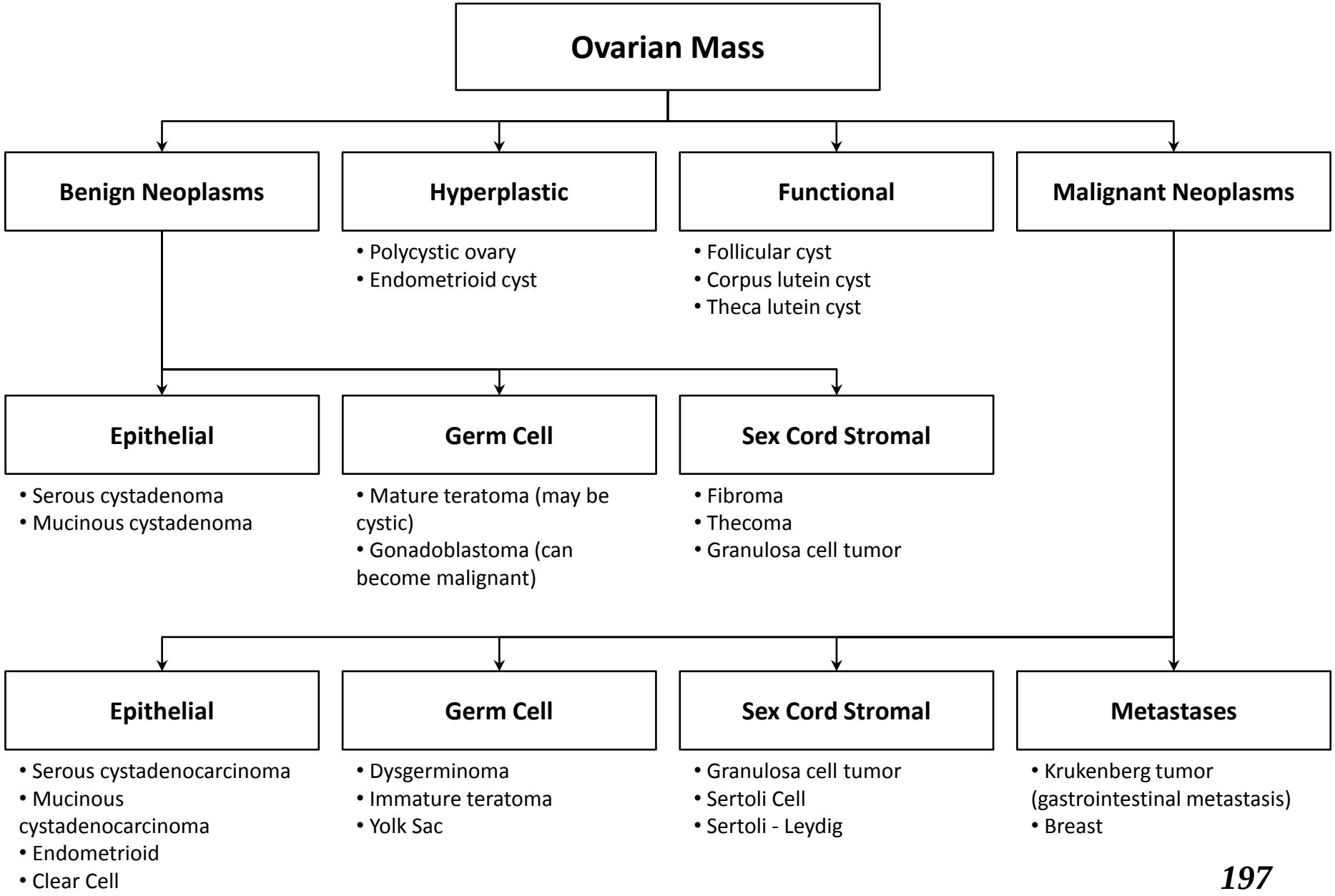
INTRAPARTUM Factors that may affect fetal oxygenation



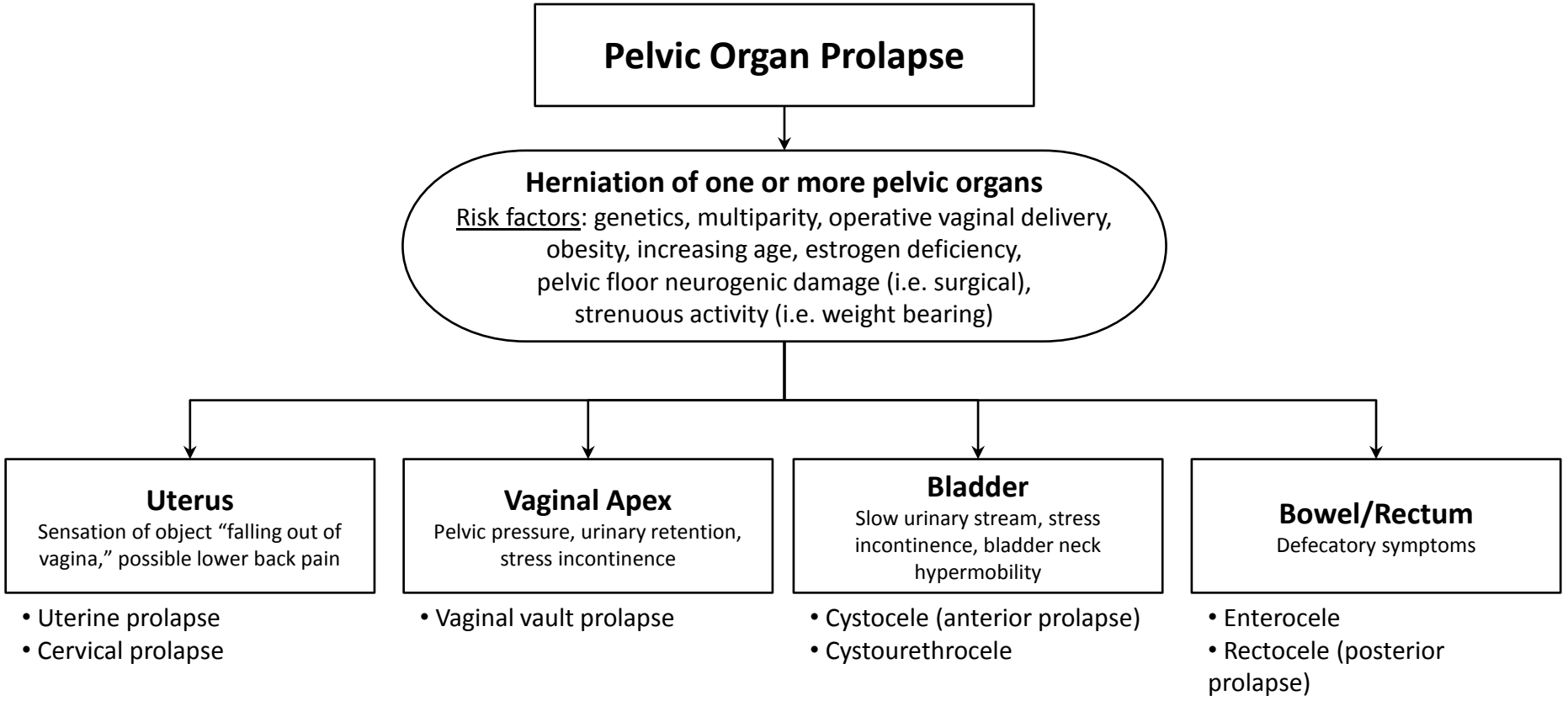
PELVIC MASS


Pelvic Mass
Do Pelvic U/S
Gynecologic
Non-Gynecologic
Gastrointestinal
Genitourinary
• Appendiceal abscess
• Diverticular abscess
• Diverticulosis
• Rectal/Colon cancer
• Distended bladder
• Bladder cancer
• Pelvic kidney
• Peritoneal Cyst
Non-Pregnant
Pregnant
Uterus
Fallopian Tube
Ovary
Uterus
Fallopian Tube
Ovary
• Fibroid
• Adenomyosis
• Neoplasm
• Pyometra
• Hematometra
• Tubo-ovarian abscess
• Paratubal cyst
• Neoplasm
• Pyosalpinx
• Hydrosalpinx
See *Ovarian Mass* scheme
• Intrauterine pregnancy
• Tubal ectopic pregnancy
• Ovarian ectopic pregnancy

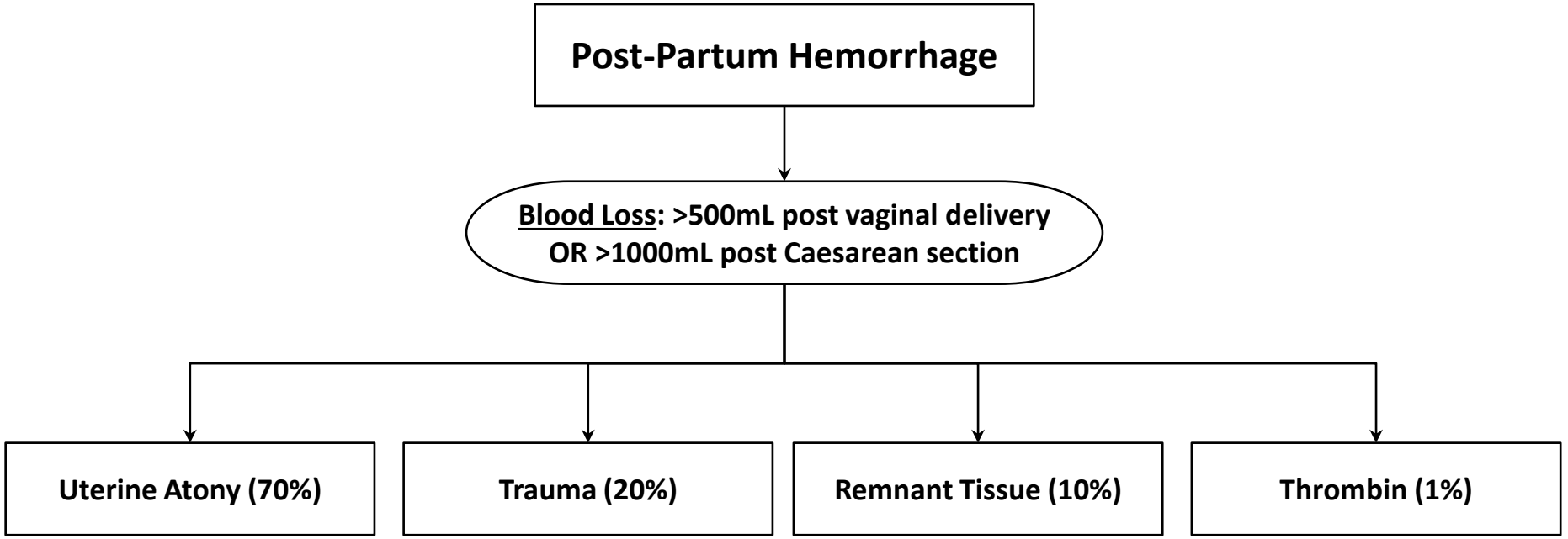
OVARIAN MASS



PELVIC ORGAN PROLAPSE



POST-PARTUM HEMORRHAGE



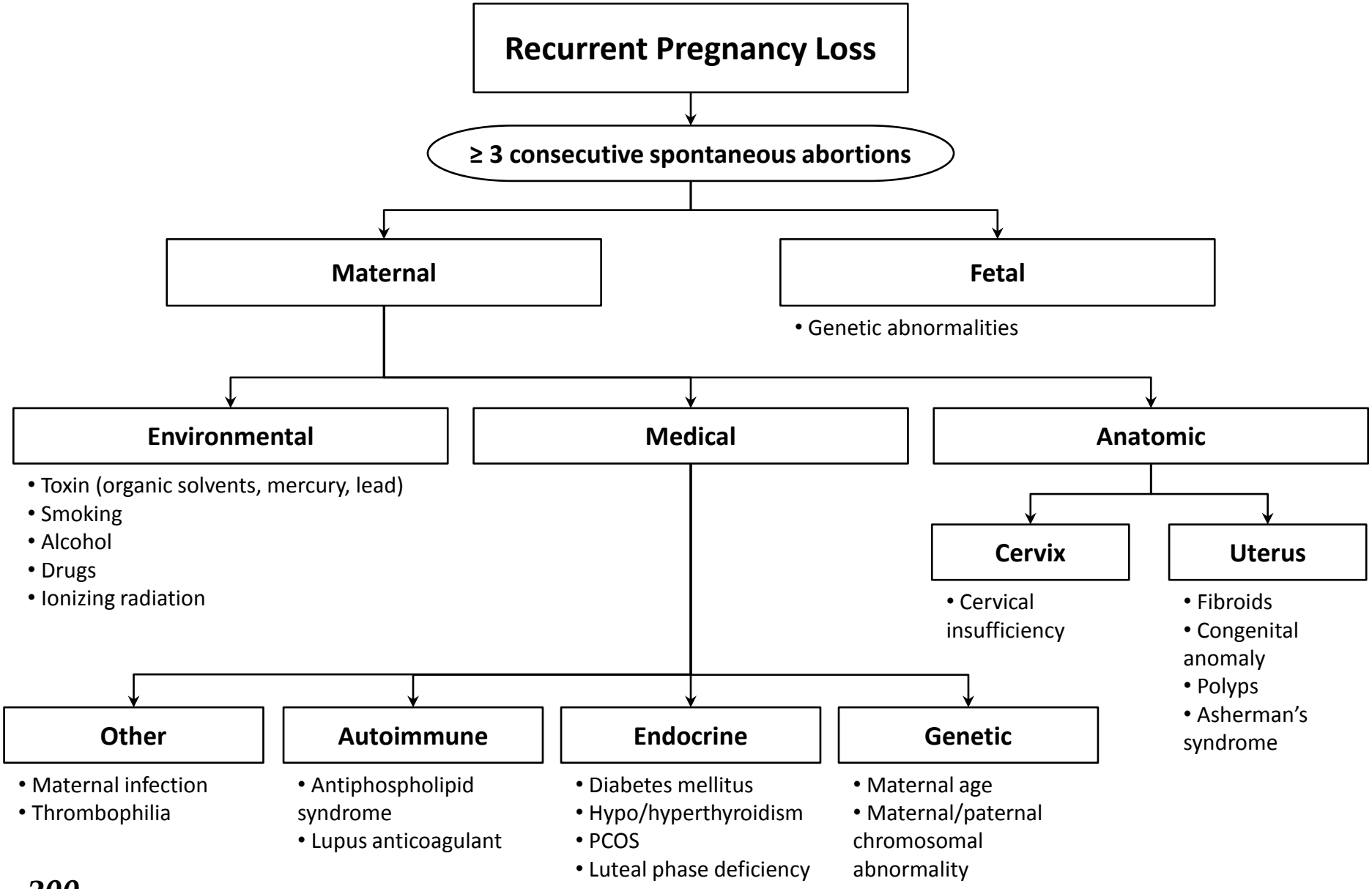
- Uterine fatigue (e.g. prolonged/induced labor, rapid labor, grand multiparity)
- Overdistension of uterus (e.g. multiple gestation, polyhydramnios, fetal macrosomia)
- Bladder distension
- Uterine infection (e.g. chorioamnionitis)
- Functional/anatomic distortion of uterus
- Drugs – Uterine relaxants (e.g. nifedipine, magnesium sulfate, NSAIDs)

- Perineal laceration (e.g. episiotomy)
- Vaginal laceration/ hematoma
- Cervical laceration (e.g. forceps/vacuum delivery)
- Uterine rupture
- Uterine inversion

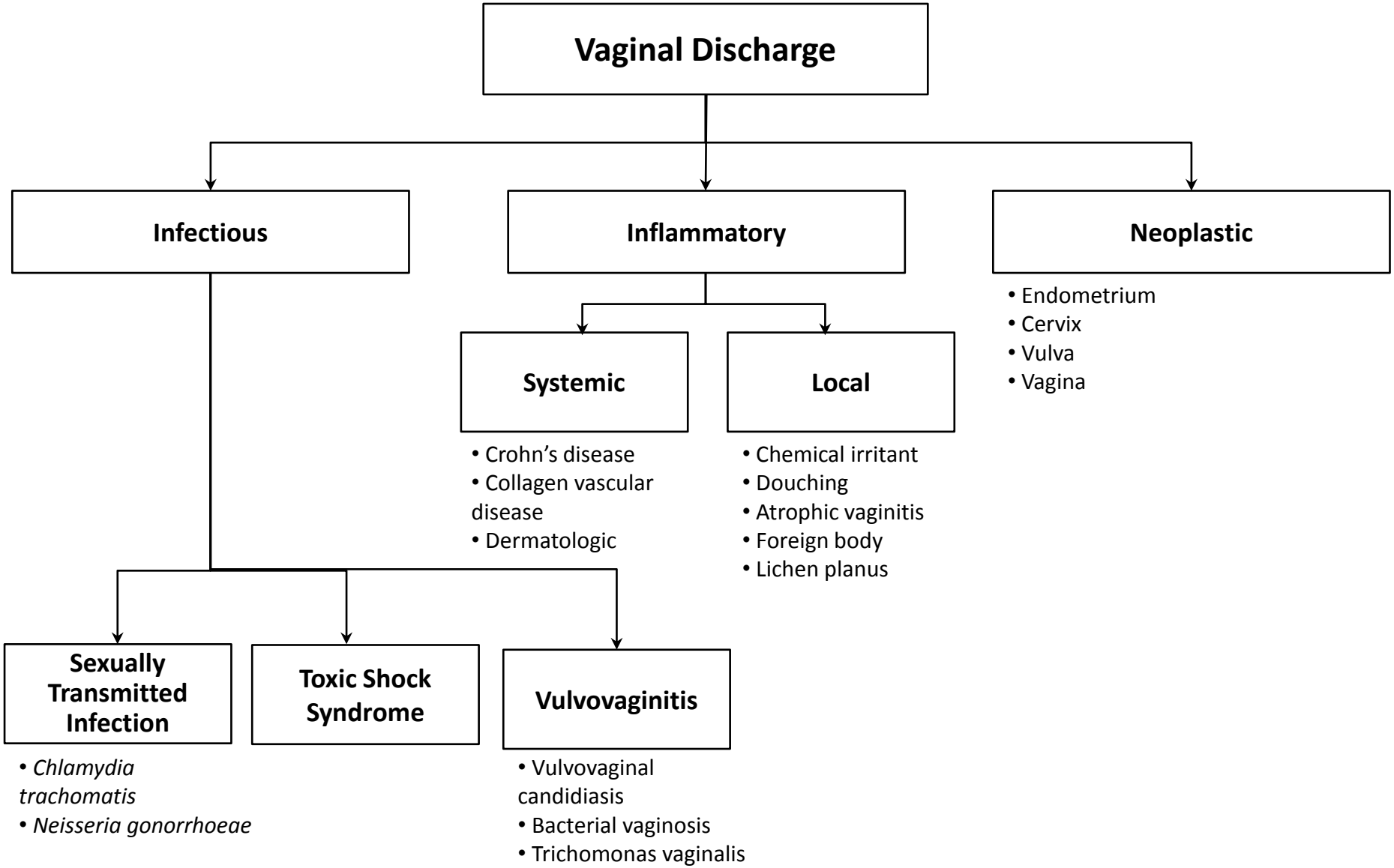
- Retained blood clots
- Retained cotyledon or succenturiate lobe
- Abnormal placentation (placenta accreta, increta, or percreta)

- Thrombocytopenia
- Idiopathic thrombocytopenic purpura (ITP)
- Thrombotic thrombocytopenic purpura (TTP)
- HELLP syndrome
- Disseminated intravascular coagulation (DIC)
- Anti-coagulation agents (e.g. heparin)
- Pre-existing coagulopathy (e.g. von Willebrand's disease, Hemophilia A)

RECURRENT PREGNANCY LOSS



VAGINAL DISCHARGE



Dermatologic Presentations

Dermatologic Presentations

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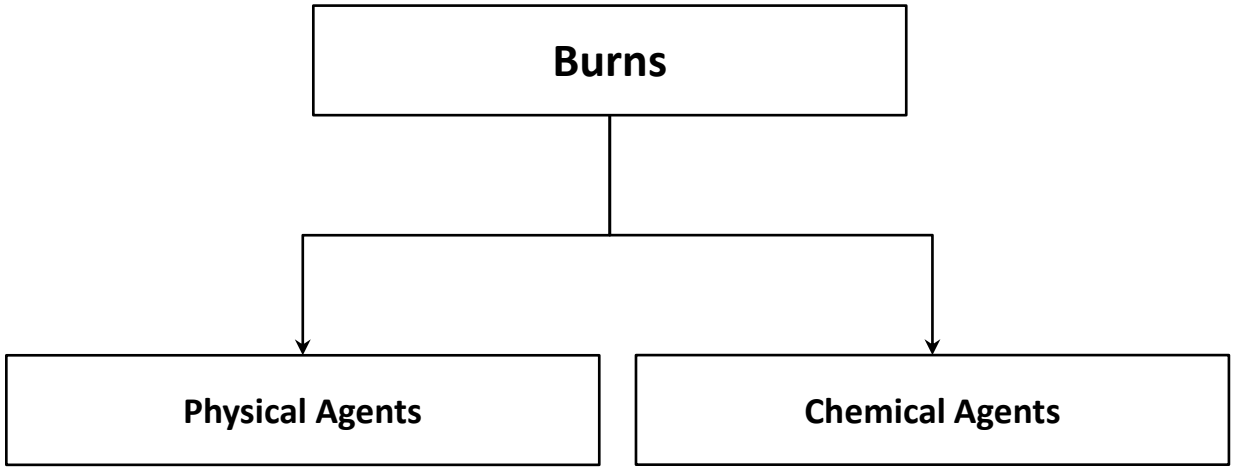
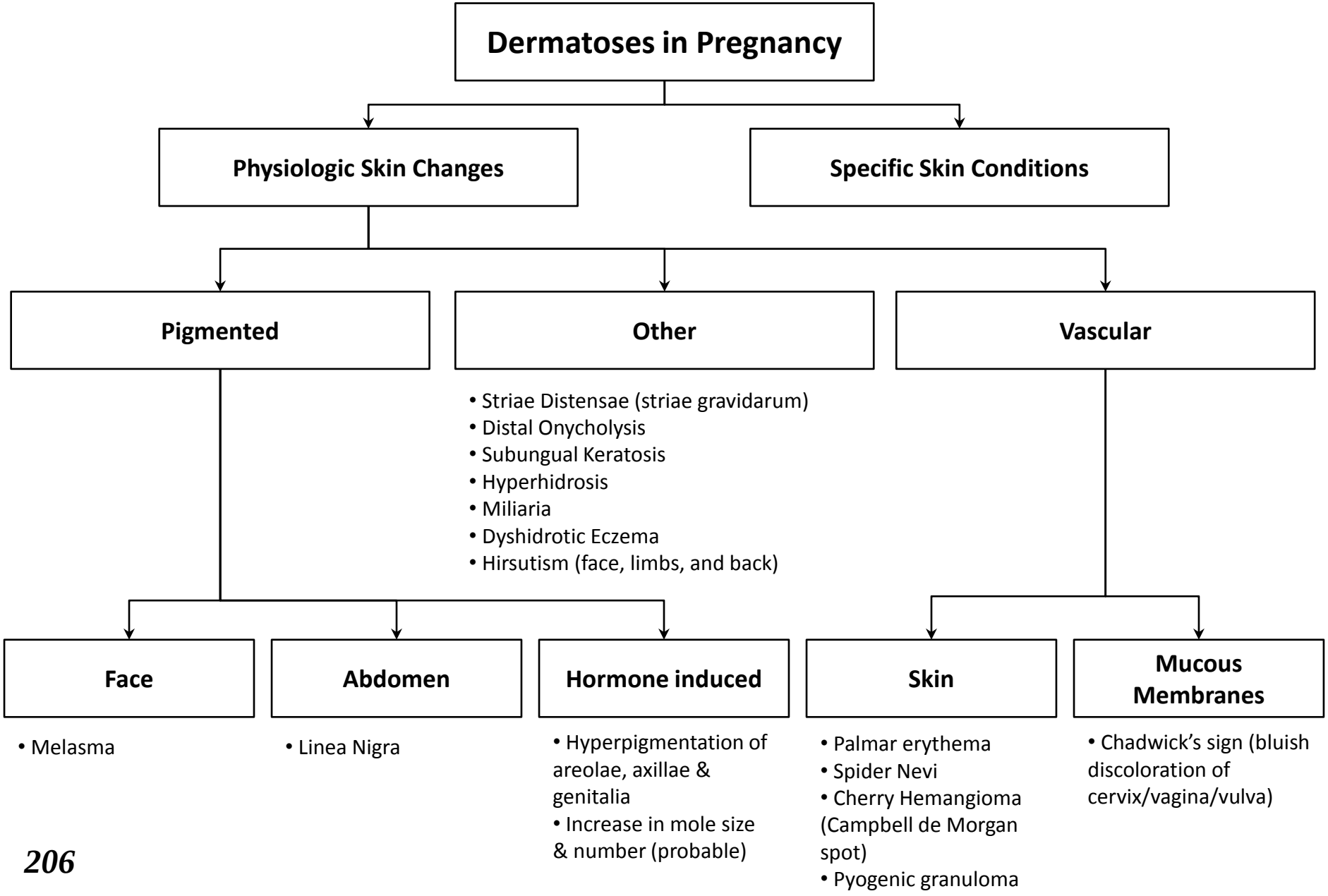
BURNS



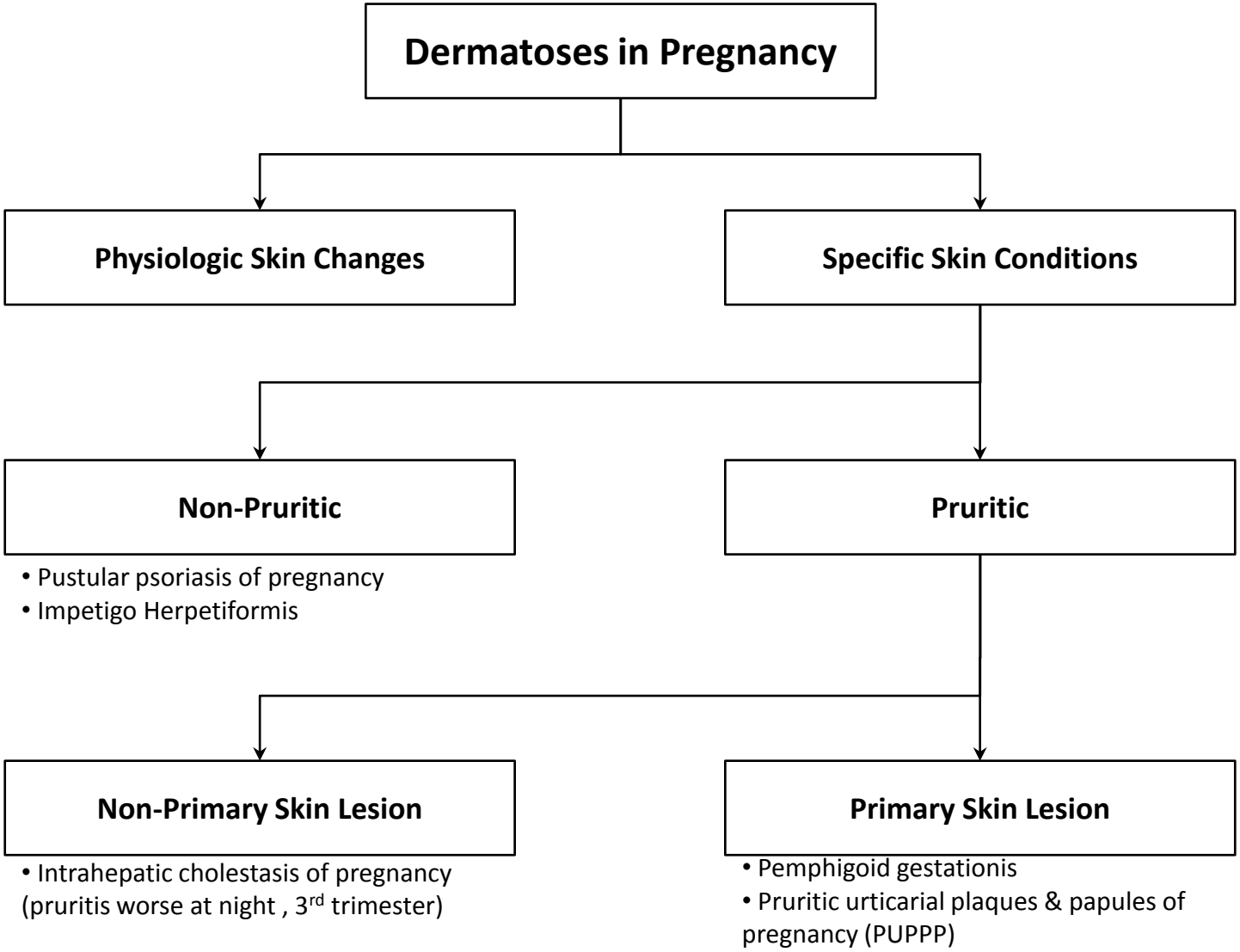
- Thermal Burn
- Cold Burn
- Electrical Burn
- Sun Burn

- Acid
- Alkali
- Oxidants (Bleaches, peroxides, chromates, manganates)
- Vesicants (sulfur and nitrogen, mustards, arsenicals, phosgene oxime)
- Others (white phosphorus, metals, persulfates, sodium azide)

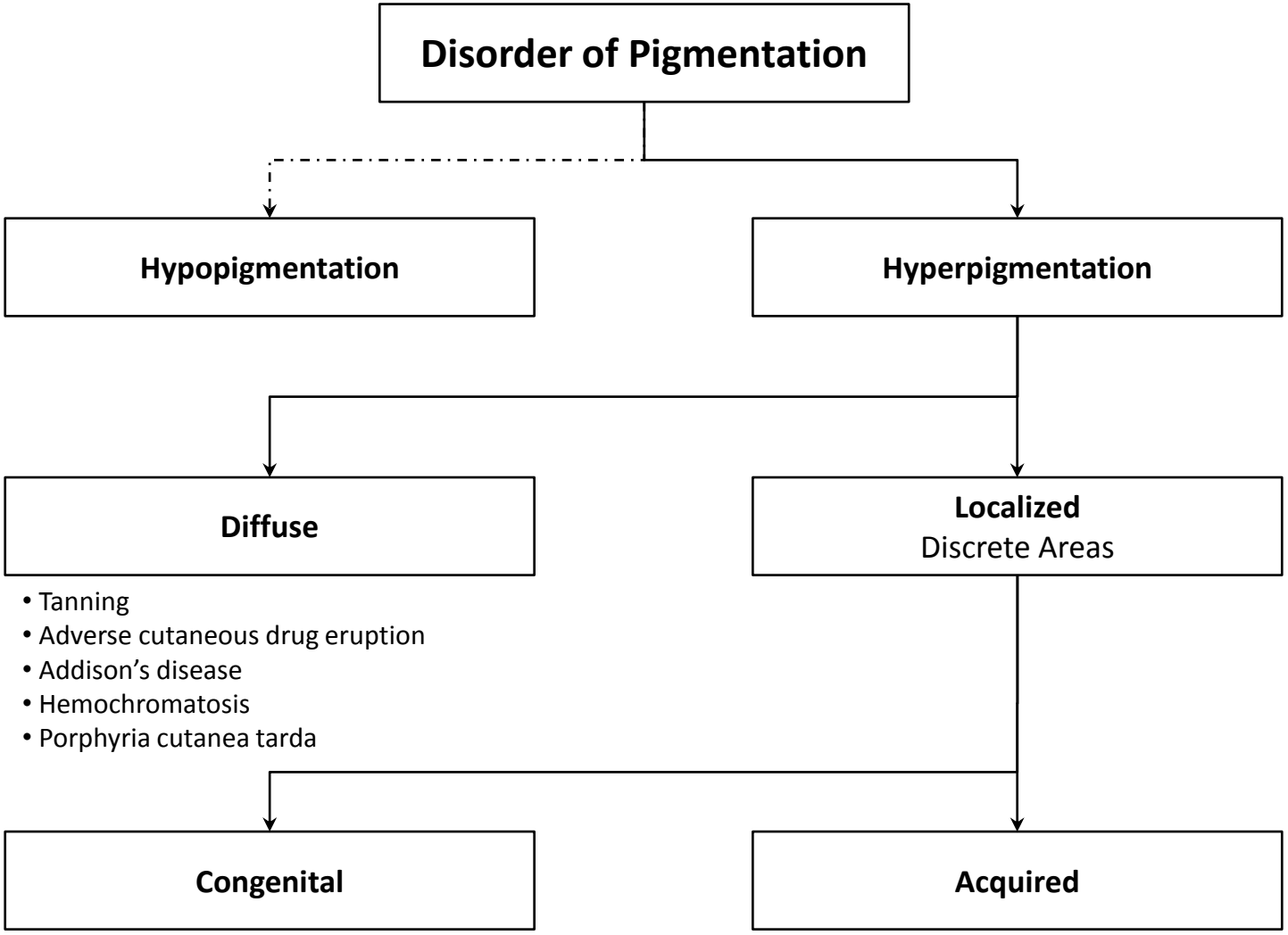
DERMATOSES IN PREGNANCY: Physiologic Changes



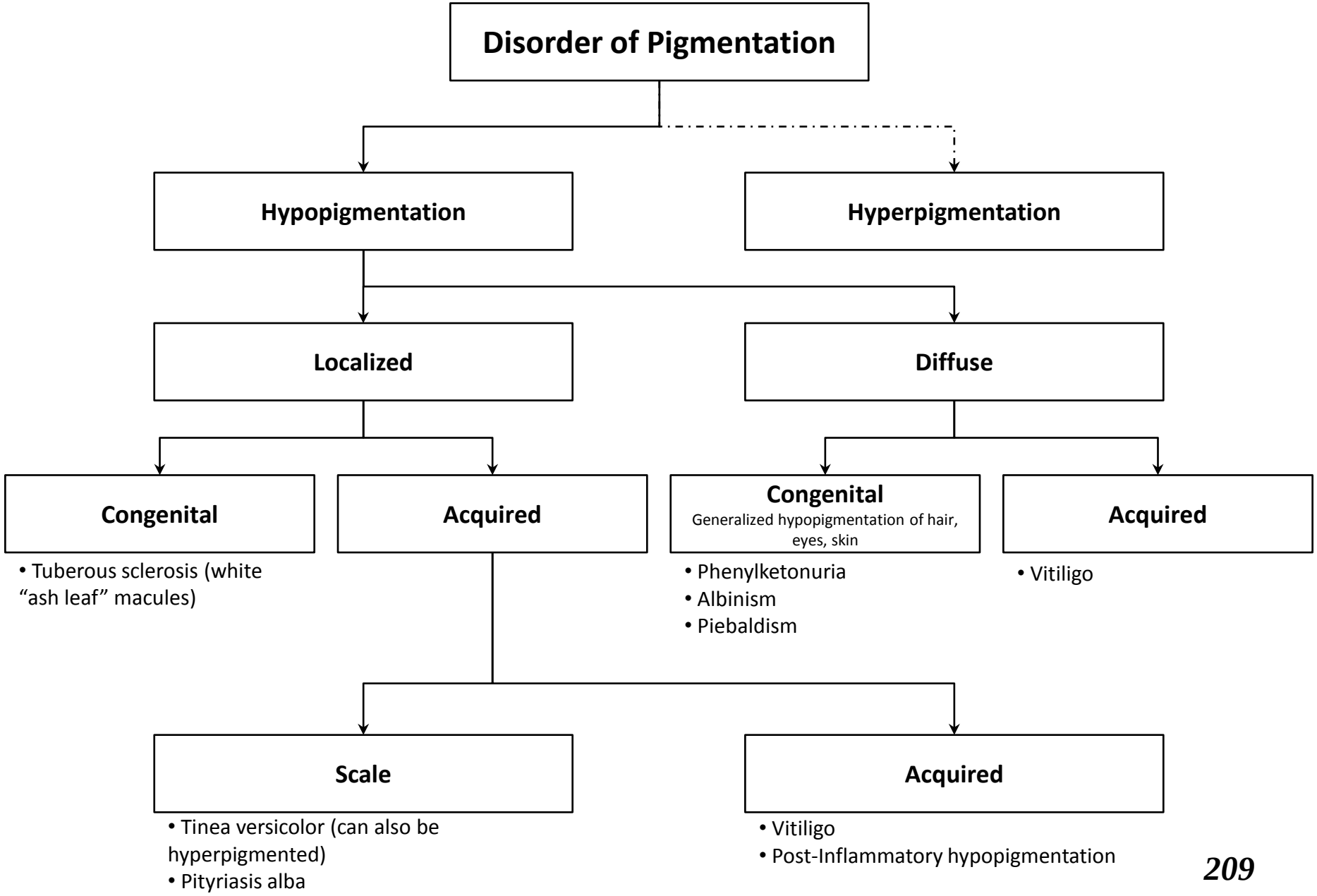
DERMATOSES IN PREGNANCY: Specific Skin Conditions



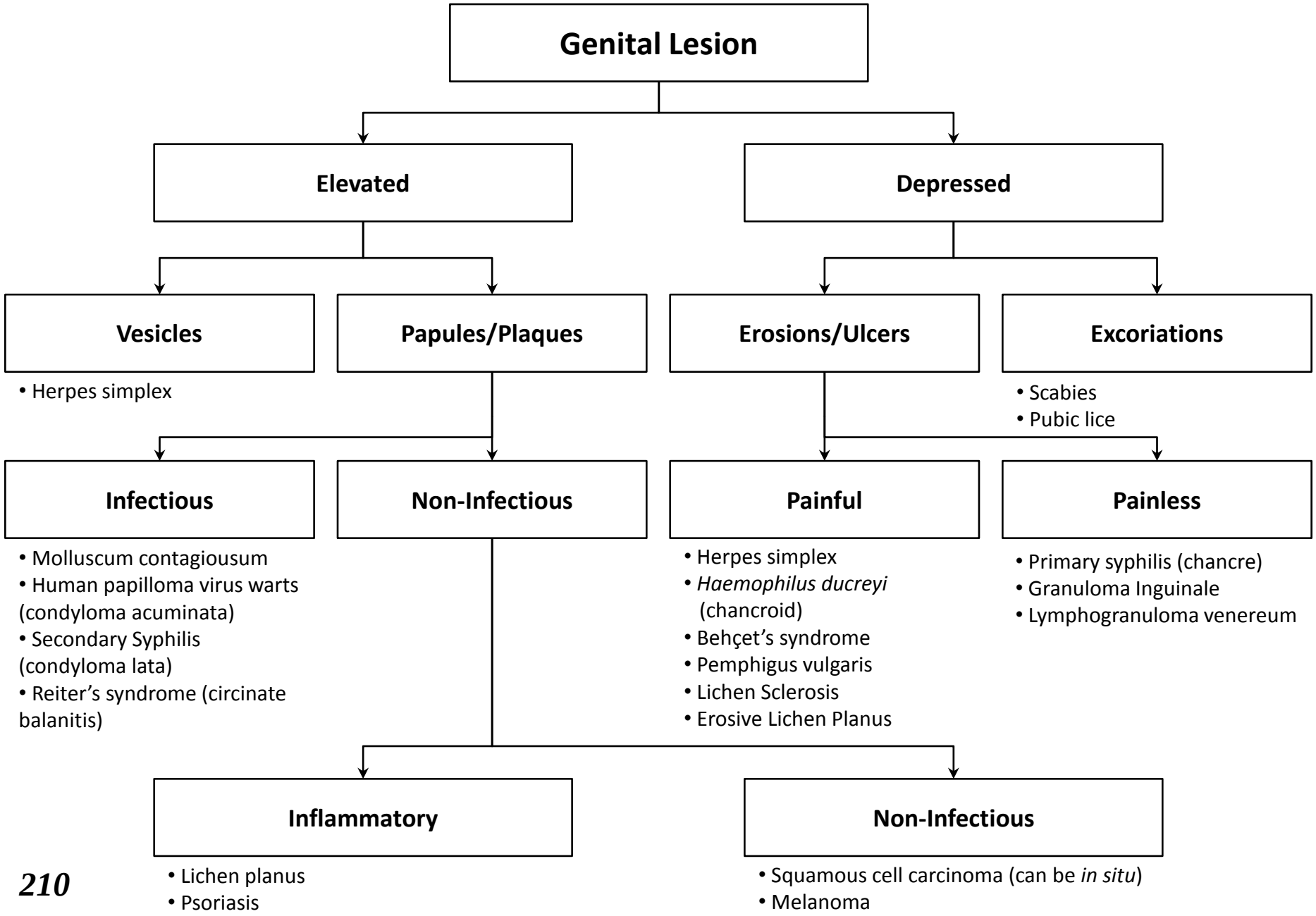
DISORDERS OF PIGMENTATION: Hyperpigmentation



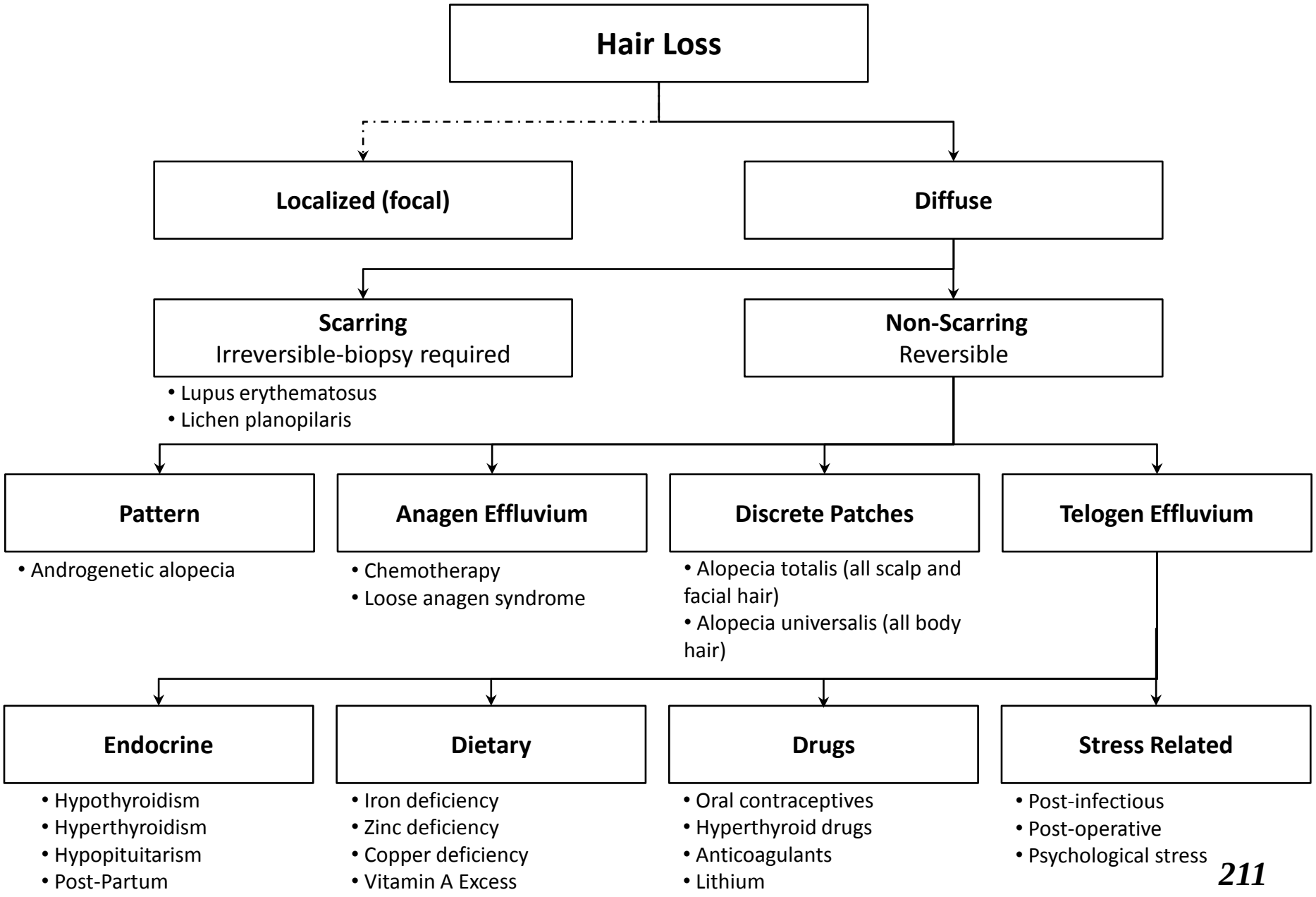
DISORDERS OF PIGMENTATION: Hypopigmentation



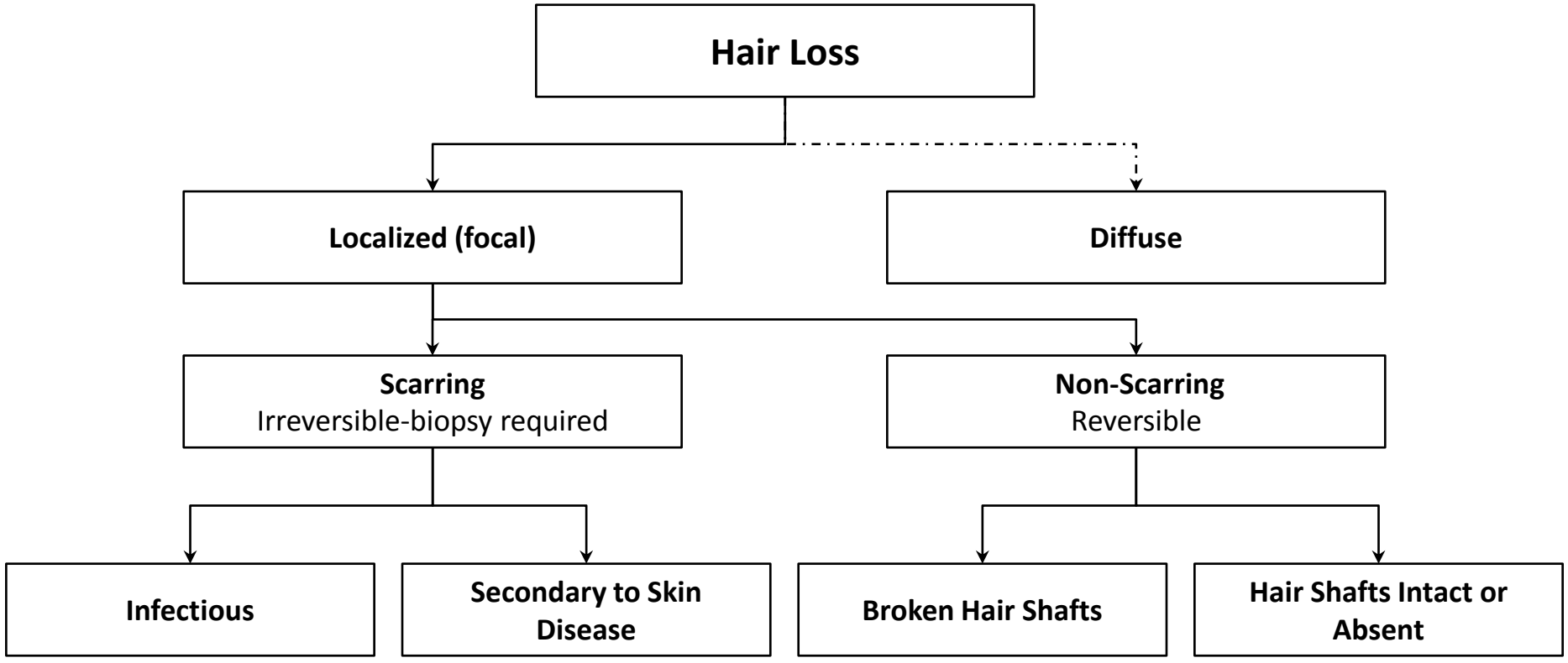
GENITAL LESION



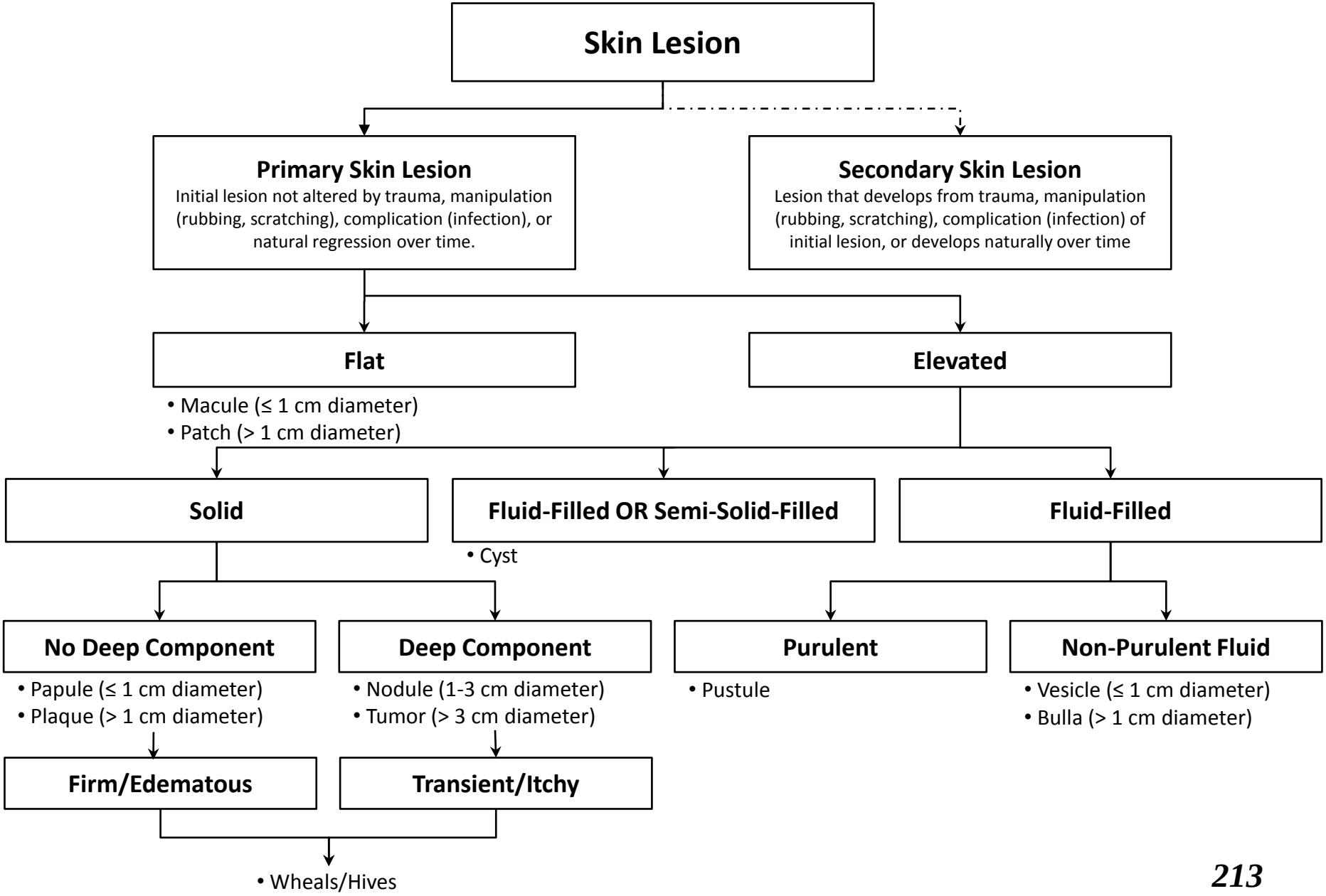
HAIR LOSS (ALOPECIA): Diffuse



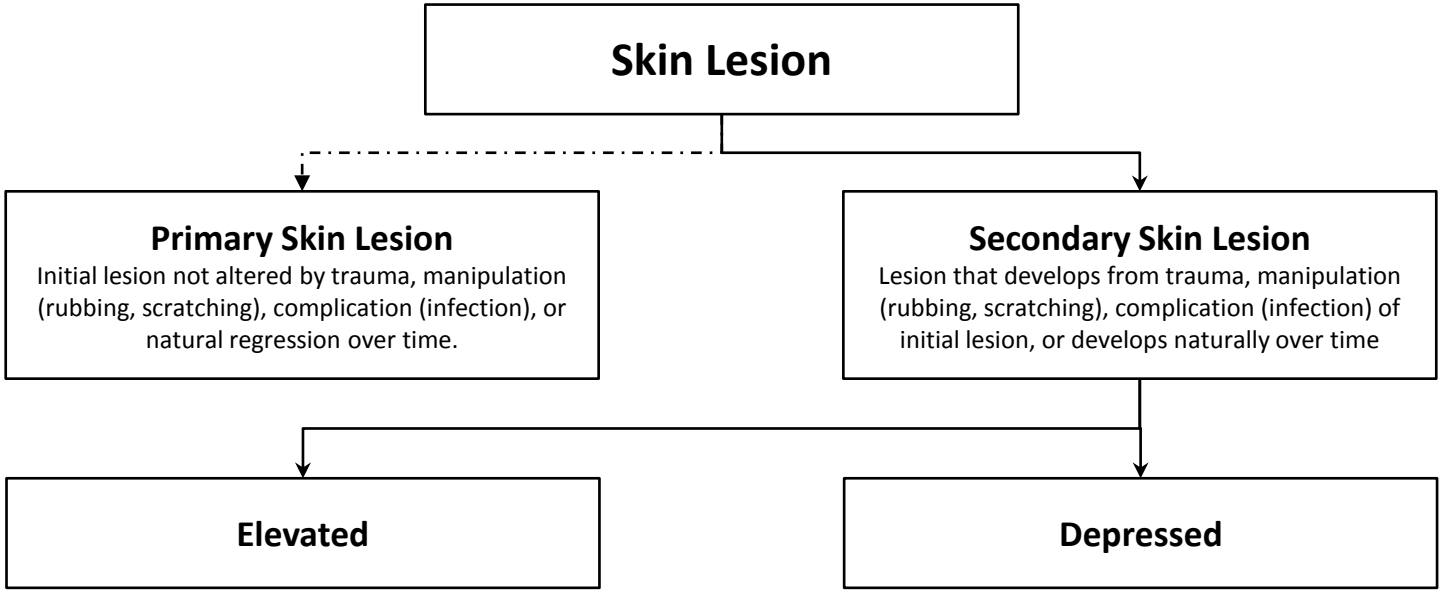
HAIR LOSS (ALOPECIA): Localized



MORPHOLOGY OF SKIN LESIONS: Primary Skin Lesions



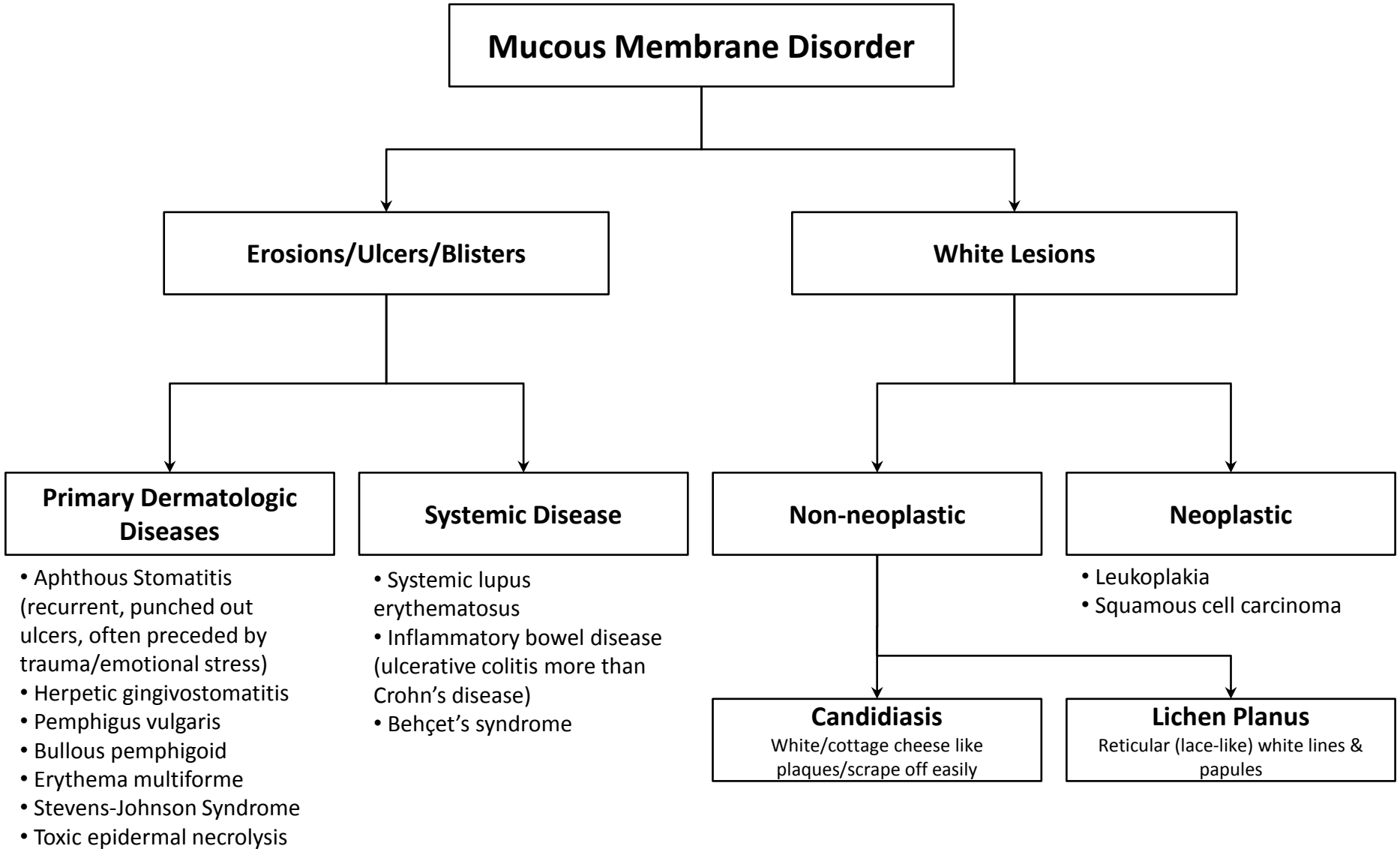
MORPHOLOGY OF SKIN LESIONS: Secondary Skin Lesions



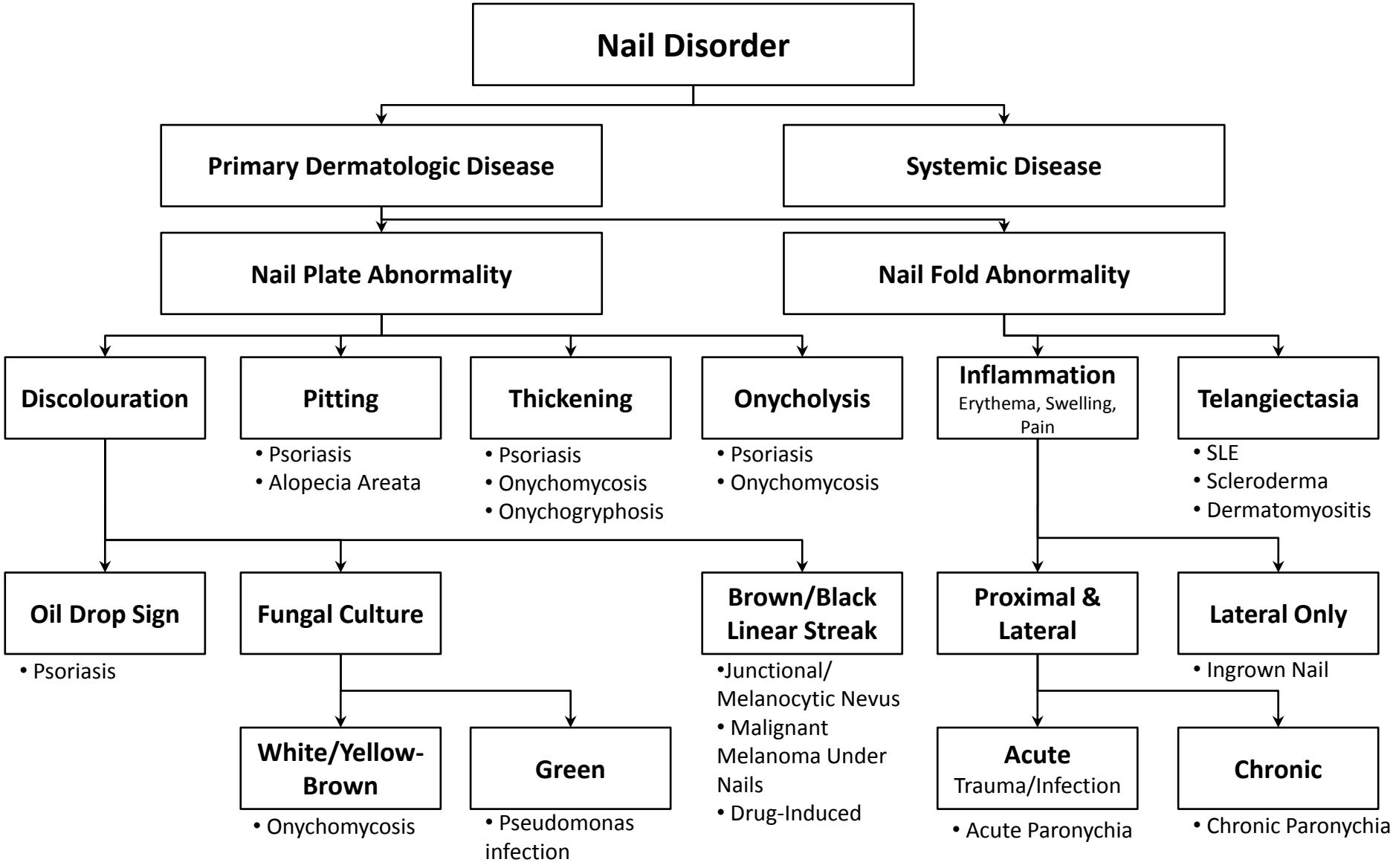
- Crust/Scab (dried serum, blood, or pus overlying the lesion)
- Scale (dry, thin or thick flakes of skin overlying the lesion)
- Lichenification (thickened skin with accentuation of normal skin lines)
- Hypertrophic Scar (within boundary of injury)
- Keloid Scar (extend beyond boundary of injury)

- Atrophic Scar (fibrotic replacement of tissue at site of injury)
- Ulcer (complete loss of epidermis extending into dermis or deeper; heals with scar)
- Erosion (partial loss of epidermis only; heals without scar)
- Fissure (linear slit-like cleavage of skin)
- Excoriation/Scratch (linear erosion induced by scratching)

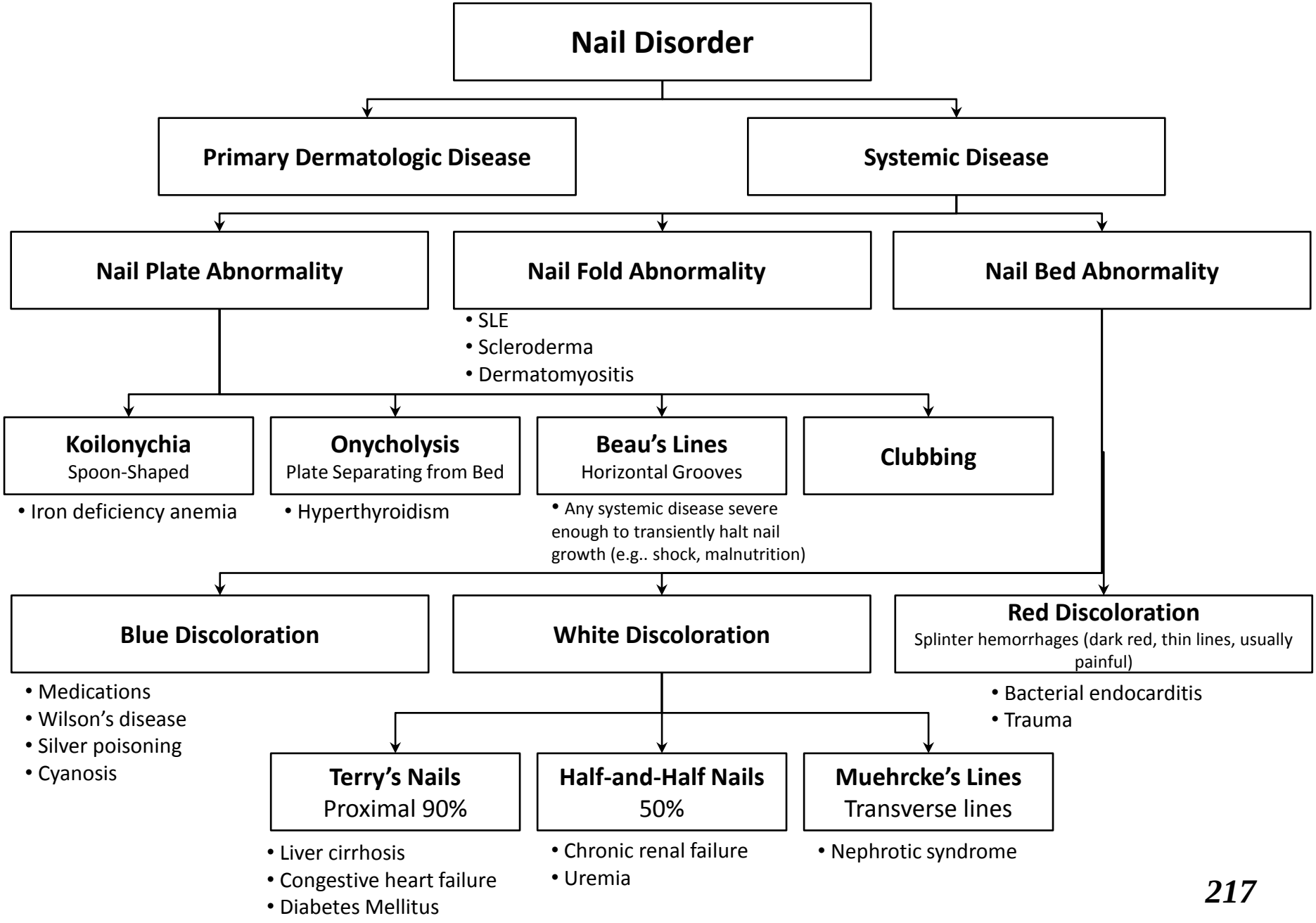
MUCOUS MEMBRANE DISORDER (Oral Cavity)



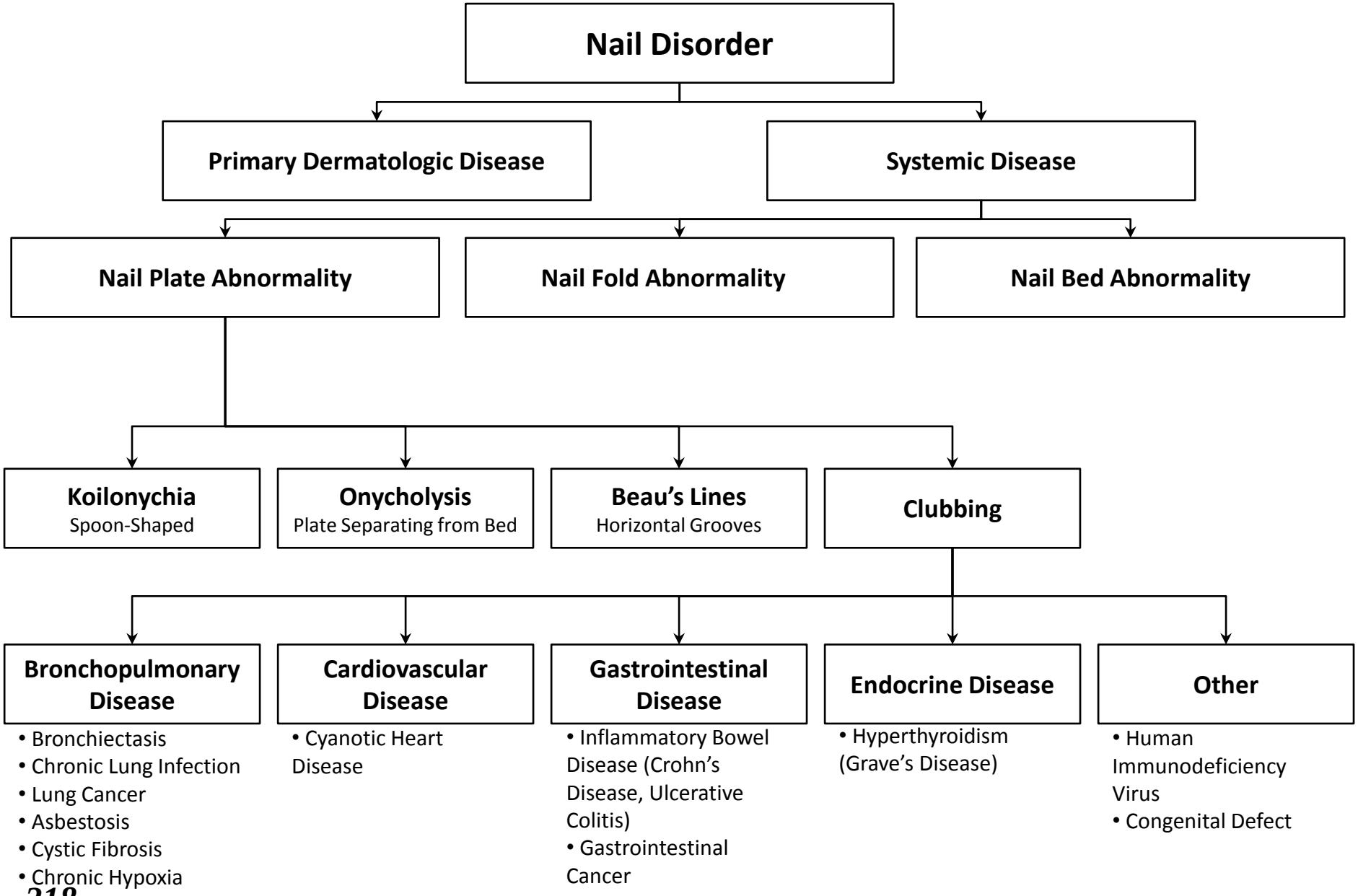
NAIL DISORDERS: Primary Dermatologic Disease



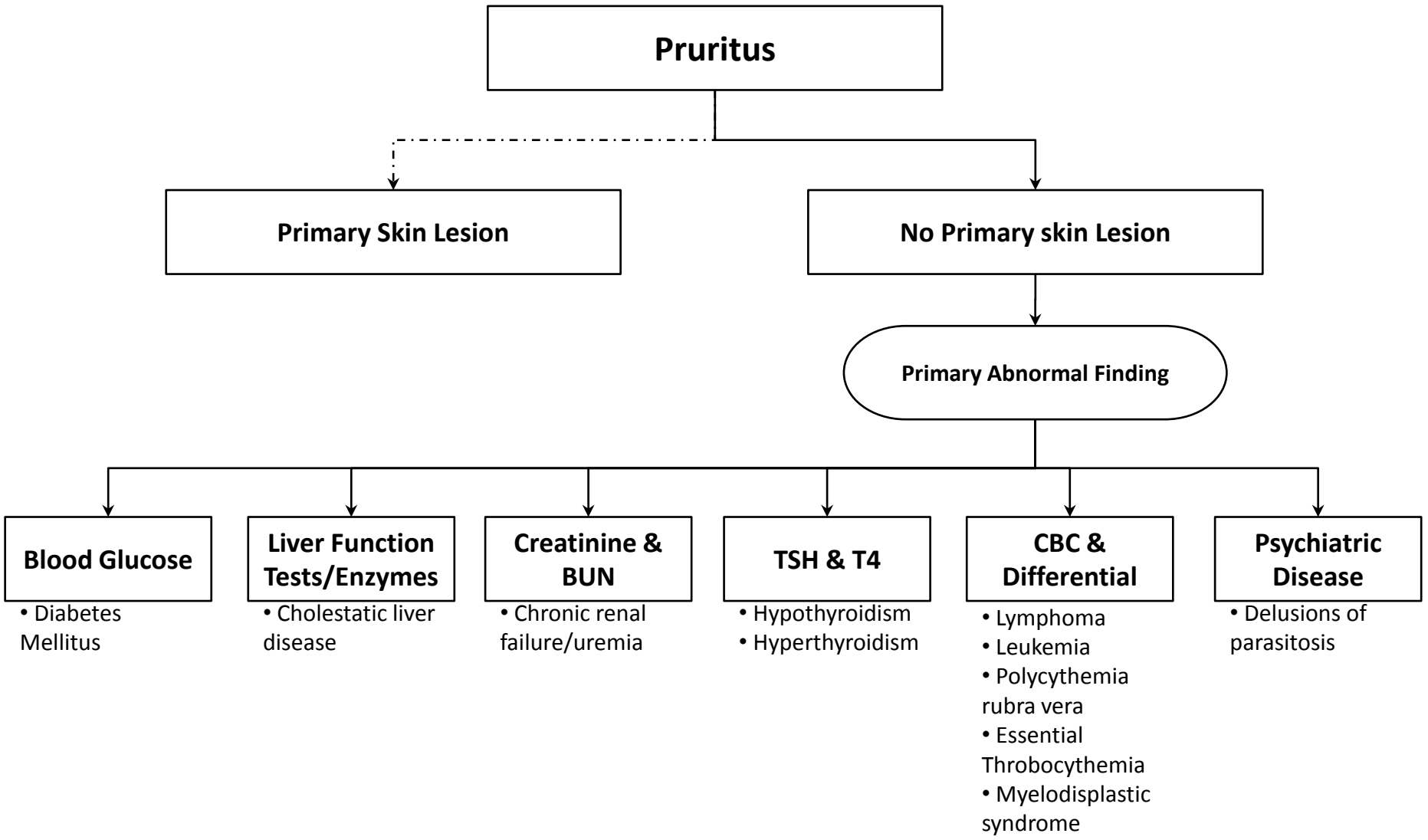
NAIL DISORDERS: Systemic Disease



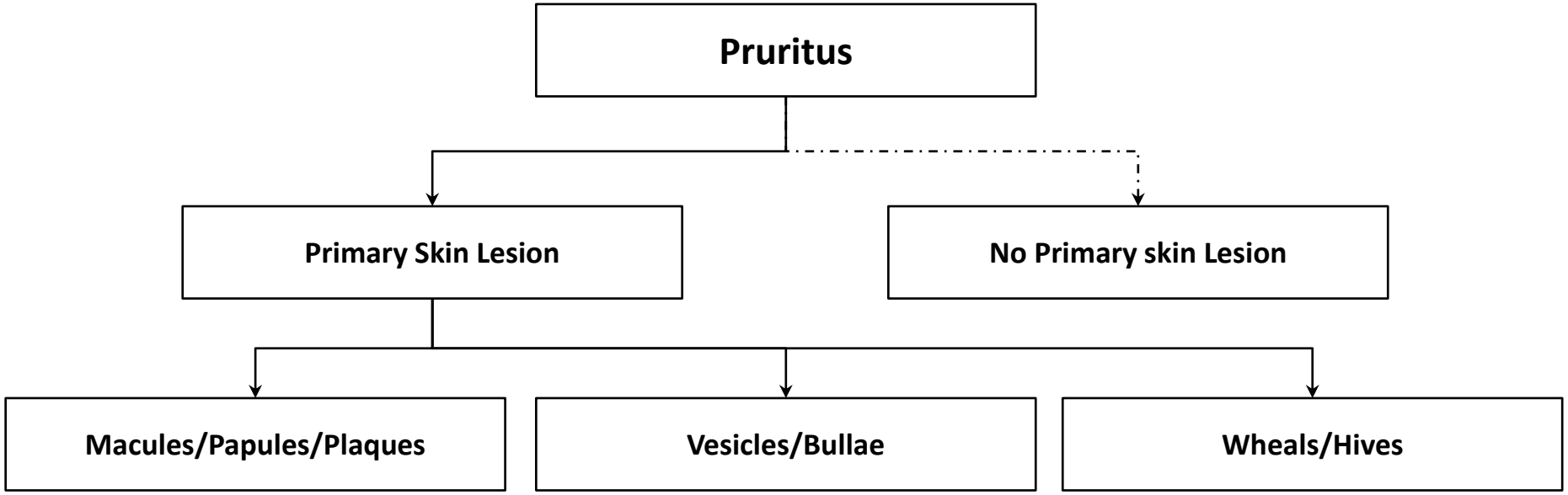
NAIL DISORDERS: Systemic Disease - Clubbing



PRURITUS: No Primary Skin Lesion



PRURITUS: Primary Skin Lesion

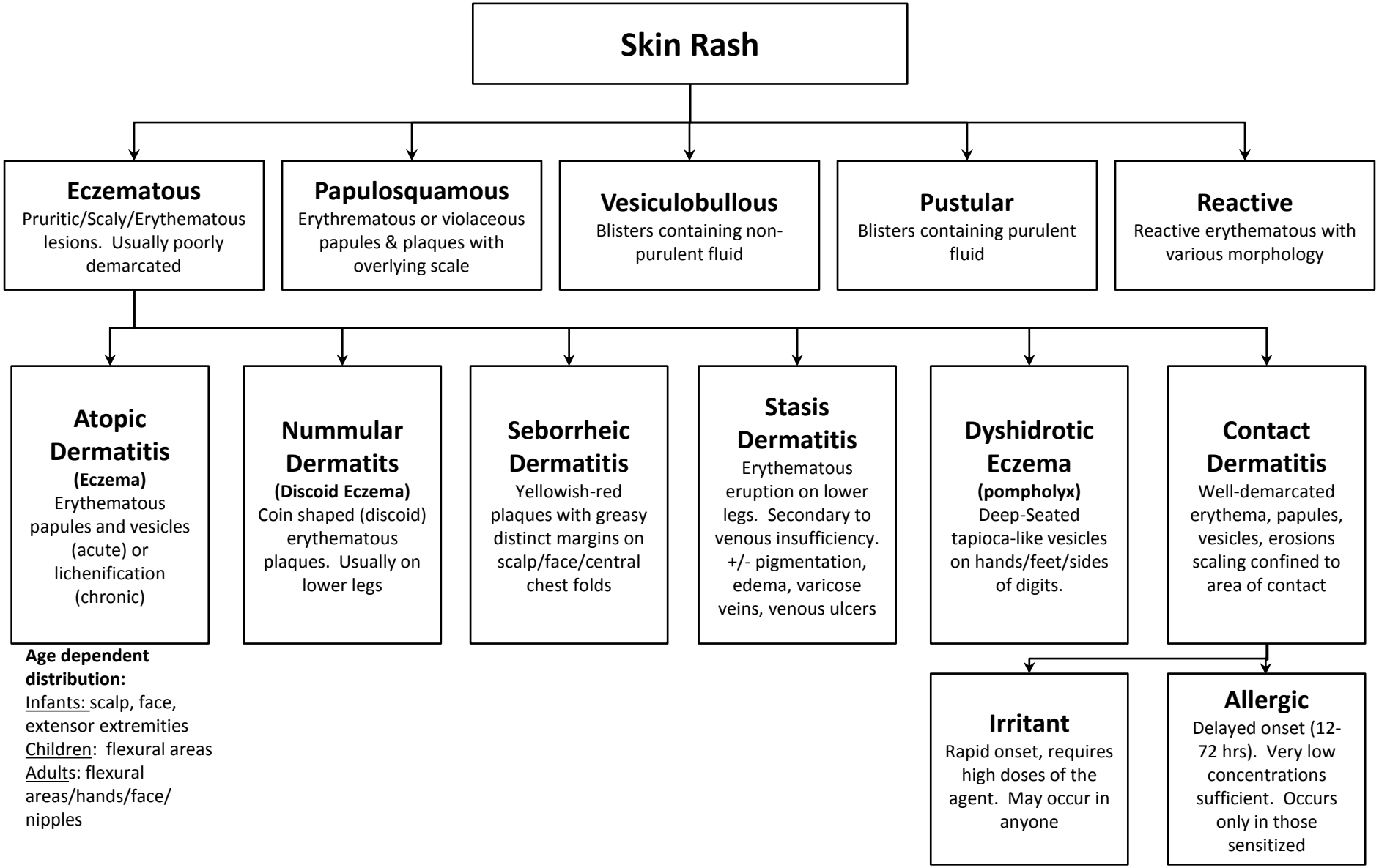


- Xerosis (dry skin)
- Atopic dermatitis
- Nummular dermatitis
- Seborrheic dermatitis
- Stasis dermatitis
- Psoriasis
- Lichen Planus
- Infestations (scabies, lice)
- Arthropod bites

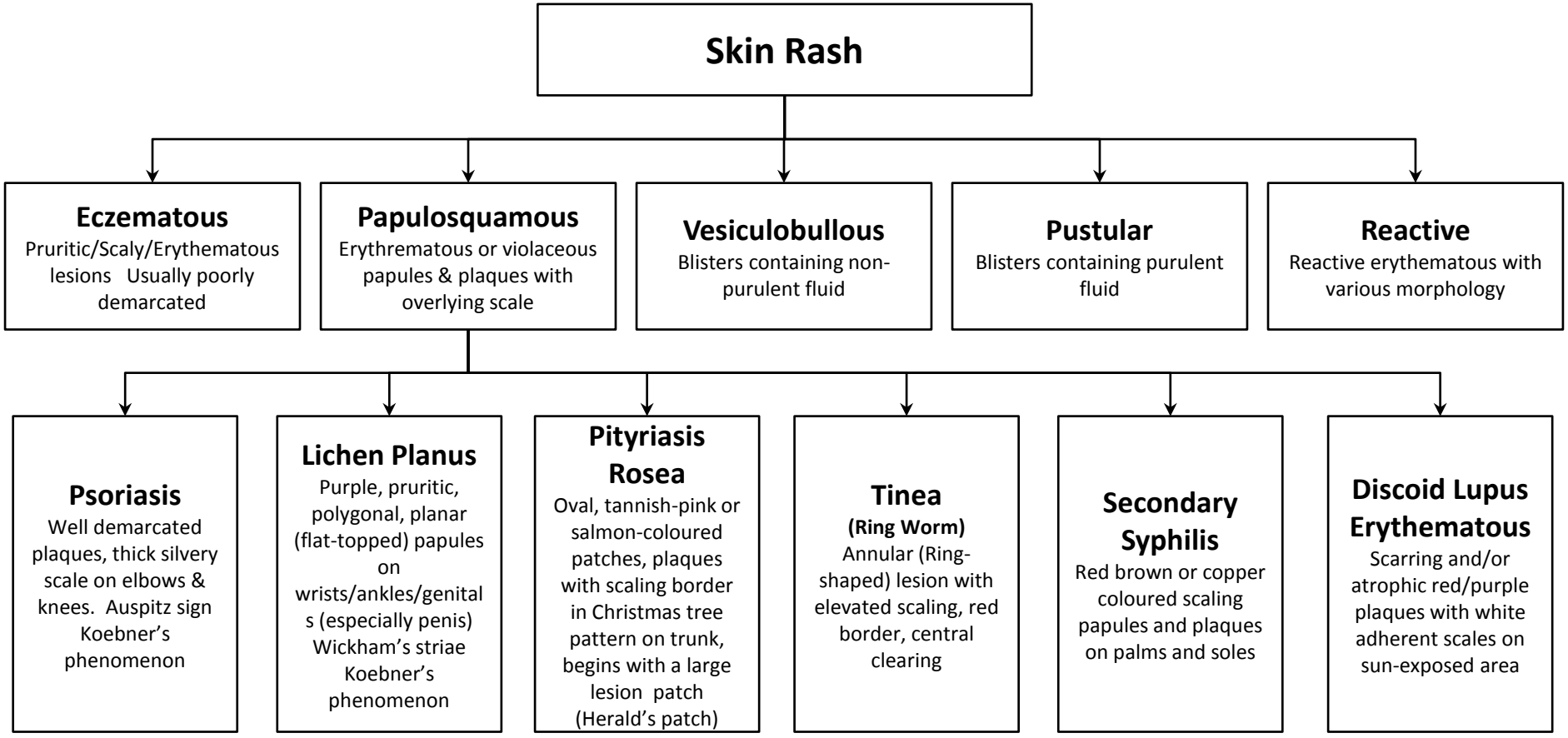
- Varicella zoster (chickenpox)
- Dermatitis herpetiformis
- Bullous pemphigoid

- Urticaria

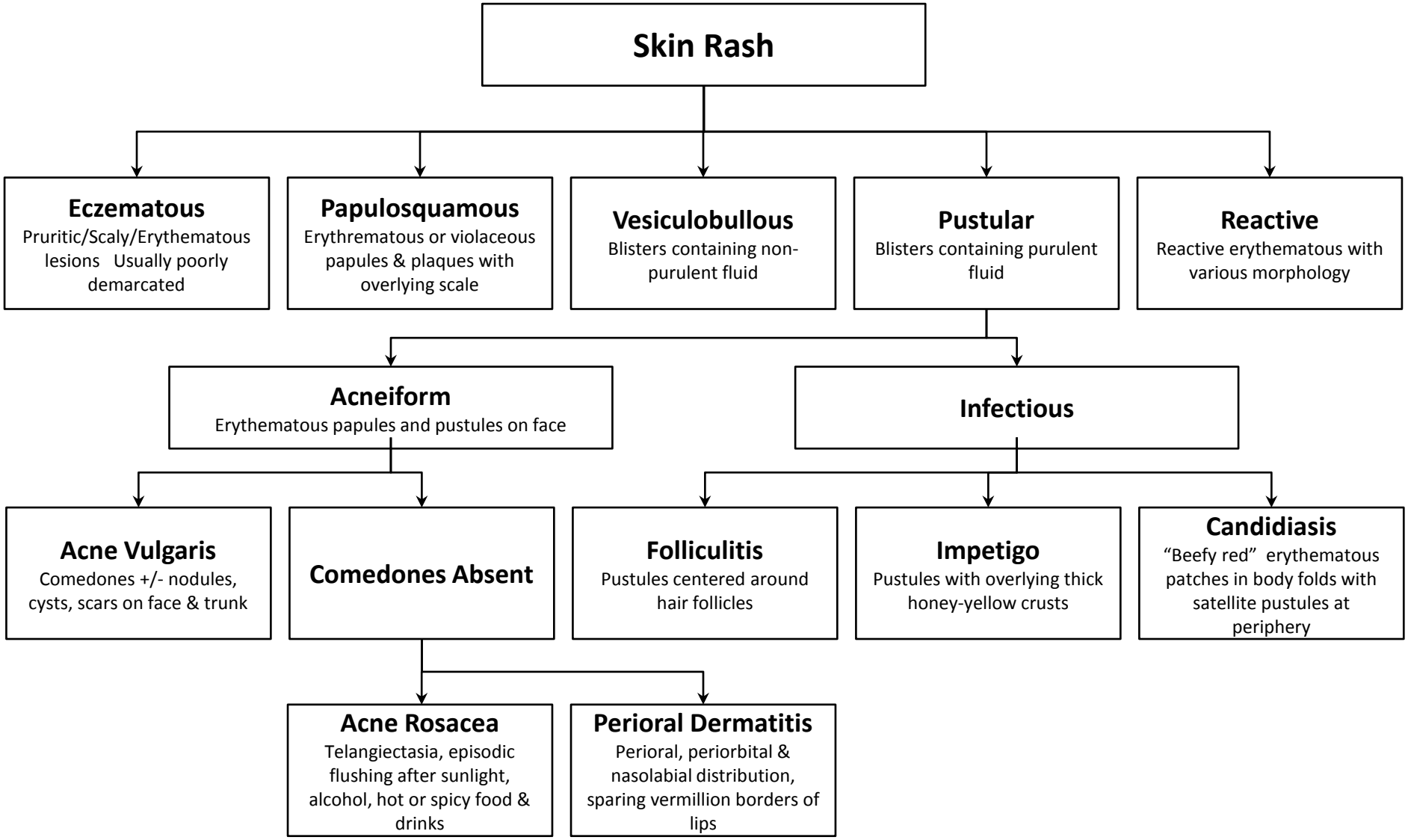
SKIN RASH: Eczematous



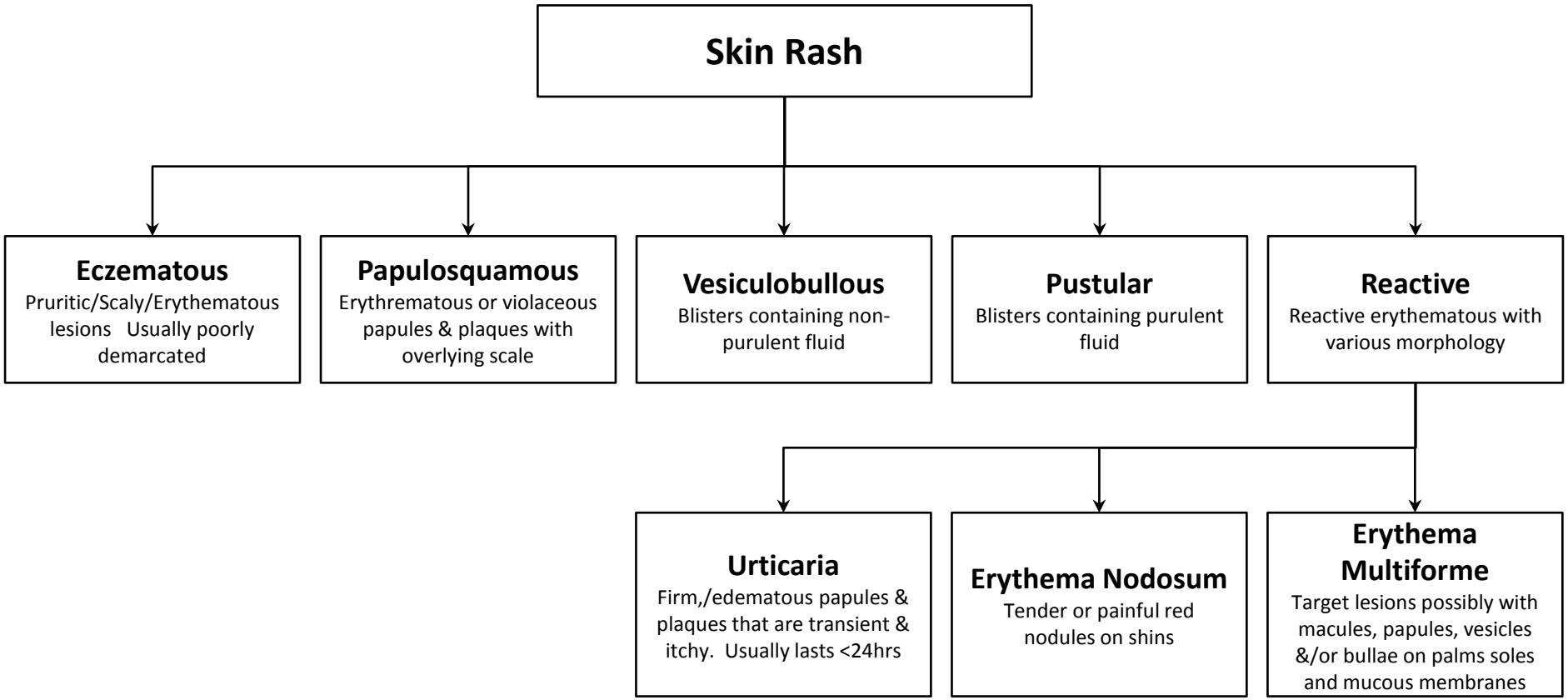
SKIN RASH: Papulosquamous



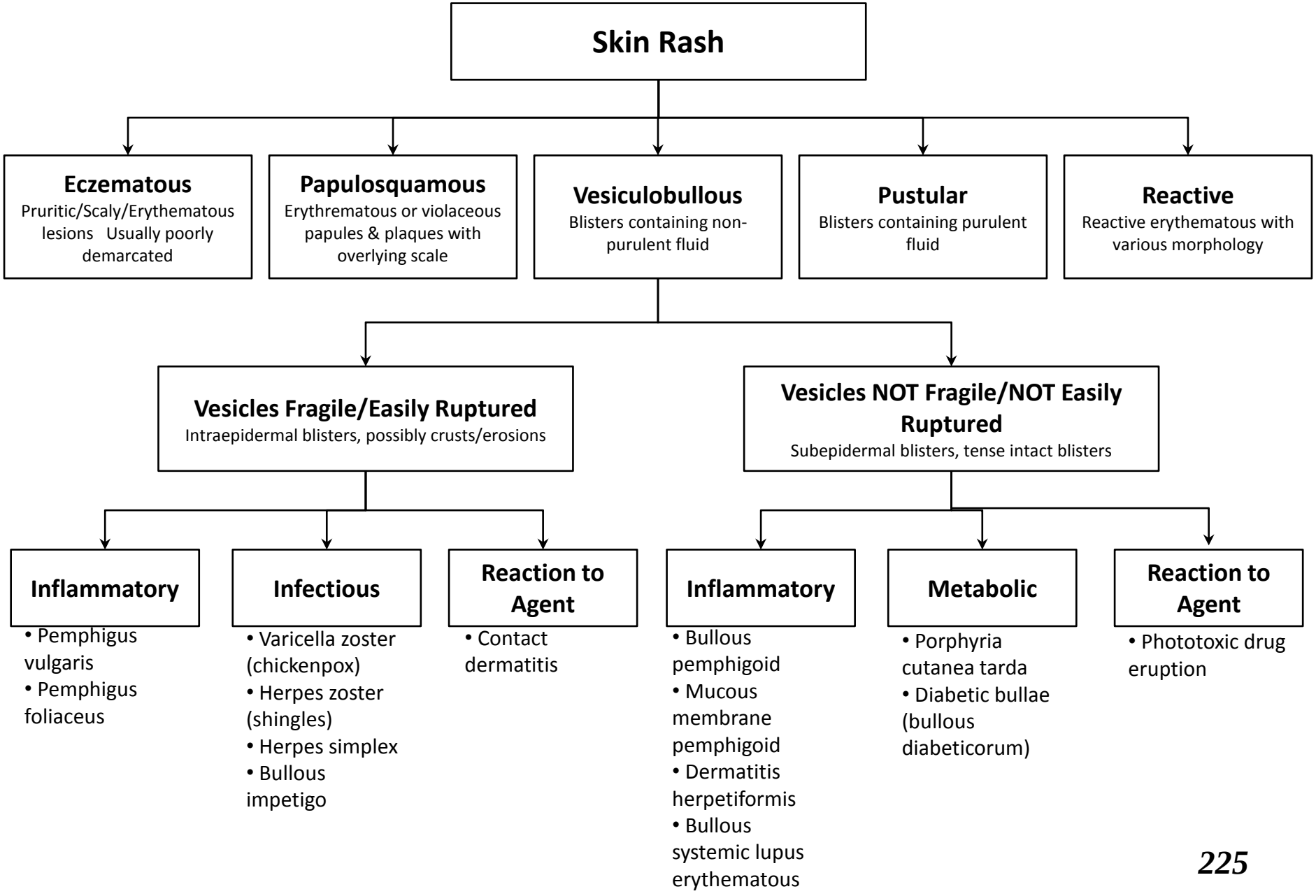
SKIN RASH: Pustular



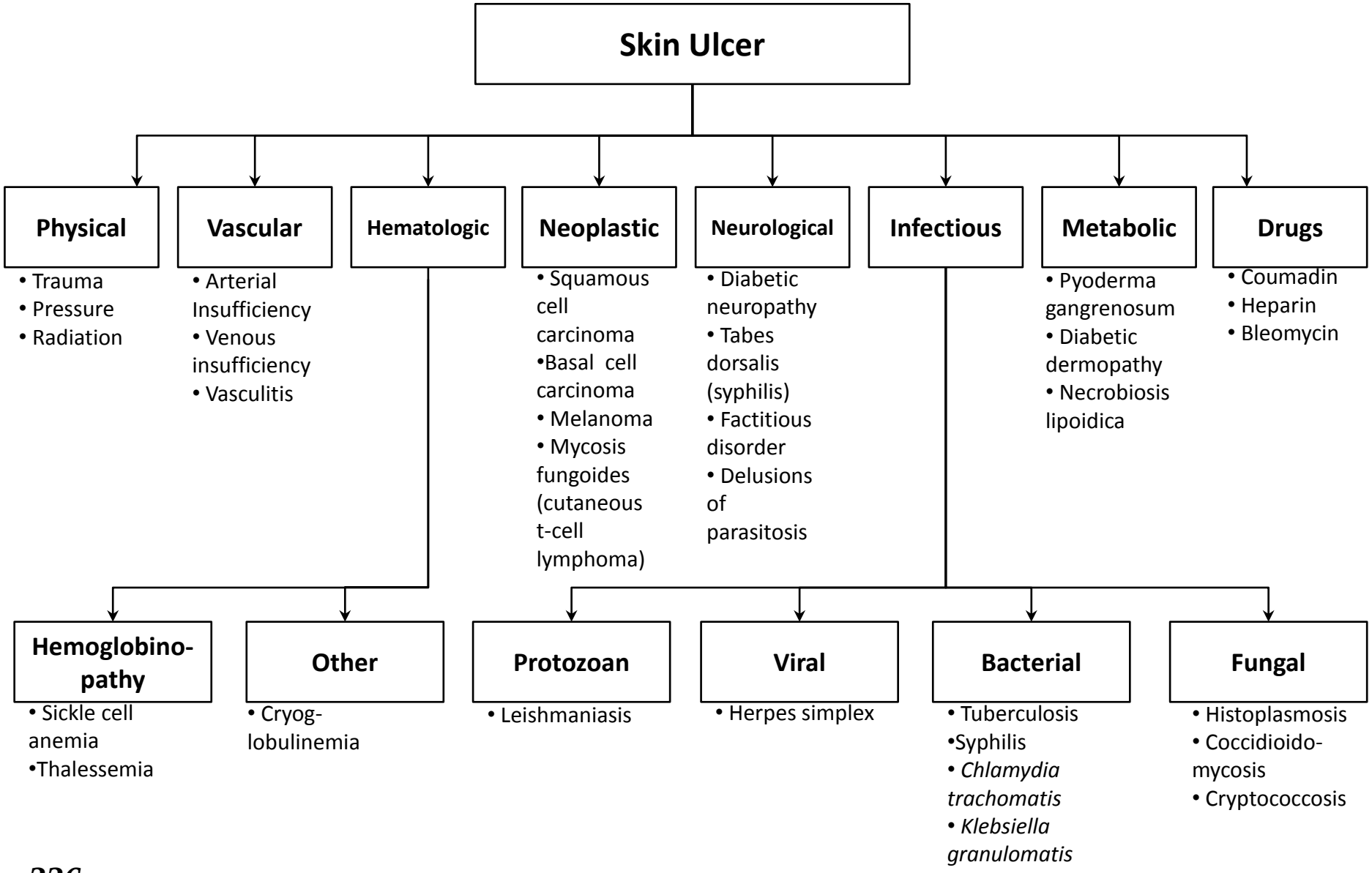
SKIN RASH: Reactive



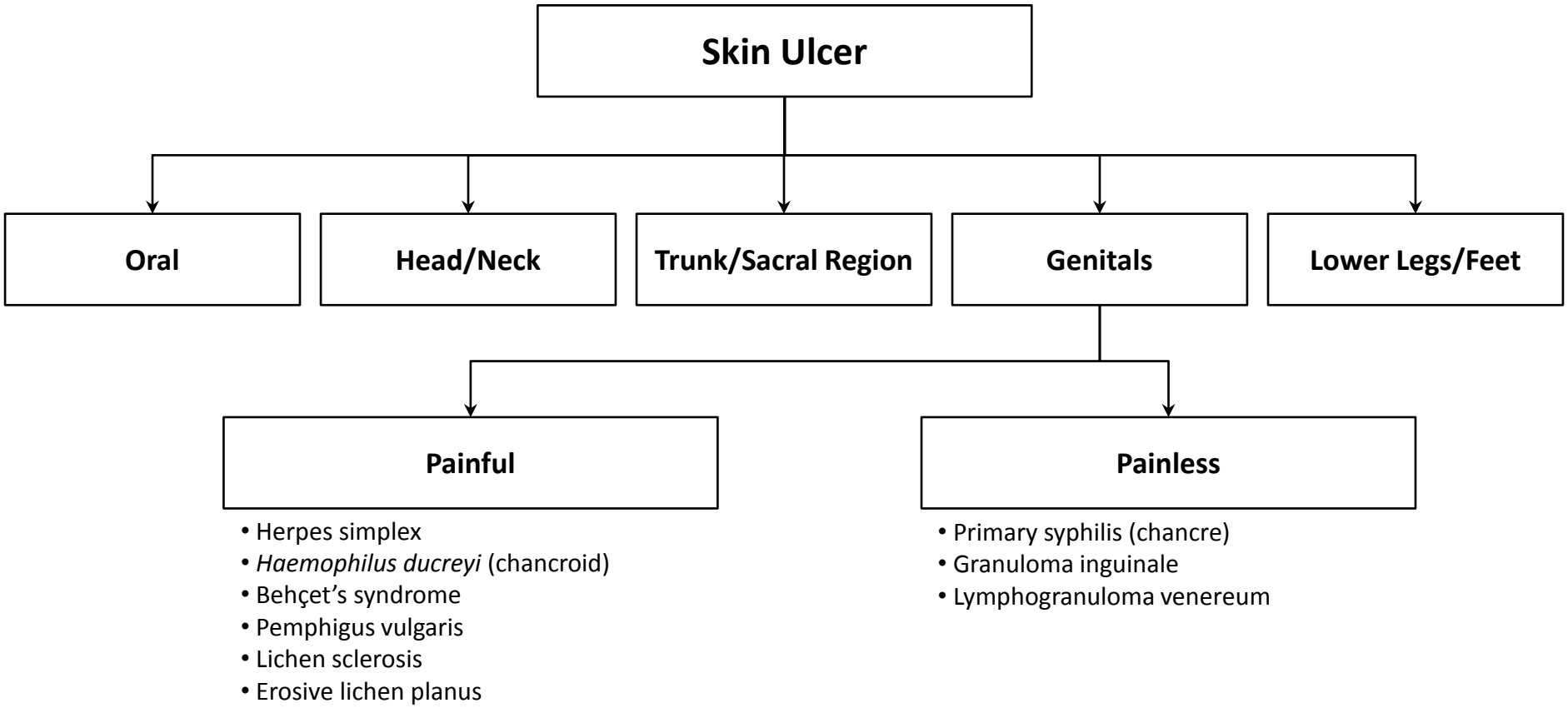
SKIN RASH: Vesiculobullous



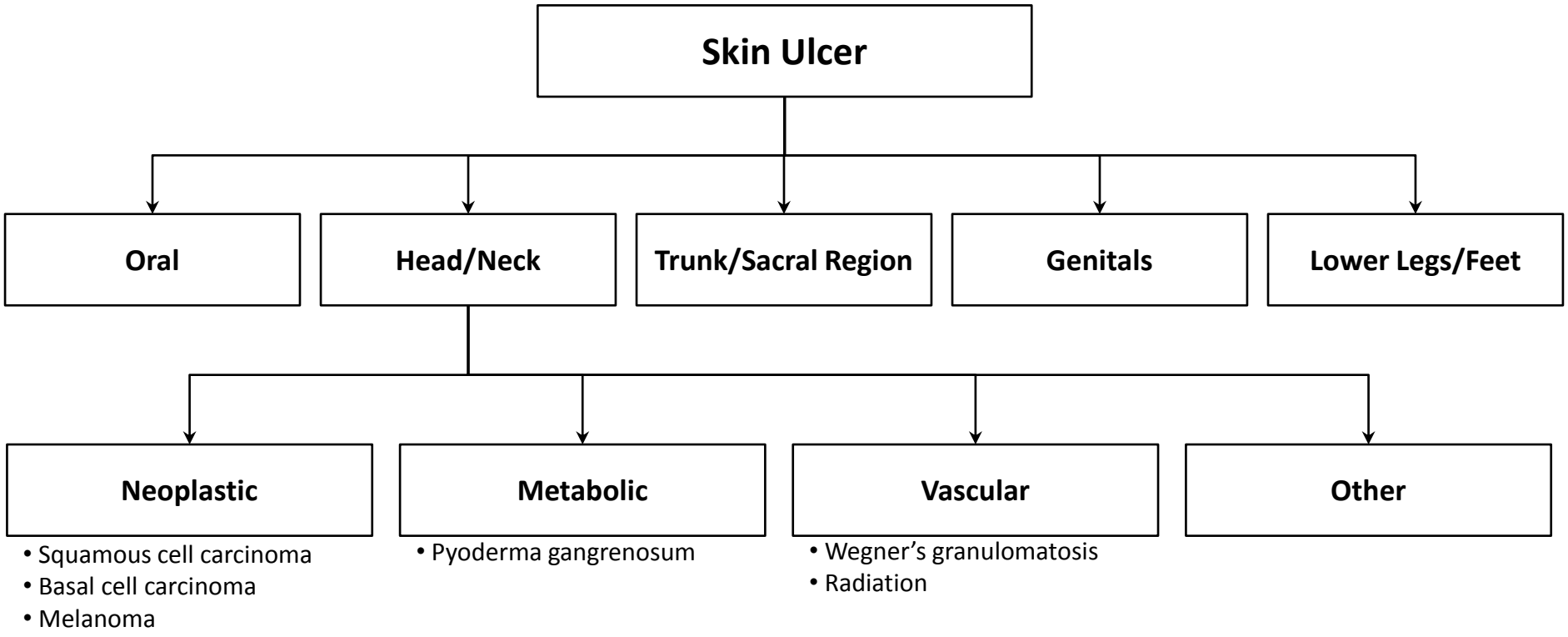
SKIN ULCER BY ETIOLOGY



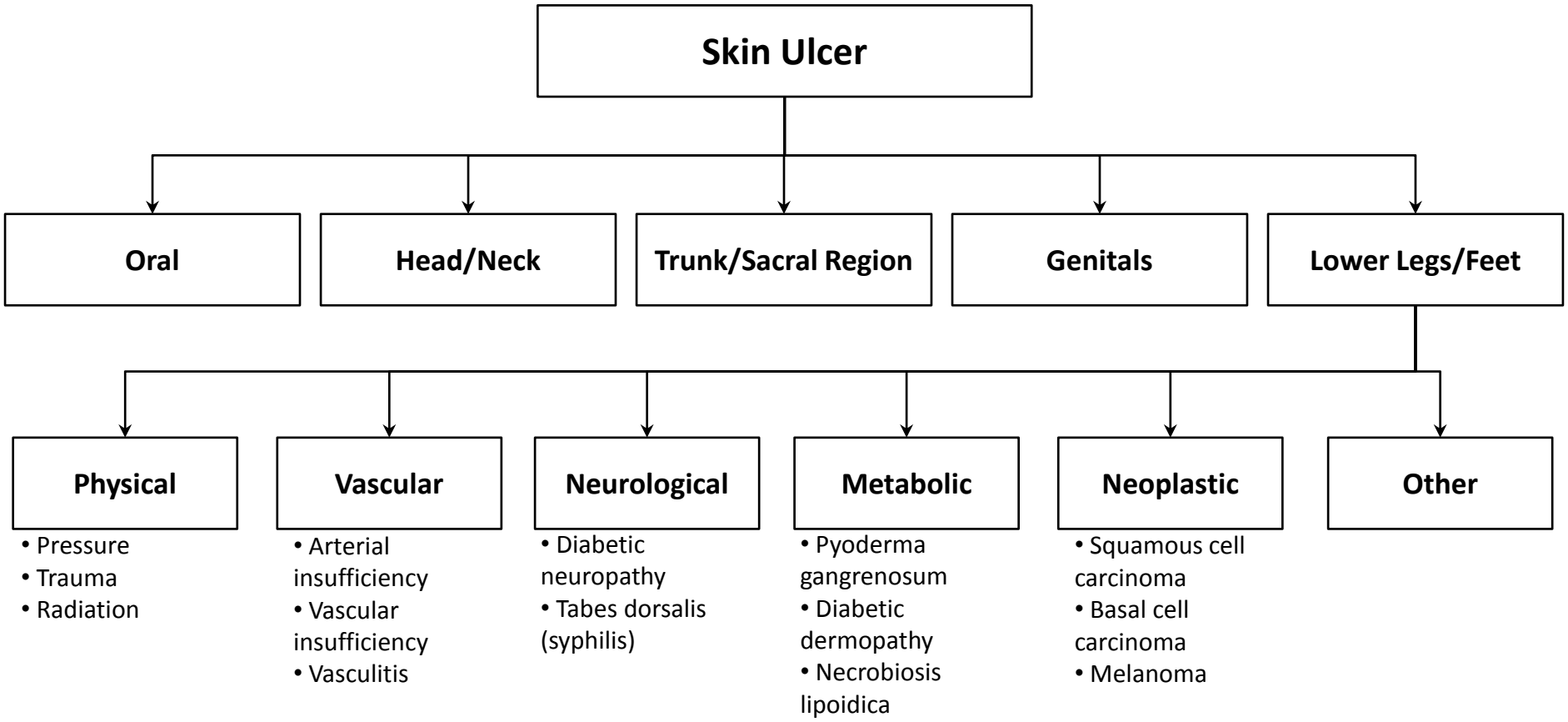
SKIN ULCER BY LOCATION: Genitals



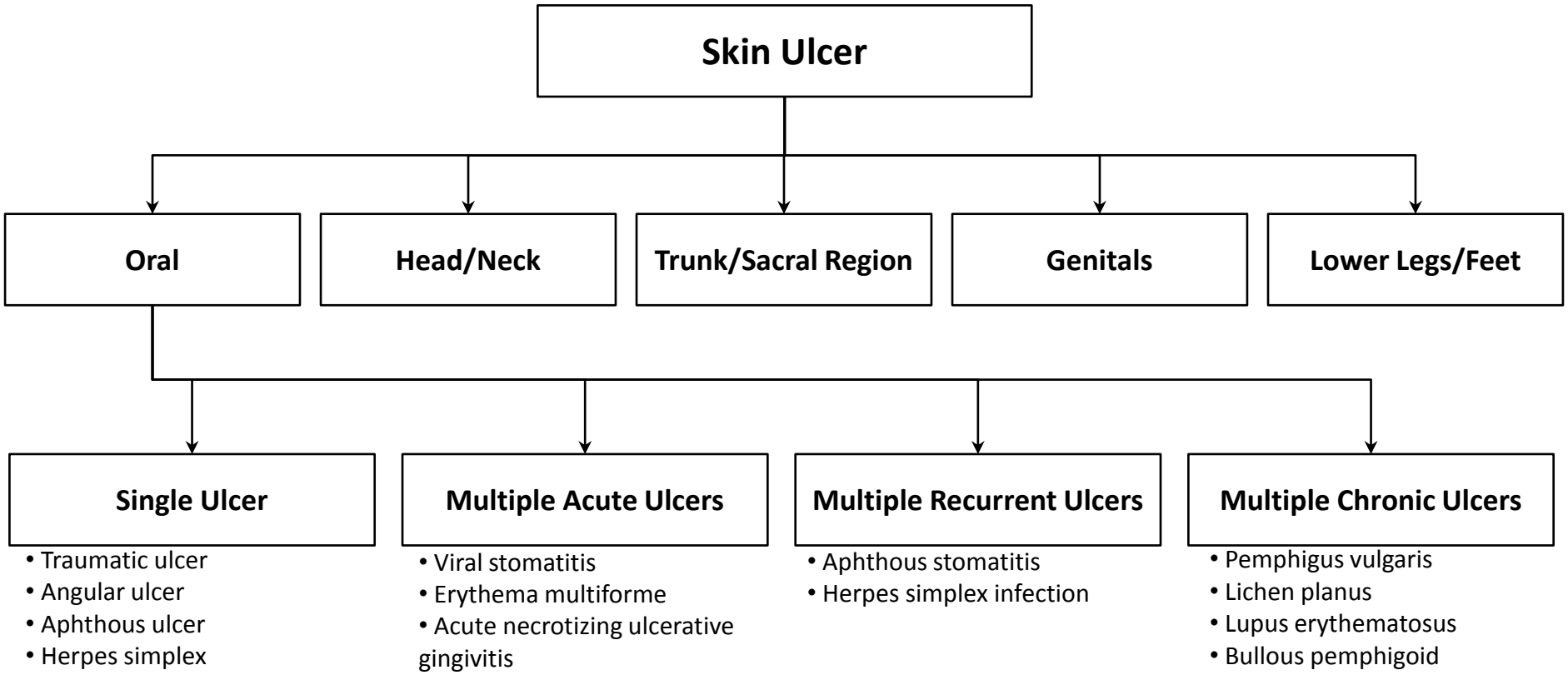
SKIN ULCER BY LOCATION: Head and Neck



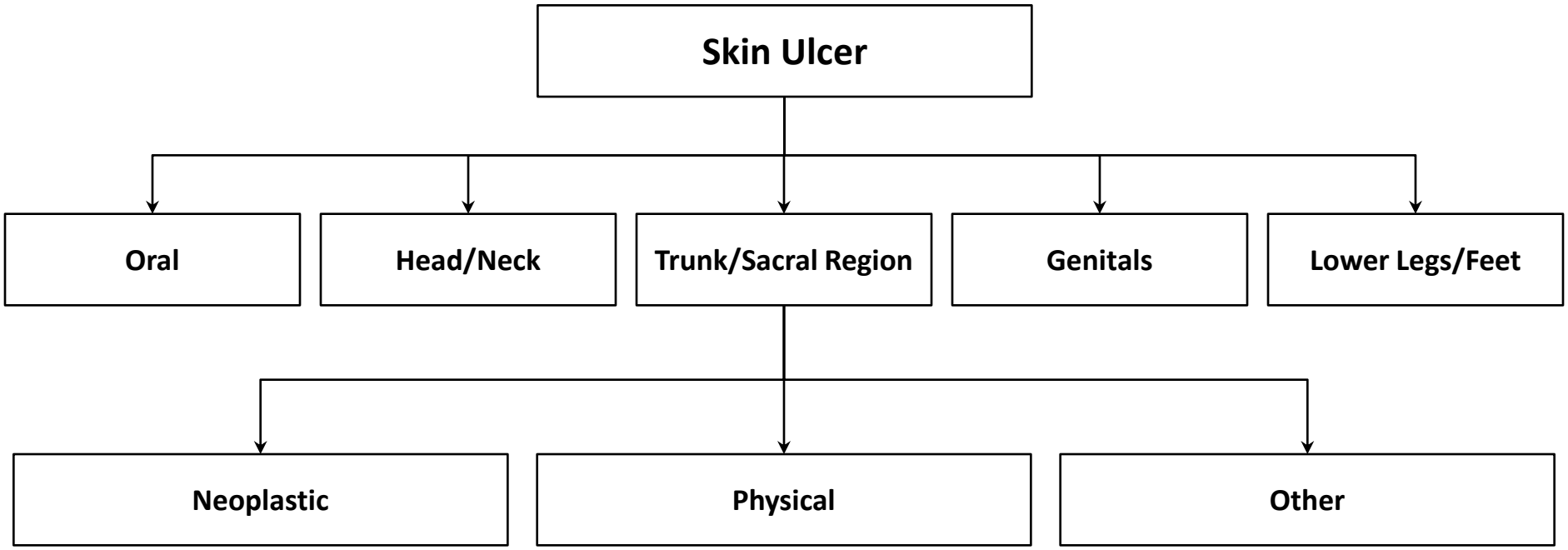
SKIN ULCER BY LOCATION: Lower Legs / Feet



SKIN ULCER BY LOCATION: Oral Ulcers



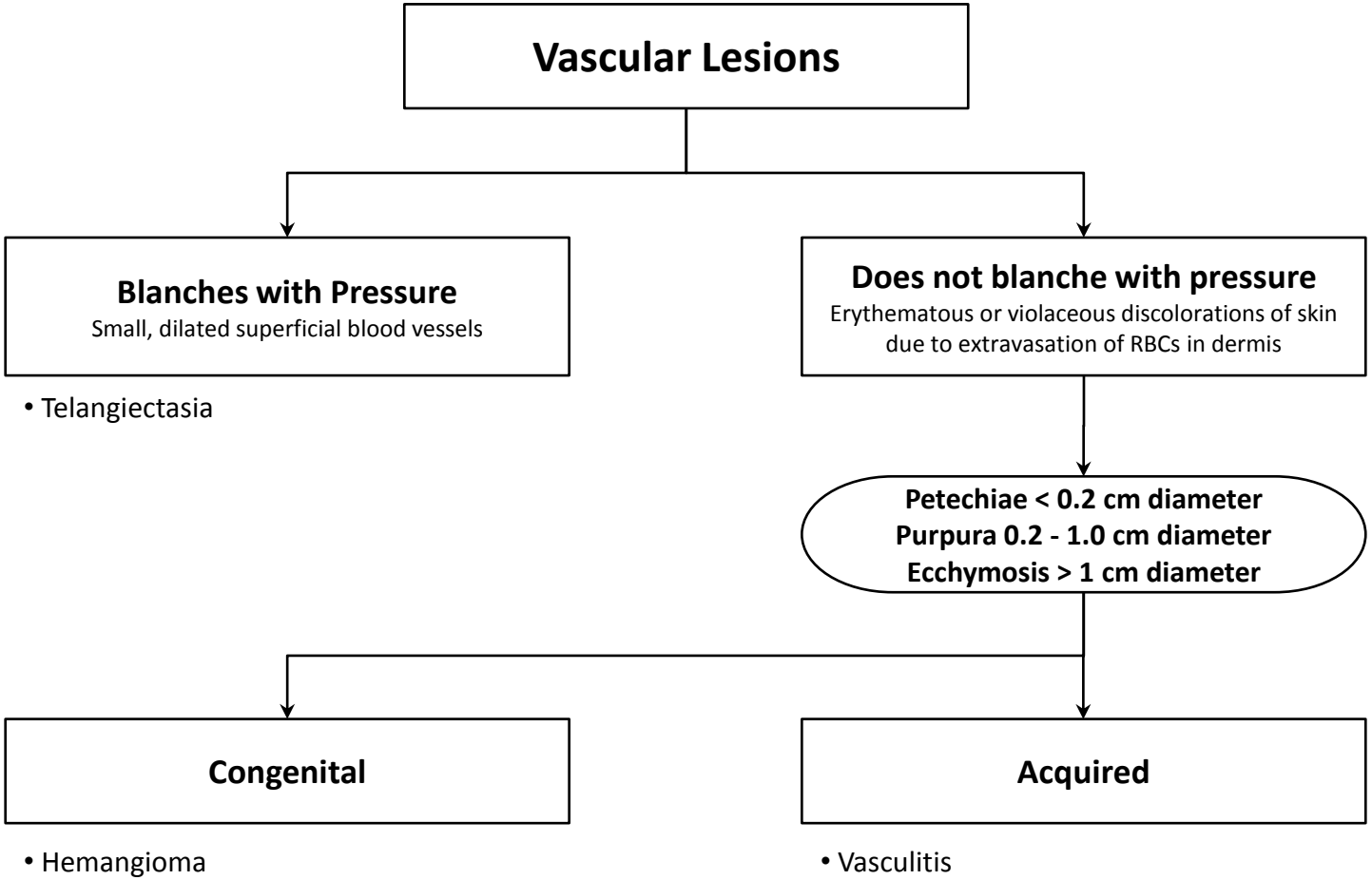
SKIN ULCER BY LOCATION: Trunk / Sacral Region



- Squamous cell carcinoma
- Basal cell carcinoma
- Melanoma
- Mycosis fungoides (cutaneous t-cell lymphoma)

- Physical
- Trauma
- Radiation

VASCULAR LESIONS



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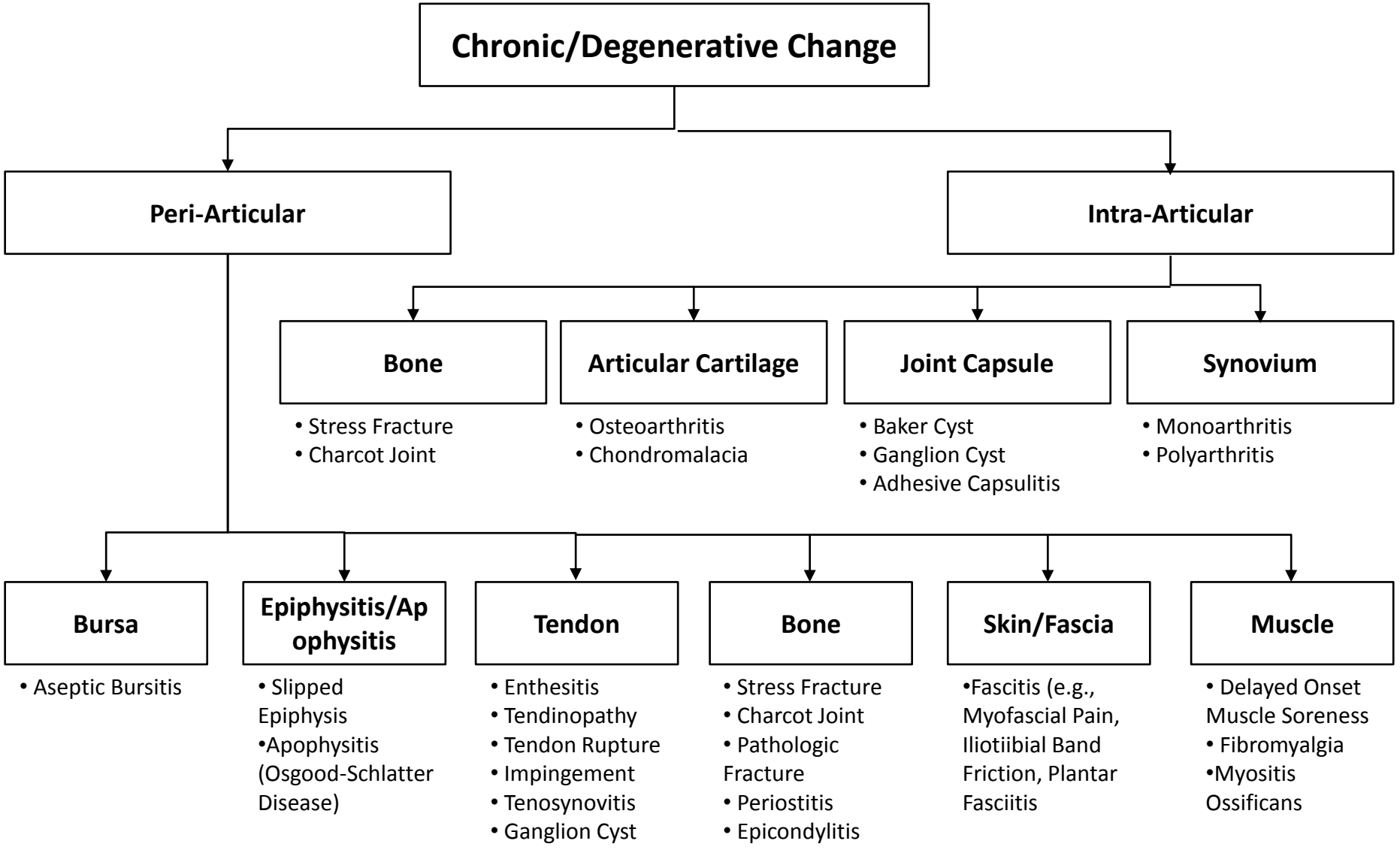
Dr. Henry Mandin
Graeme Matthewson
Katy Anderson
Tara Daley
Jonathan Dykeman
Kate Elzinga,
Bikram Sidhu,

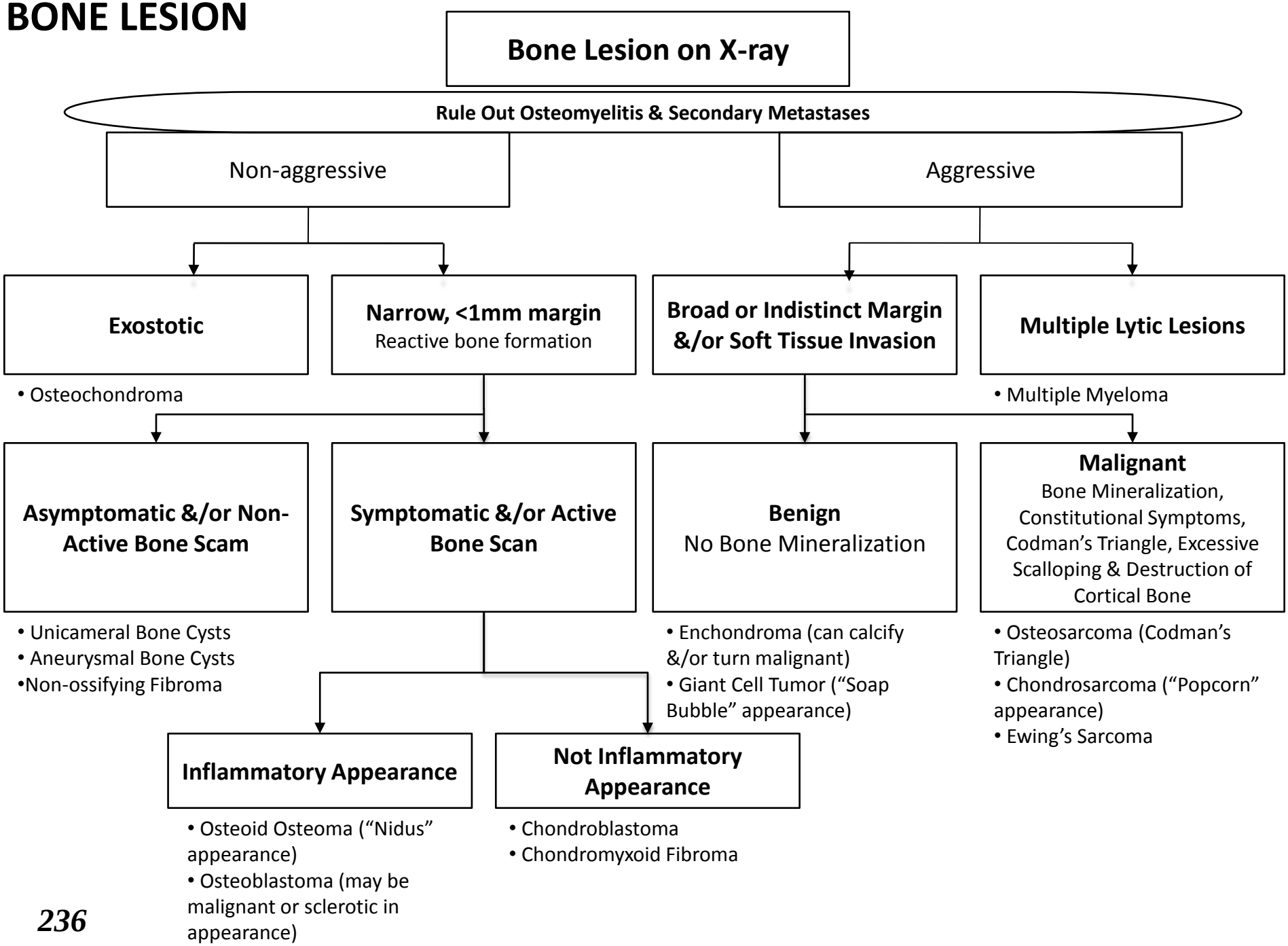
ACUTE JOINT PAIN- VITAMIN CD

Vascular	- *See vascular joint pain*
Infectious	- *See infectious joint pain*
Trauma	- Multiple injury sites, Open Fracture, Infectious joint pain
Autoimmune	- *See inflammatory joint pain*
Metabolic	- *See pathologic fractures*
Iatrogenic	- Hx of prior surgery
Neoplastic	- *See Tumour*
Congenital	- Scoliosis, Talipes Equinovarus, Meta tarsus adductus, Bow leg, Knock-Knee'd
Degenerative	- Degenerative Disc Disease, Osteoarthritis, Osteoporosis

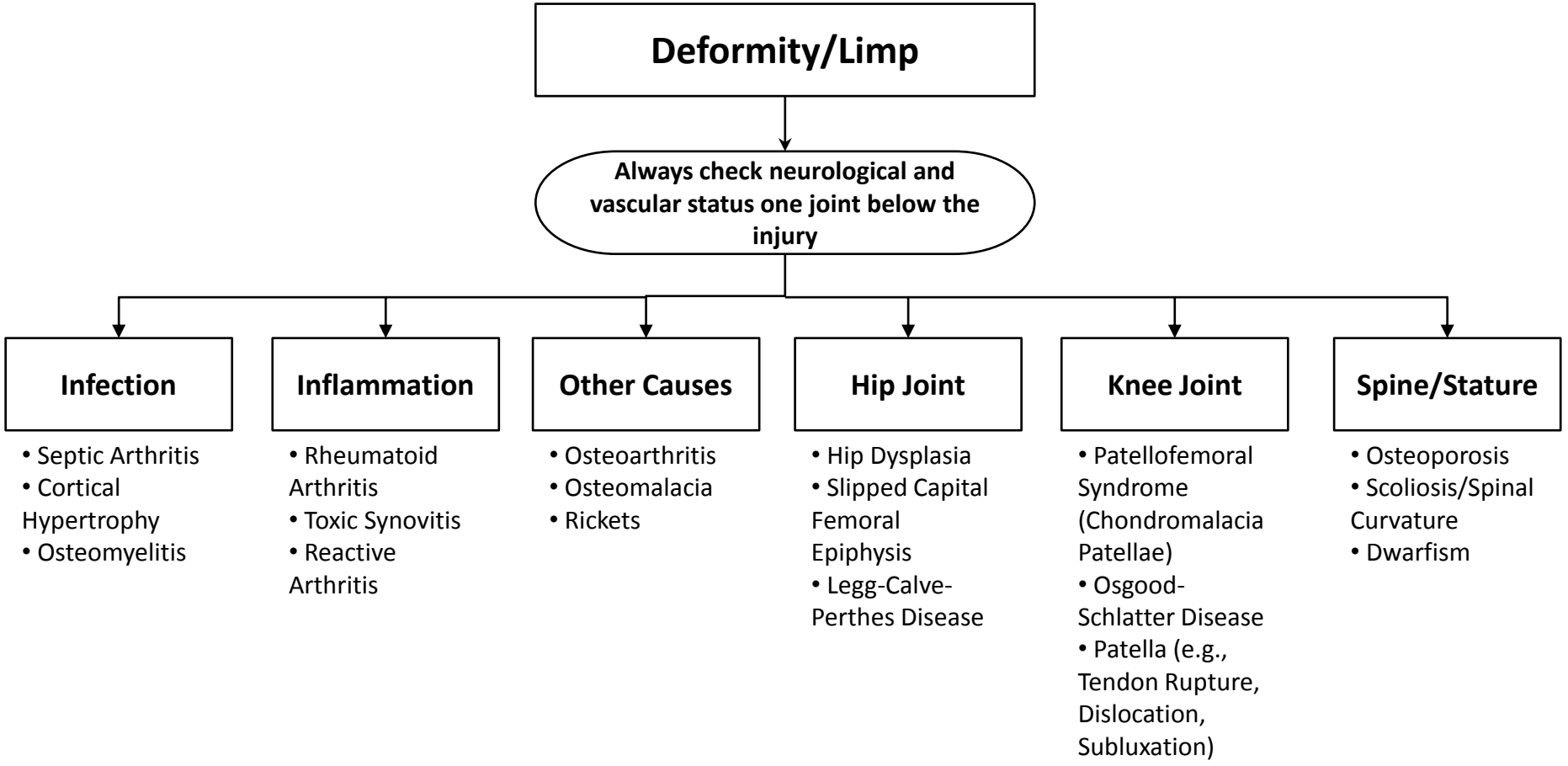
CHRONIC JOINT PAIN



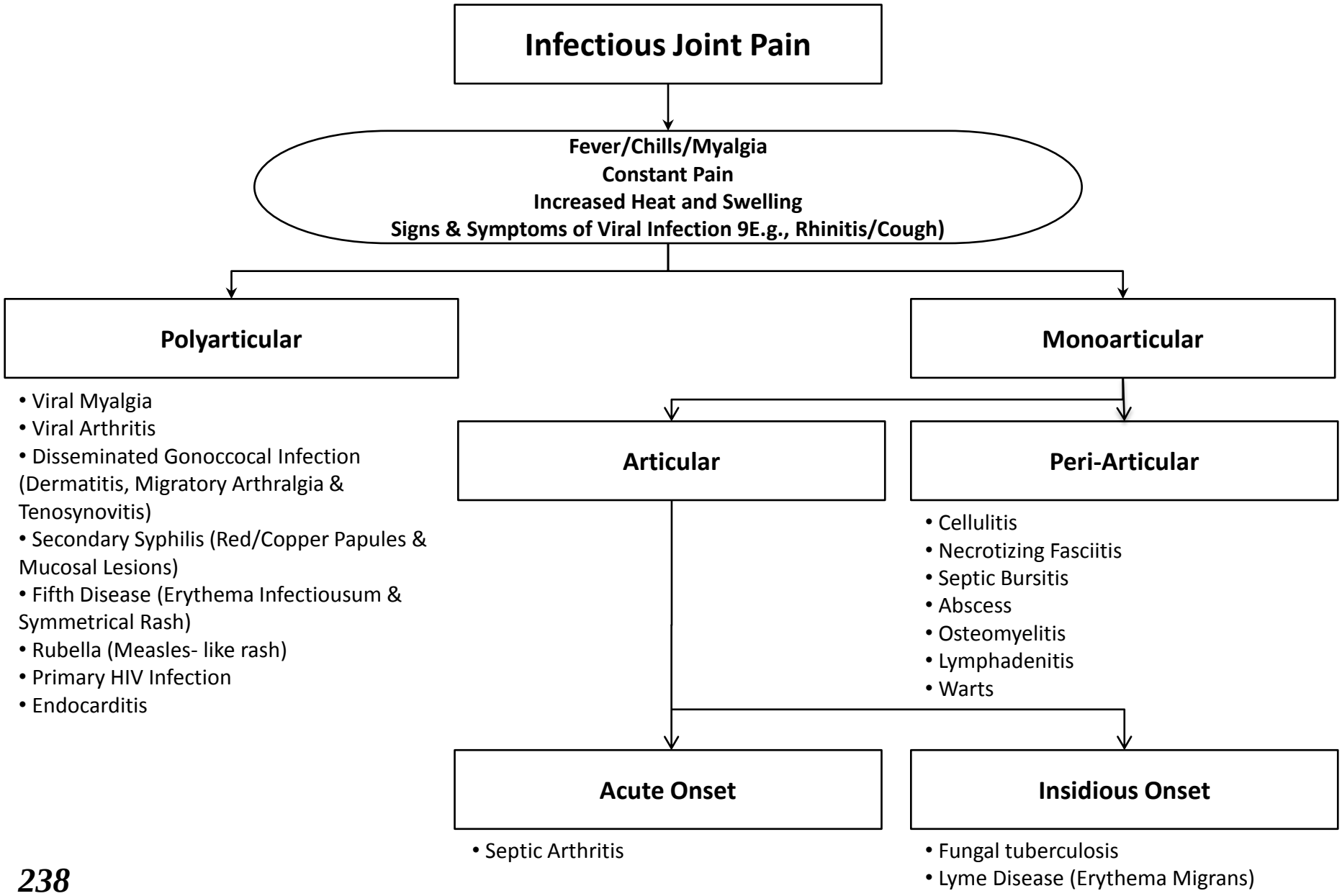
BONE LESION


Bone Lesion on X-ray
Rule Out Osteomyelitis & Secondary Metastases
Non-aggressive
Aggressive
Exostotic
Narrow, <1mm margin
Reactive bone formation
Broad or Indistinct Margin &/or Soft Tissue Invasion
Multiple Lytic Lesions
• Osteochondroma
• Multiple Myeloma
Asymptomatic &/or Non-Active Bone Scam
Symptomatic &/or Active Bone Scan
Benign
No Bone Mineralization
Malignant
Bone Mineralization, Constitutional Symptoms, Codman's Triangle, Excessive Scalloping & Destruction of Cortical Bone
• Unicameral Bone Cysts
• Aneurysmal Bone Cysts
•Non-ossifying Fibroma
• Enchondroma (can calcify &/or turn malignant)
• Giant Cell Tumor ("Soap Bubble" appearance)
• Osteosarcoma (Codman's Triangle)
• Chondrosarcoma ("Popcorn" appearance)
• Ewing's Sarcoma
Inflammatory Appearance
Not Inflammatory Appearance
• Osteoid Osteoma ("Nidus" appearance)
• Osteoblastoma (may be malignant or sclerotic in appearance)
• Chondroblastoma
• Chondromyxoid Fibroma

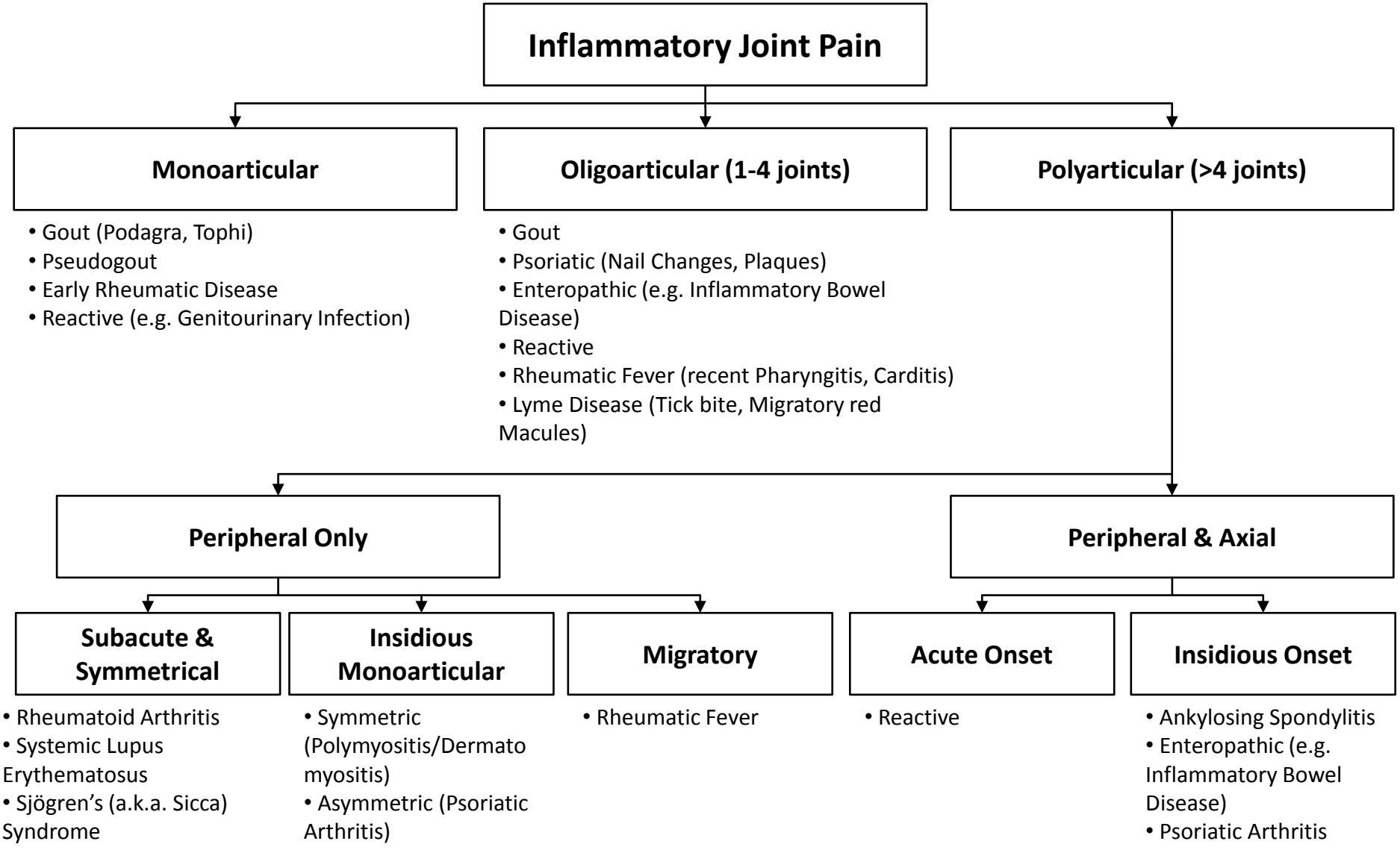
DEFORMITY/LIMP



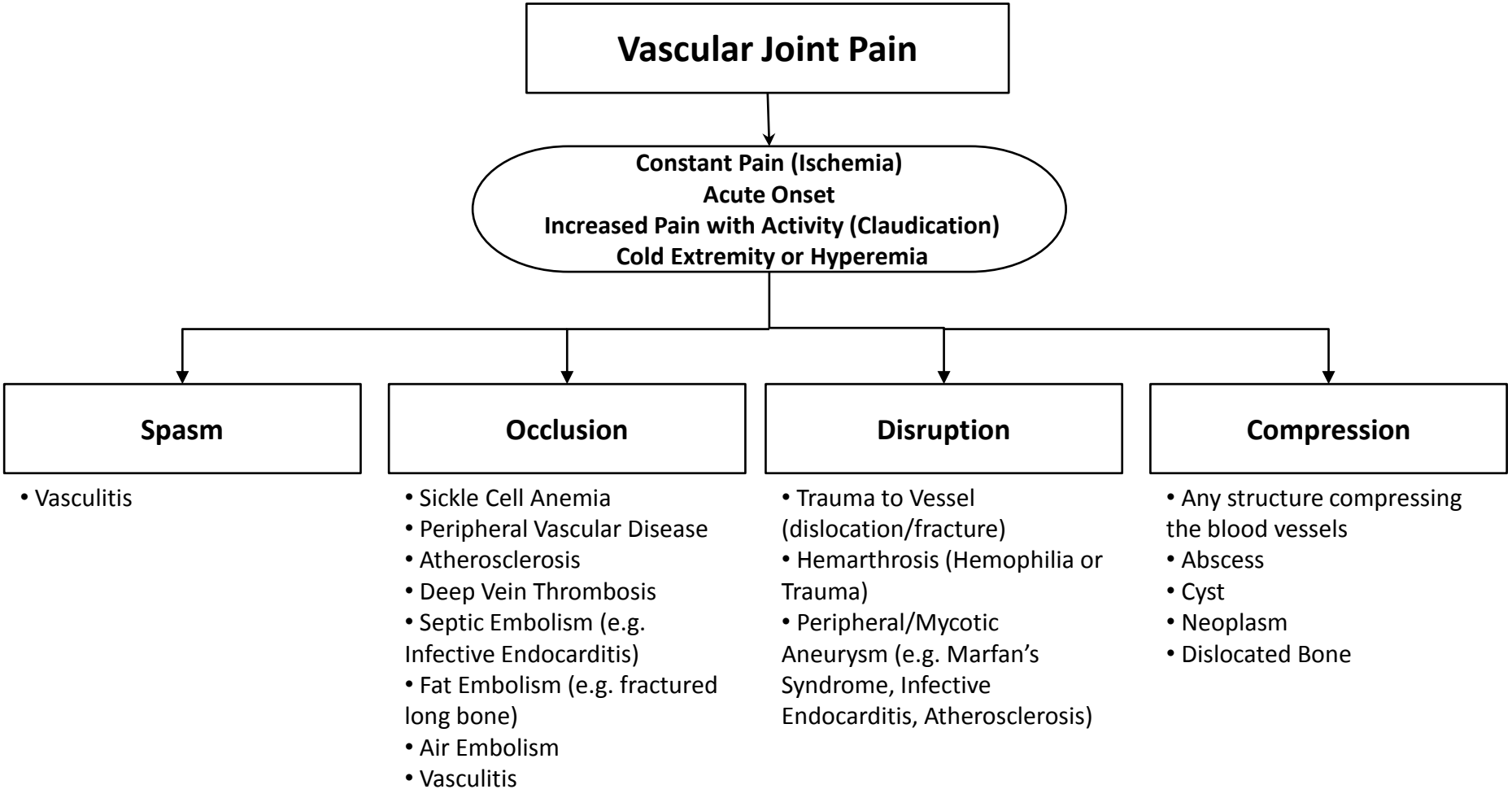
INFECTIOUS JOINT PAIN



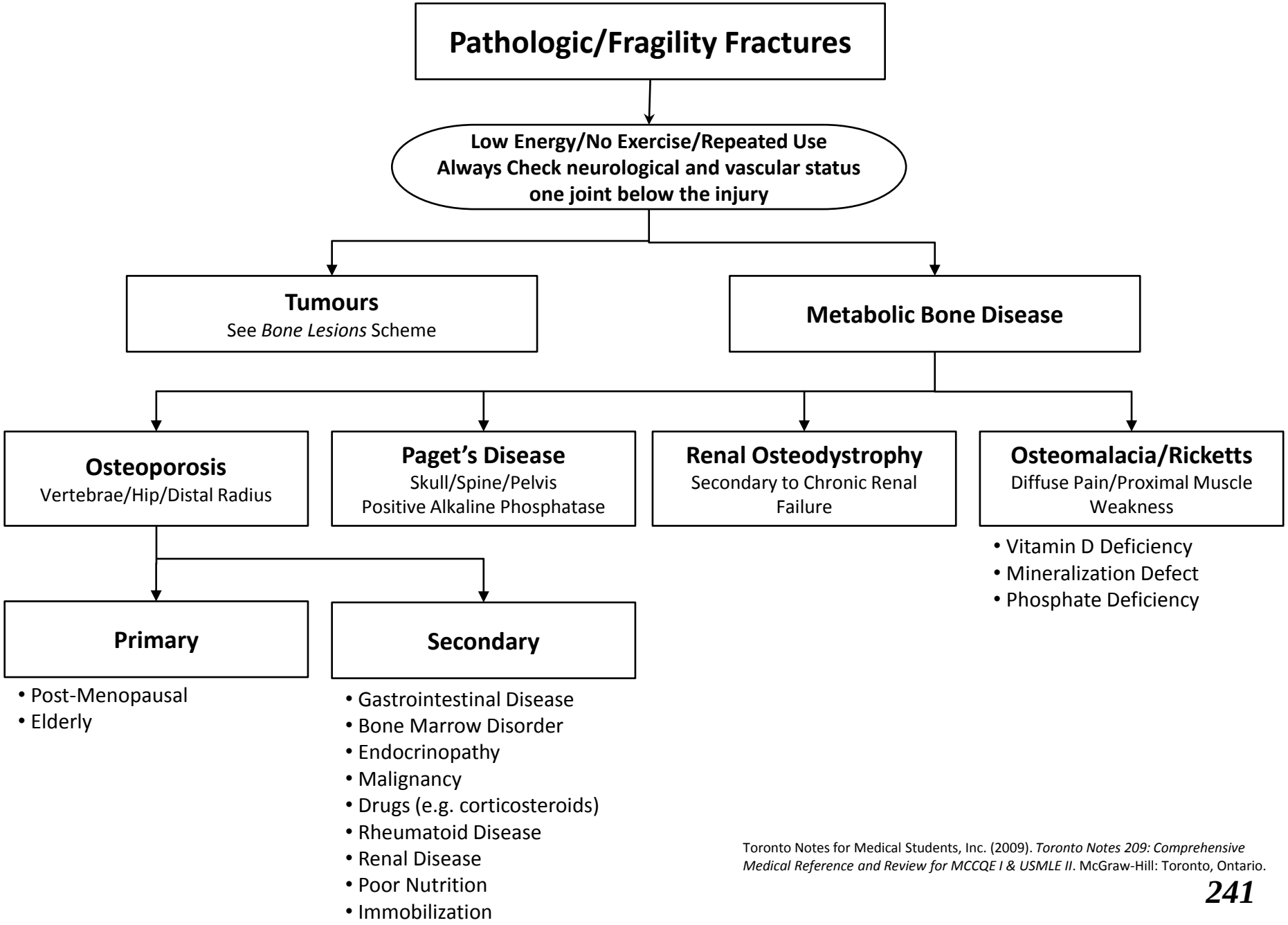
INFLAMMATORY JOINT PAIN



VASCULAR JOINT PAIN

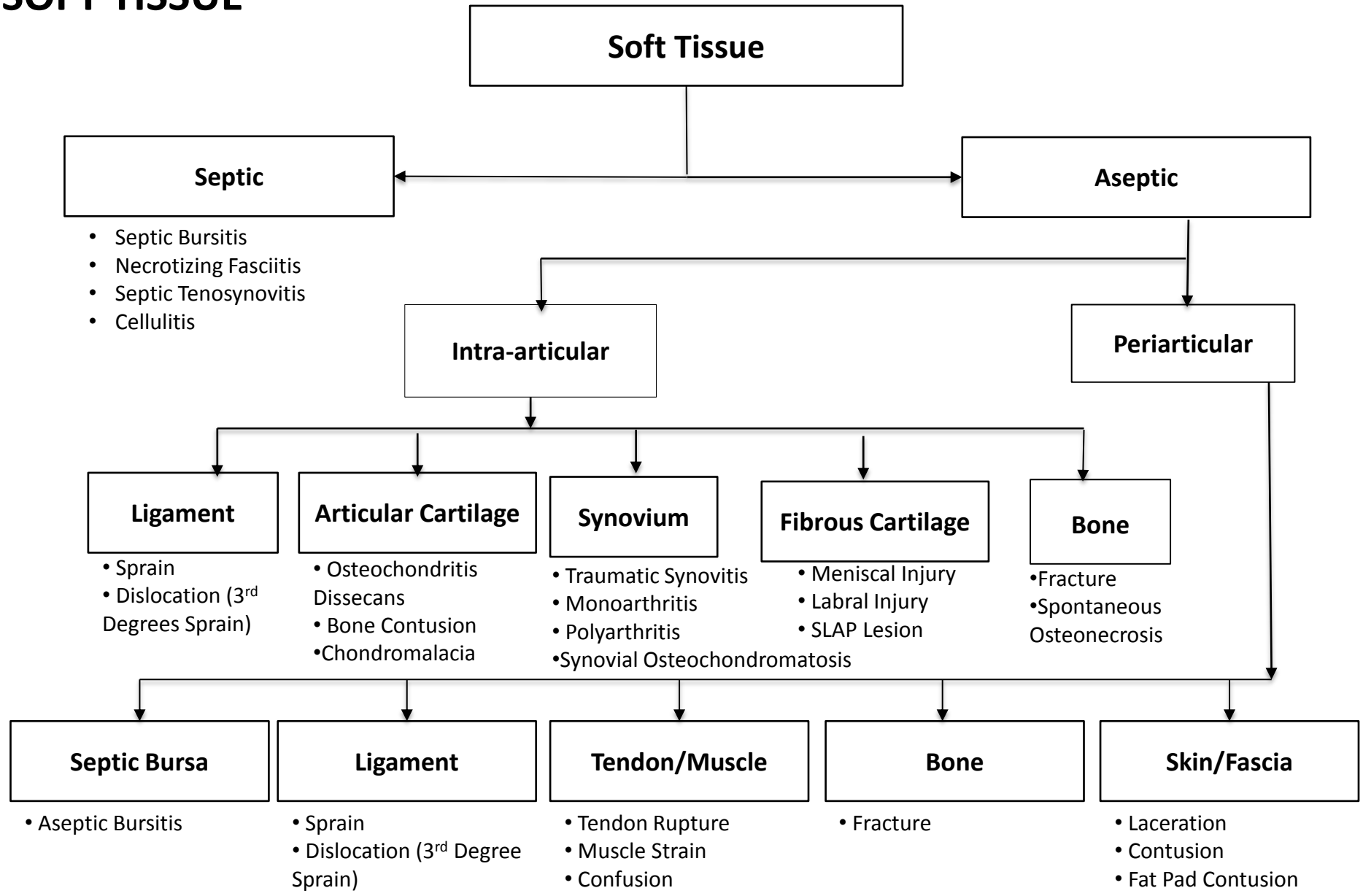


PATHOLOGIC FRACTURES

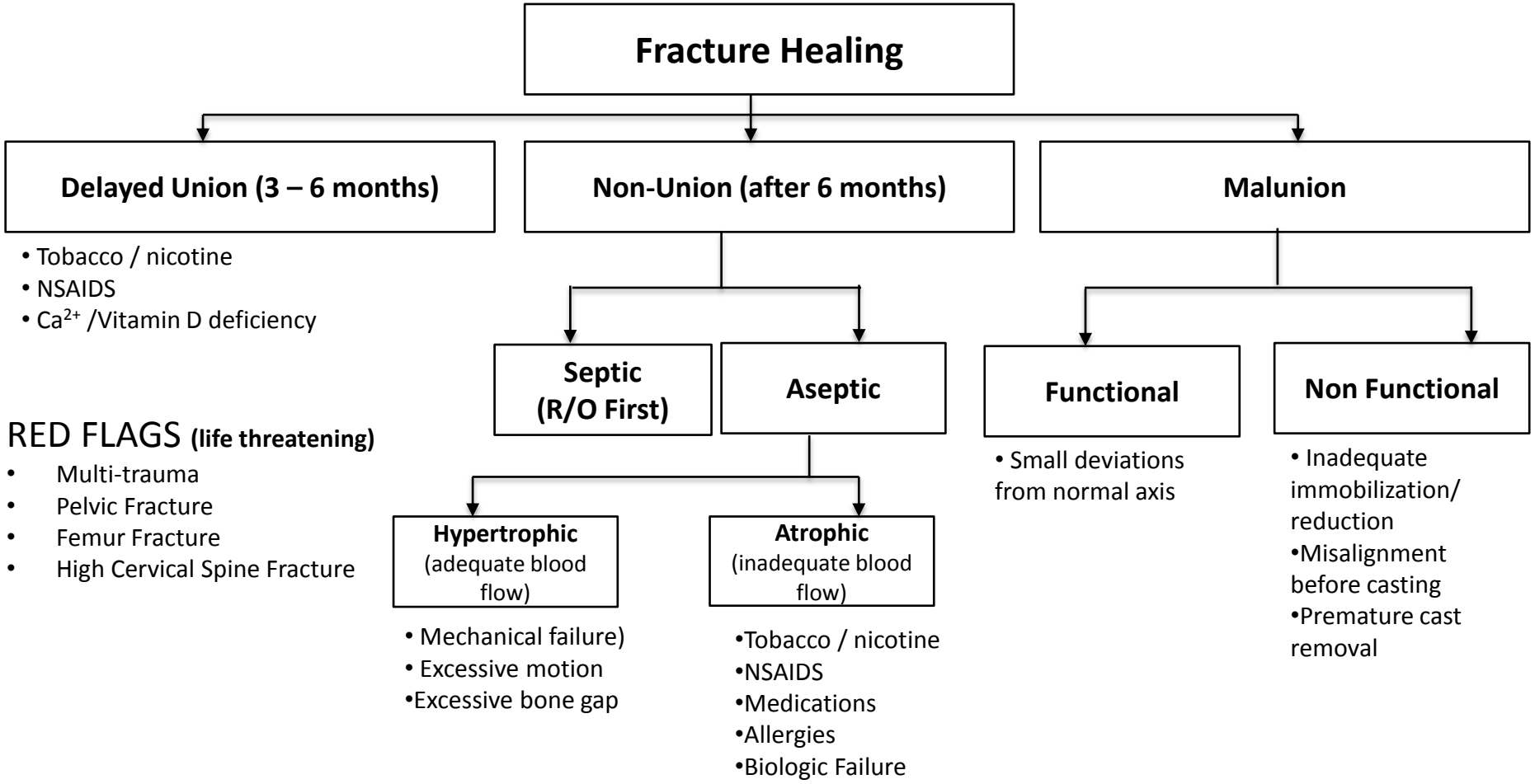


Toronto Notes for Medical Students, Inc. (2009). *Toronto Notes 209: Comprehensive Medical Reference and Review for MCCQE I & USMLE II*. McGraw-Hill: Toronto, Ontario.

SOFT TISSUE


Soft Tissue
Septic
Aseptic
• Septic Bursitis
• Necrotizing Fasciitis
• Septic Tenosynovitis
• Cellulitis
Intra-articular
Periarticular
Ligament
Articular Cartilage
Synovium
Fibrous Cartilage
Bone
• Sprain
• Dislocation (3rd Degrees Sprain)
• Osteochondritis Dissecans
• Bone Contusion
•Chondromalacia
• Traumatic Synovitis
• Monoarthritis
• Polyarthritis
•Synovial Osteochondromatosis
• Meniscal Injury
• Labral Injury
• SLAP Lesion
•Fracture
•Spontaneous Osteonecrosis
Septic Bursa
Ligament
Tendon/Muscle
Bone
Skin/Fascia
• Aseptic Bursitis
• Sprain
• Dislocation (3rd Degree Sprain)
• Tendon Rupture
• Muscle Strain
• Confusion
• Fracture
• Laceration
• Contusion
• Fat Pad Contusion

FRACTURE HEALING



RED FLAGS **(life threatening)**

- Multi-trauma
- Pelvic Fracture
- Femur Fracture
- High Cervical Spine Fracture

Operative Fractures:

- Open
- Unstable
- Displaced
- Intra-articular

Non-Operative Fractures

- Closed
- Stable
- Undisplaced
- Extra-articular

Inflammation → **Soft Callus** → **Hard Callus** → **Remodelling**

Hours- Days | Days- Weeks | Weeks- Months | Years

OSTEOPOROSIS- BMD testing

T-Scores:
Normal ≥ -1
-2.49 < Osteopenia < -1
Osteoporosis - ≤ - 2.5

Osteoporosis

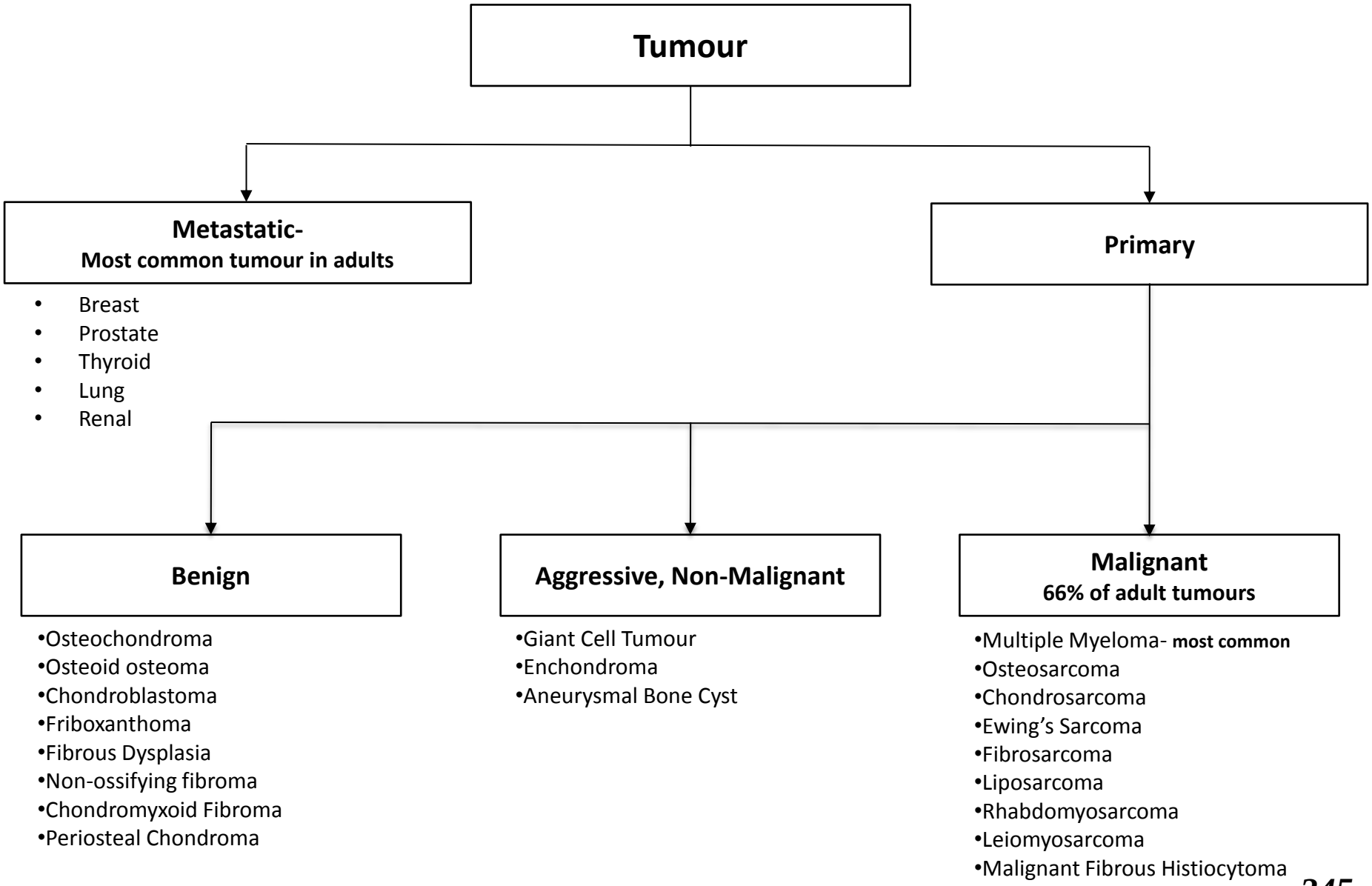
Age > 50 years

- All men and women ≥65
- Prior fragility fracture
- Prolonged glucocorticoid use
- Rheumatoid Arthritis
- Falls in past 12 months
- Parental Hip Fracture
- Other medications
- Vertebral fracture
- Osteopenia on X ray
- Smoking/ETOH
- Low body weight (<60kg) or major loss (>10% of when 25)

Age < 50 years

- Fragility Fracture
- Prolonged Glucocorticoid use
- Use of other high risk medications
  - Aromatase Inhibitors
  - Androgen Deprivation Therapy
- Hypogonadism/Premature Menopause
- Malabsorption Syndrome
- Primary Hyperparathyroidism
- Other disorders strongly associated with rapid bone loss and/or fracture

TUMOUR


Tumour
Metastatic-
Most common tumour in adults
Primary
Breast
Prostate
Thyroid
Lung
Renal
Benign
Aggressive, Non-Malignant
Malignant
66% of adult tumours
•Osteochondroma
•Osteoid osteoma
•Chondroblastoma
•Friboxanthoma
•Fibrous Dysplasia
•Non-ossifying fibroma
•Chondromyxoid Fibroma
•Periosteal Chondroma
•Giant Cell Tumour
•Enchondroma
•Aneurysmal Bone Cyst
•Multiple Myeloma- most common
•Osteosarcoma
•Chondrosarcoma
•Ewing's Sarcoma
•Fibrosarcoma
•Liposarcoma
•Rhabdomyosarcoma
•Leiomyosarcoma
•Malignant Fibrous Histiocytoma

MYOTOMES: Segmental Innervation of Muscles

Muscle Group	Action	Myotome	Peripheral Nerve
Shoulder	Abduction	C5	Axillary Nerve
	Adduction	C6-C8	Thoracodorsal Nerve
Elbow	Flexion	C5	Musculocutaneous Nerve
	Extension	C7	Radial Nerve
Wrist	Extension	C6	Radial Nerve
Fingers	Flexion	C8	Median Nerve
	Abduction	T1	Ulnar Nerve
Hip	Flexion	L2	Nerve to Psoas
	Extension	S1	Inferior Gluteal Nerve
	Abduction	L5	Superior Gluteal Nerve
Knee	Flexion	L5	Tibial Nerve
	Extension	L3	Femoral Nerve
Ankle	Dorsiflexion	L4	Deep Peroneal Nerve
	Plantarflexion	S1	Tibial Nerve

N.B. There is considerable overlap between myotomes for some actions. The myotomes listed are the dominant segments involved.

GUIDE TO SPINAL CORD INJURY

Spinal Root	Sensory	Motor	Reflex
C4	Acromioclavicular Joint	Respiration	None
C5	Radial Antecubital Fossa	Elbow Flexion	Biceps Reflex
C6	Dorsal Thumb	Wrist Extension	Brachioradialis Reflex
C7	Dorsal Middle Finger	Elbow Extension	Triceps Reflex
C8	Dorsal Little Finger	Finger Flexion	None
T1	Ulnar Antecubital Fossa	Finger Abduction	None
T7-12	See Dermatomes	Abdominal Muscles	Abdominal Reflex
L2	Anterior Medial Thigh	Hip Flexion	Cremasteric Reflex
L3	Medial Femoral Condyle	Knee Extension	None
L4	Medial Malleolus	Ankle Dorsiflexion	Knee Jerk Reflex
L5	First Web Space (1^{st}/2^{nd} MTP)	Big Toe Extension	Hamstring Reflex
S1	Lateral Calcaneus	Ankle Plantarflexion	Ankle Jerk Reflex
S2	Popliteal Fossa	Anal Sphincter	Bulbocavernosus
S3/S4	Perianal Region	Anal Sphincter	None

N.B. There is considerable variability in spinal cord levels for motor and reflex testing. Always test the level above and below the suspected injury

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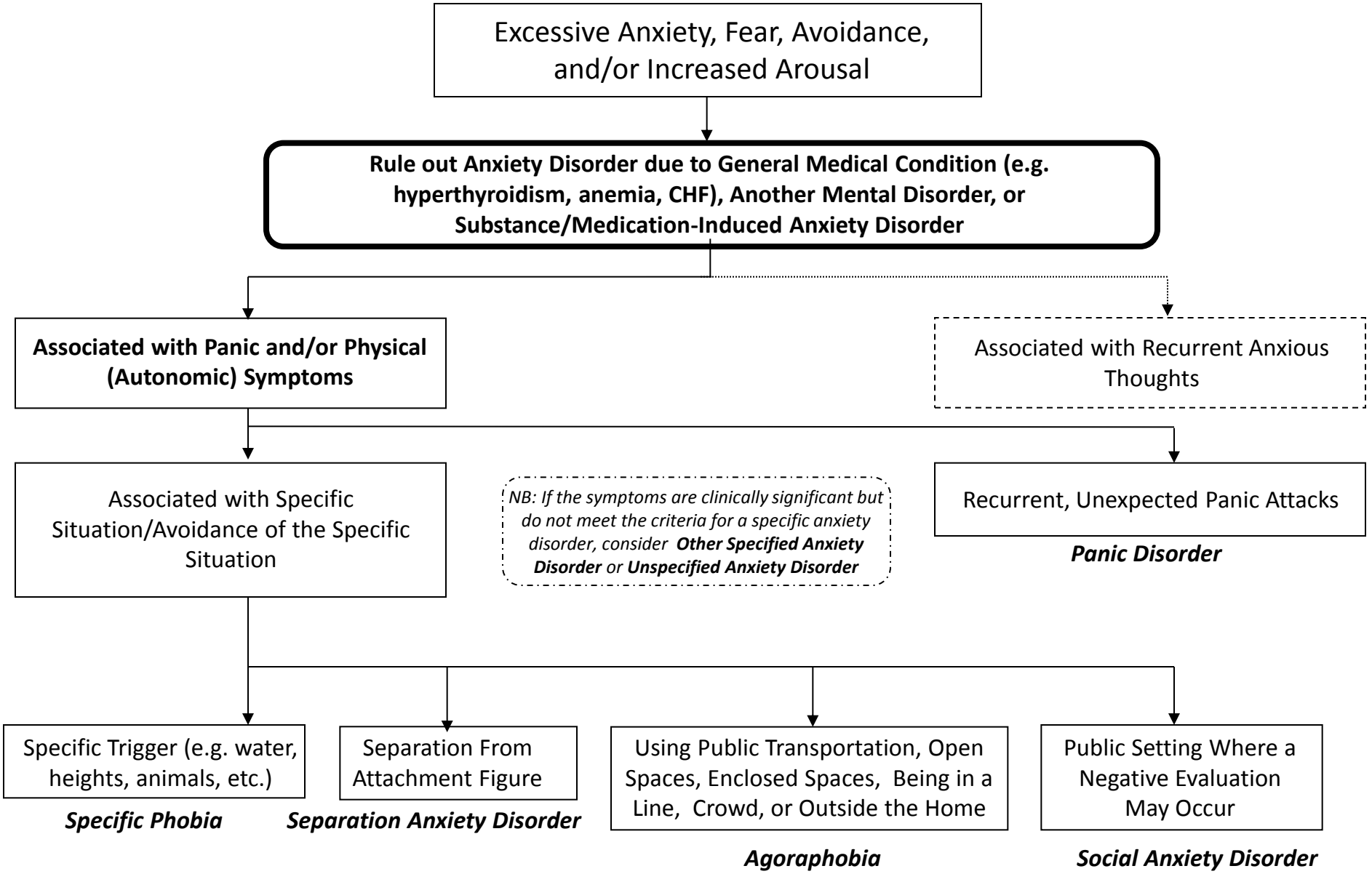
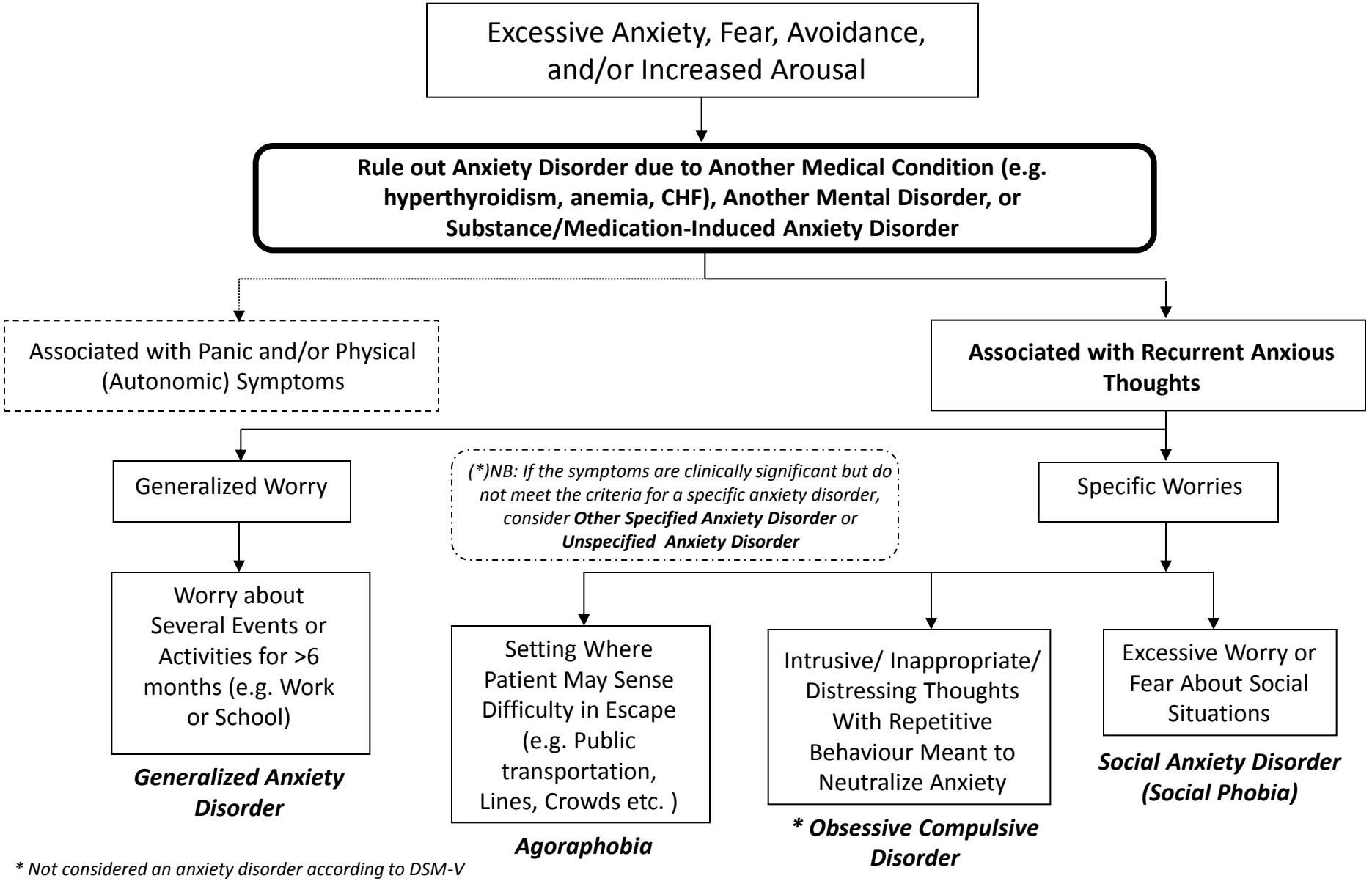
ANXIETY DISORDERS: Associated with Panic



1. Anxiety Review Panel, Evans M, Bradwejn J, Dunn L (Eds) (2000). Guidelines for the Treatment of Anxiety Disorders in Primary Care. Toronto: Queen's Printer of Ontario, pp. 41
2. American Psychiatric Association (2013). Diagnostic and Statistical Manual of Mental Disorders (5th ed. DSM-V).

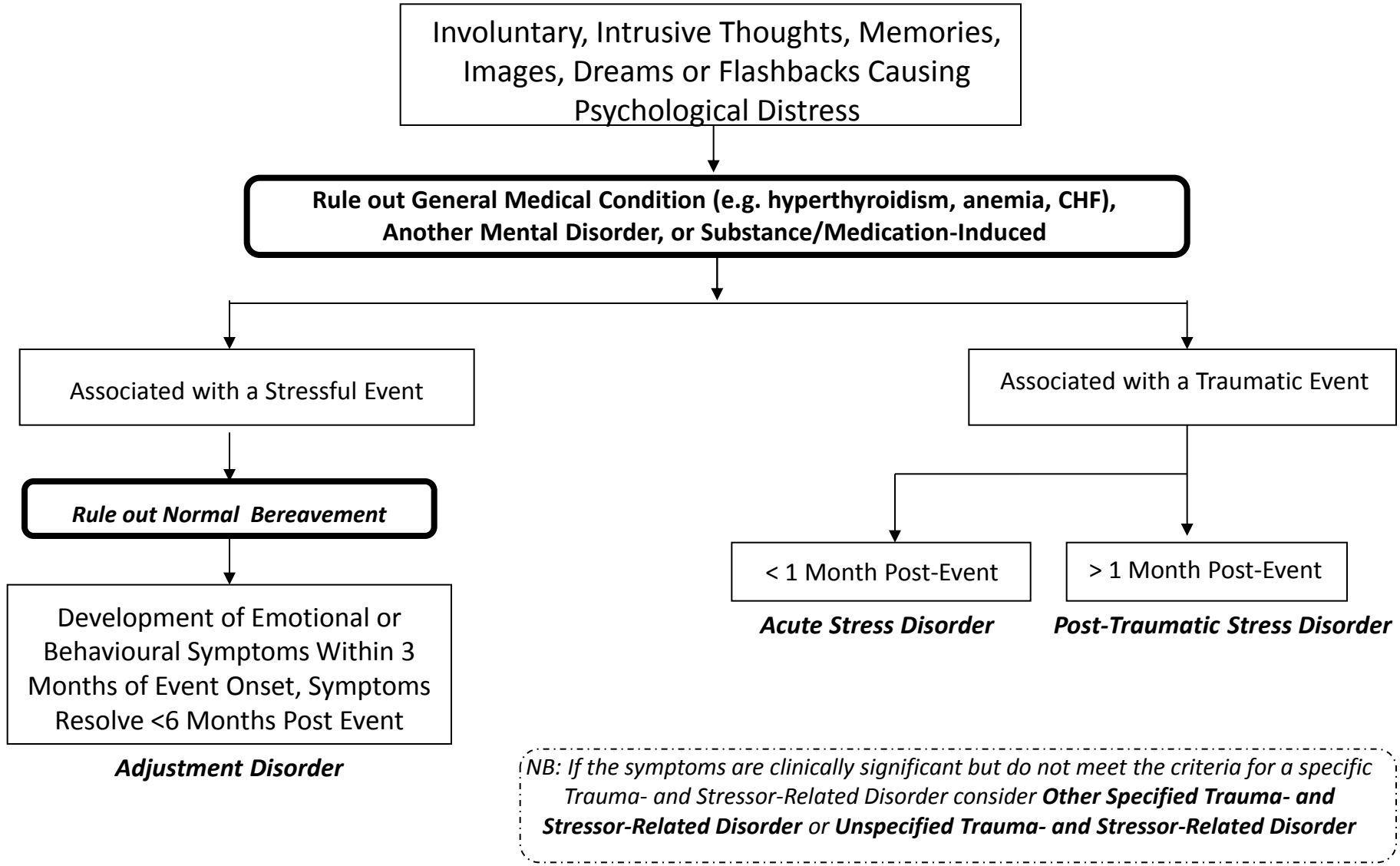
ANXIETY DISORDERS: Recurrent Anxious Thoughts



** Not considered an anxiety disorder according to DSM-V*

1. American Psychiatric Association (2013). Diagnostic and Statistical Manual of Mental Disorders (5th ed. DSM-V).

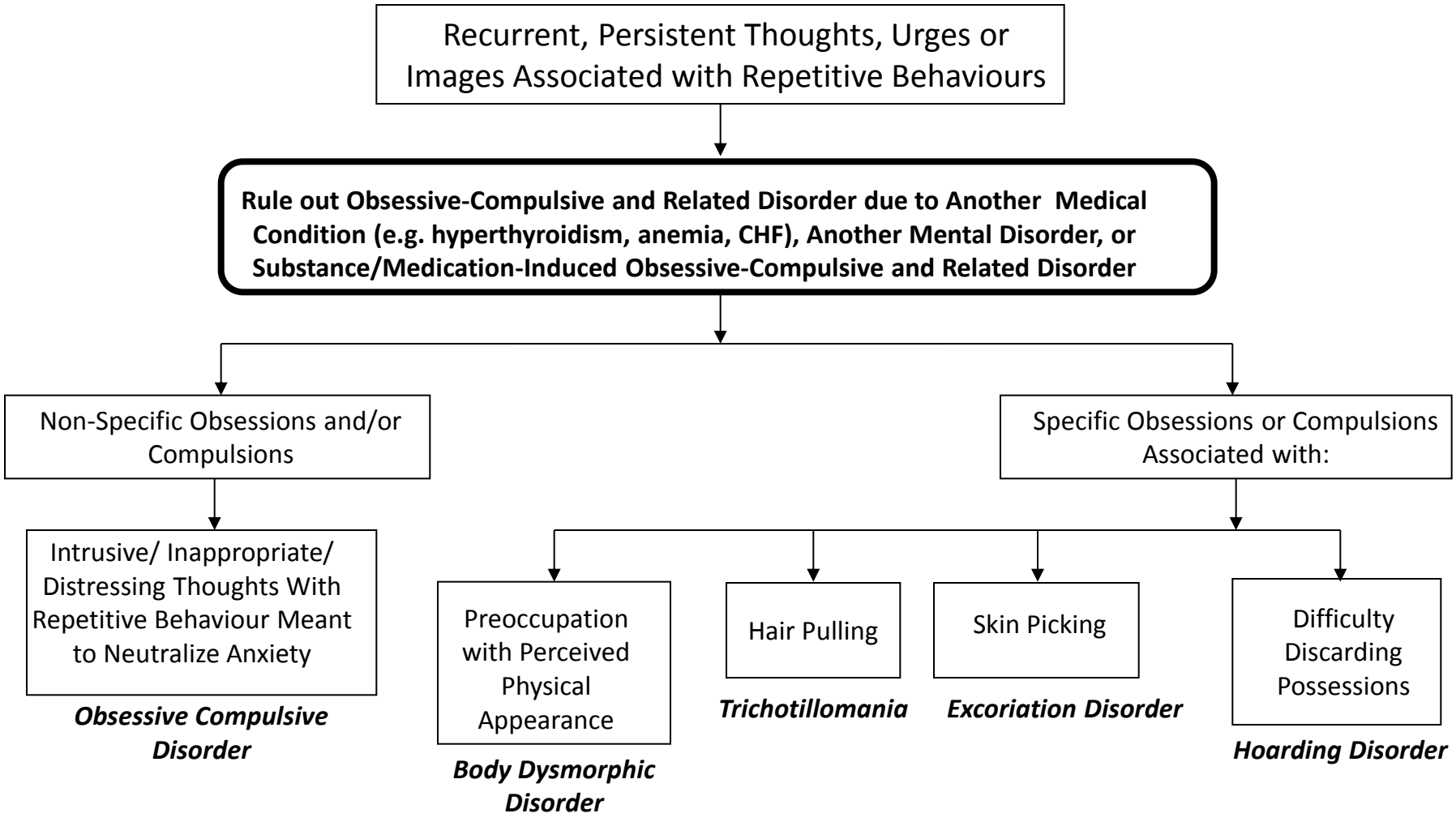
Trauma- and Stressor- Related Disorders



NB: If the symptoms are clinically significant but do not meet the criteria for a specific Trauma- and Stressor-Related Disorder consider ***Other Specified Trauma- and Stressor-Related Disorder*** *or* ***Unspecified Trauma- and Stressor-Related Disorder***

1. American Psychiatric Association (2013). Diagnostic and Statistical Manual of Mental Disorders (5th ed. DSM-V.

Obsessive-Compulsive and Related Disorders



NB: If the symptoms are clinically significant but do not meet the criteria for a specific ***Obsessive-Compulsive or Related Disorder*** *consider* ***Other Specified Obsessive-Compulsive or Related Disorder*** *or* ***Unspecified Obsessive-Compulsive or Related Disorder***

1. American Psychiatric Association (2013). Diagnostic and Statistical Manual of Mental Disorders (5th ed. DSM-V.

PERSONALITY DISORDER

Personality Disorder

- **Enduring pattern of experience and behaviour that deviates from cultural expectations**, manifest in two or more of the following areas: cognition, affectivity, interpersonal functioning, and impulse control
- The pattern is **inflexible and pervasive** across many social and personal situations
- The pattern leads to **distress or impairment** in important areas of functioning
- The pattern is **stable and of long duration**, with an onset that can be traced back to childhood or adolescence
- The pattern is **not due to another mental illness, a general medical condition, or substance use**

Cluster A: Odd or Eccentric

- **Paranoid** - irrational suspicion or mistrust
- **Schizoid** - emotional detachment, lack of interest in social relationships
- **Schizotypal** - Odd beliefs

Cluster B: Dramatic, Emotional, or Social

- **Antisocial** - disregard for social norms, the law, and rights of others
- **Borderline** - instability of identity, relationships, and behaviour
- **Histrionic** - attention-seeking, exaggerated emotional expression
- **Narcissistic** - grandiosity, need for admiration, lack of empathy

Cluster C: Anxious or Fearful

- **Avoidant** - social inhibition, inadequacy, hypersensitivity
- **Dependent** - psychological dependence on others)
- **Obsessive-Compulsive** - rigid, inflexible conformity to rules, order, and codes)

1. Black, D.W., and N.C. Andreasen (2011). Introductory Textbook of Psychiatry, 5th Ed. Washington: American Psychiatric Publishing, Inc. pp. 285-317

MOOD DISORDERS: Depressed Mood

Medical Conditions:

Neurological	C.V.A, Parkinson's, MS
Viral	Mononucleosis, HIV, Hepatitis
Endocrine	Cushing's, Hyper/hypothyroid
Other	Cancer, B12 deficiency

Drugs of Abuse:

Amphetamines Alcohol Cocaine

Medications:

Corticosteroids	Antihypertensives
Antipsychotics	Oral contraceptives

Depressed or Elevated Mood

Rule out depressed or elevated mood disorder due to substances and/or general medical condition

Elevated Mood +/- Depressed Mood

Depressed Mood Only

2 week period, depressed mood nearly everyday

- Major Depressive Disorder

Depressed Mood
Sleep changes
Interest – anhedonia
Guilt
Energy – anergia
Concentration - decrease
Appetite +/- 5% body weight in one month
Psychomotor agitation or retardation
Suicidal thoughts

Suicide = 15% over lifetime

Depressed mood more days than not for > 2 years

- Persistent Depressive Disorder

2 or more:

1) Decreased appetite
2) Insomnia
3) Anergia
4) Poor concentration
5) Hopelessness
6) Low self-esteem

Prevalence = 3% over lifetime

Depressed mood in context of specific stressor < 6 months

- Adjustment Disorder with Depressed Mood

Prevalence = 5%
Hospitalized patients

Depressed mood in context of personal loss < 2 months

- Bereavement

None of:

1) Suicidal ideation
2) Psychosis (except hallucinations of deceased)
3) Guilt (except deceased)

MOOD DISORDERS: Elevated Mood

Medical Conditions:

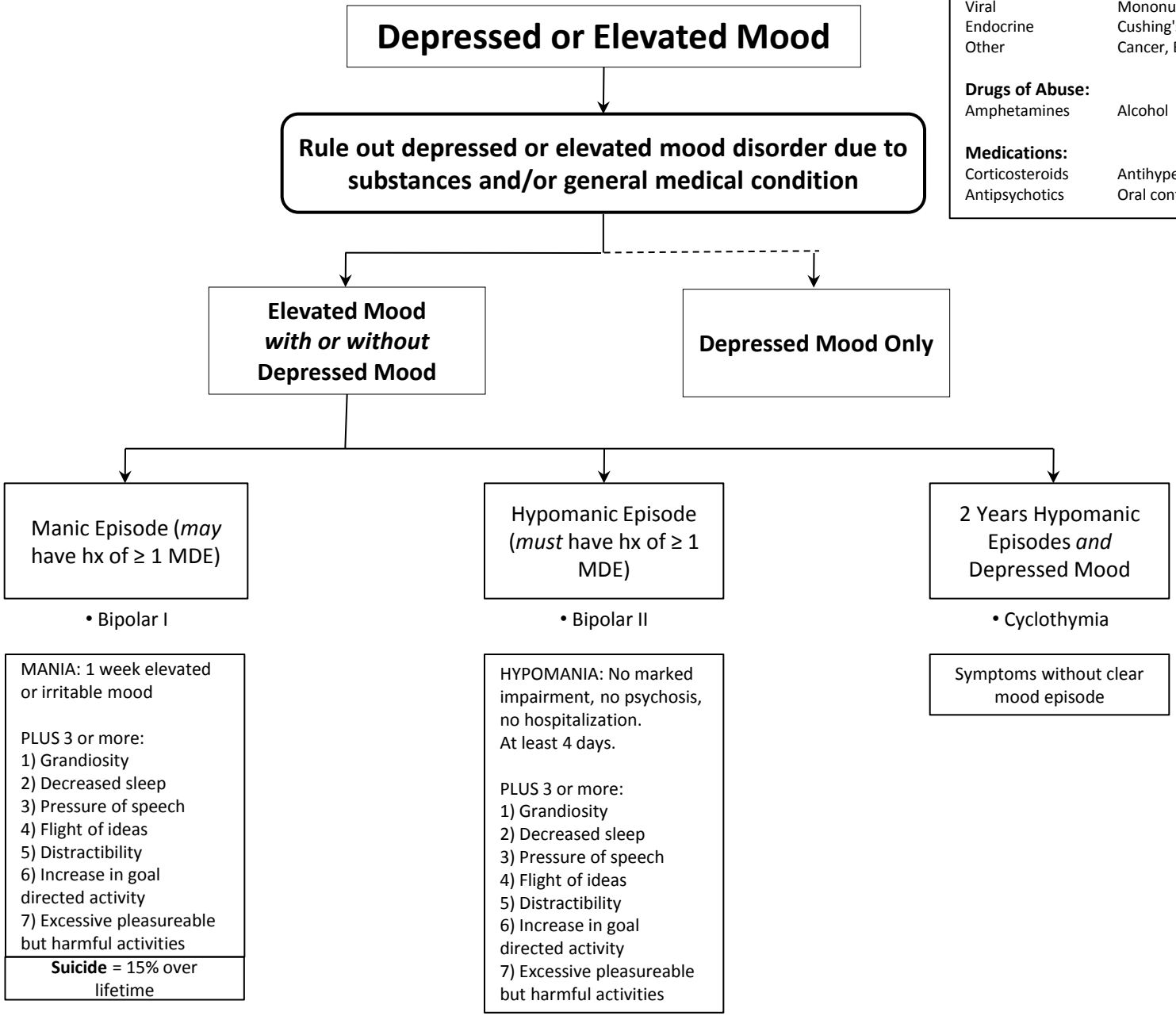
Neurological	C.V.A, Parkinson's, MS
Viral	Mononucleosis, HIV, Hepatitis
Endocrine	Cushing's, Hyper/hypothyroid
Other	Cancer, B12 deficiency

Drugs of Abuse:

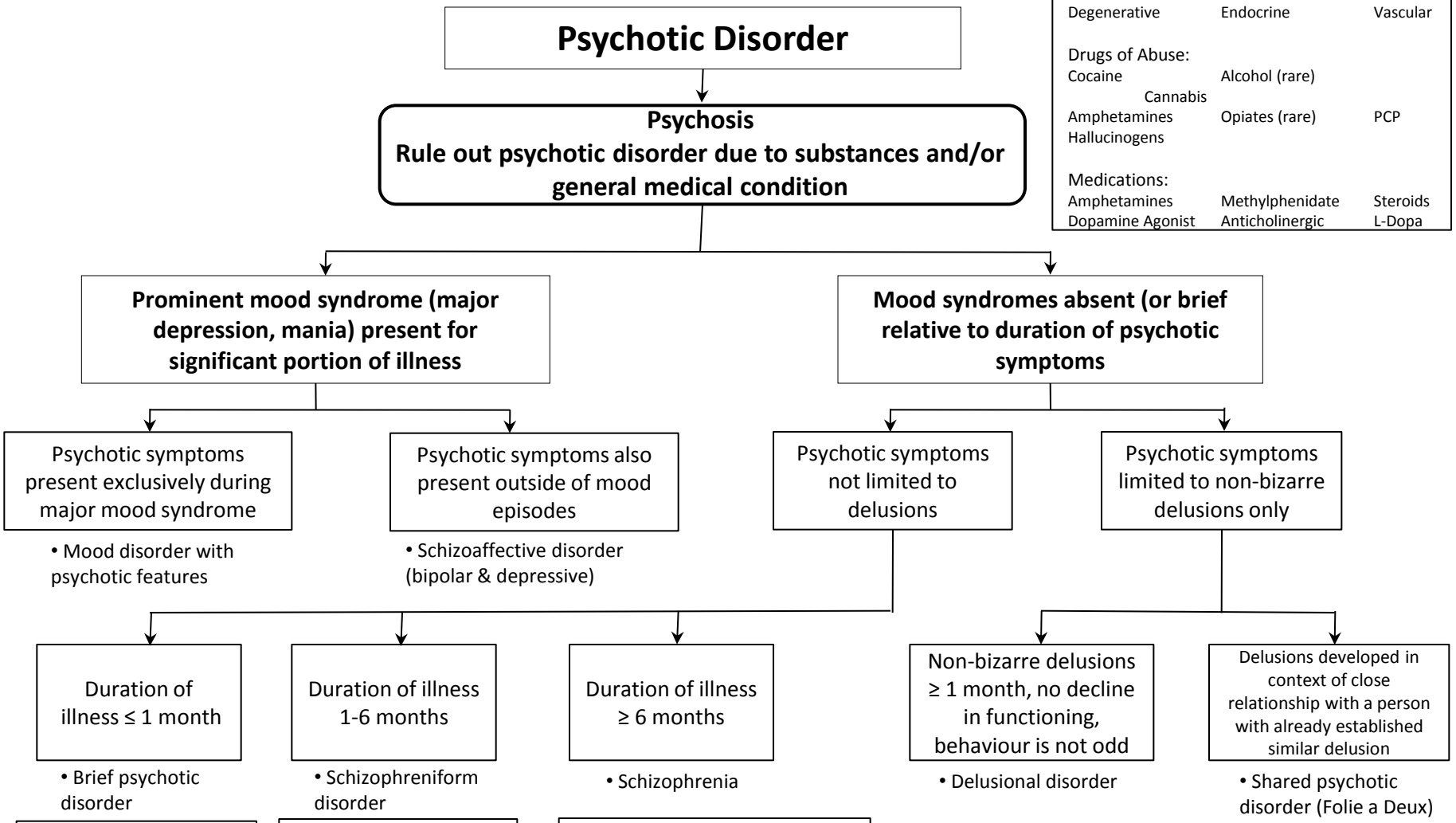
Amphetamines Alcohol Cocaine

Medications:

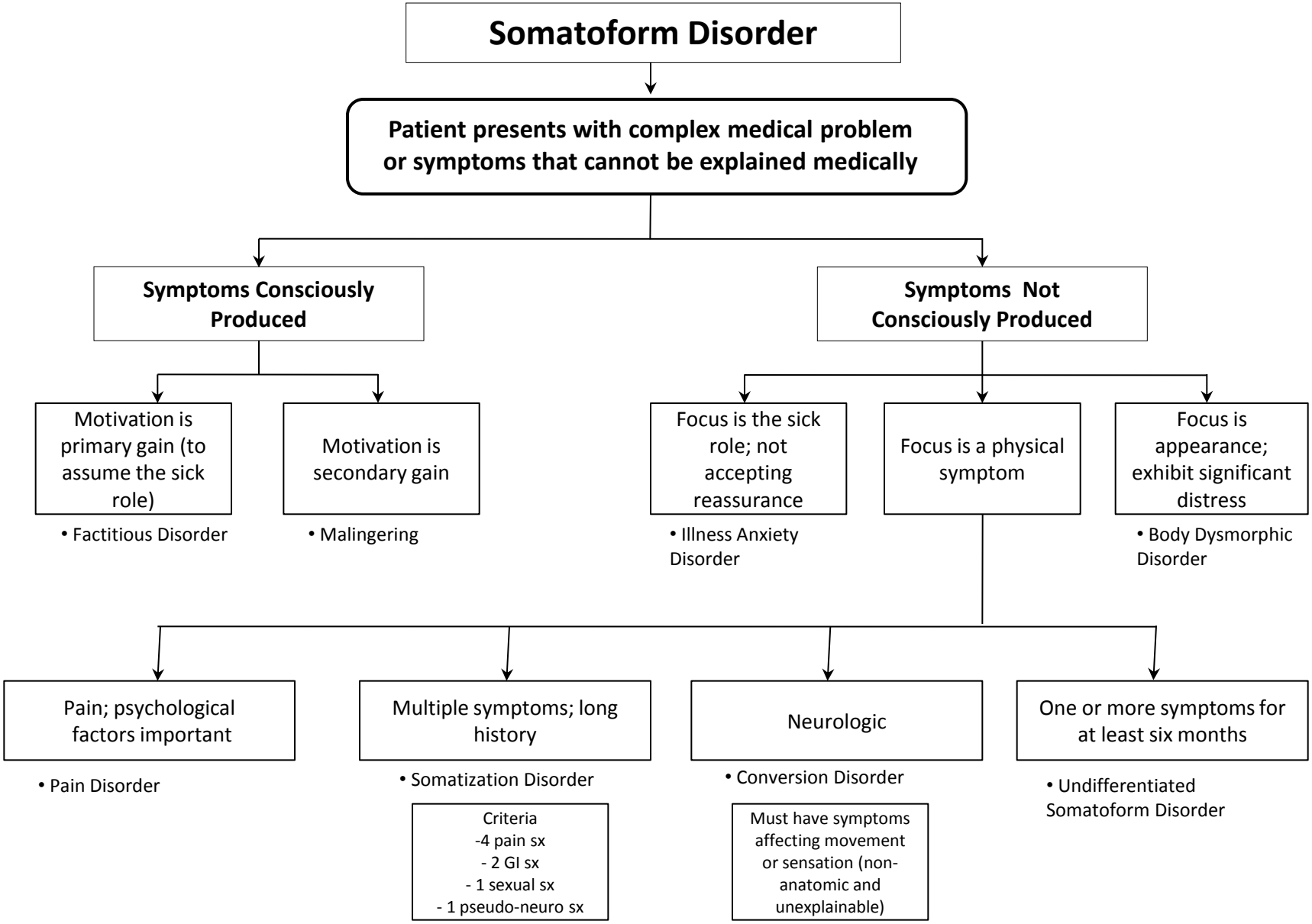
Corticosteroids	Antihypertensives
Antipsychotics	Oral contraceptives



PSYCHOTIC DISORDERS



SOMATOFORM DISORDERS



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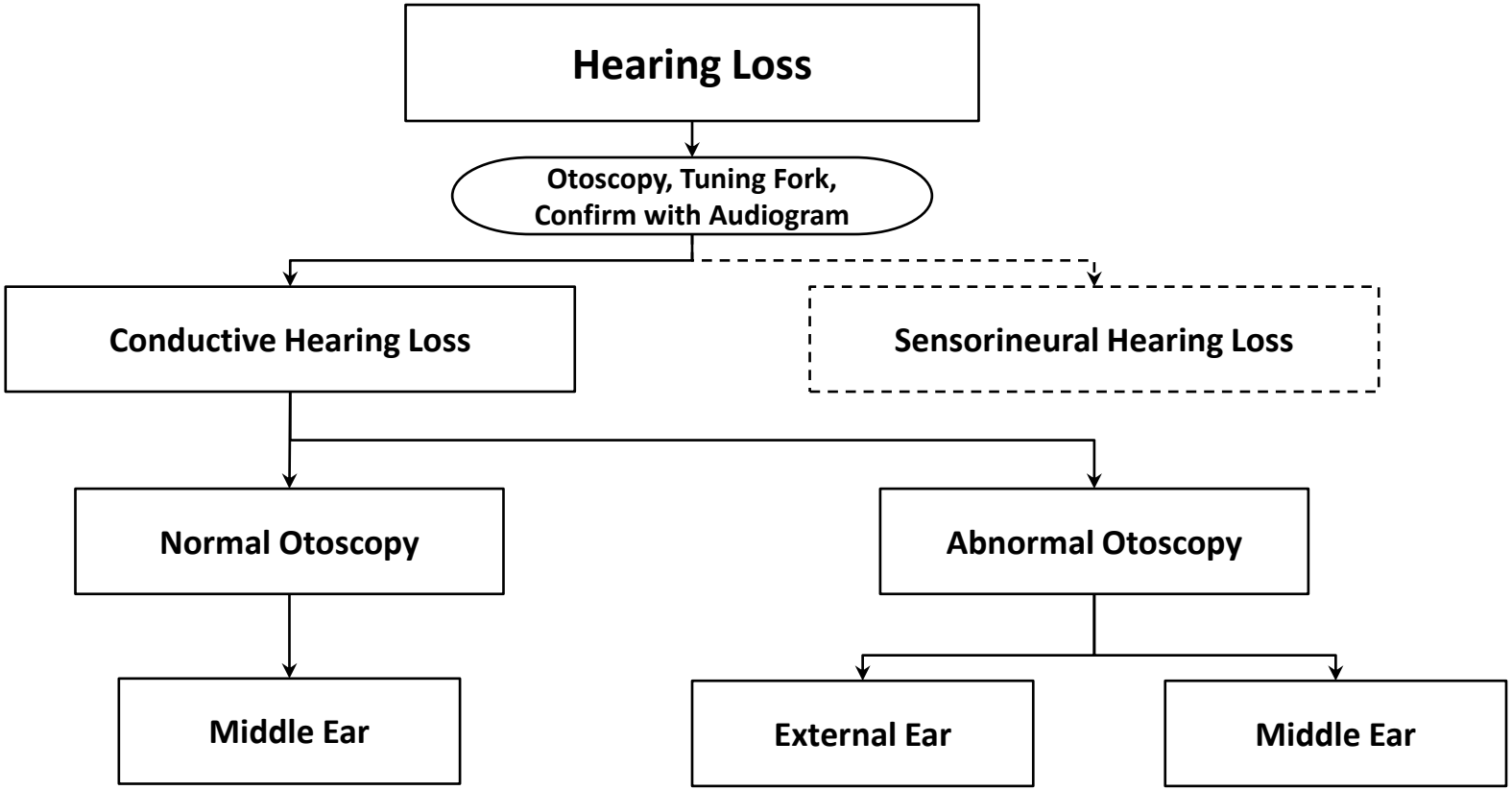
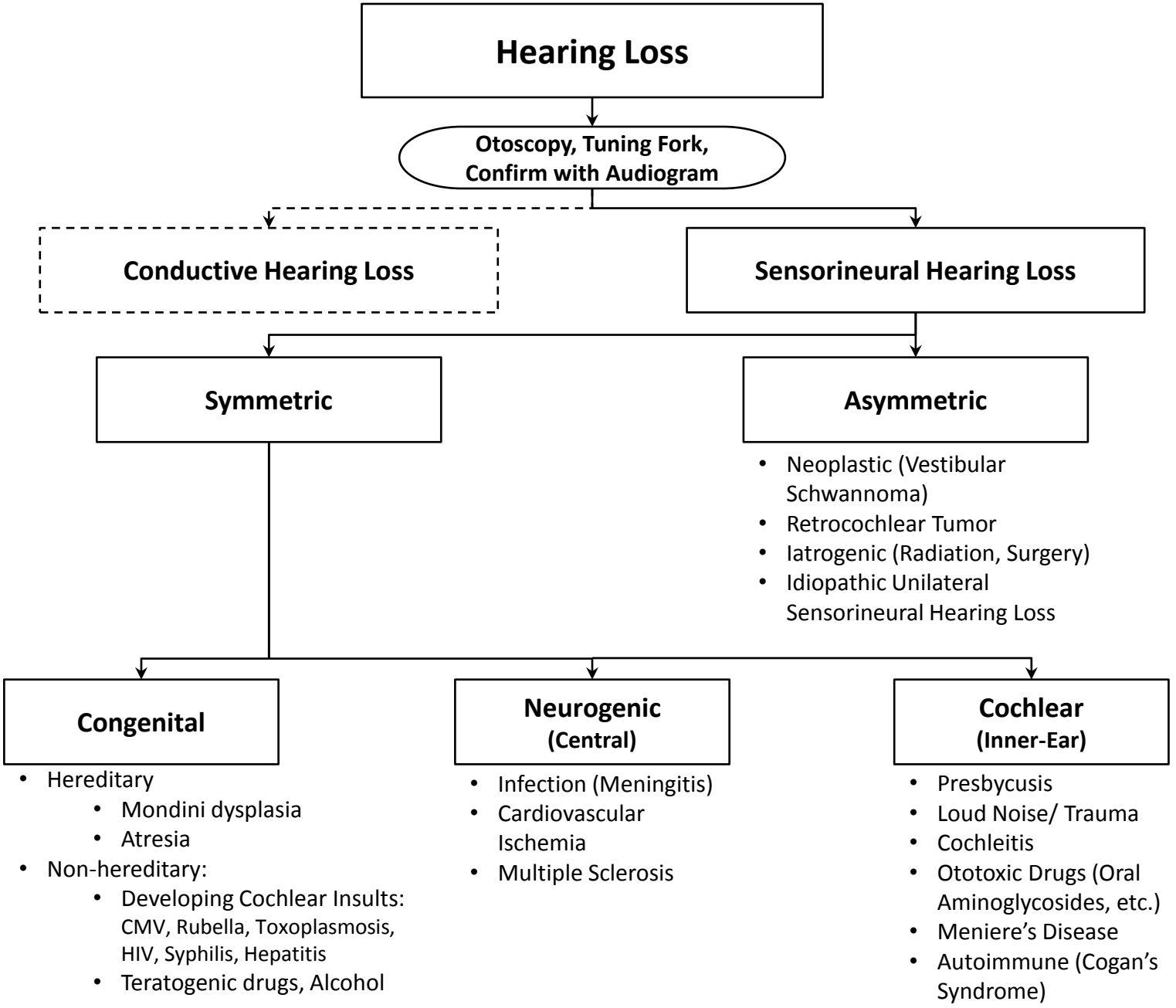
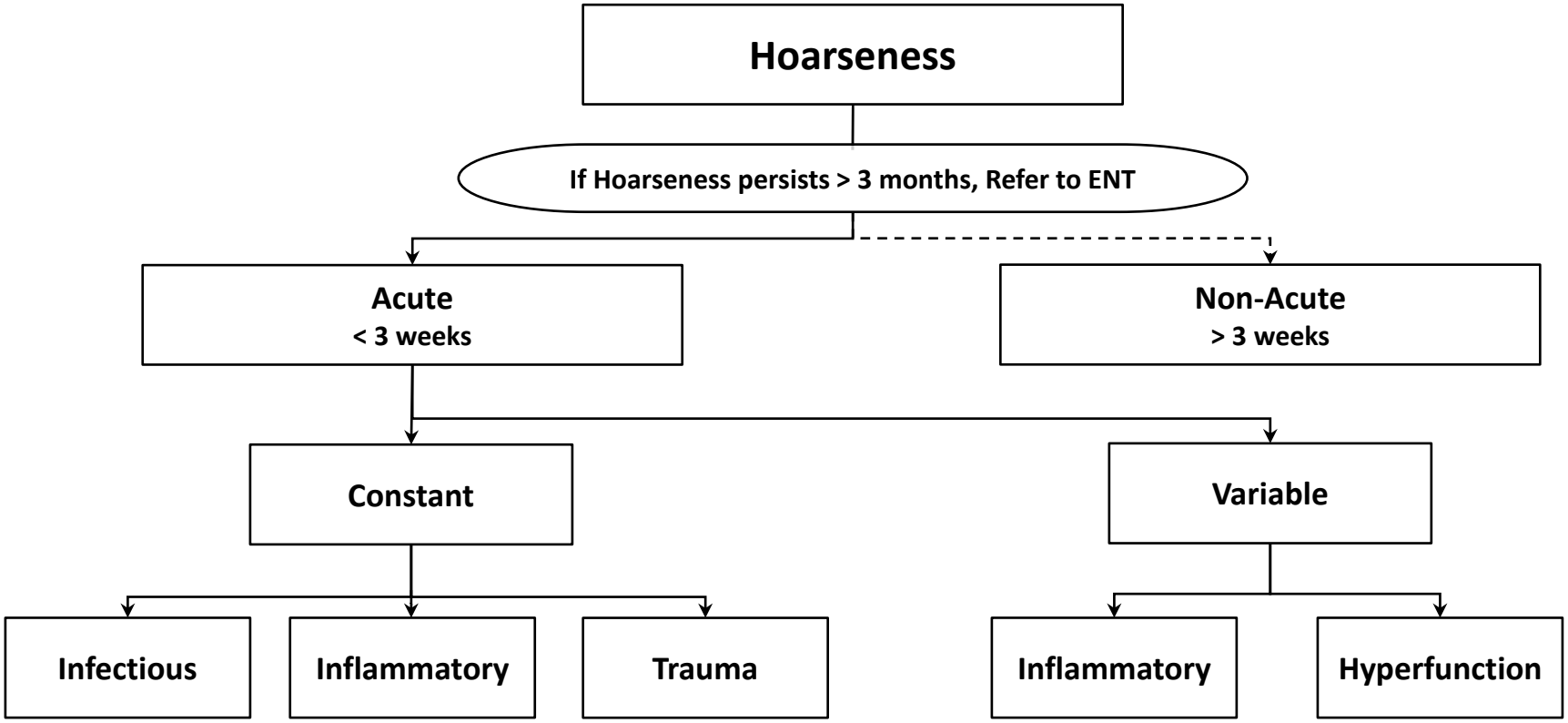
HEARING LOSS: Conductive



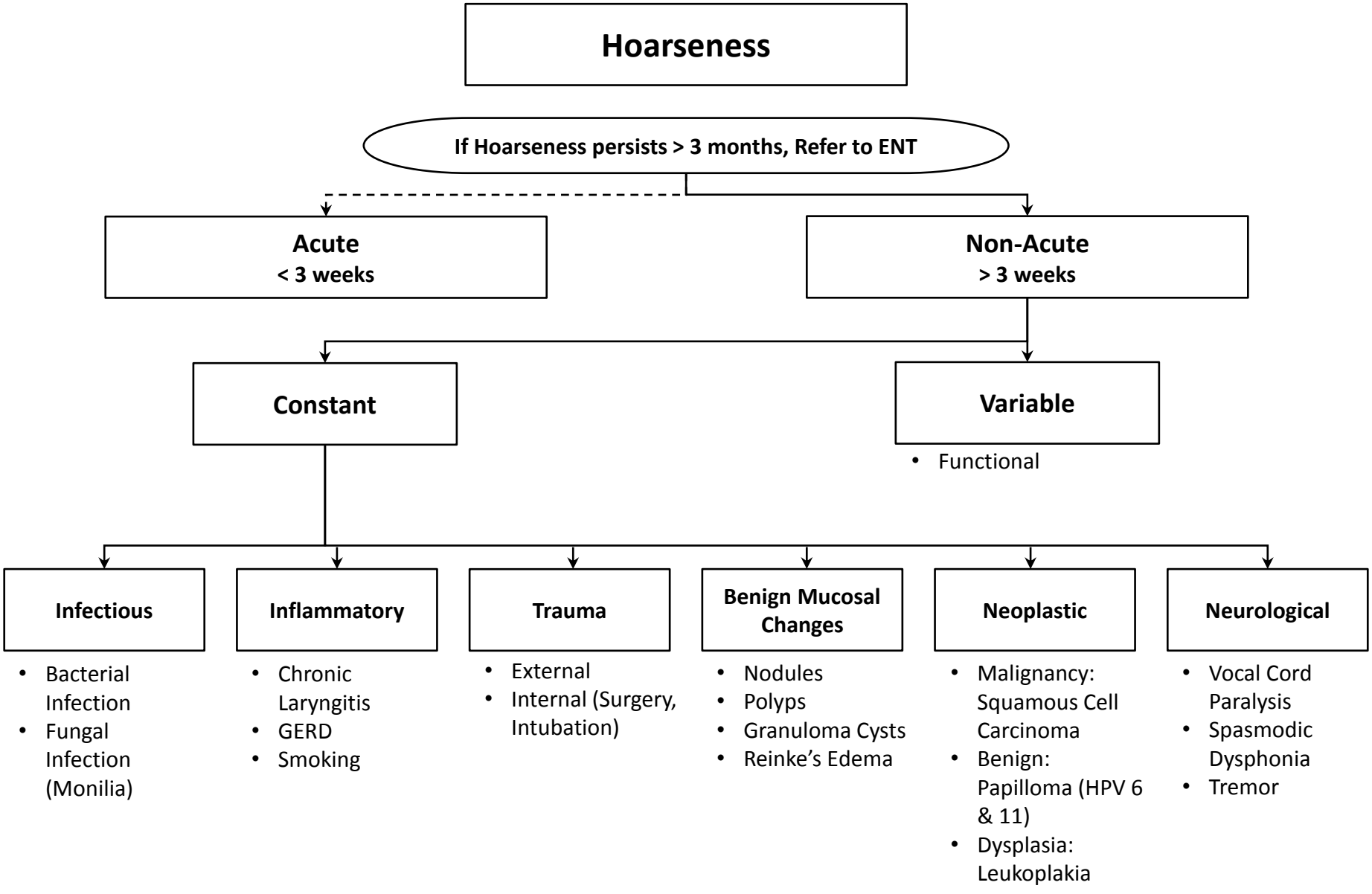
HEARING LOSS: Sensorineural



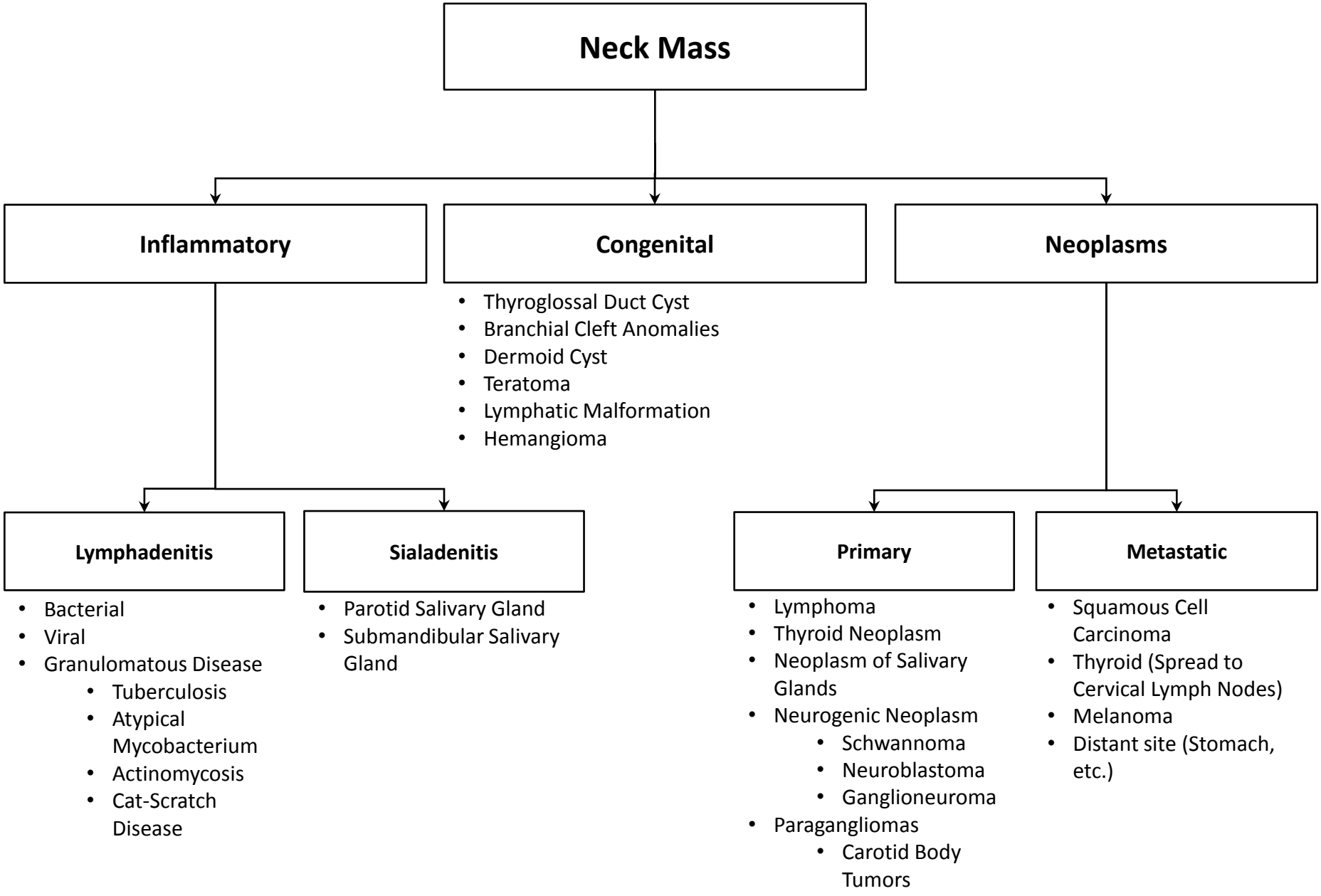
HOARSENESS: Acute



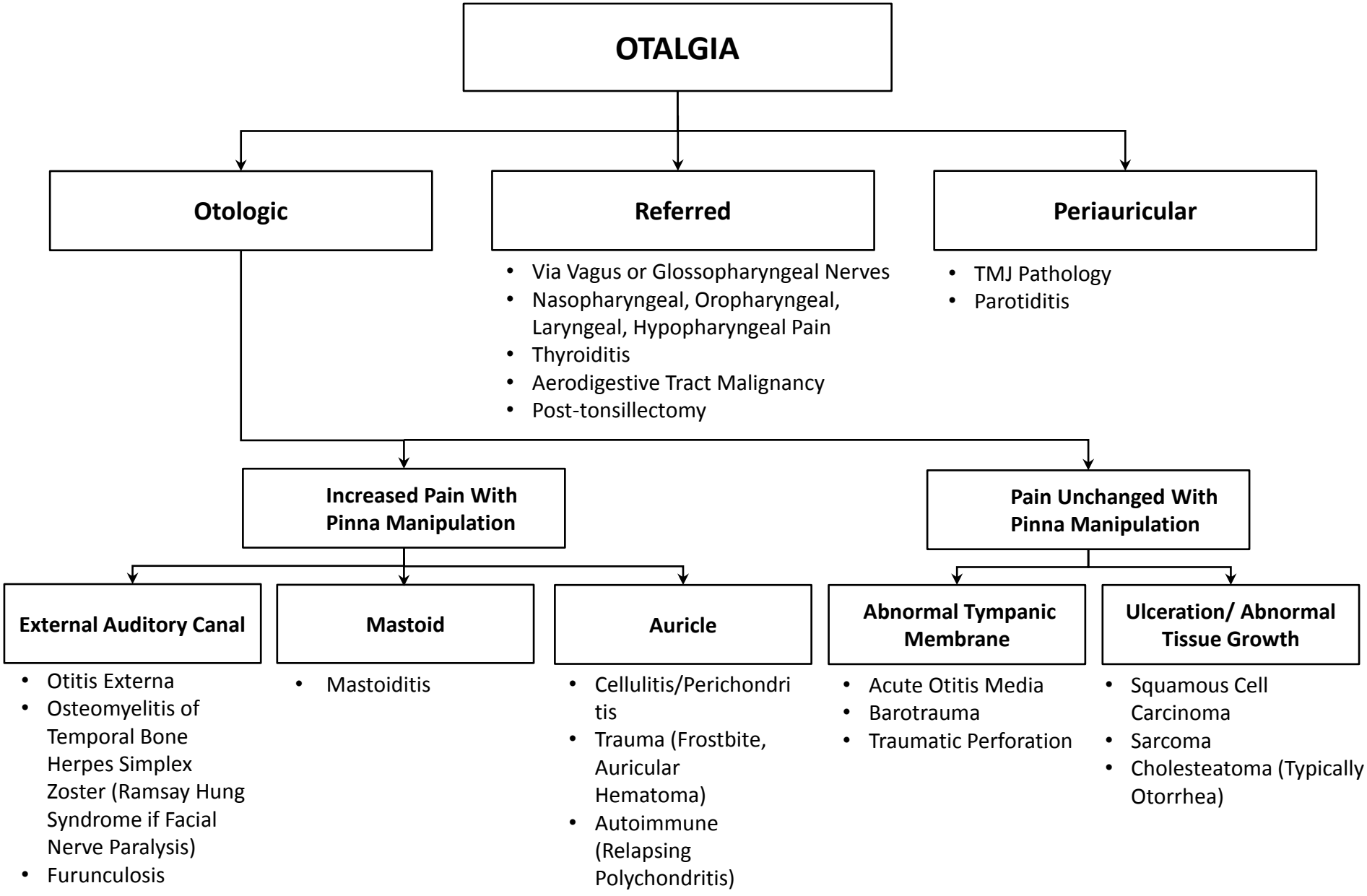
HOARSENESS: Non-Acute



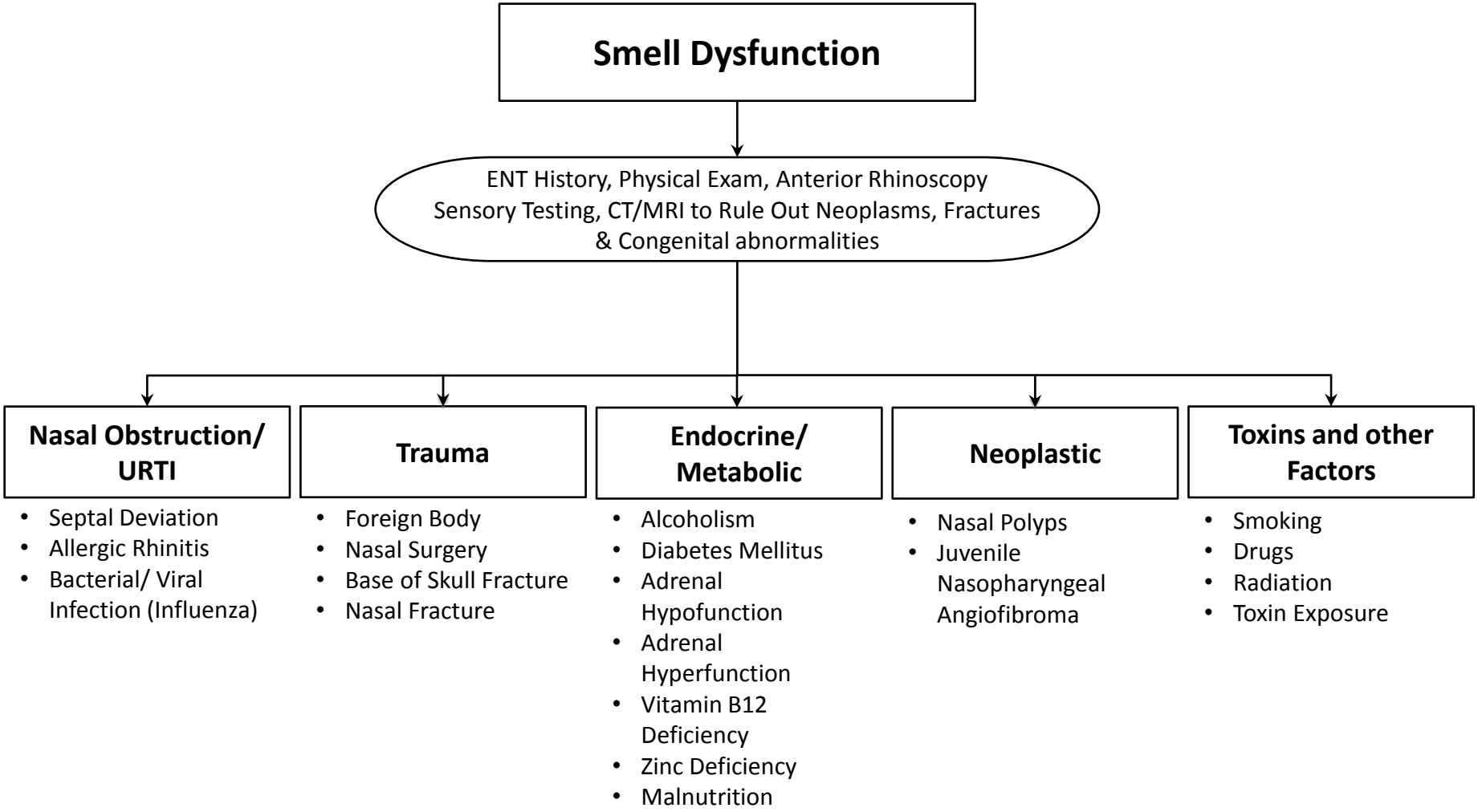
NECK MASS


Neck Mass
Inflammatory
Congenital
Neoplasms
• Thyroglossal Duct Cyst
• Branchial Cleft Anomalies
• Dermoid Cyst
• Teratoma
• Lymphatic Malformation
• Hemangioma
Lymphadenitis
Sialadenitis
Primary
Metastatic
• Bacterial
• Viral
• Granulomatous Disease
• Tuberculosis
• Atypical Mycobacterium
• Actinomycosis
• Cat-Scratch Disease
• Parotid Salivary Gland
• Submandibular Salivary Gland
• Lymphoma
• Thyroid Neoplasm
• Neoplasm of Salivary Glands
• Neurogenic Neoplasm
• Schwannoma
• Neuroblastoma
• Ganglioneuroma
• Paragangliomas
• Carotid Body Tumors
• Squamous Cell Carcinoma
• Thyroid (Spread to Cervical Lymph Nodes)
• Melanoma
• Distant site (Stomach, etc.)

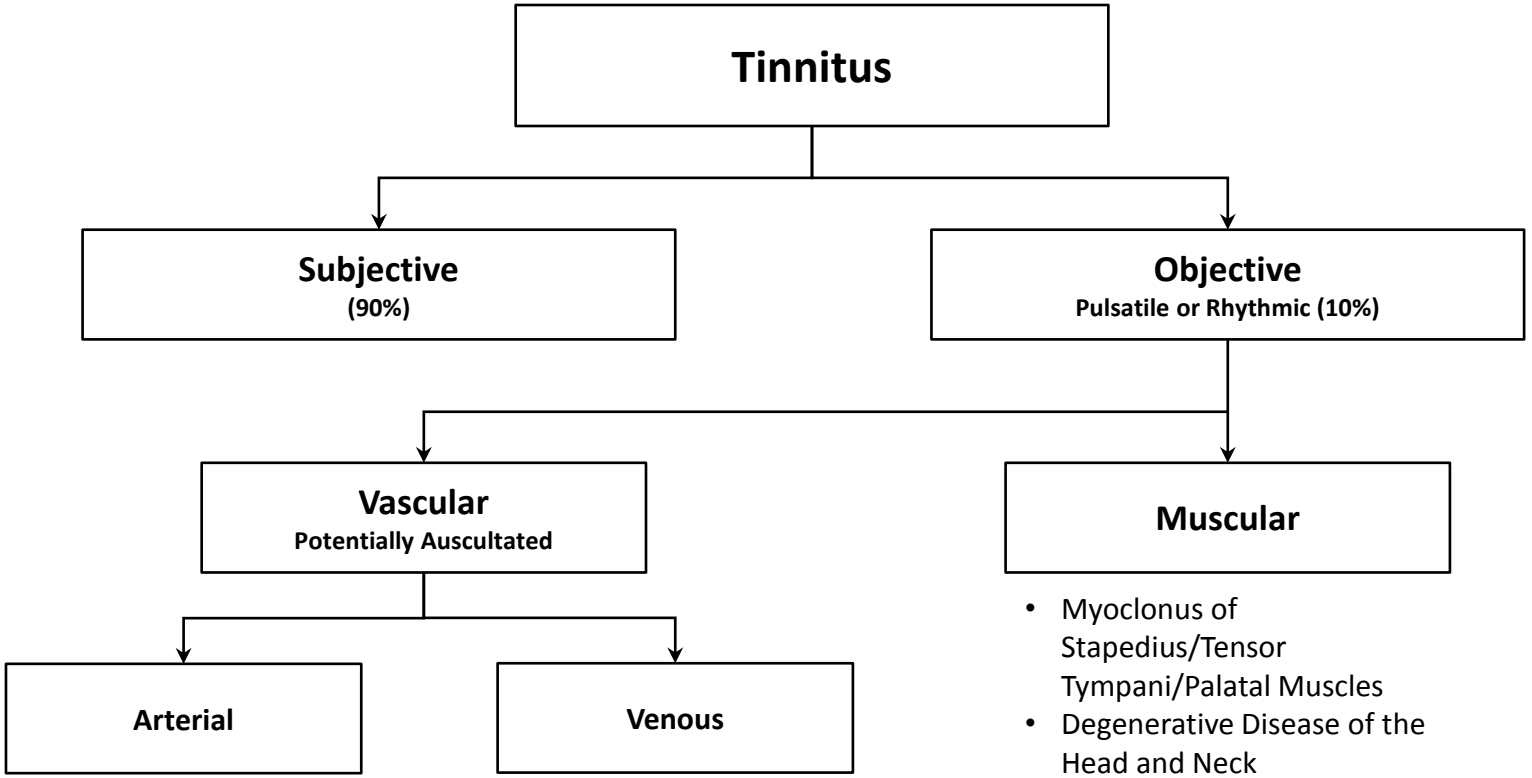
OTALGIA


OTALGIA
Otologic
Referred
Periauricular
• Via Vagus or Glossopharyngeal Nerves
• Nasopharyngeal, Oropharyngeal, Laryngeal, Hypopharyngeal Pain
• Thyroiditis
• Aerodigestive Tract Malignancy
• Post-tonsillectomy
• TMJ Pathology
• Parotiditis
Increased Pain With Pinna Manipulation
Pain Unchanged With Pinna Manipulation
External Auditory Canal
Mastoid
Auricle
Abnormal Tympanic Membrane
Ulceration/ Abnormal Tissue Growth
• Otitis Externa
• Osteomyelitis of Temporal Bone
Herpes Simplex Zoster (Ramsay Hung Syndrome if Facial Nerve Paralysis)
• Furunculosis
• Mastoiditis
• Cellulitis/Perichondritis
• Trauma (Frostbite, Auricular Hematoma)
• Autoimmune (Relapsing Polychondritis)
• Acute Otitis Media
• Barotrauma
• Traumatic Perforation
• Squamous Cell Carcinoma
• Sarcoma
• Cholesteatoma (Typically Otorrhea)

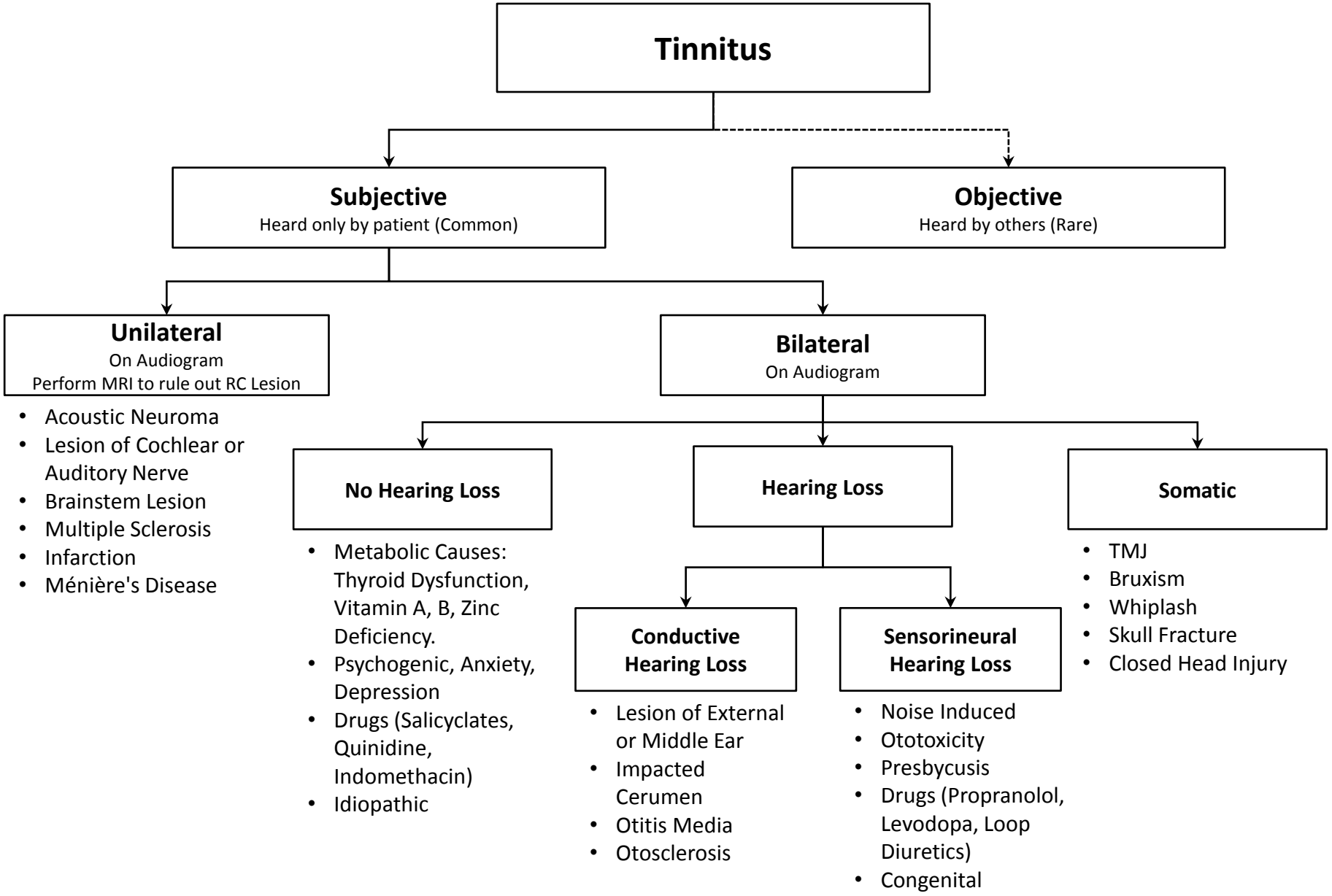
SMELL DYSFUNCTION



TINNITUS: Objective



TINNITUS: Subjective



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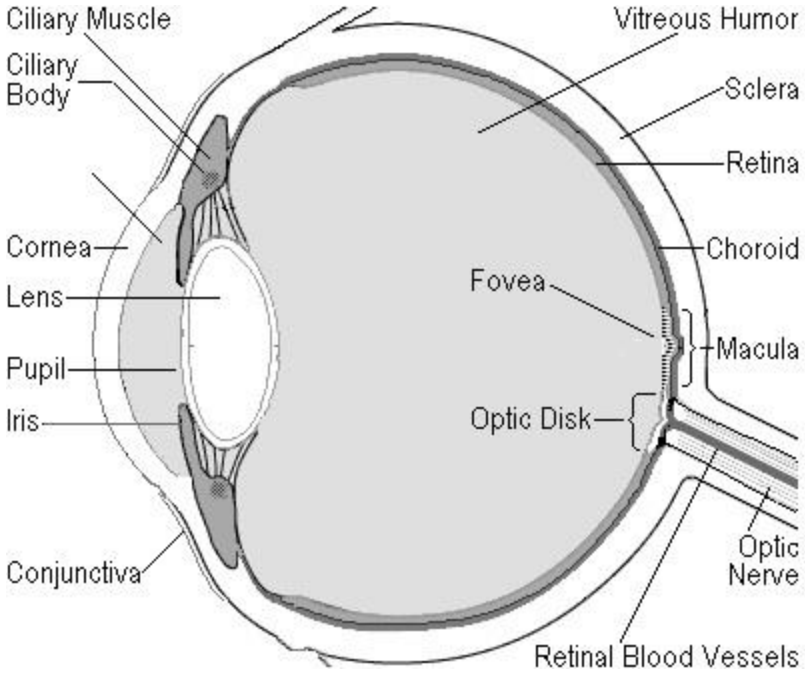
CROSS SECTION OF THE EYE and ABBREVIATIONS



Ophthalmology Acronyms

EOM - Extra ocular movements
IOL - Intraocular Lens
IOP - Intraocular Pressure
OD - Oculus Dexter (right eye)
OS - Oculus Sinister (left eye)
OU - Oculus Uterque (both eyes)
PERRLA - Pupils Equal, Round, Reactive to Light and Accommodation
RAPD - Relative Afferent pupillary defect
SLE - Slit Lamp Exam
VA - Visual Acuity

APPROACH TO AN EYE EXAM

1. History

2. Obvious Physical Trauma

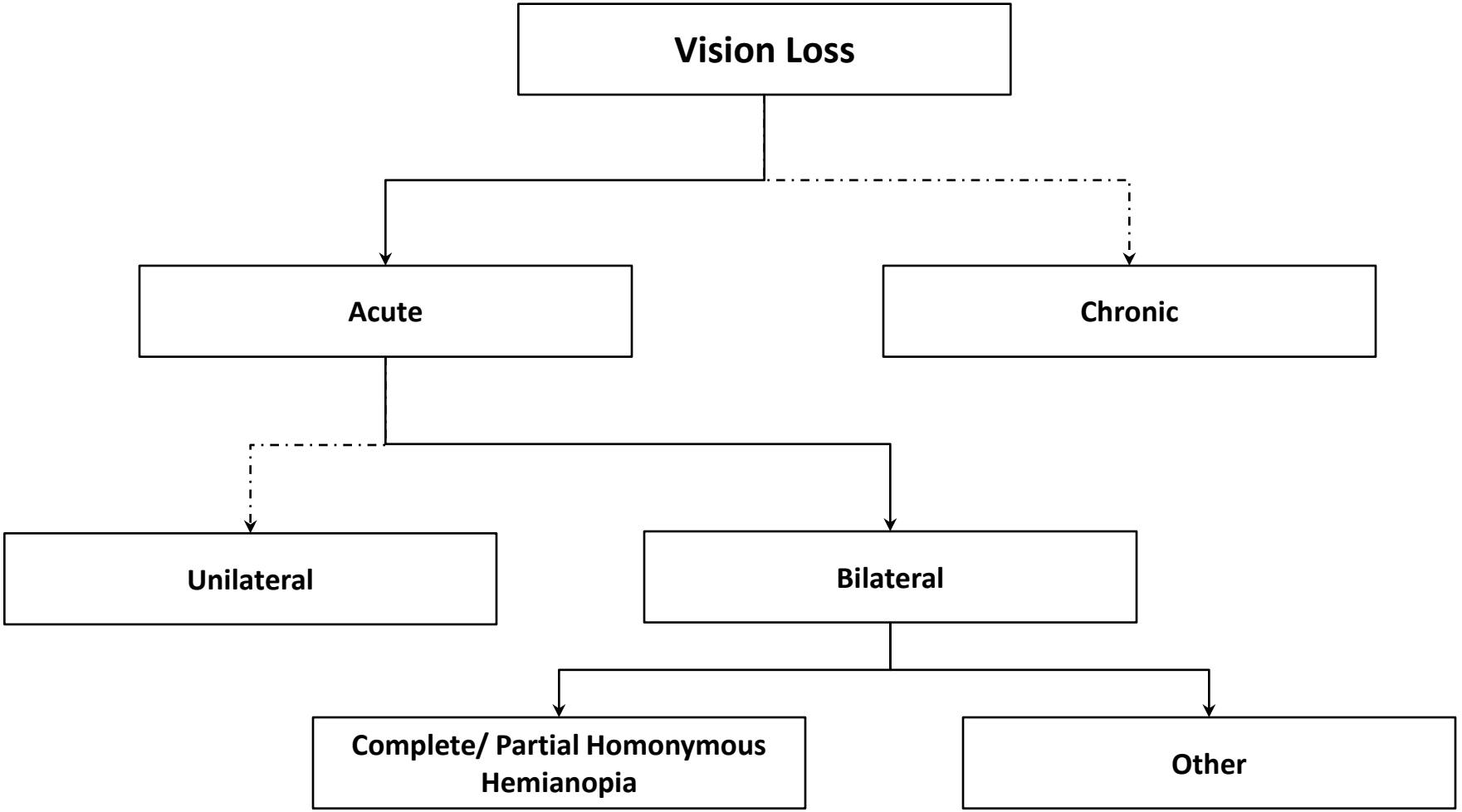
3. Initial Assessment
   - A. Visual Acuity
   - B. Pupils
     - a. Light Reflex, Accommodation, RAPD
   - C. Ocular Movements (CN 3, 4, 6)
   - D. Visual Fields by Confrontation

4. Slit Lamp Exam
   - A. Lids / Lashes/ Lacrimal
   - B. Sclera/ Conjunctiva
   - C. Cornea
   - D. Anterior Chamber
   - E. Iris
   - F. Lens
   - G. Vitreous Humor

5. Fundoscopy
   - A. Retina
   - B. Optic Nerve/ Disc/ Cup: Disc Ratio
   - C. Macula
   - D. Fovea
   - E. Blood Vessels

ACUTE VISION LOSS: Bilateral

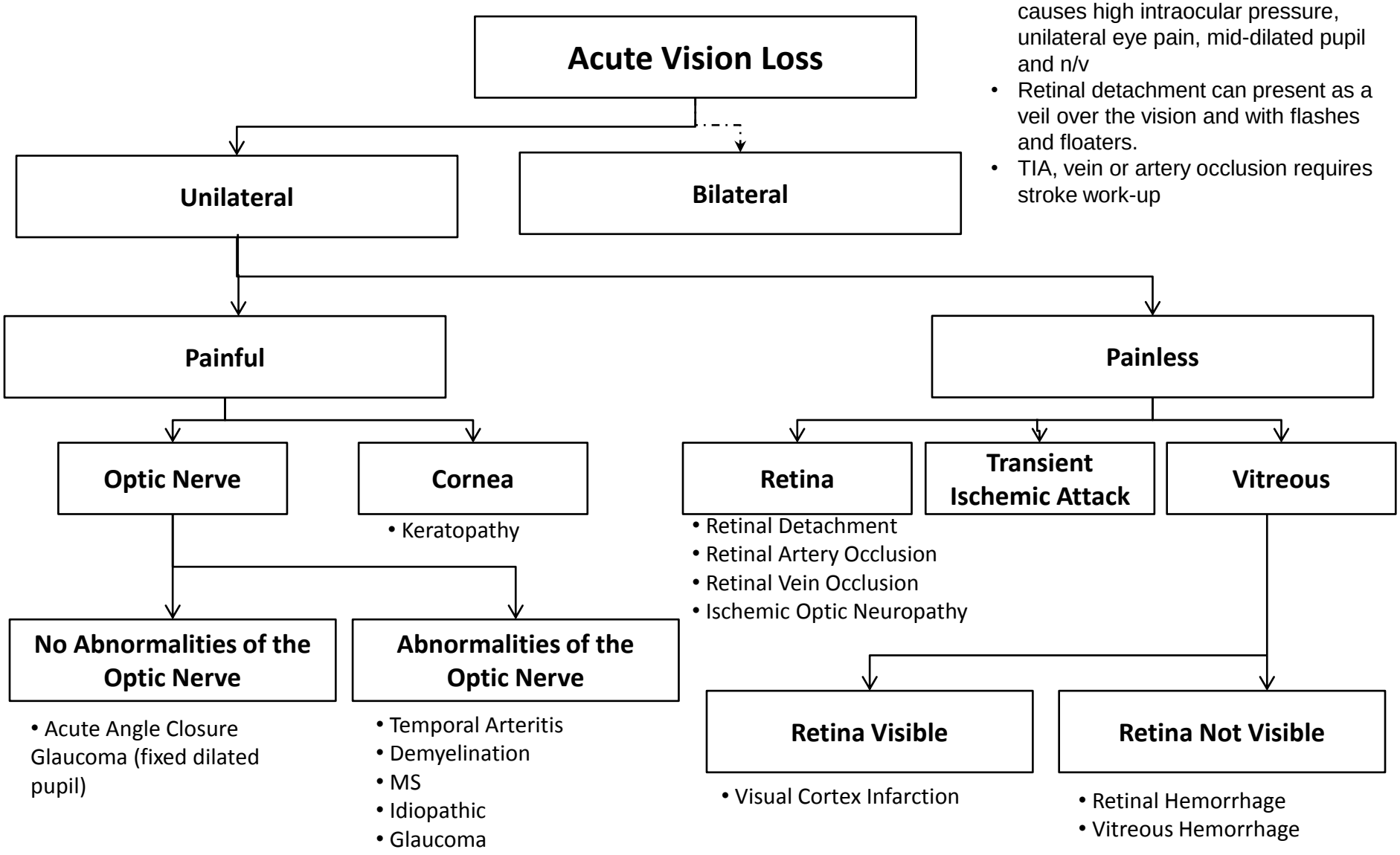
Clinical Pearl:
- Patients with bilateral acute vision loss should have a CT.



ACUTE VISION LOSS: Unilateral

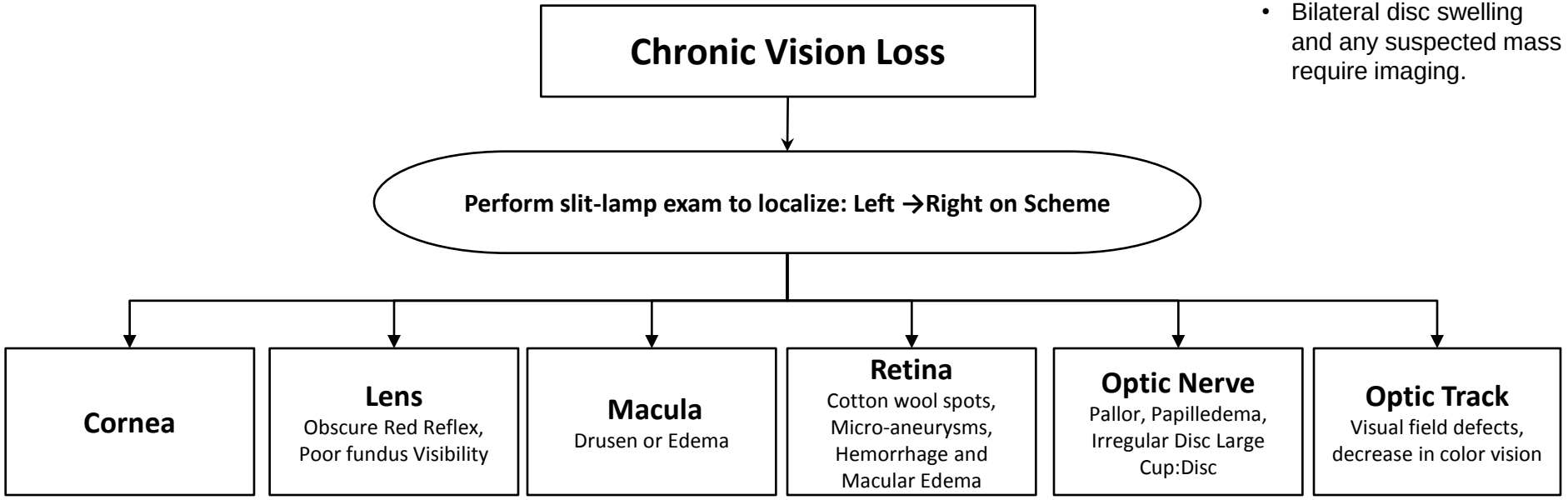
Clinical Pearls:

- Optic neuritis causes pain with EOM
- Temporal arteritis causes temporalis pain and pain with mastication
- Acute angle closure glaucoma causes high intraocular pressure, unilateral eye pain, mid-dilated pupil and n/v
- Retinal detachment can present as a veil over the vision and with flashes and floaters.
- TIA, vein or artery occlusion requires stroke work-up



CHRONIC VISION LOSS: Anatomic

Clinical Pearls:
- Edema can cause halos in the vision.
- Bilateral disc swelling and any suspected mass require imaging.



- Keratoconus
- Stromal Scaring
- Neovascularization
- Edema
- Pterygium

- Cataract (Nuclear, Subcapsular, Cortical)

- Age Related Macular Degeneration (Wet, Dry)

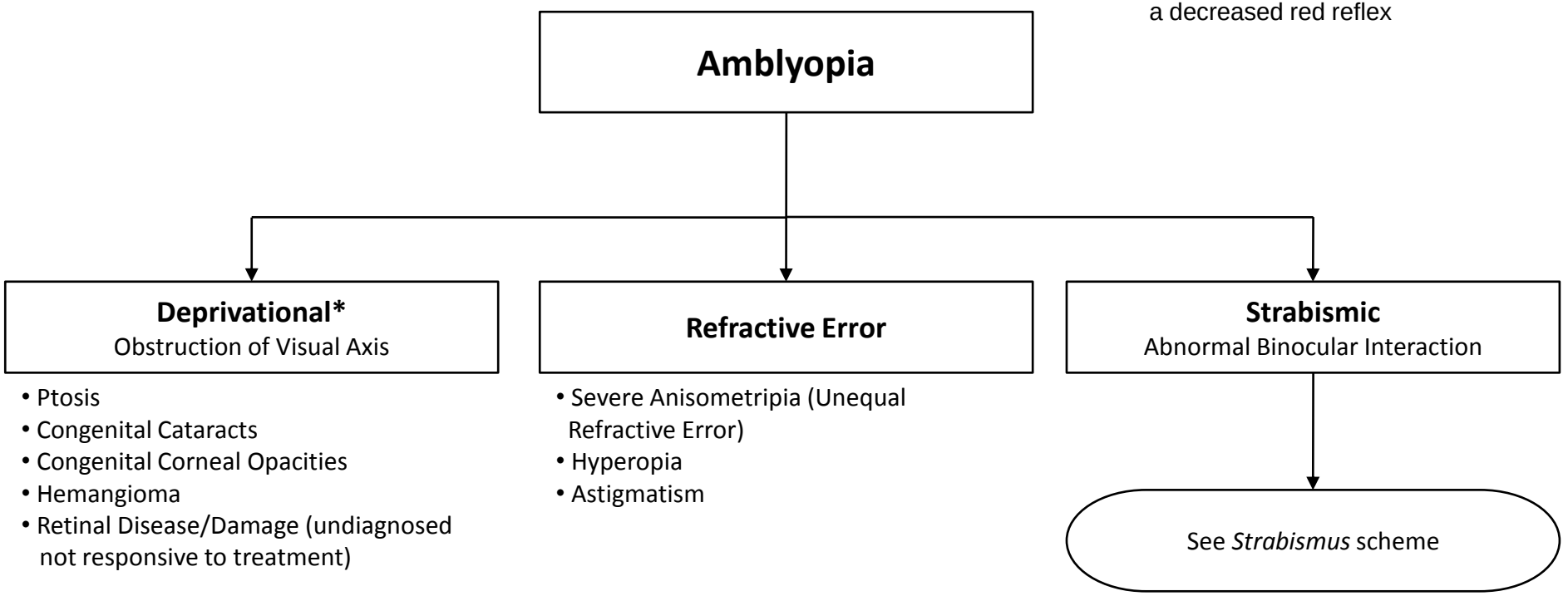
- Diabetic Retinopathy (Background, Pre-Proliferative, Proliferative)
- Retinitis Pigmentosa (Decreased night vision, loss of peripheral vision)
- Systemic inflammatory conditions

- Glaucoma (Open-Angle)

- Optic Nerve Compression
- Pituitary Lesion
- Meningioma
- Craniopharyngioma

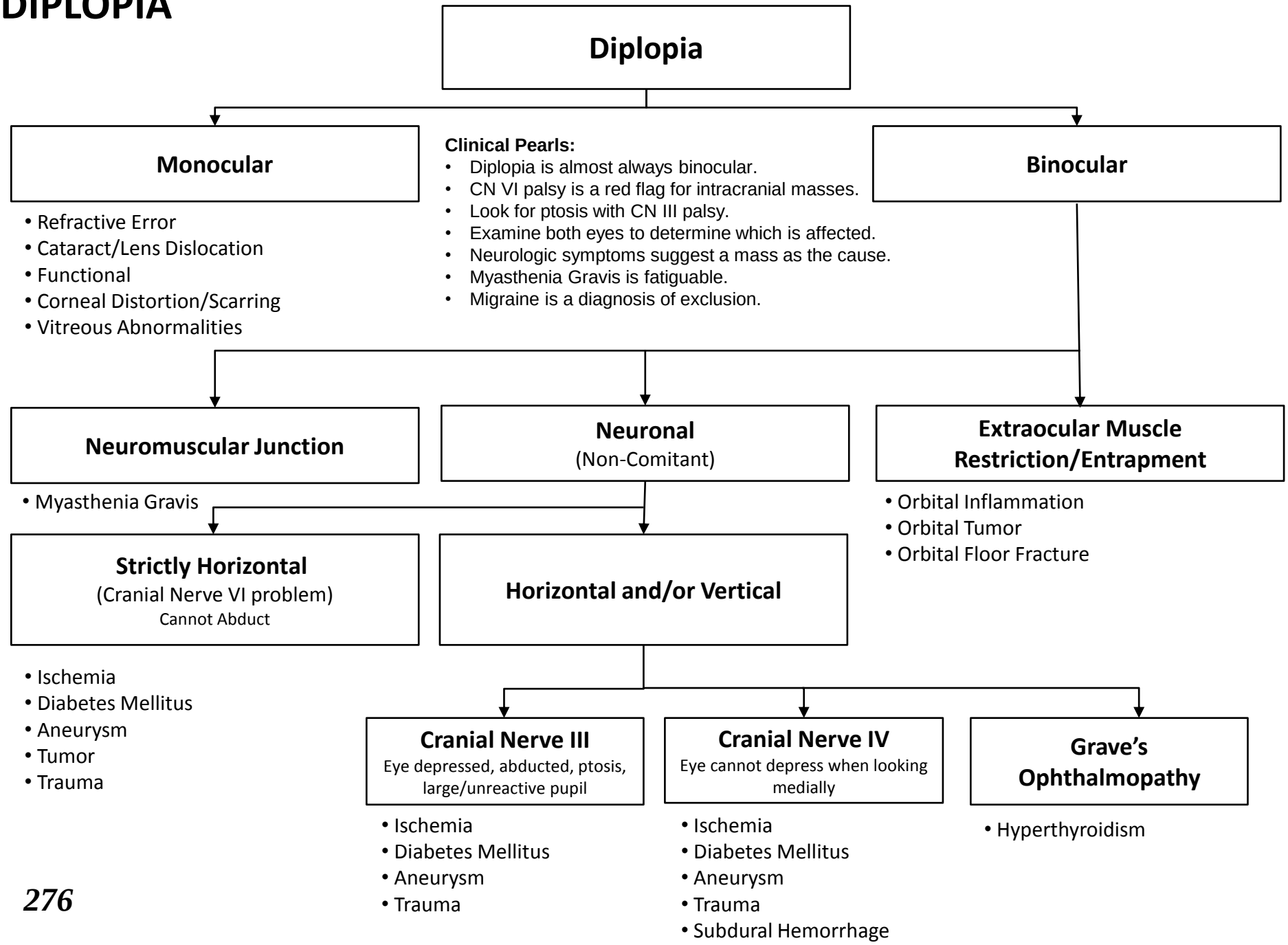
AMBLYOPIA

Clinical Pearl:
- Congenital cataracts and retinoblastoma's cause leukocoria and a decreased red reflex

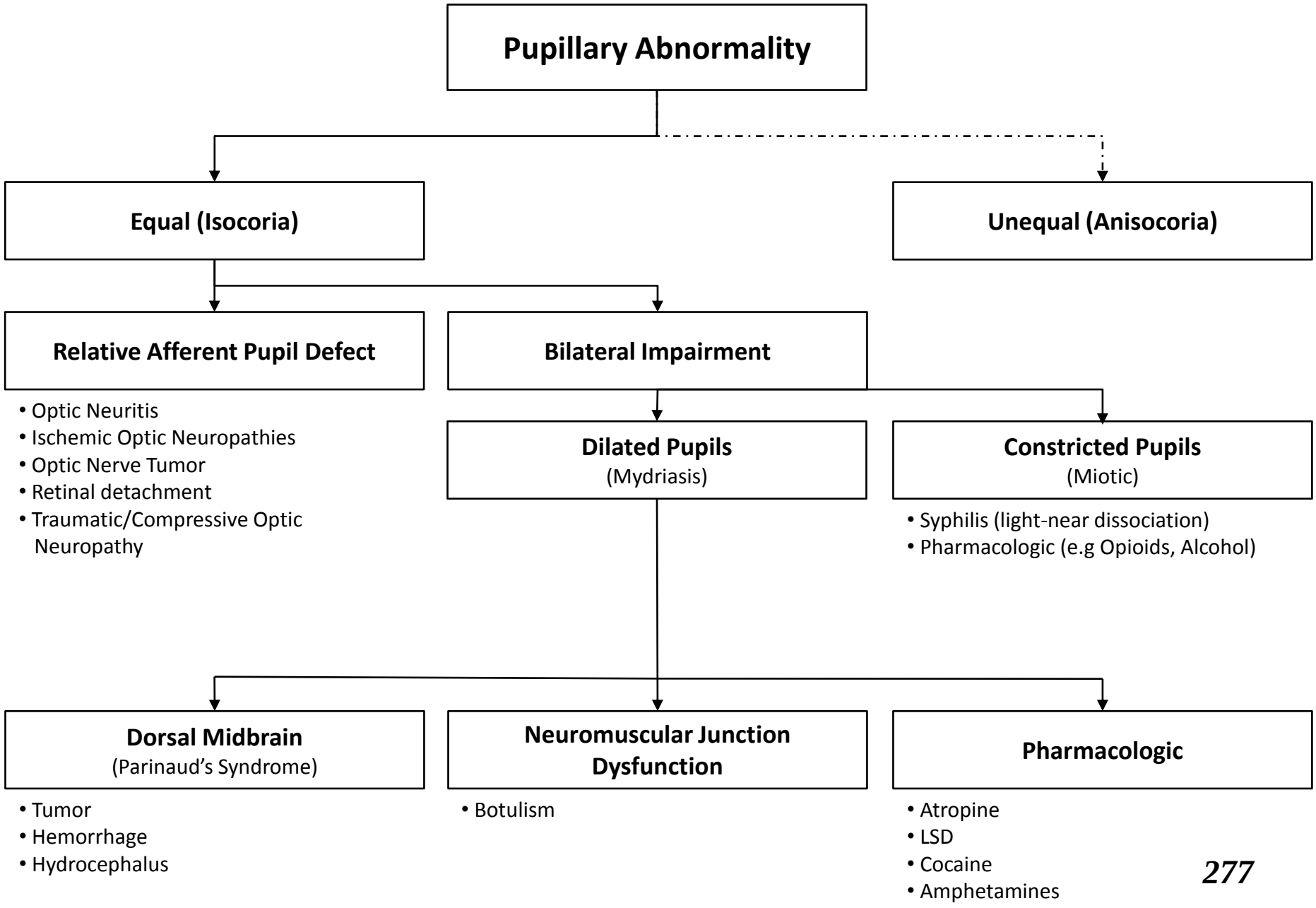


* Can cause permanent visual impairment if not treated urgently in infancy

DIPLOPIA

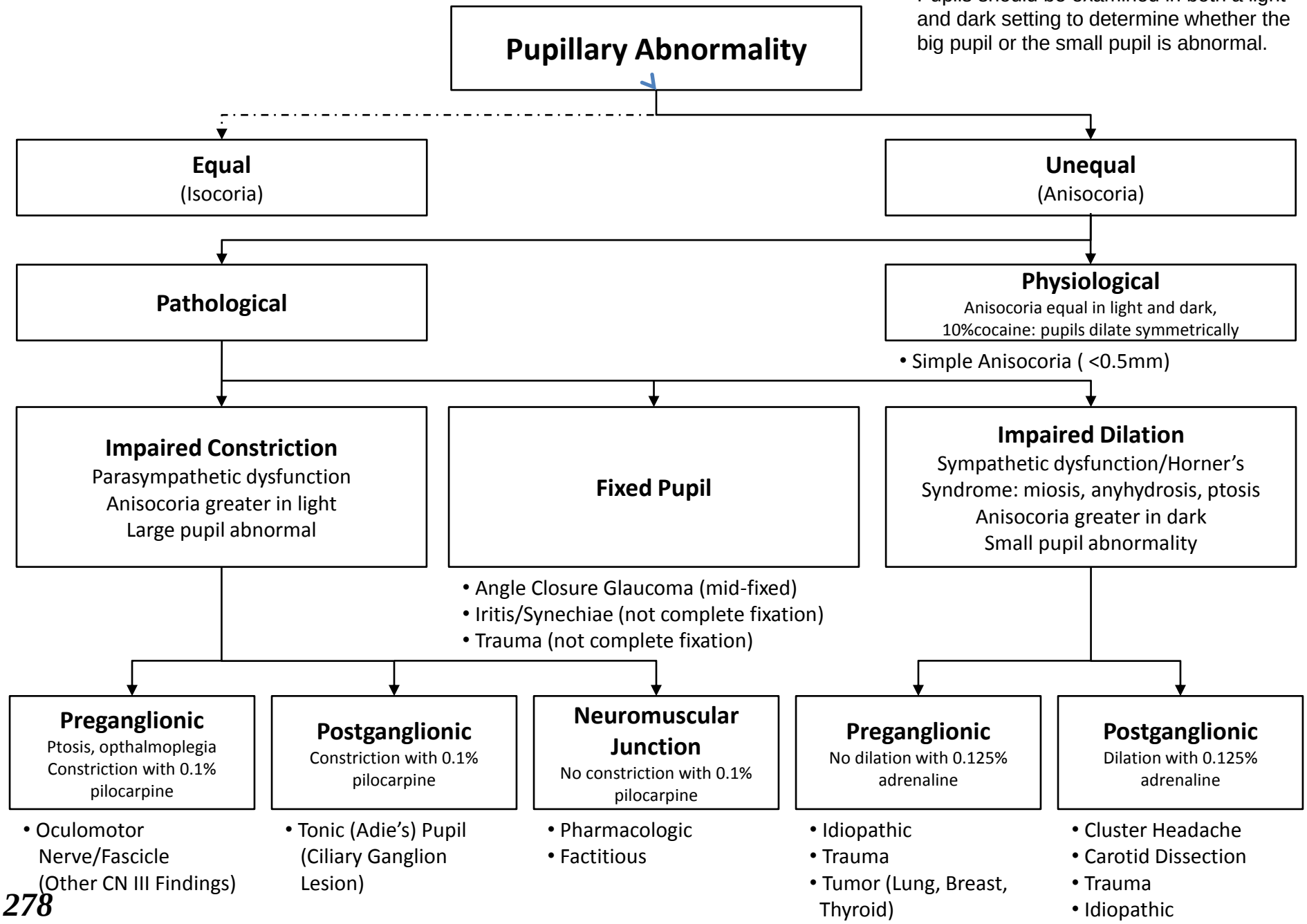

Diplopia
Monocular
Binocular
Clinical Pearls:
• Diplopia is almost always binocular.
• CN VI palsy is a red flag for intracranial masses.
• Look for ptosis with CN III palsy.
• Examine both eyes to determine which is affected.
• Neurologic symptoms suggest a mass as the cause.
• Myasthenia Gravis is fatiguable.
• Migraine is a diagnosis of exclusion.
• Refractive Error
• Cataract/Lens Dislocation
• Functional
• Corneal Distortion/Scarring
• Vitreous Abnormalities
Neuromuscular Junction
Neuronal
(Non-Comitant)
Extraocular Muscle Restriction/Entrapment
• Myasthenia Gravis
• Orbital Inflammation
• Orbital Tumor
• Orbital Floor Fracture
Strictly Horizontal
(Cranial Nerve VI problem)
Cannot Abduct
Horizontal and/or Vertical
• Ischemia
• Diabetes Mellitus
• Aneurysm
• Tumor
• Trauma
Cranial Nerve III
Eye depressed, abducted, ptosis, large/unreactive pupil
Cranial Nerve IV
Eye cannot depress when looking medially
Grave's Ophthalmopathy
• Ischemia
• Diabetes Mellitus
• Aneurysm
• Trauma
• Ischemia
• Diabetes Mellitus
• Aneurysm
• Trauma
• Subdural Hemorrhage
• Hyperthyroidism

PUPILLARY ABNORMALITES: Isocoria



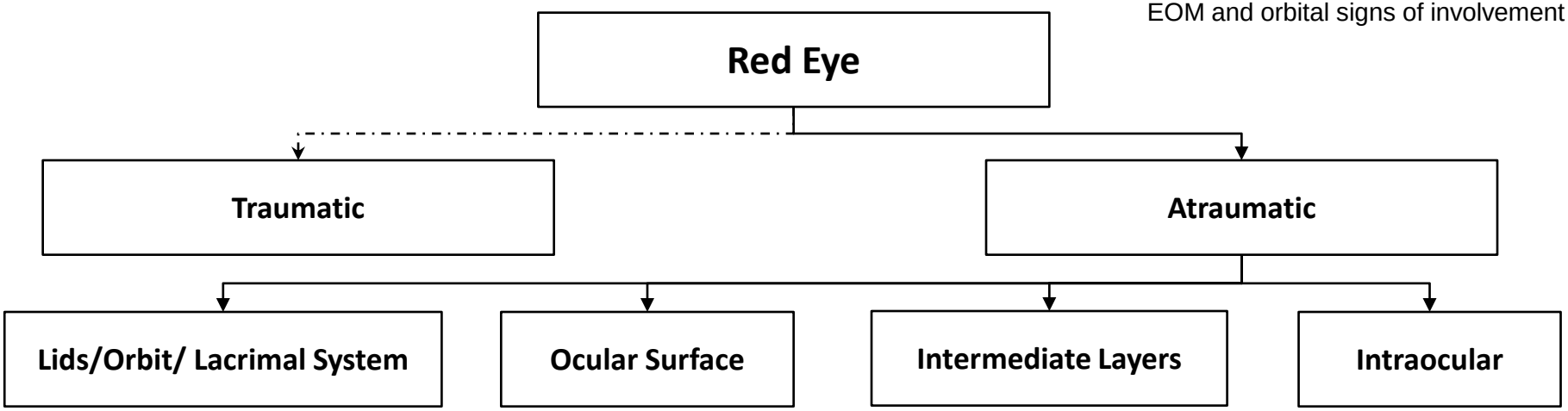
PUPILLARY ABNORMALITIES: Anisocoria

Clinical Pearl:
- Pupils should be examined in both a light and dark setting to determine whether the big pupil or the small pupil is abnormal.



RED EYE: Atraumatic

Clinical Pearl:
- Orbital cellulitis can present with pain on EOM and orbital signs of involvement



- Blepharitis
- Stye/ Chalazion
- Dacrocystitis
- Pre-septal cellulitis
- Orbital Cellulitis

- Subconjunctival Hemorrhage
- Conjunctivitis
- Corneal Abrasion/ Erosion
- Keratitis/Corneal Ulcer
- HSV Keratitis

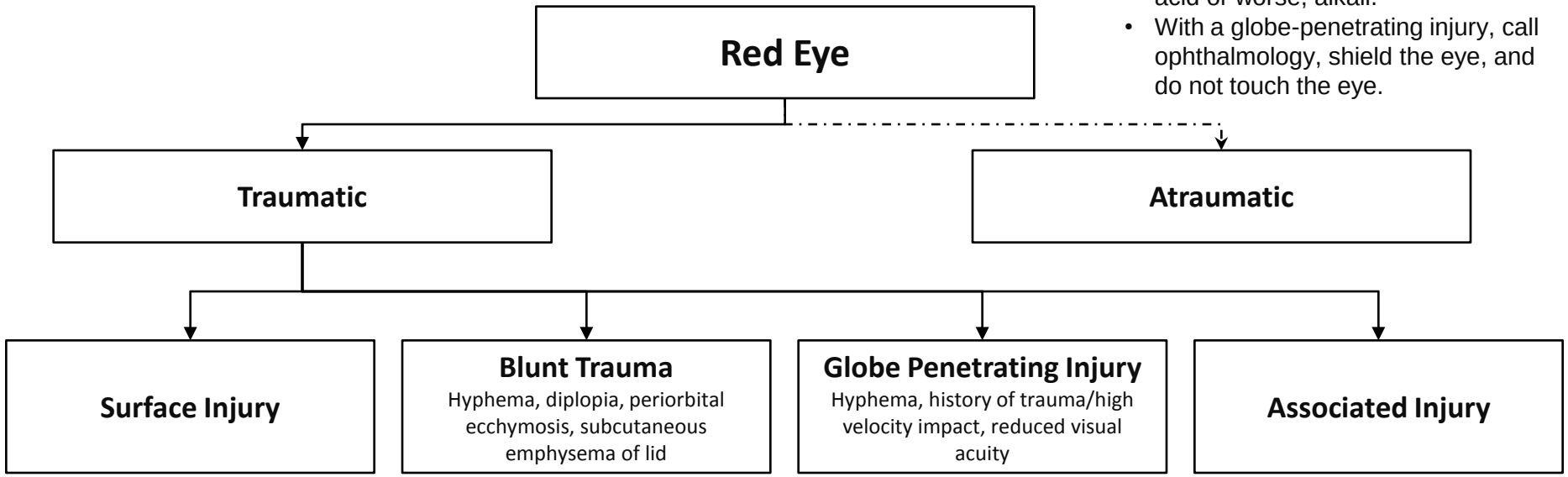
- Episcleritis
- Scleritis
- Uveitis
- Iritis

- Acute Angle Closure Glaucoma
- Endophthalmitis

RED EYE: Traumatic

Clinical Pearls:

- With chemical burns, it is important to determine if the burn was caused by acid or worse, alkali.
- With a globe-penetrating injury, call ophthalmology, shield the eye, and do not touch the eye.



- Corneal Abrasion
- Ultraviolet Keratitis
- Chemical (Acid, alkali)

- Orbital Rim/Mid-facial Fracture
- Orbital Floor Fracture
- Orbital Apex Injury/ Retrobulbar Fracture**

** Urgent lateral canthotomy

- Lids: Swelling, Laceration
- Conjunctiva: Subconjunctival hemorrhage
- Cornea: Abrasion
- Iris: Laceration, iritis, iridodialysis
- Pupil: Traumatic mydriasis
- Lens: Cataract, dislocation
- Vitreous hemorrhage
- Retina: Tear, hemorrhage, choroidal rupture
- Glaucoma
- Optic Neuropathy

STRABISMUS: Ocular Misalignment

Clinical Peal:
- Strabismus is most often seen in pediatrics.

Strabismus

Rule Out Amblyopia

Phoria
- Latent deviation
- Symmetrical corneal light reflex,
- Negative cover test positive cover/uncover test

- Esophoria (eye moves medial → centre when uncovered)
- Exophoria (eye moves lateral → centre when uncovered)

Tropia
- Manifest deviation
- Asymmetrical light reflex,
- Positive cover test

Paretic
Non-comitant
Angle of misalignment changes with direction of gaze

Horizontal
(eso/exotropia)

- CN VI problem (eye cannot abduct)

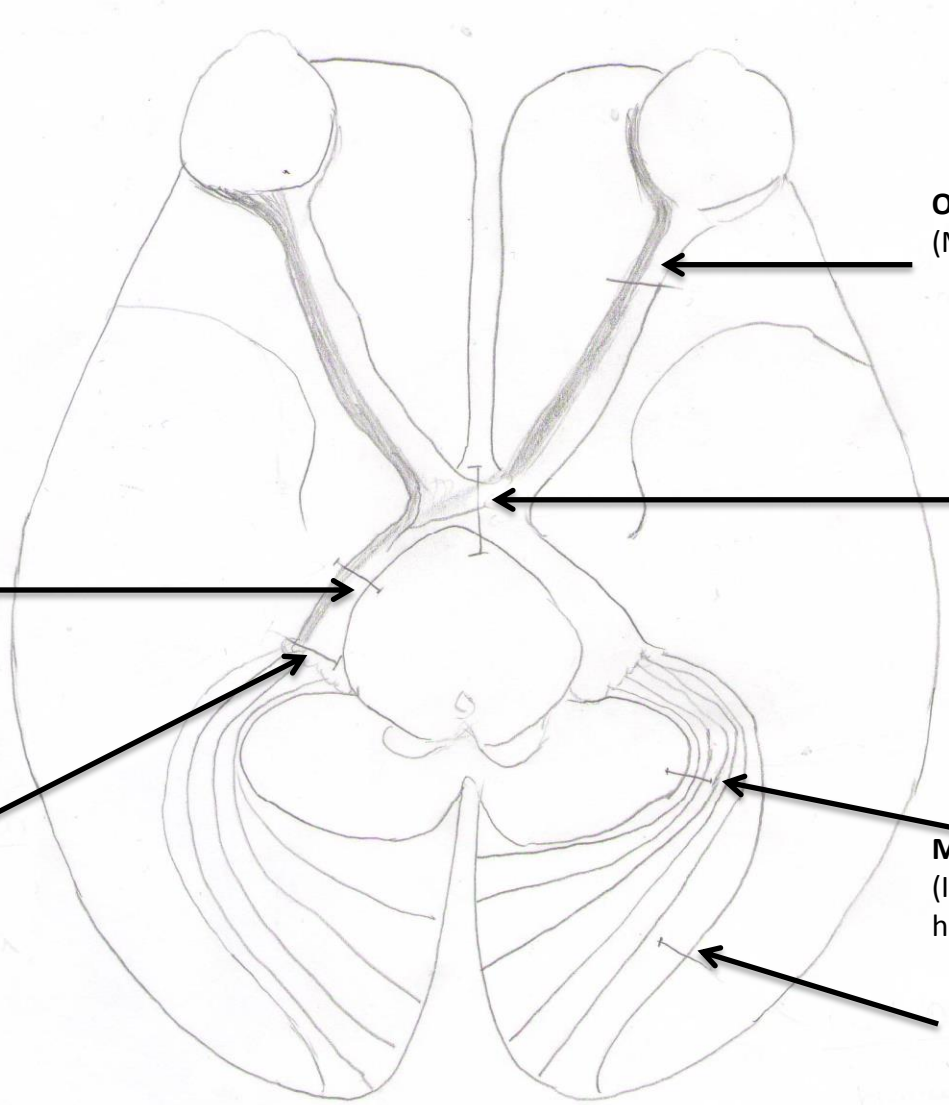
Horizontal and/or vertical
(Eso/exotropia, hyper/hypotopia, mixed)

- CN III Problem (eye is depressed and abducted, ptosis, large/unreactive pupil)
- CN IV Problem (eye cannot depress when looking medially)

Non-Paretic
Comitant
Angle of misalignment unchanged with direction of gaze

- Accommodative Esotropia (onset 2-4yrs, hyperopic)
- Congenital Esotropia (contralateral eye deviates medial → straight when ipsilateral covered)
- Exotropia (contralateral eye deviates lateral → straight when ipsilateral covered)

Neuro-Ophthalmology: Visual Field Defects



Optic Nerve Lesion
(Monocular vision loss)

Optic Chiasm Lesion
(bitemporal hemianopia)

- Pituitary/metastatic tumor
- Craniopharyngioma
- Meningioma
- Optic nerve glioma
- Aneurysm
- Infection
- MS
- Sarcoidosis

Optic Tract Lesion
(Incongruous right homonymous hemianopia)

Lateral Geniculate Nucleus Lesion
(Right homonymous horizontal sectroanopia)

Meyer's Loop Lesion
(Incongruous superior homonymous quadrantanopia)

Right Parietal Lobe Lesion
(Inferior homonymous hemianopia)

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Pediatric Presentations

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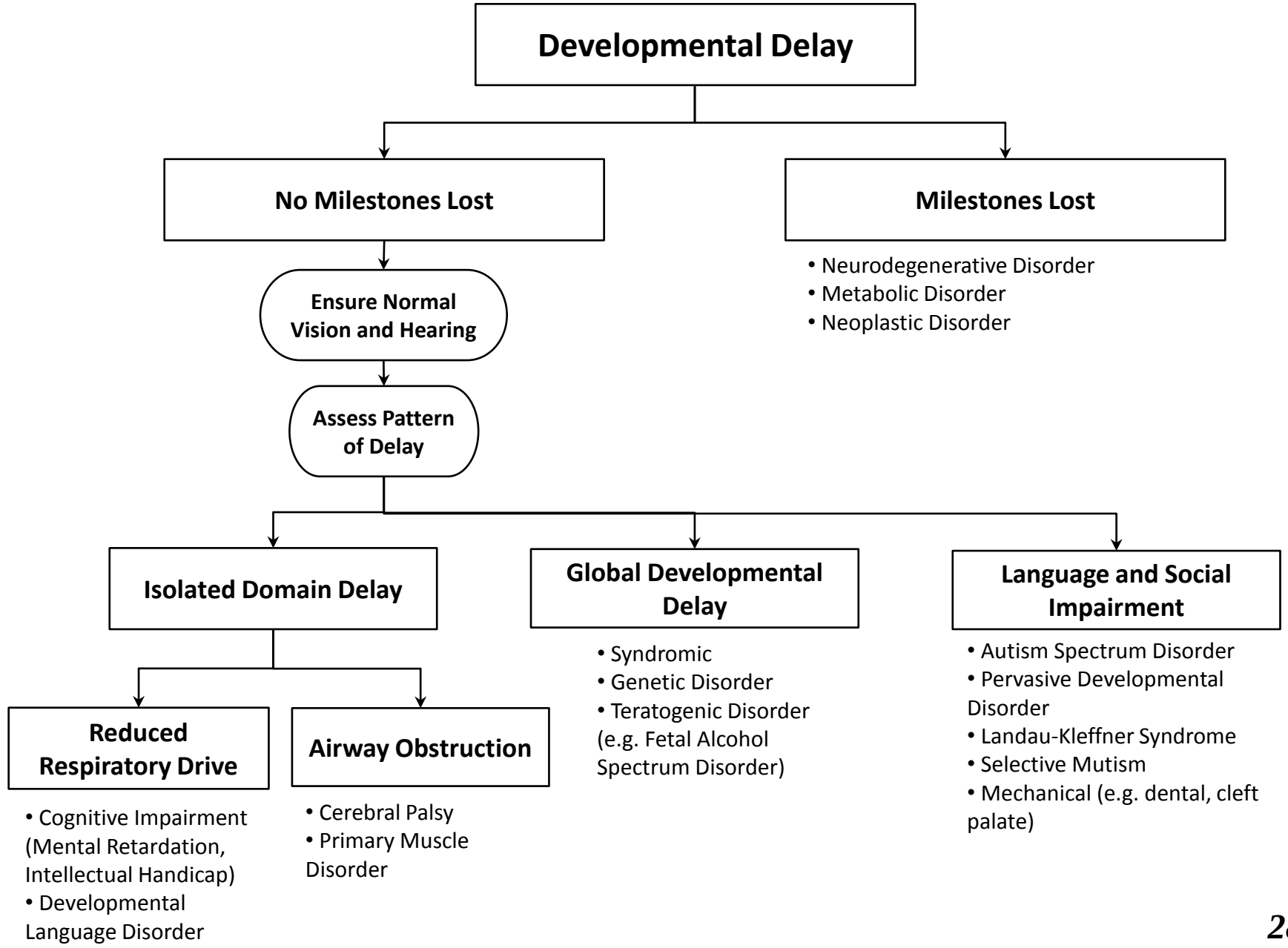
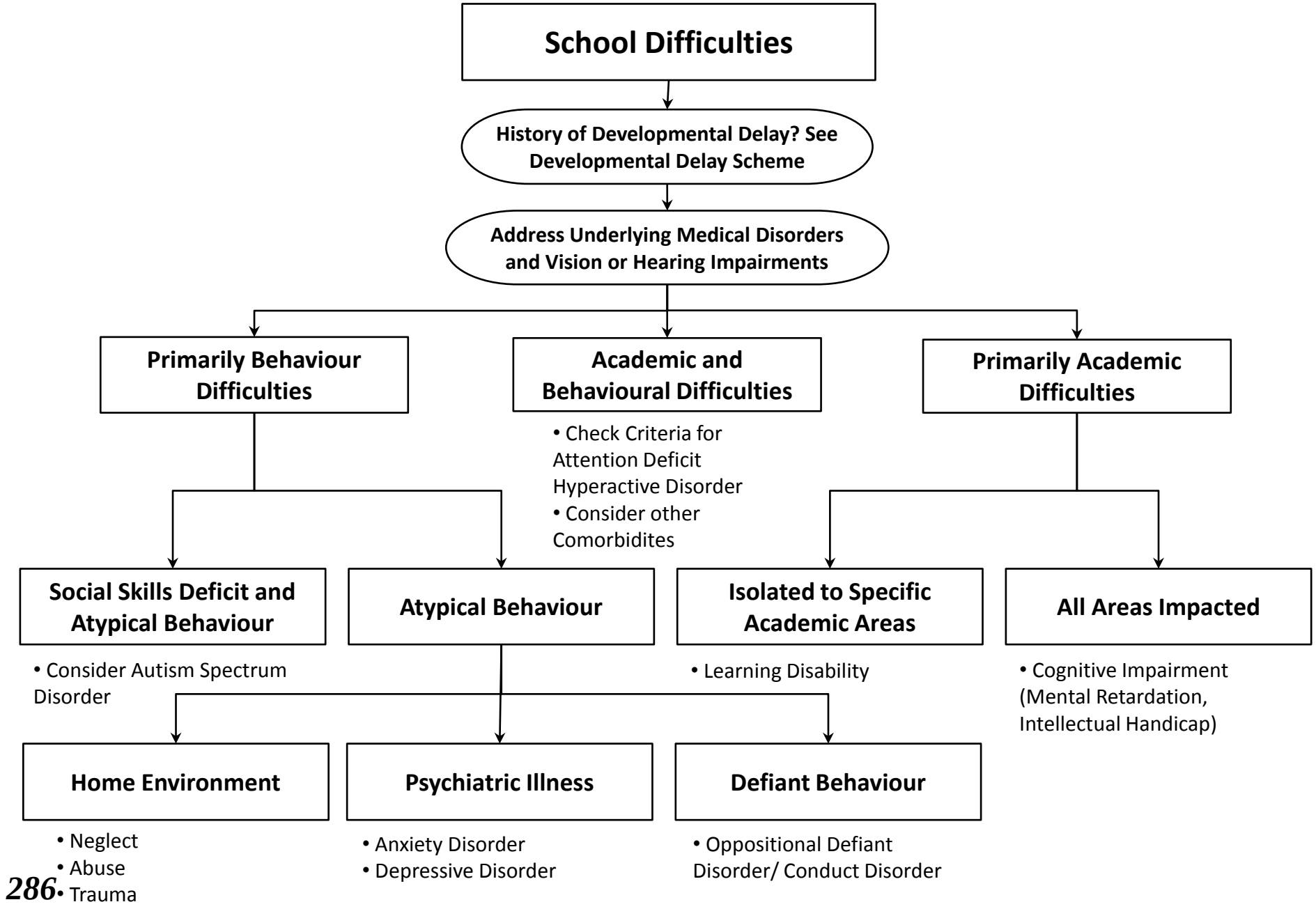
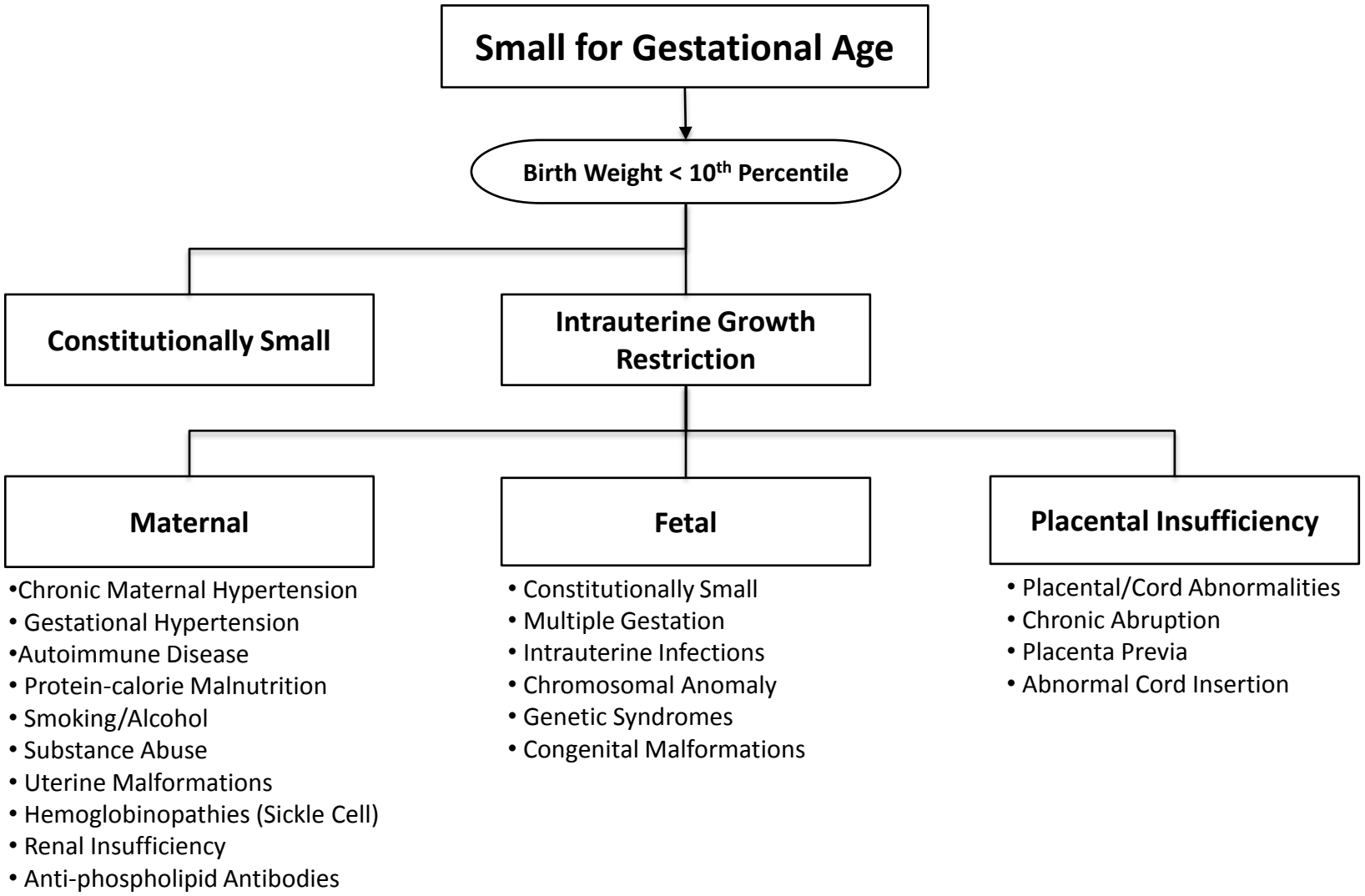
DEVELOPMENTAL DELAY



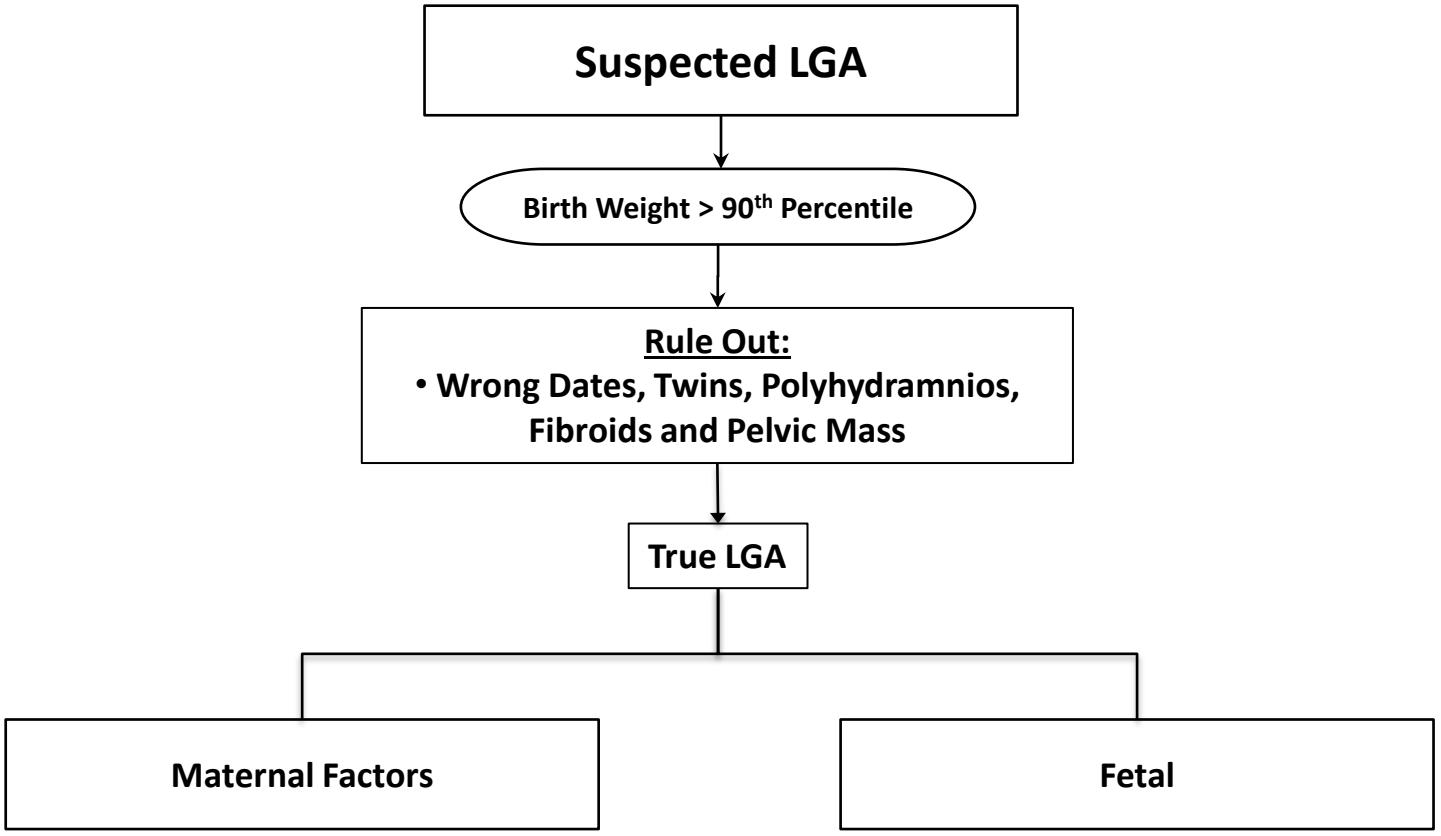
SCHOOL DIFFICULTIES



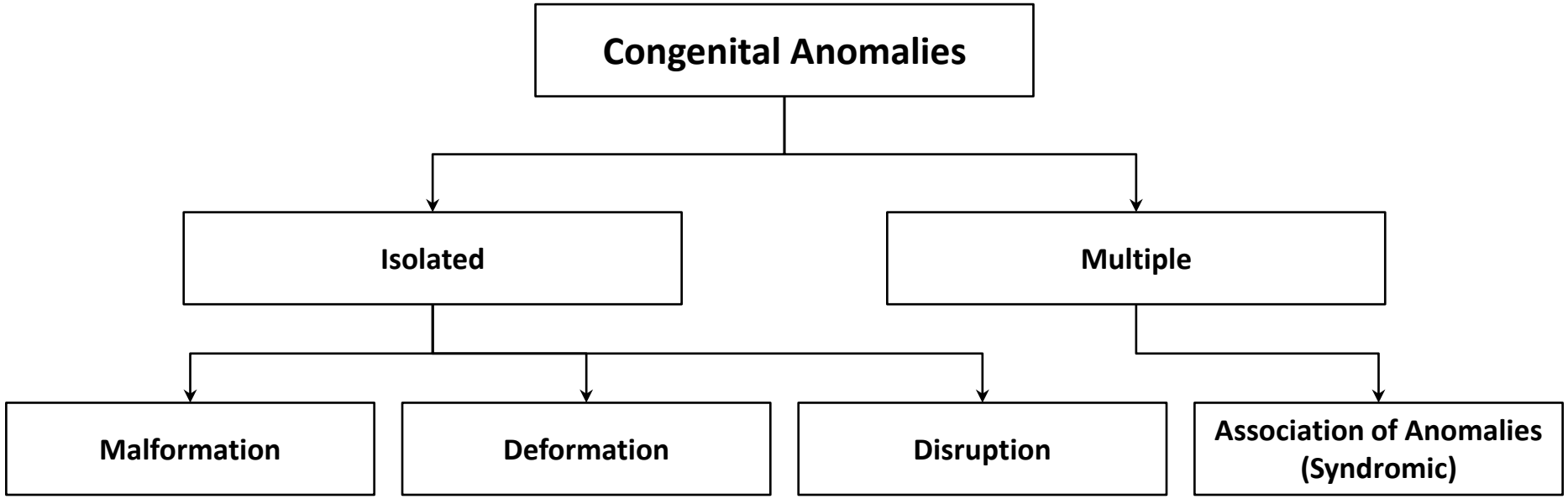
SMALL FOR GESTATIONAL AGE



LARGE FOR GESTATIONAL AGE

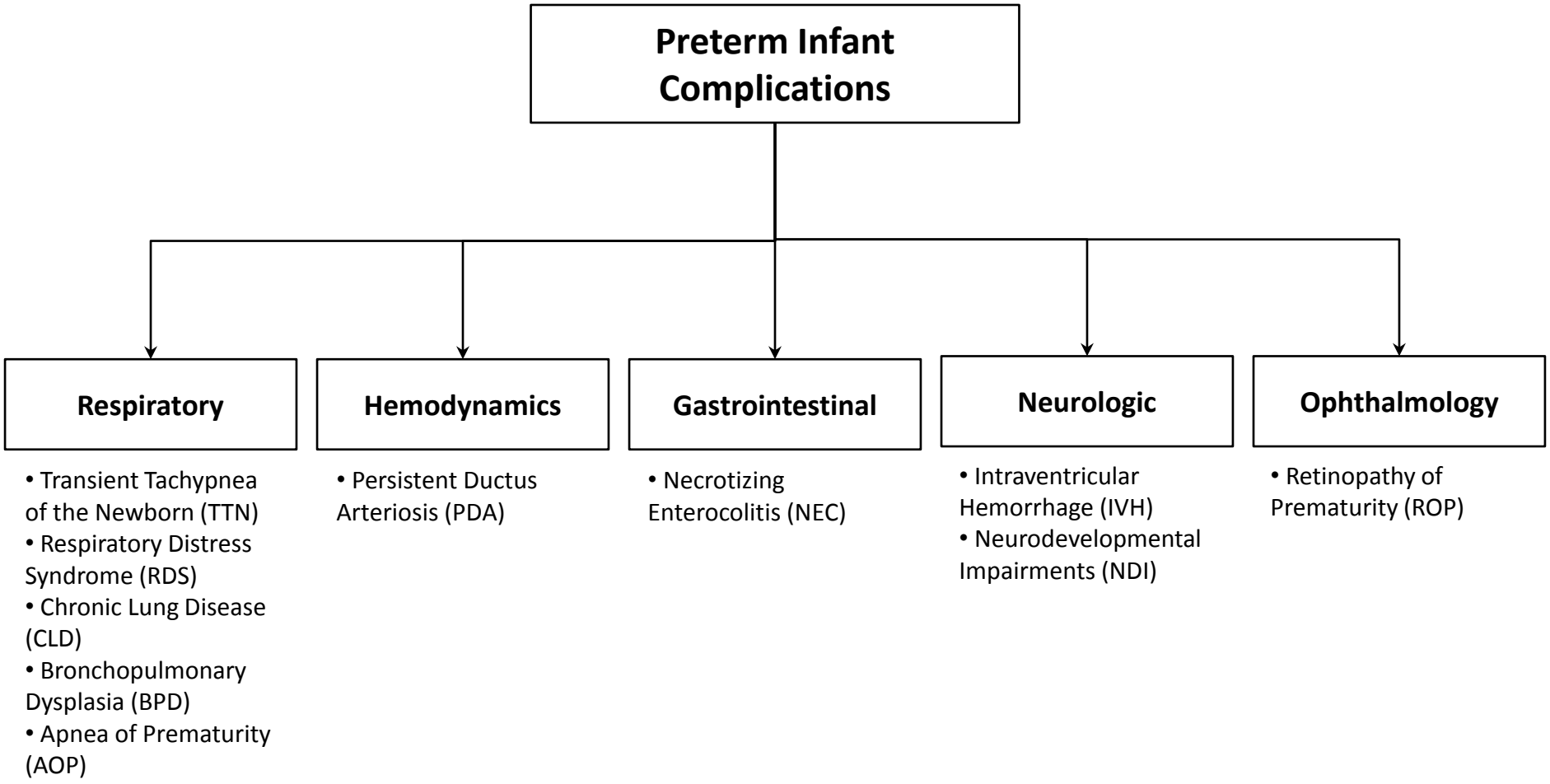


CONGENITAL ANOMALIES

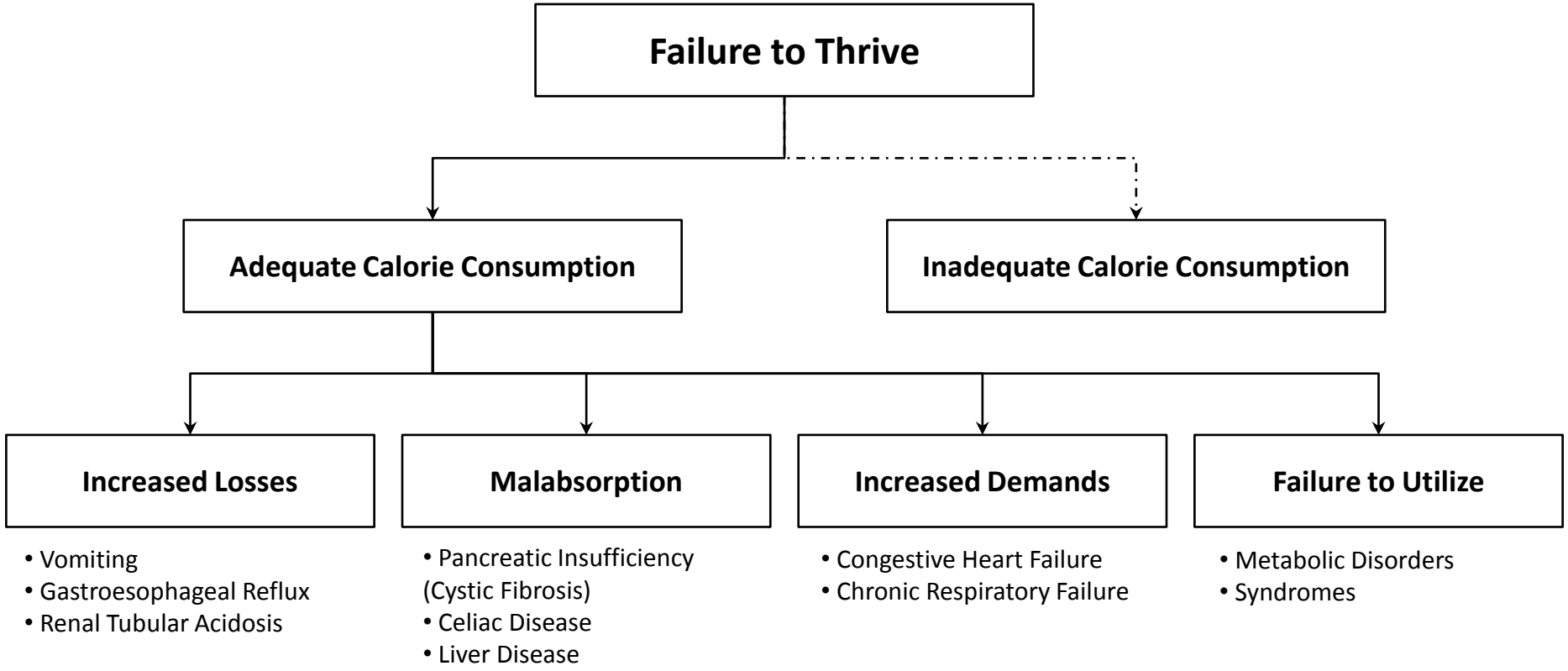


Things to Consider:
History – Prenatal: maternal health, exposures, screening, ultrasounds; delivery; neonatal
Family History – Three Generations: prior malformations, stillbirths, recurrent miscarriages, consanguinity
Physical Exam – Variants, minor anomalies, major malformation
Diagnostic Procedures – Chromosomes, molecular/DNA, radiology, photography, metabolic
Diagnostic Evaluations – Prognosis, recurrence, prenatal diagnosis, surveillance, treatment

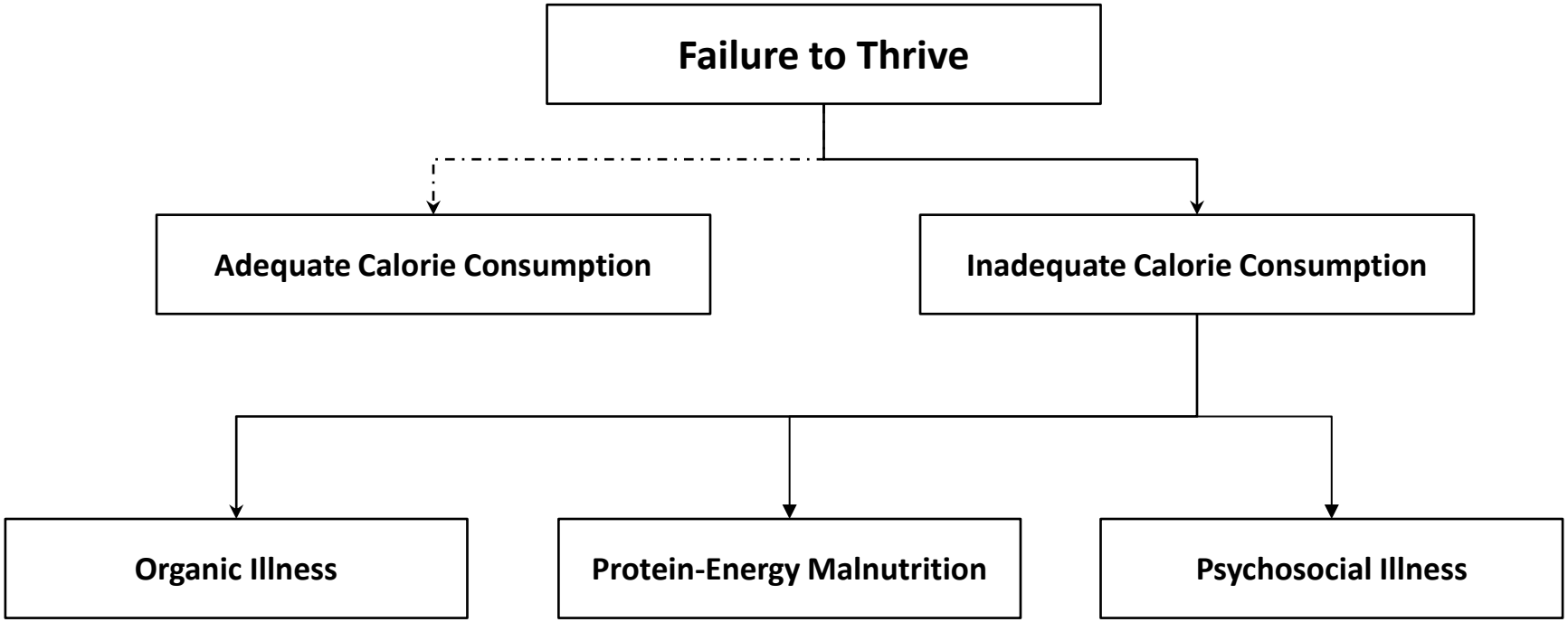
PRETERM INFANT COMPLICATIONS



FAILURE TO THRIVE: Adequate Calorie Consumption



FAILURE TO THRIVE: Inadequate Calorie Consumption

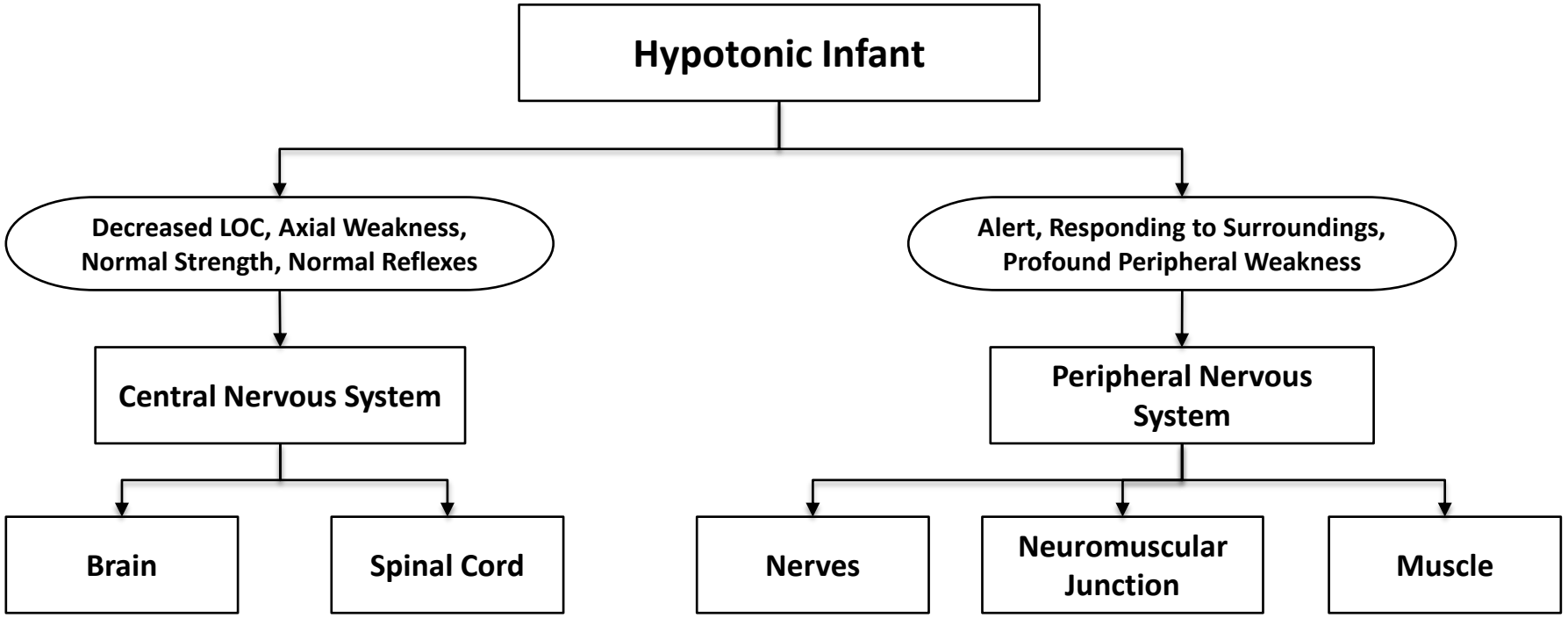


- Chronic Renal Failure
- Esophagitis
- Congenital Heart Defect
- Structural Dystrophies

- Kwashiokor (inadequate protein intake)
- Marasmus (inadequate protein and energy intake)

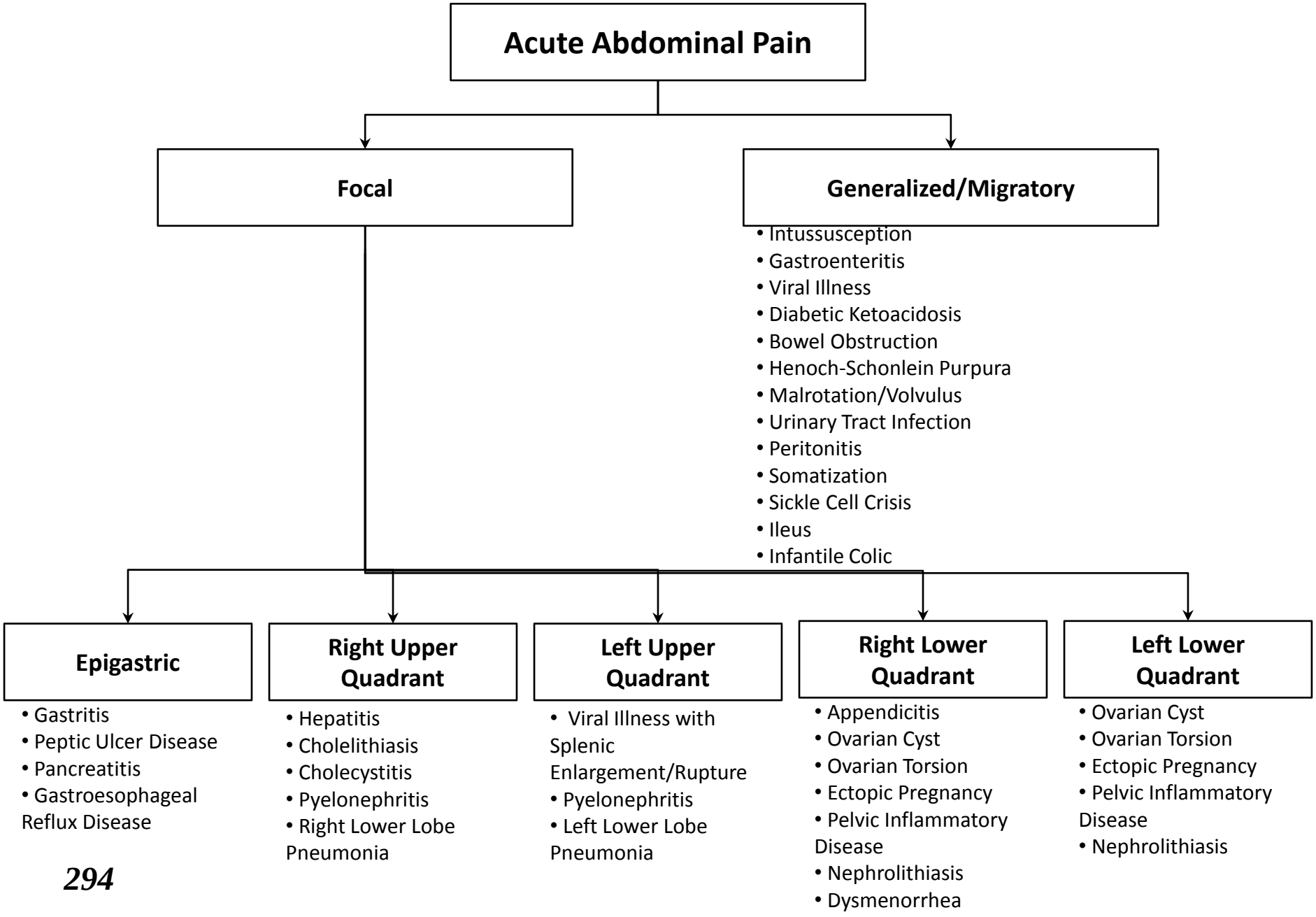
- Oral Aversion
- Neglect
- Poverty
- Disturbed Parent-Child Relationship

Hypotonic Infant (Floppy Newborn)

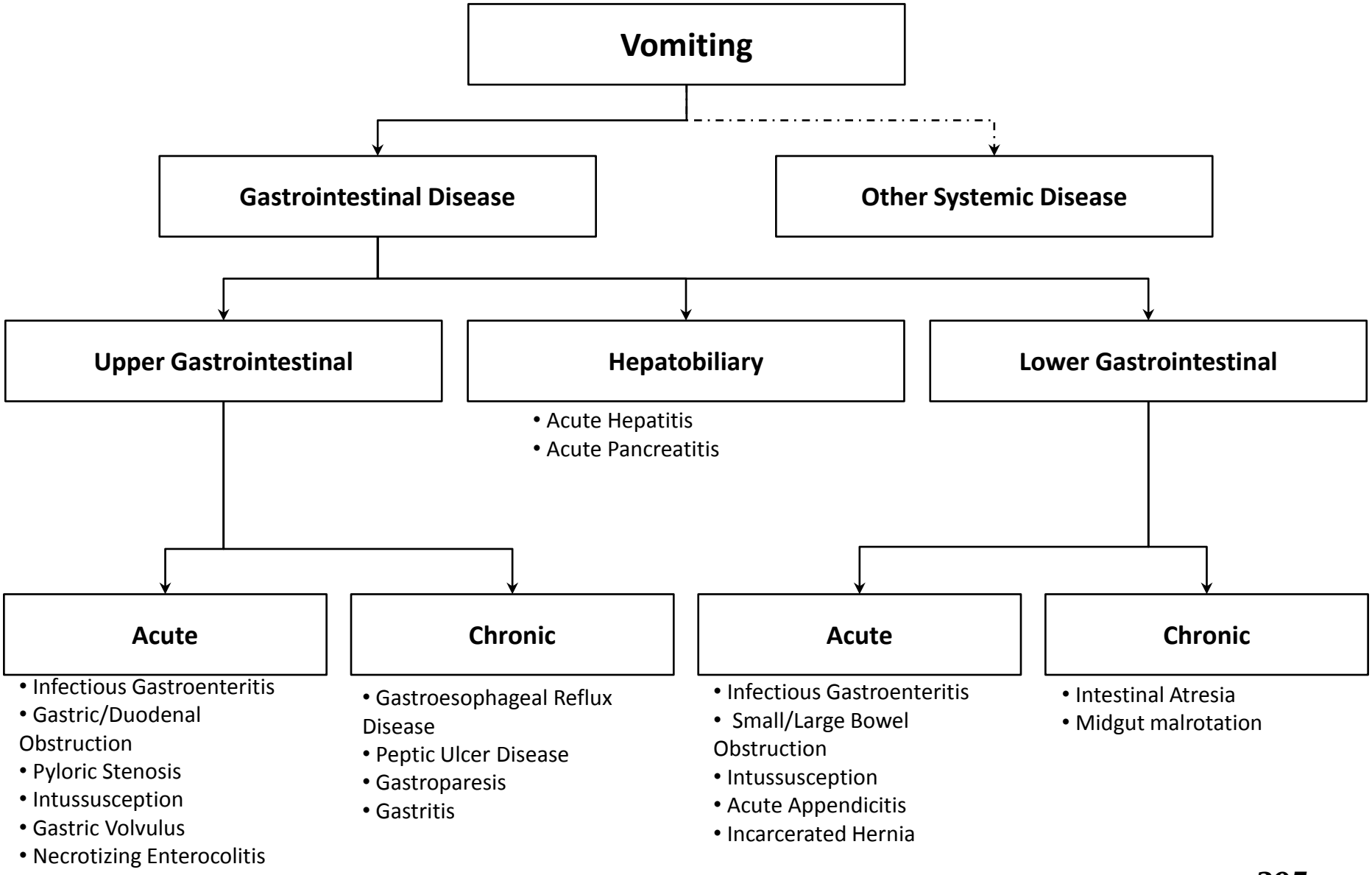


* Indicates most common causes of hypotonia

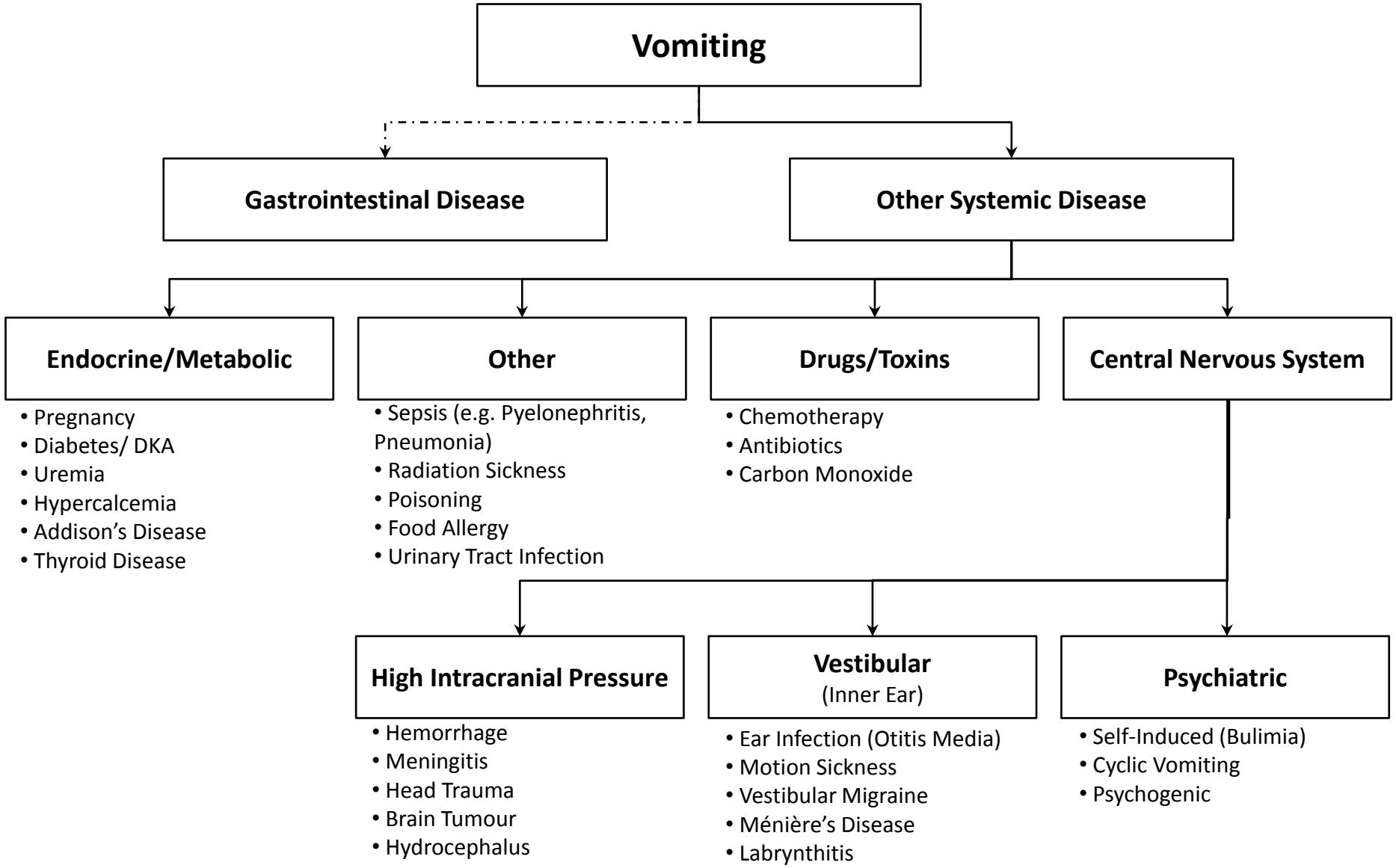
ACUTE ABDOMINAL PAIN



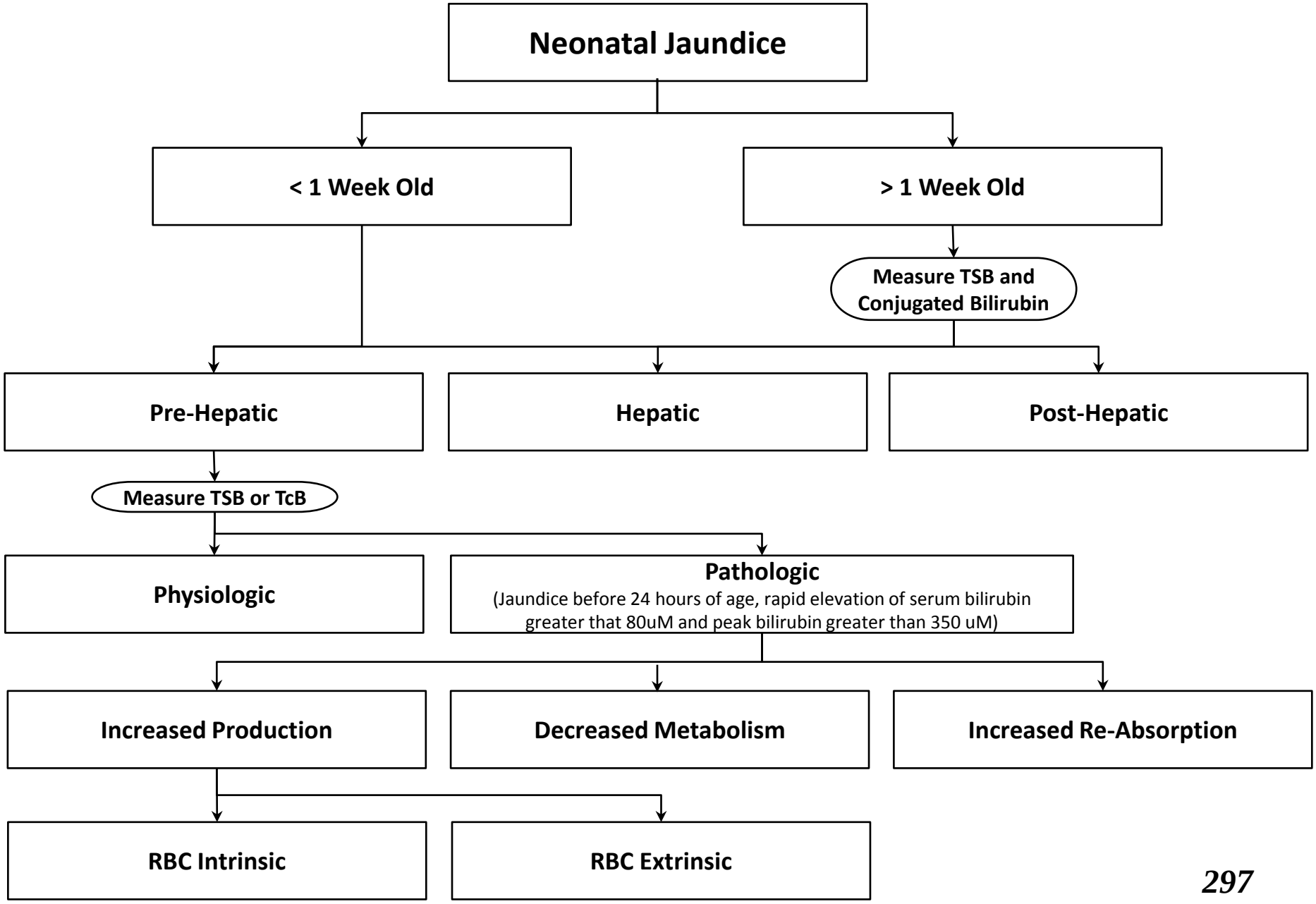
PEDIATRIC VOMITING: Gastrointestinal causes



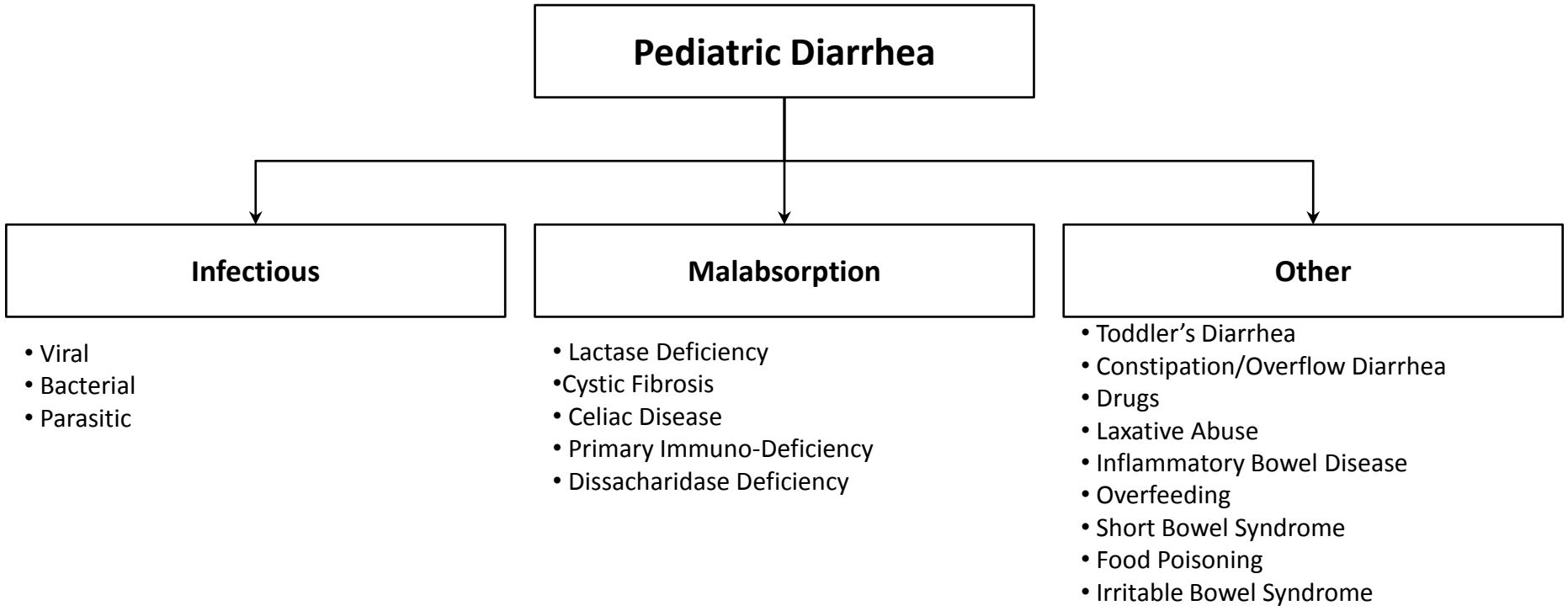
PEDIATRIC VOMITING: Systemic causes



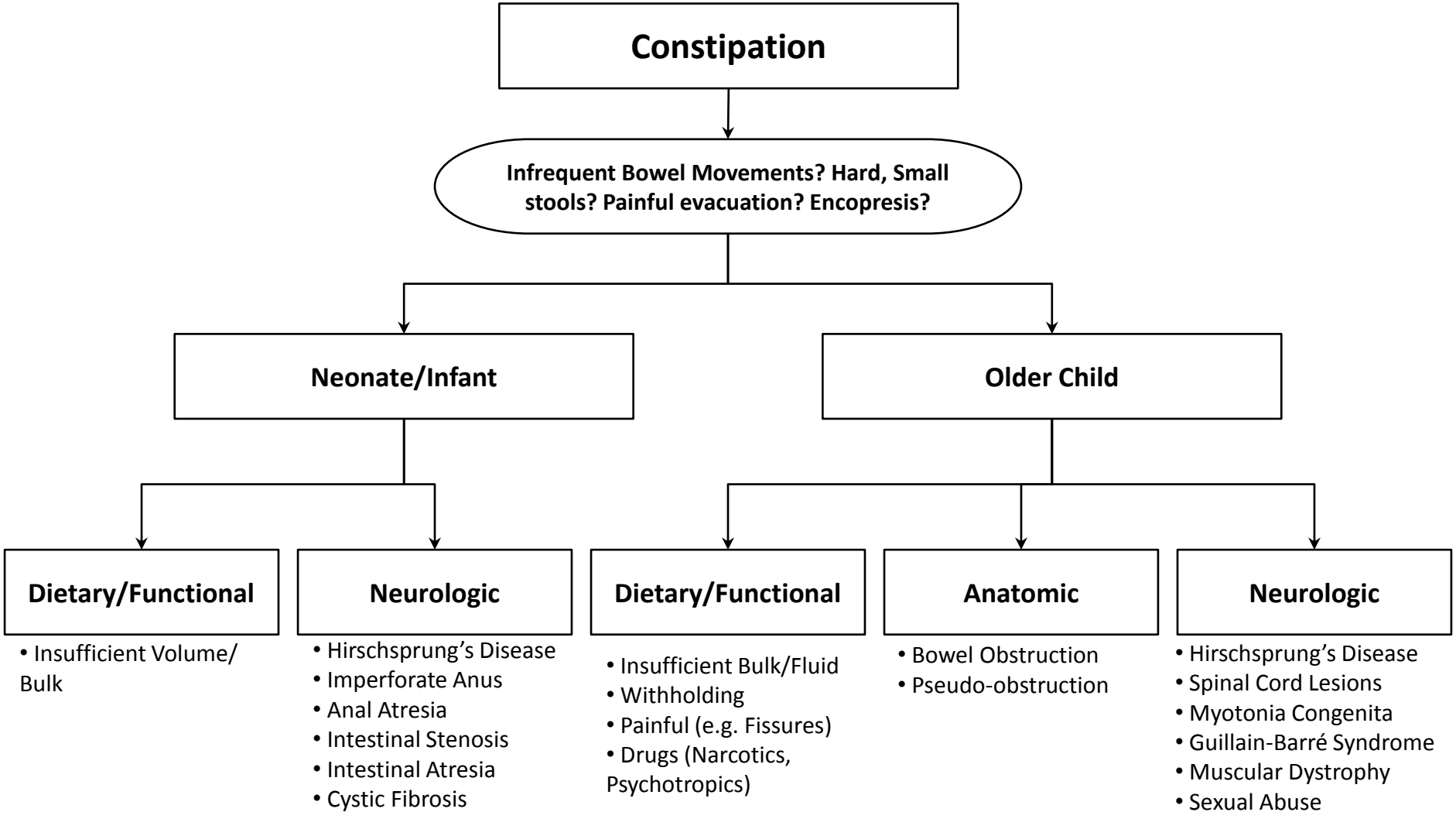
NEONATAL JAUNDICE



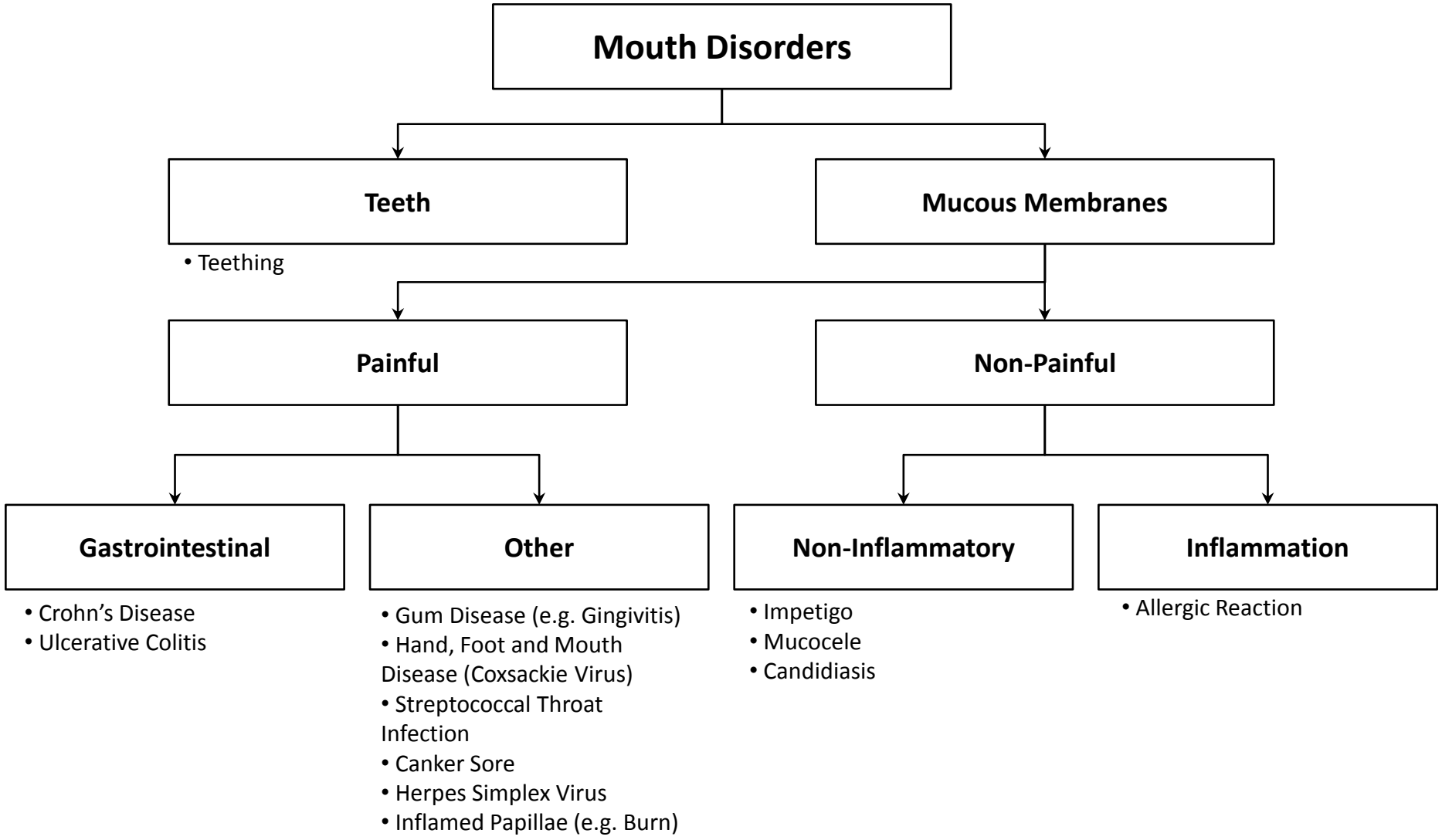
PEDIATRIC DIARRHEA



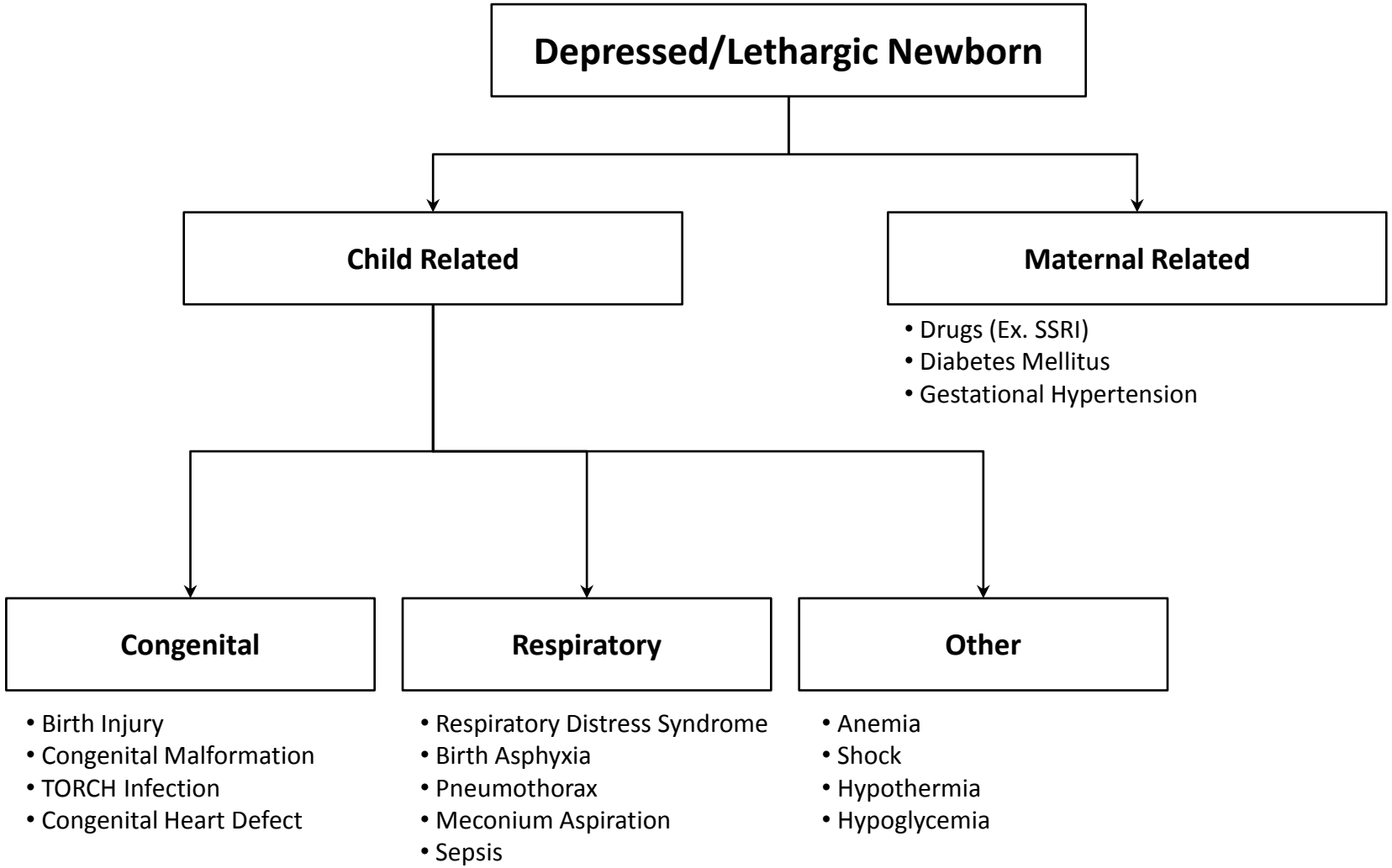
CONSTIPATION: PEDIATRIC



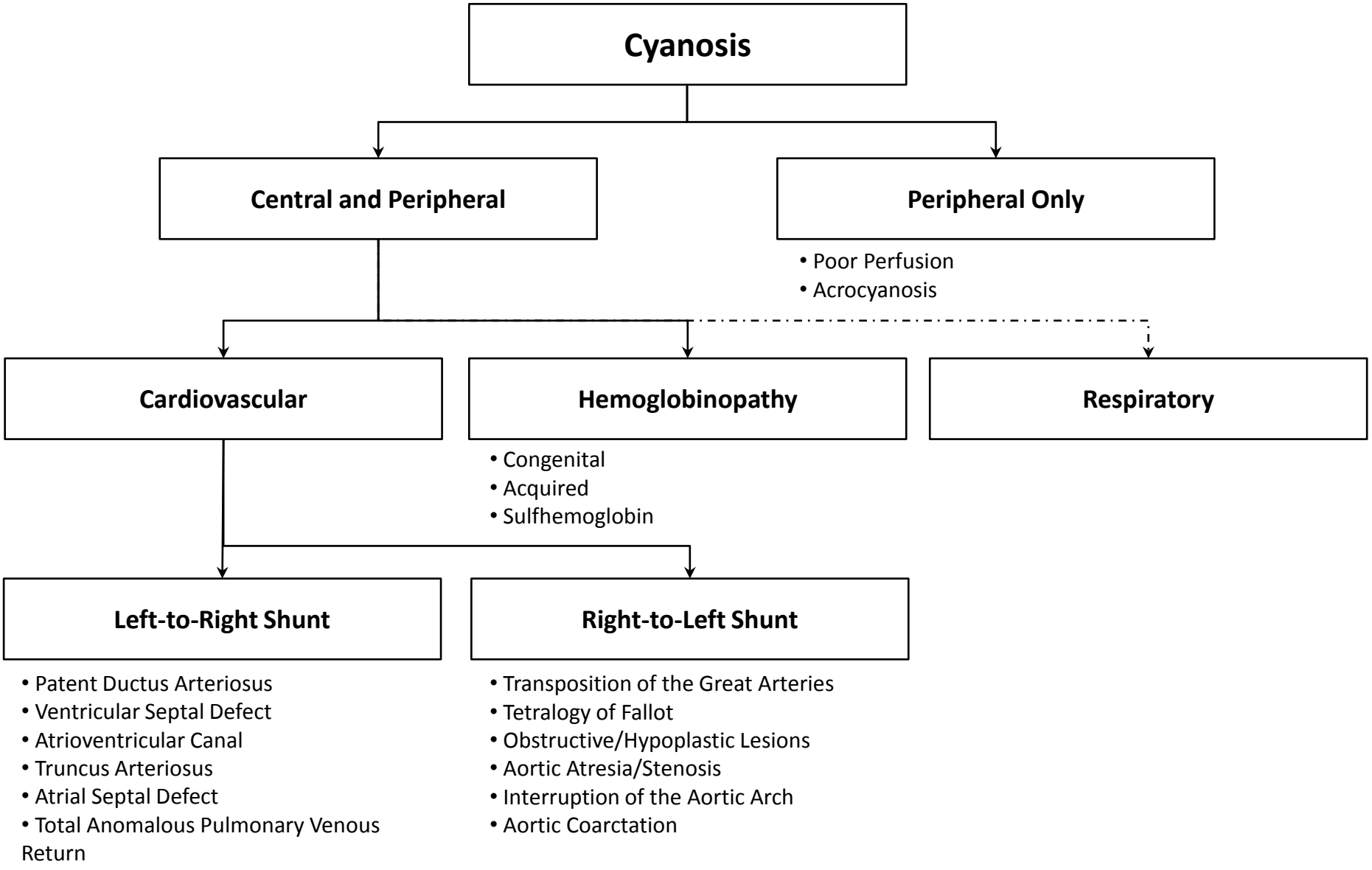
MOUTH DISORDERS: PEDIATRIC



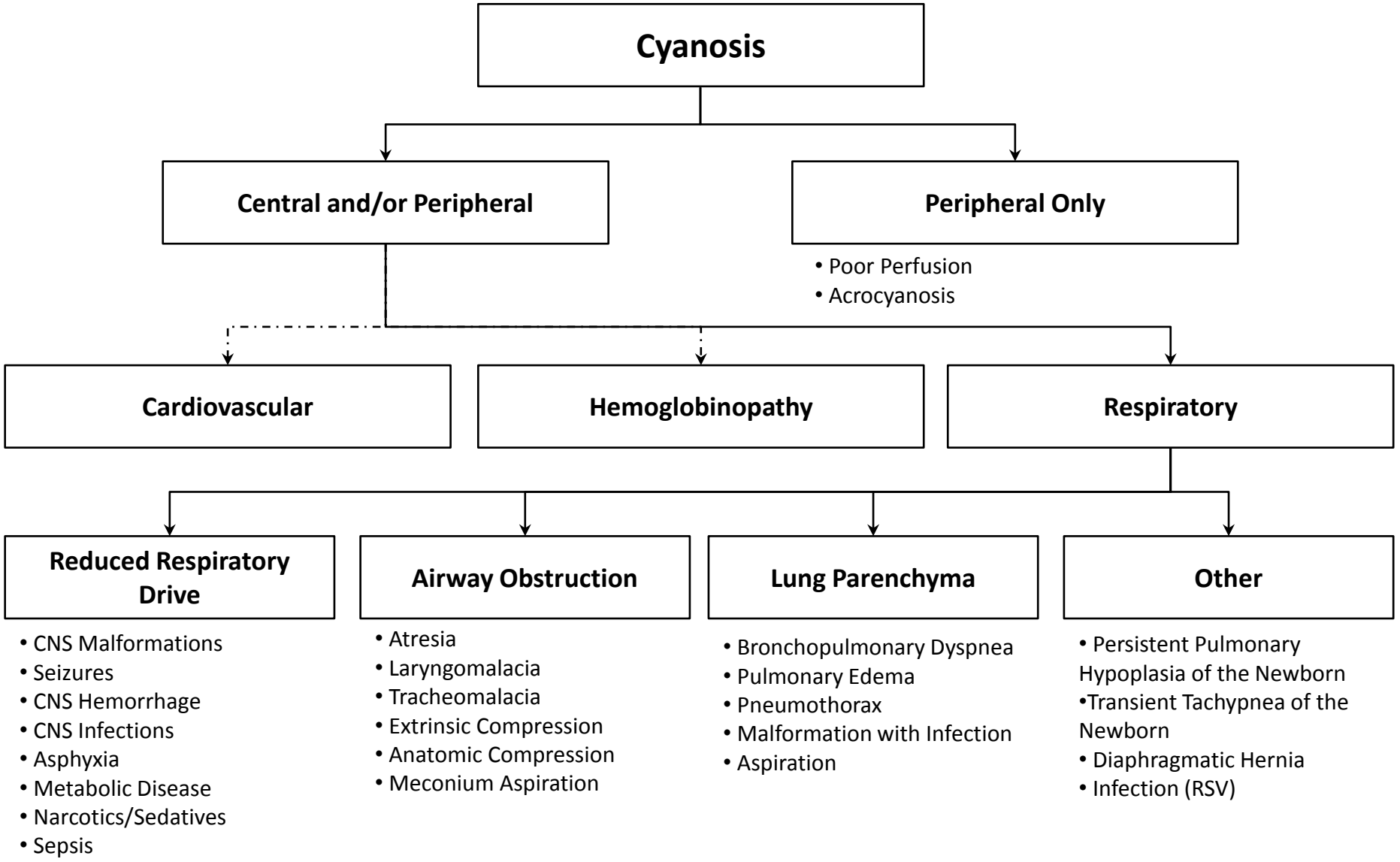
Depressed/Lethargic Newborn



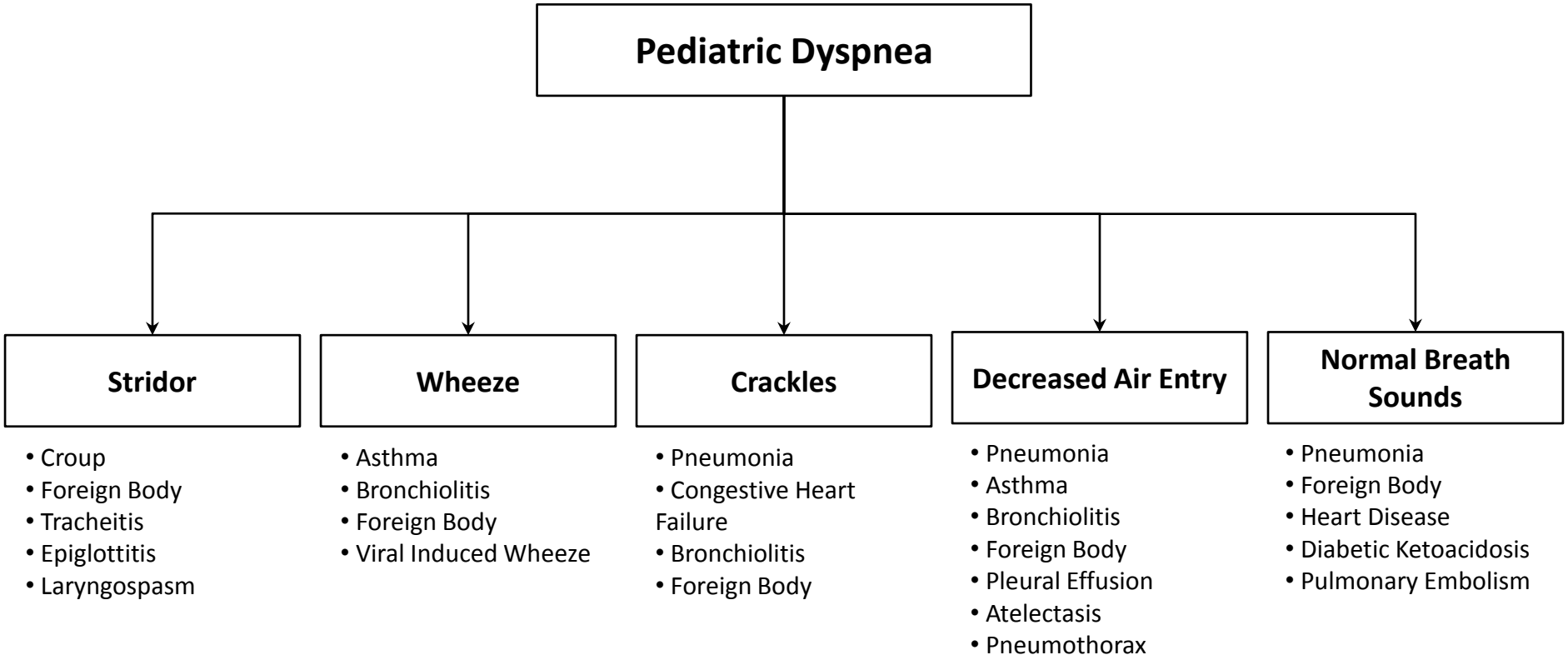
CYANOSIS IN THE NEWBORN: Non-Respiratory



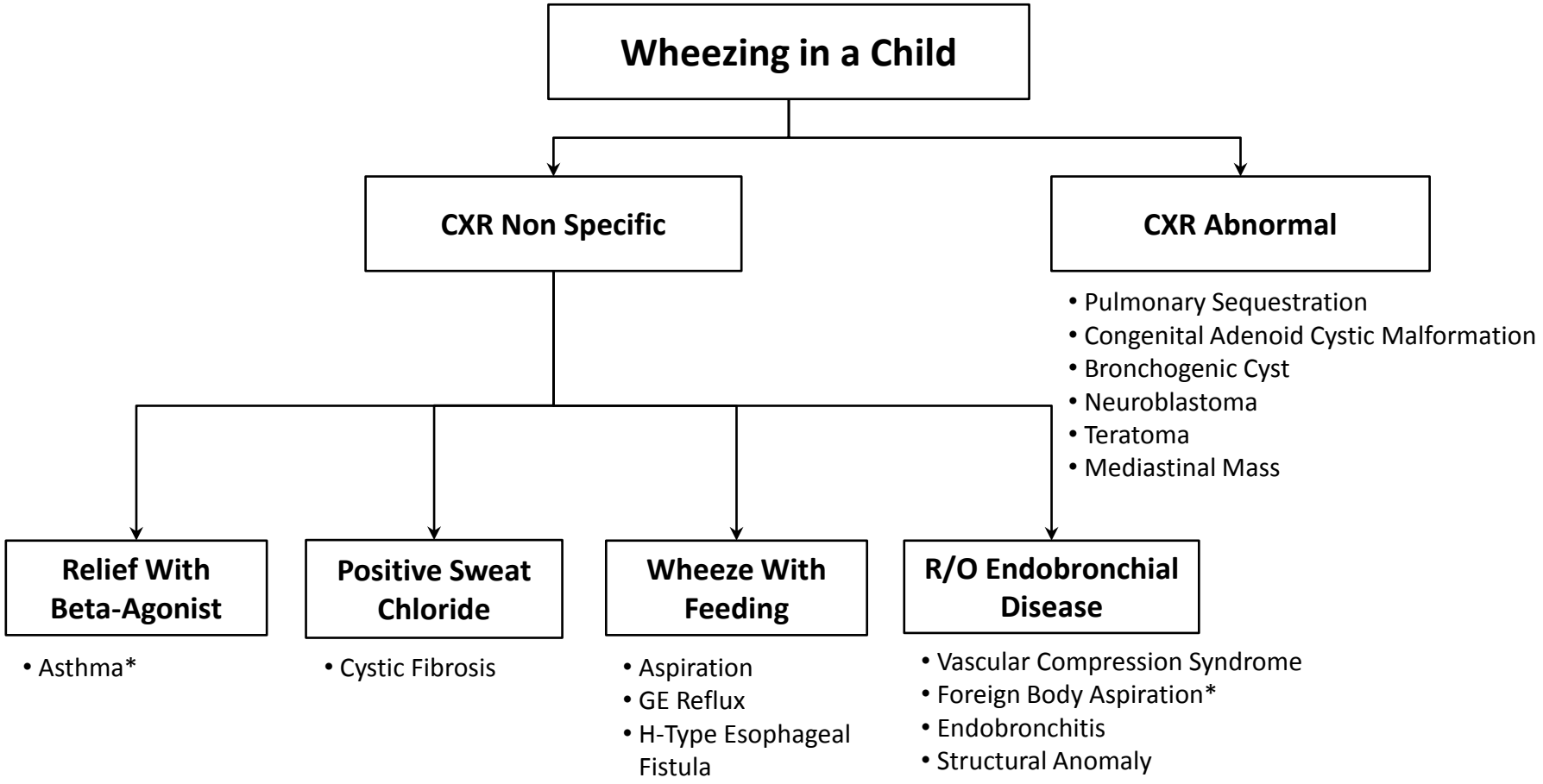
CYANOSIS IN THE NEWBORN: Respiratory



PEDIATRIC DYSPNEA

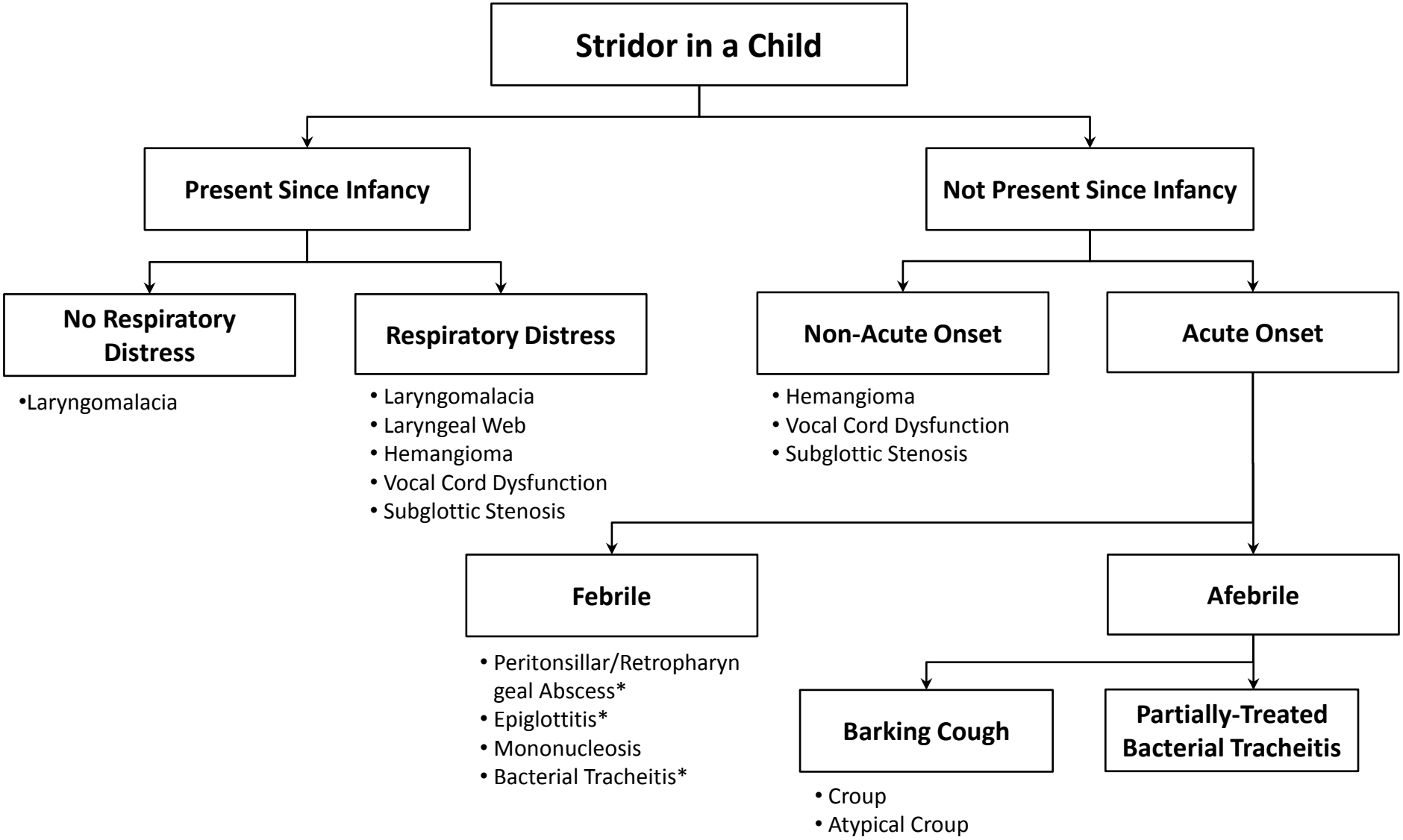


NOISY BREATHING: Pediatric Wheezing



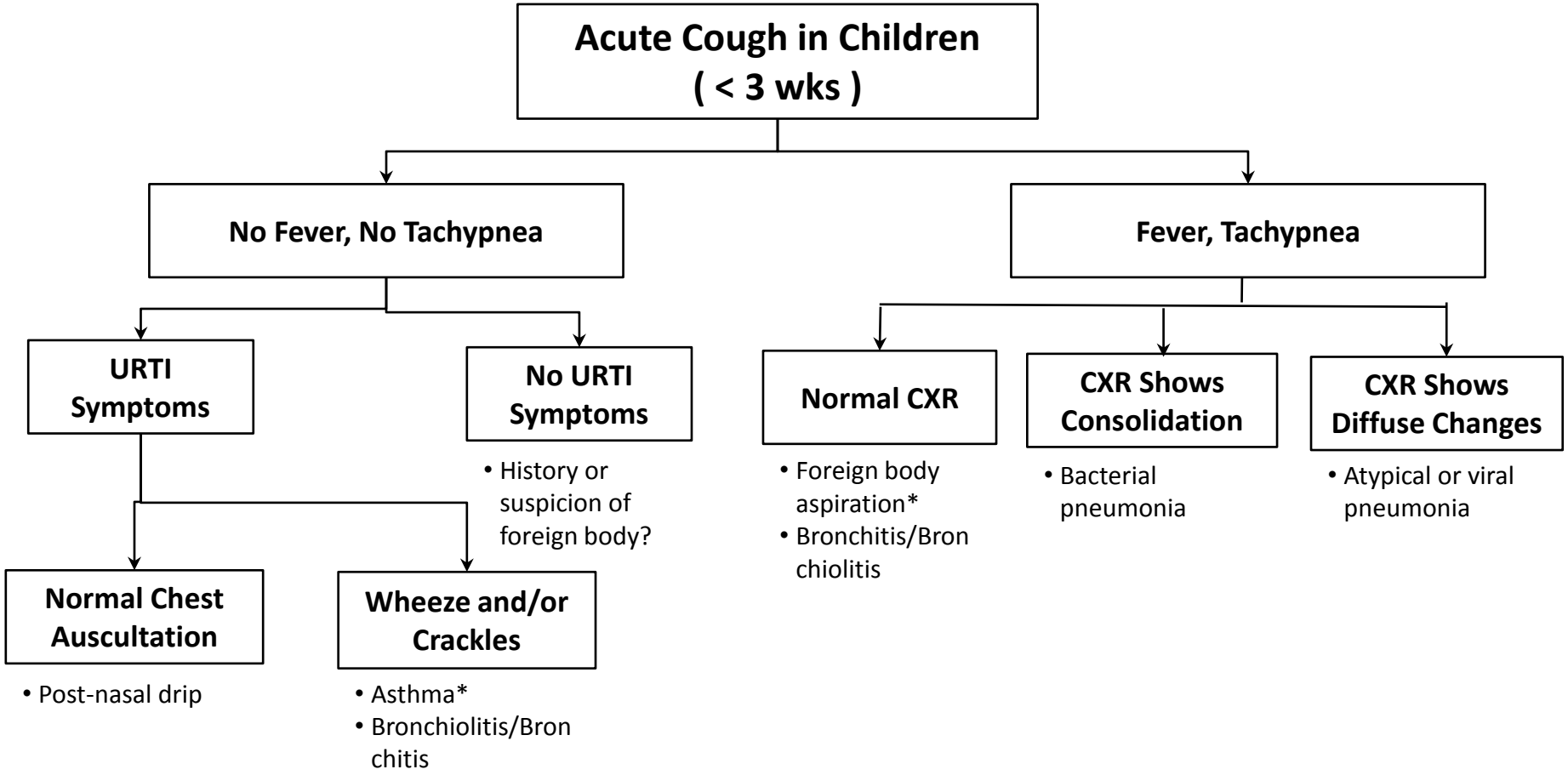
** Denotes acutely life-threatening causes*

NOISY BREATHING: Pediatric Stridor



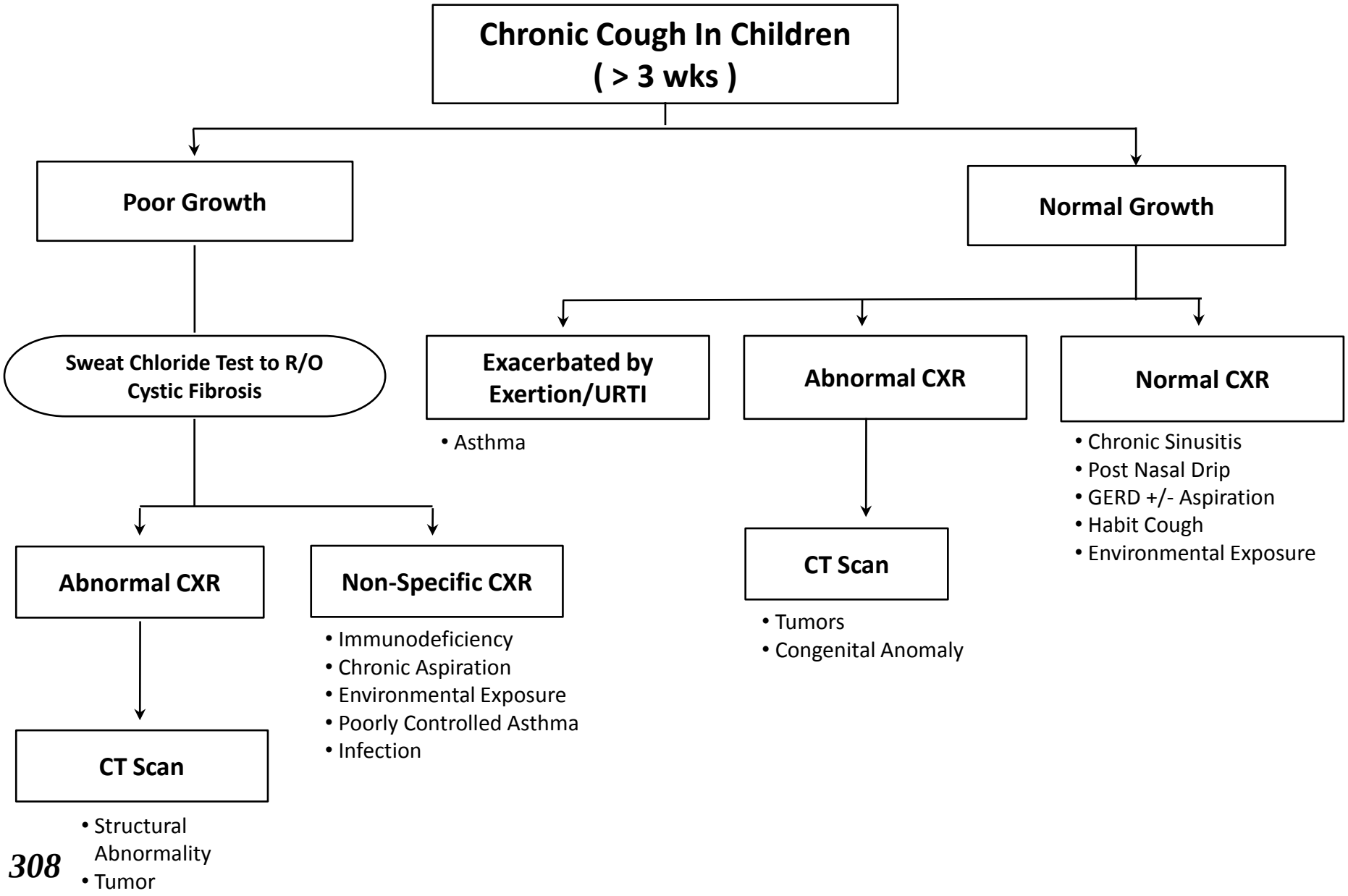
** Denotes acutely life-threatening causes*

PEDIATRIC COUGH: Acute

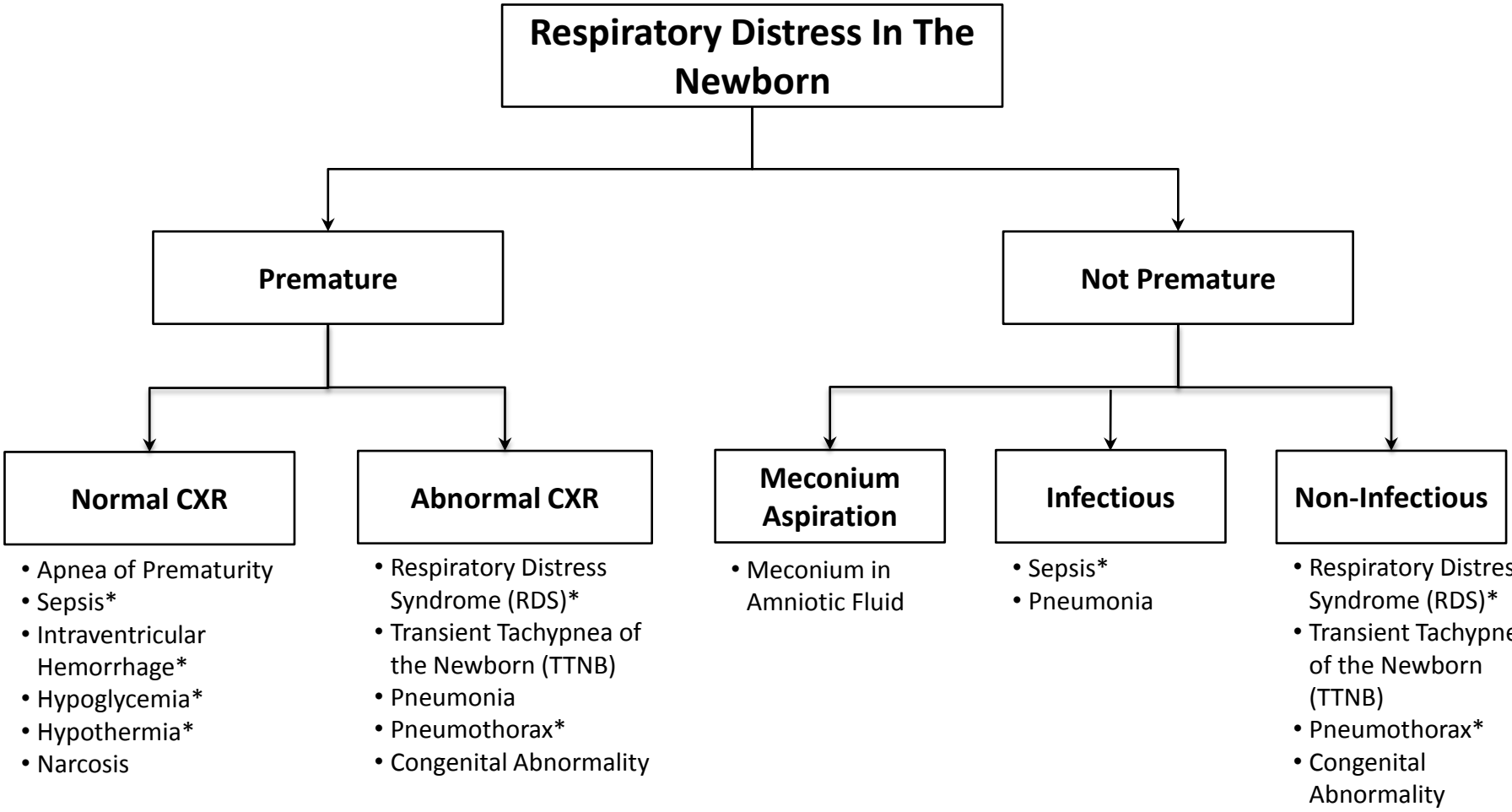


** Denotes acutely life-threatening causes*

PEDIATRIC COUGH: Chronic

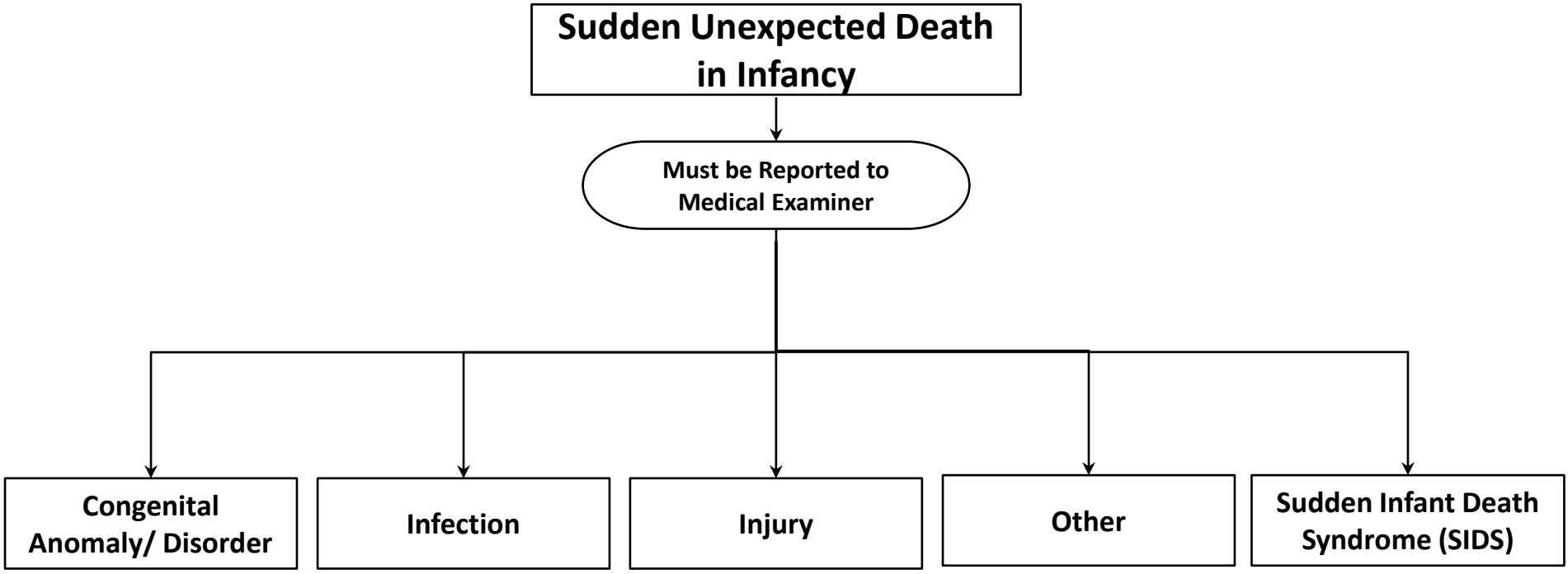


RESPIRATORY DISTRESS IN THE NEWBORN



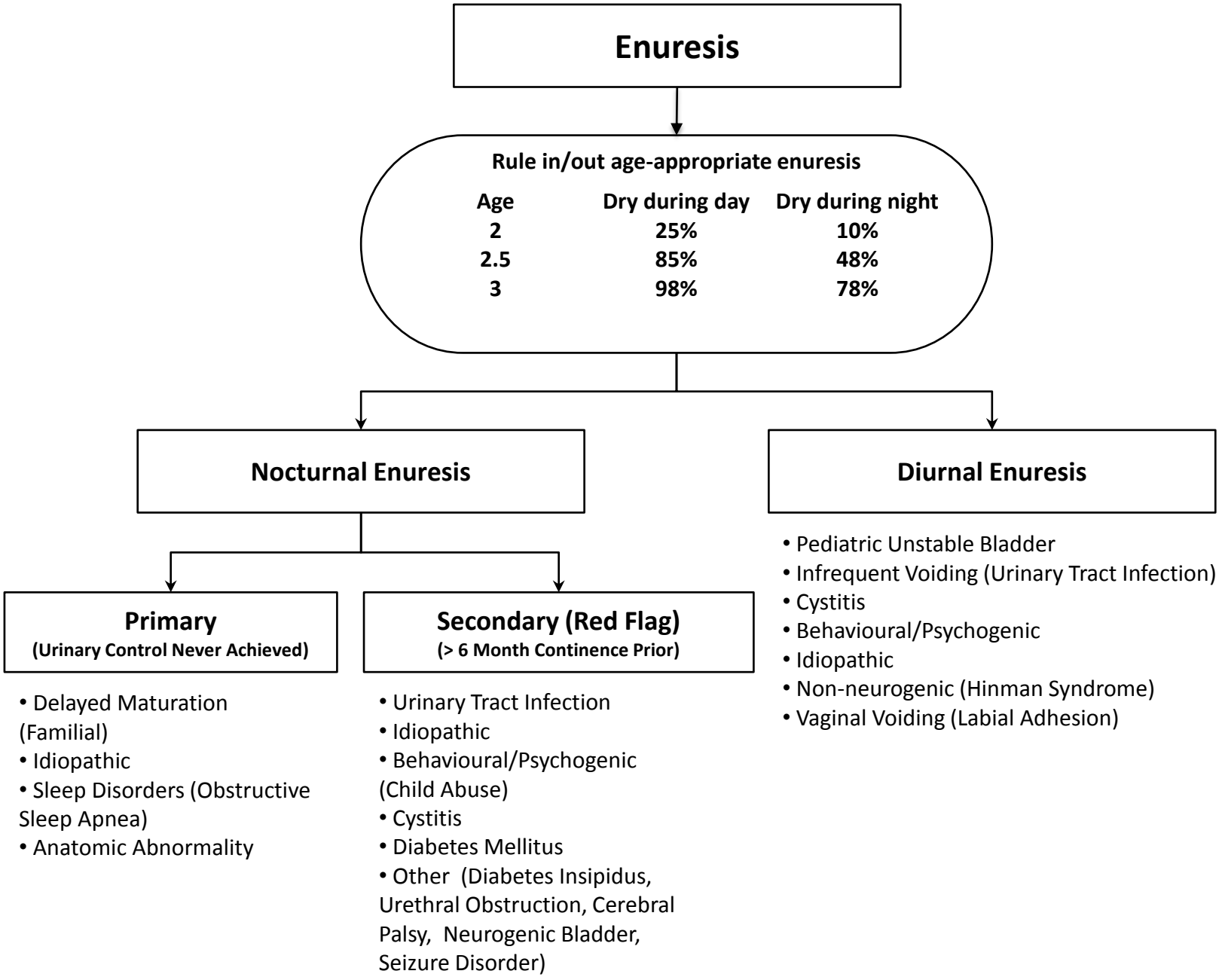
** Denotes acutely life-threatening causes*

SUDDEN UNEXPECTED DEATH IN INFANCY (SUDI)

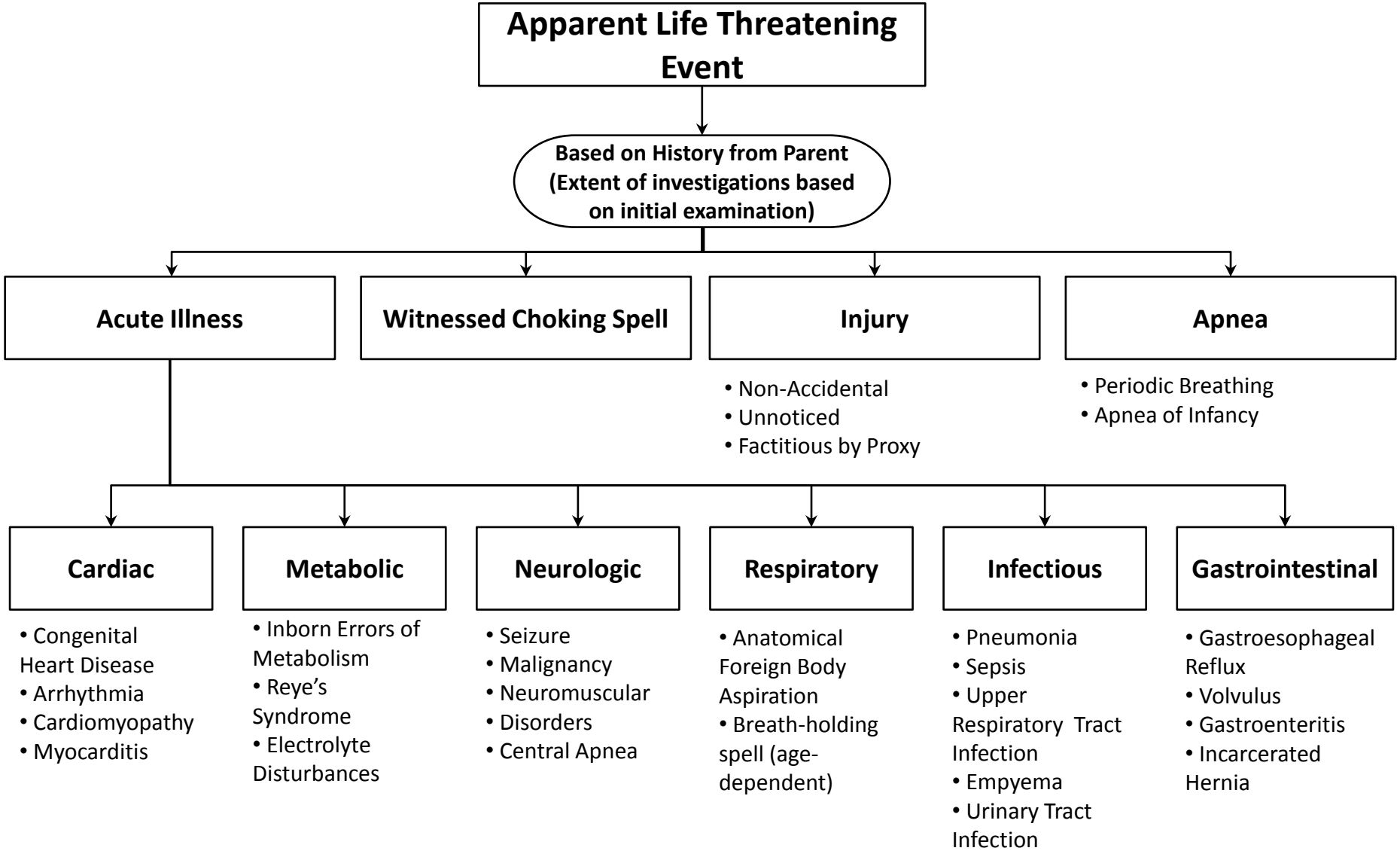


* SUDI with negative investigations and infant found in prone position or in bed with parent may be called either SIDS or injury (new ideas evolving)

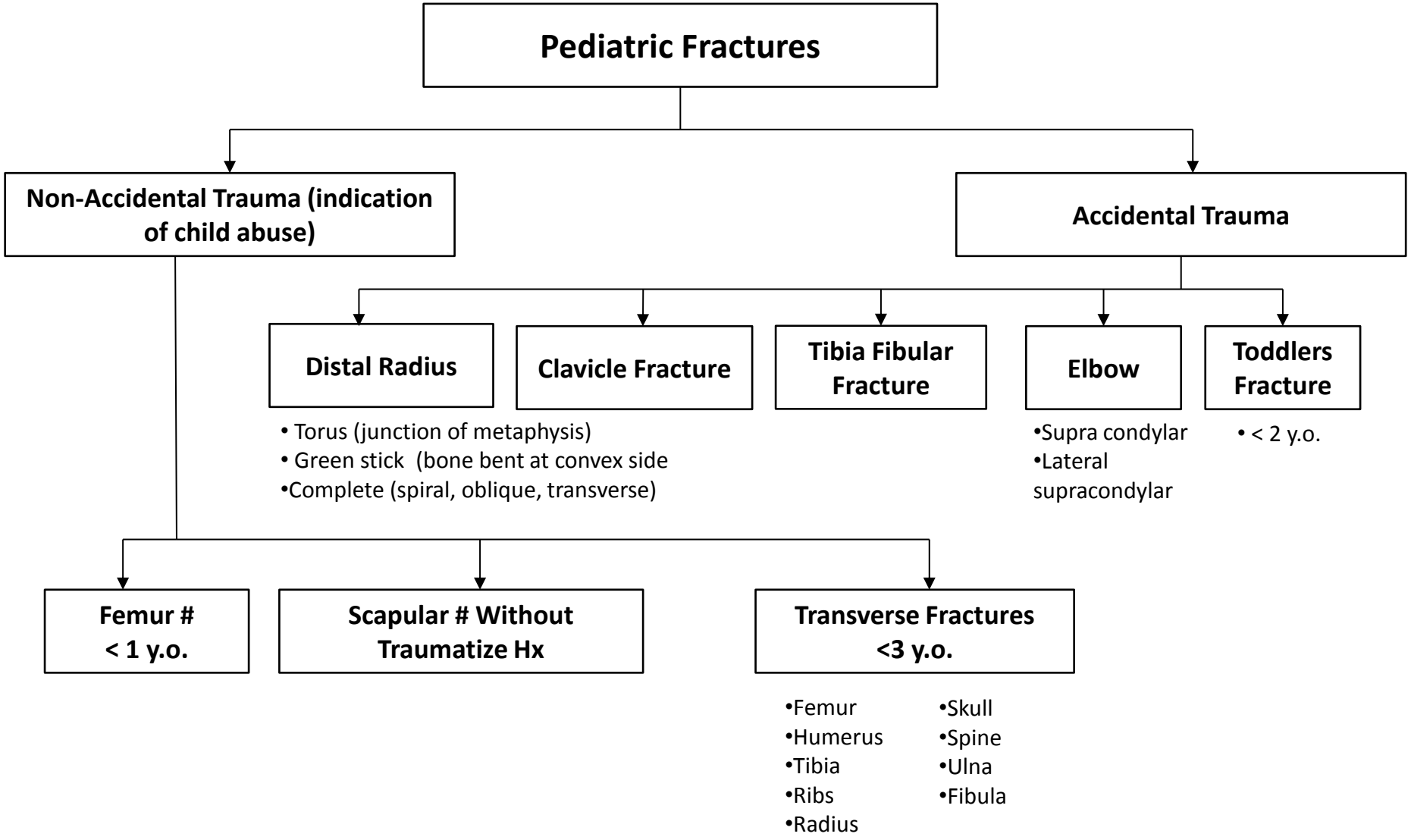
ENURESIS


Enuresis
Rule in/out age-appropriate enuresis
Age Dry during day Dry during night
2 25% 10%
2.5 85% 48%
3 98% 78%
Nocturnal Enuresis
Diurnal Enuresis
Primary
(Urinary Control Never Achieved)
Secondary (Red Flag)
(> 6 Month Continence Prior)
• Delayed Maturation (Familial)
• Idiopathic
• Sleep Disorders (Obstructive Sleep Apnea)
• Anatomic Abnormality
• Urinary Tract Infection
• Idiopathic
• Behavioural/Psychogenic (Child Abuse)
• Cystitis
• Diabetes Mellitus
• Other (Diabetes Insipidus, Urethral Obstruction, Cerebral Palsy, Neurogenic Bladder, Seizure Disorder)
• Pediatric Unstable Bladder
• Infrequent Voiding (Urinary Tract Infection)
• Cystitis
• Behavioural/Psychogenic
• Idiopathic
• Non-neurogenic (Hinman Syndrome)
• Vaginal Voiding (Labial Adhesion)

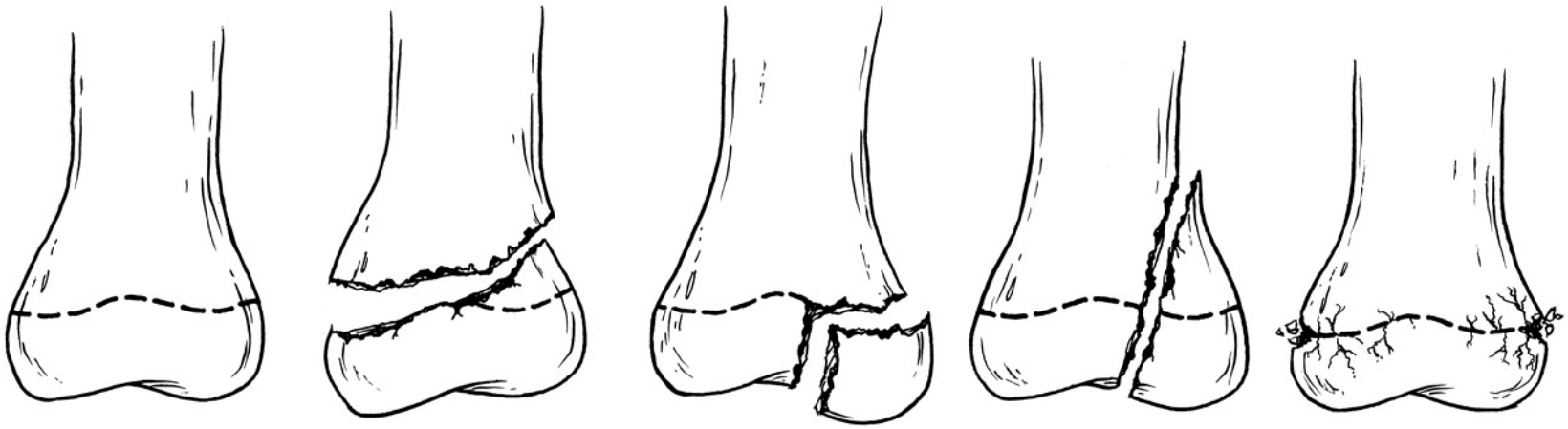
APPARENT LIFE THREATENING EVENT



PEDIATRIC FRACTURES



SALTER HARRIS PHYSEAL INJURY CLASSIFICATION SYSTEM

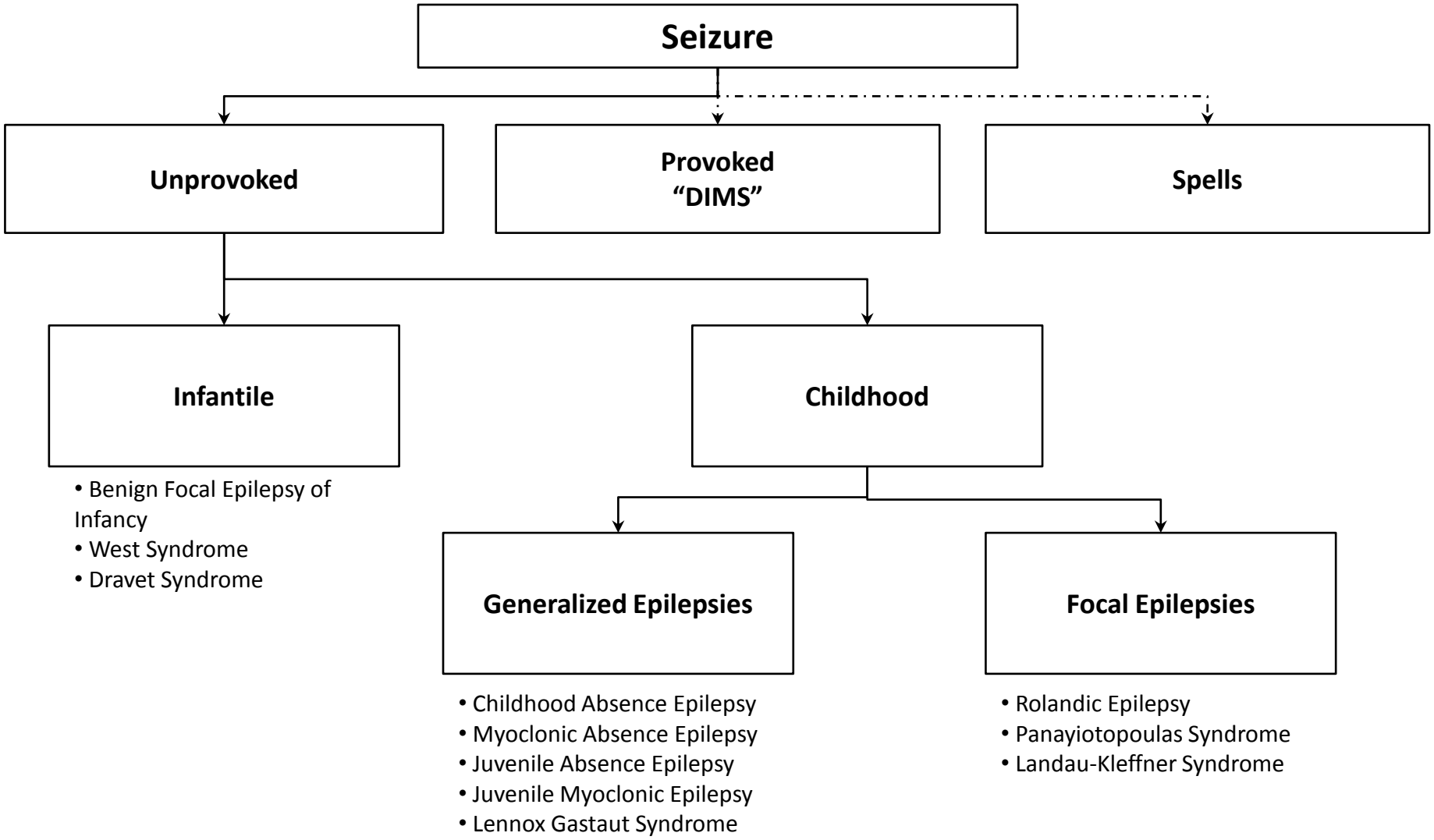


Type	Population	Features
I	Younger Children	Separation through the physis
II	Older Children (75%)	Fracture through a portion of the physis that extends through the metaphyses
III	Older Children (75%)	Fracture line goes below the physis through the epiphysis, and into the joint
IV		Fracture Line through the metaphysis, physis and epiphysis
V		Compression fracture of the growth plate

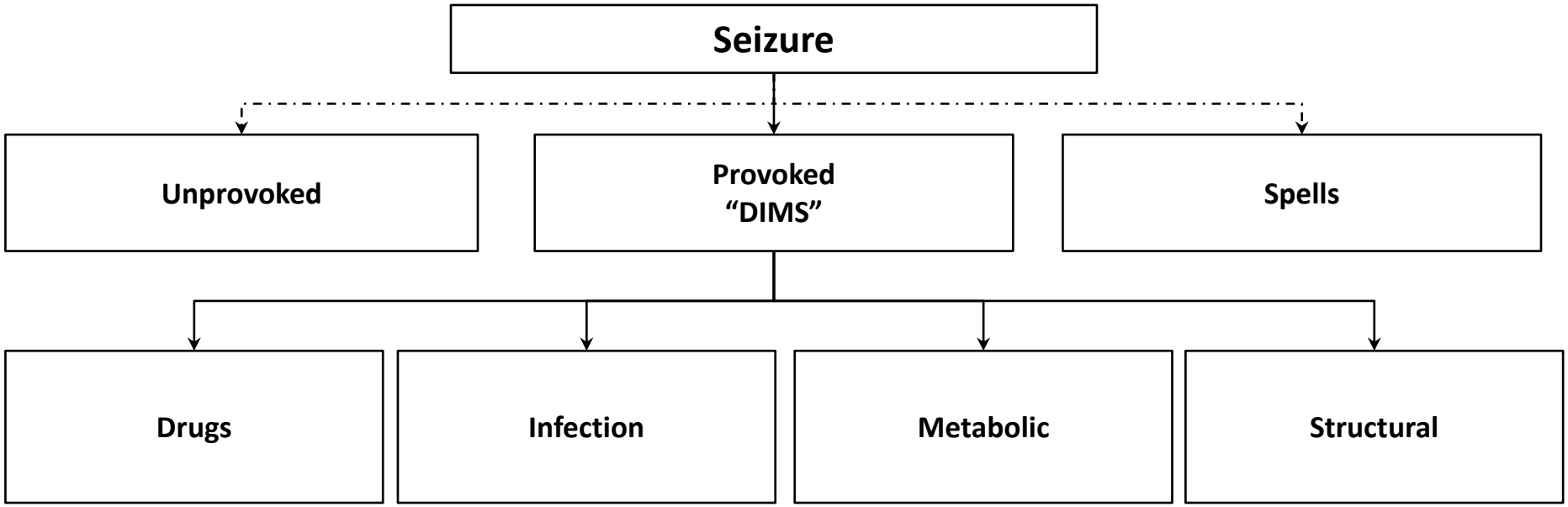
S	Straight through
A	Above
L	Lower
T	Through
R	Crush

http://www.jaaos.org/content/10/5/345/F1.large.jpg

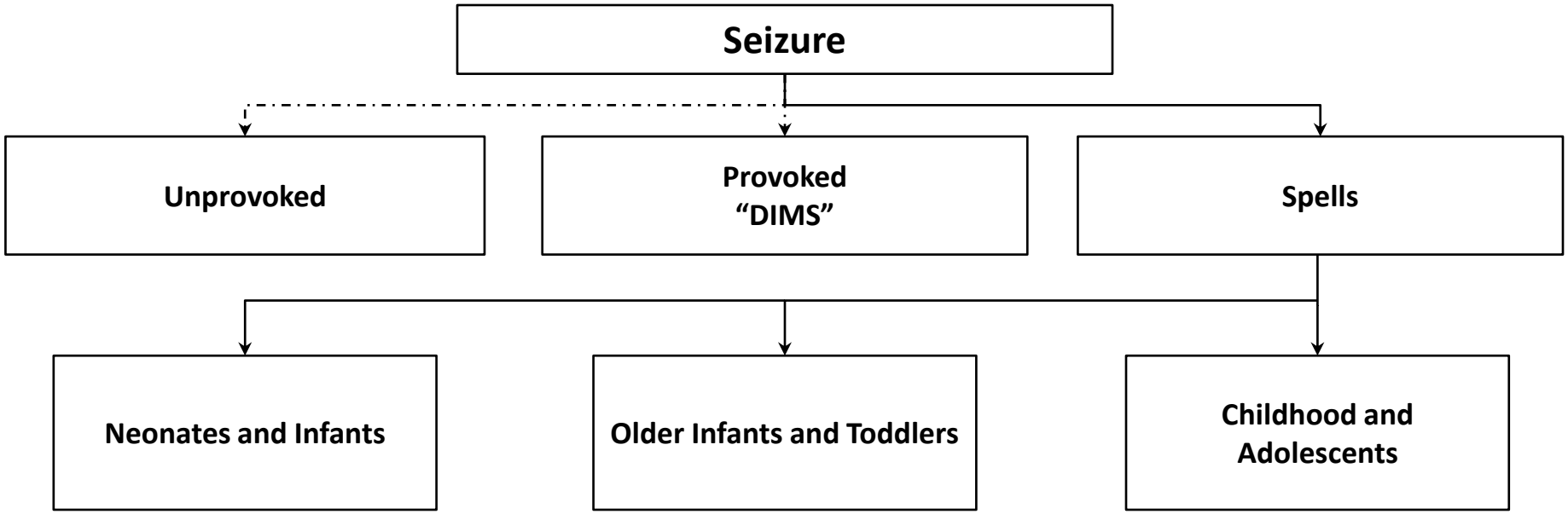
PEDIATRIC SEIZURE: Unprovoked



PEDIATRIC SEIZURE: Provoked



PEDIATRIC SEIZURE: Spells

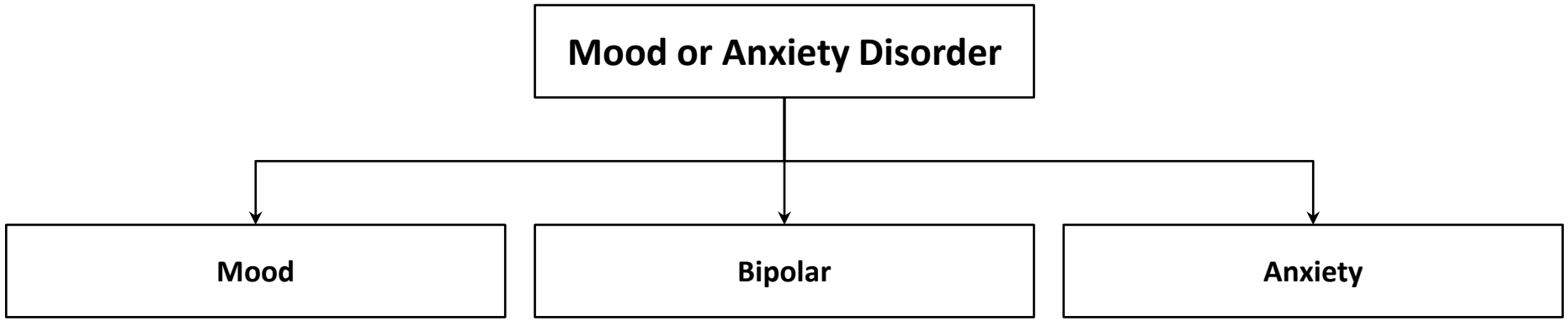


- Benign Sleep Myoclonus
- Shuddering attacks
- Infantile Colic
- Sandifer Syndrome

- Breath-holding spells
- Benign Paroxysmal Vertigo
- Benign Paroxysmal Torticollis
- Night Terrors

- Daydreaming
- Syncope
- Migraine-variants
- Panic Attack
- Transient Ischemic Attack
- Narcolepsy
- Cataplexy

PEDIATRIC MOOD AND ANXIETY DISORDERS



- Major Depressive Disorder
- Persistent Depressive Disorder
- Disruptive Mood Dysregulation Disorder*

- Panic Disorder and Agoraphobia
- Specific Phobia
- Social Phobia
- Generalized Anxiety Disorder
- Selective Mutism*
- Separation Anxiety Disorder*

*More commonly or exclusively found in pediatric populations

Other Presentations

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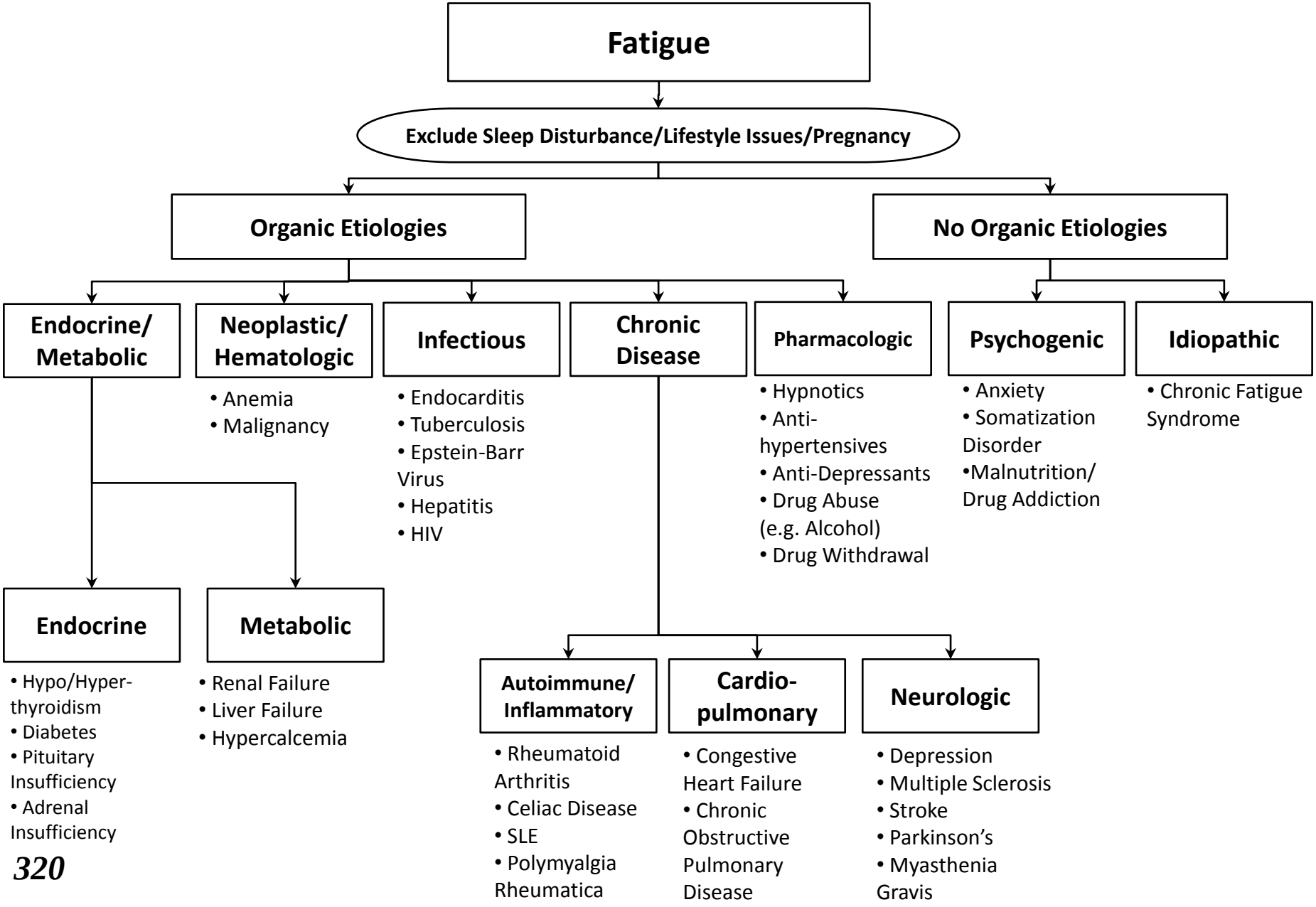
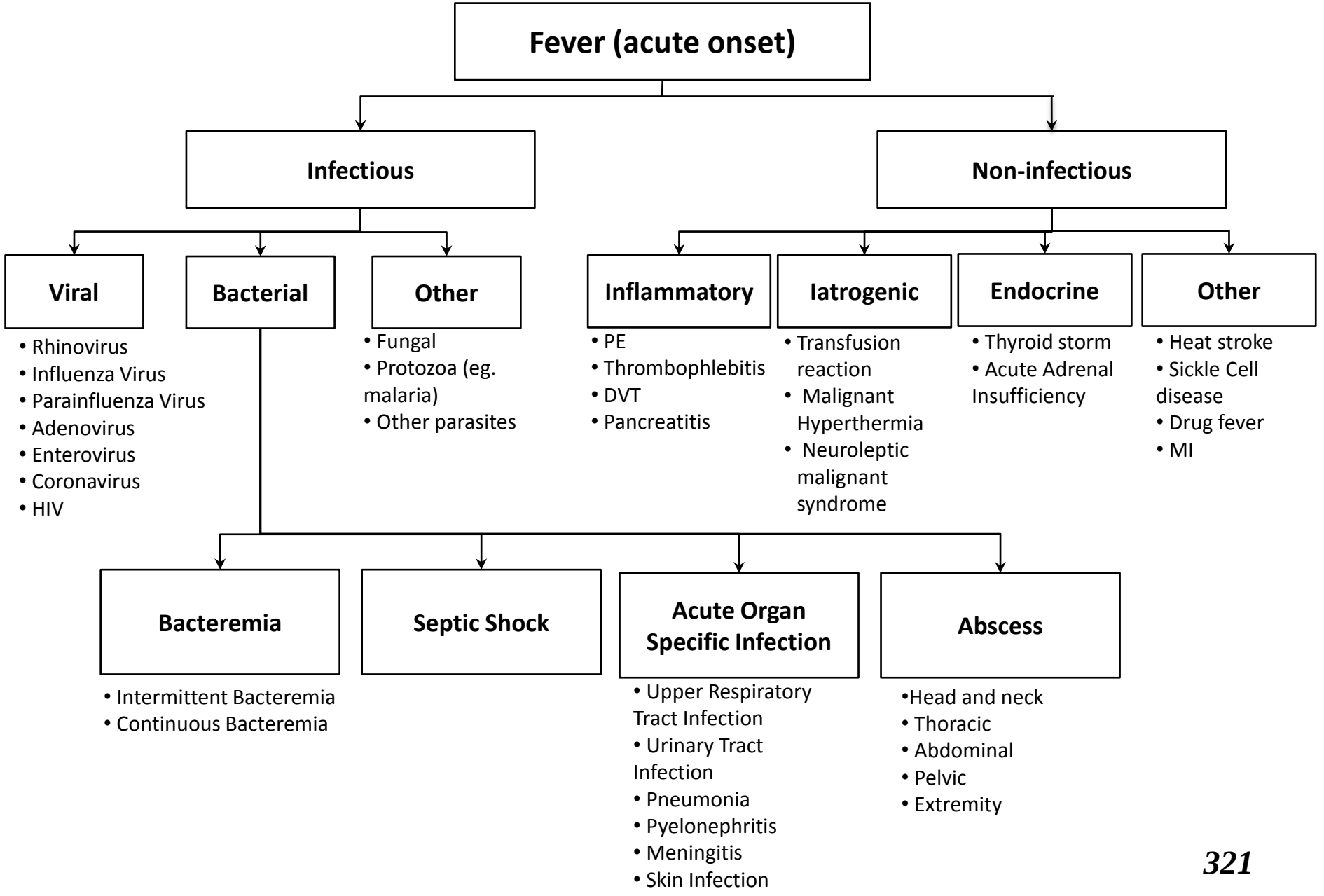
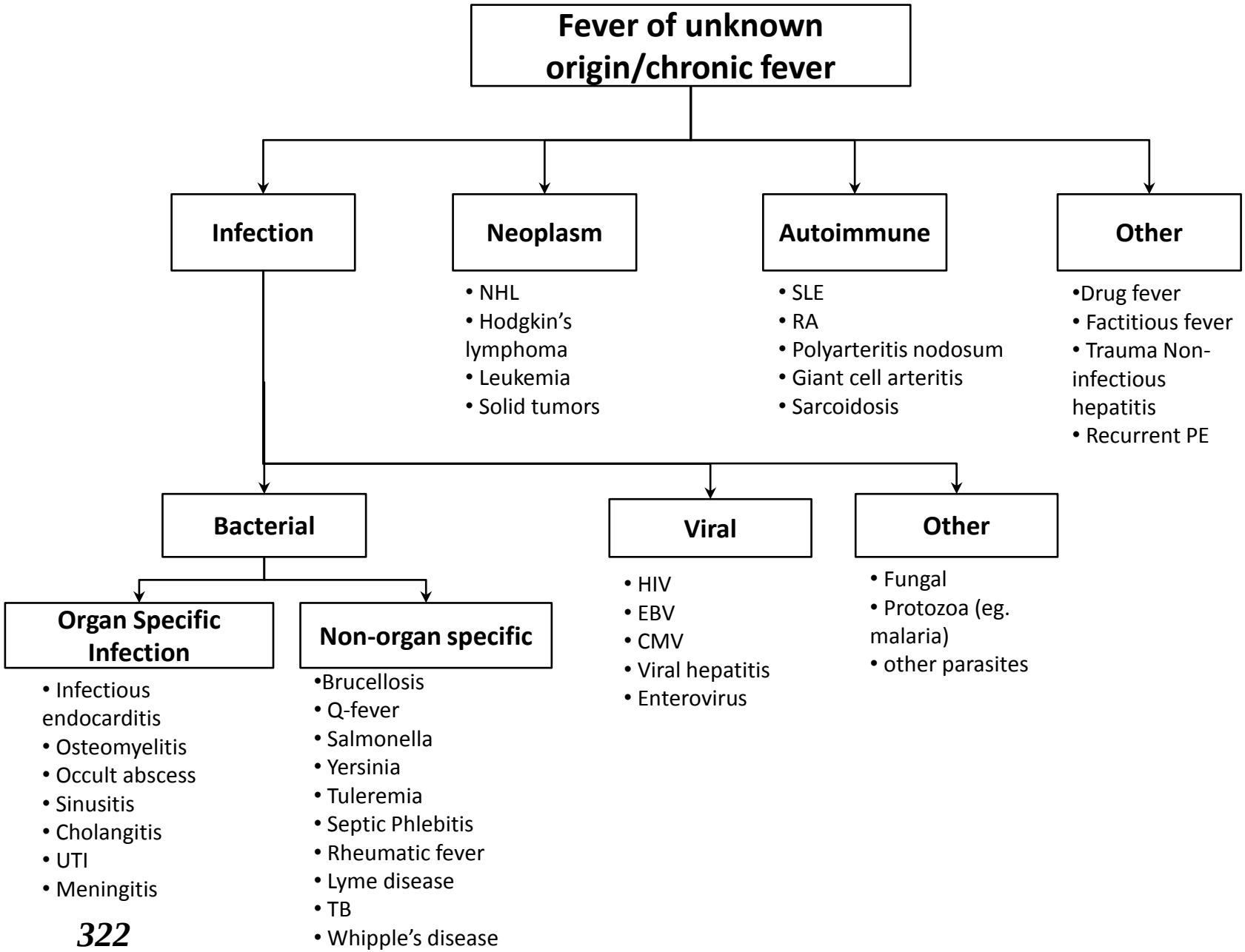
FATIGUE


Fatigue
Exclude Sleep Disturbance/Lifestyle Issues/Pregnancy
Organic Etiologies
No Organic Etiologies
Endocrine/ Metabolic
Neoplastic/ Hematologic
Infectious
Chronic Disease
Pharmacologic
Psychogenic
Idiopathic
• Anemia
• Malignancy
• Endocarditis
• Tuberculosis
• Epstein-Barr Virus
• Hepatitis
• HIV
• Hypnotics
• Anti-hypertensives
• Anti-Depressants
• Drug Abuse (e.g. Alcohol)
• Drug Withdrawal
• Anxiety
• Somatization Disorder
•Malnutrition/ Drug Addiction
• Chronic Fatigue Syndrome
Endocrine
Metabolic
• Hypo/Hyper-thyroidism
• Diabetes
• Pituitary Insufficiency
• Adrenal Insufficiency
• Renal Failure
• Liver Failure
• Hypercalcemia
Autoimmune/ Inflammatory
Cardio-pulmonary
Neurologic
• Rheumatoid Arthritis
• Celiac Disease
• SLE
• Polymyalgia Rheumatica
• Congestive Heart Failure
• Chronic Obstructive Pulmonary Disease
• Depression
• Multiple Sclerosis
• Stroke
• Parkinson's
• Myasthenia Gravis

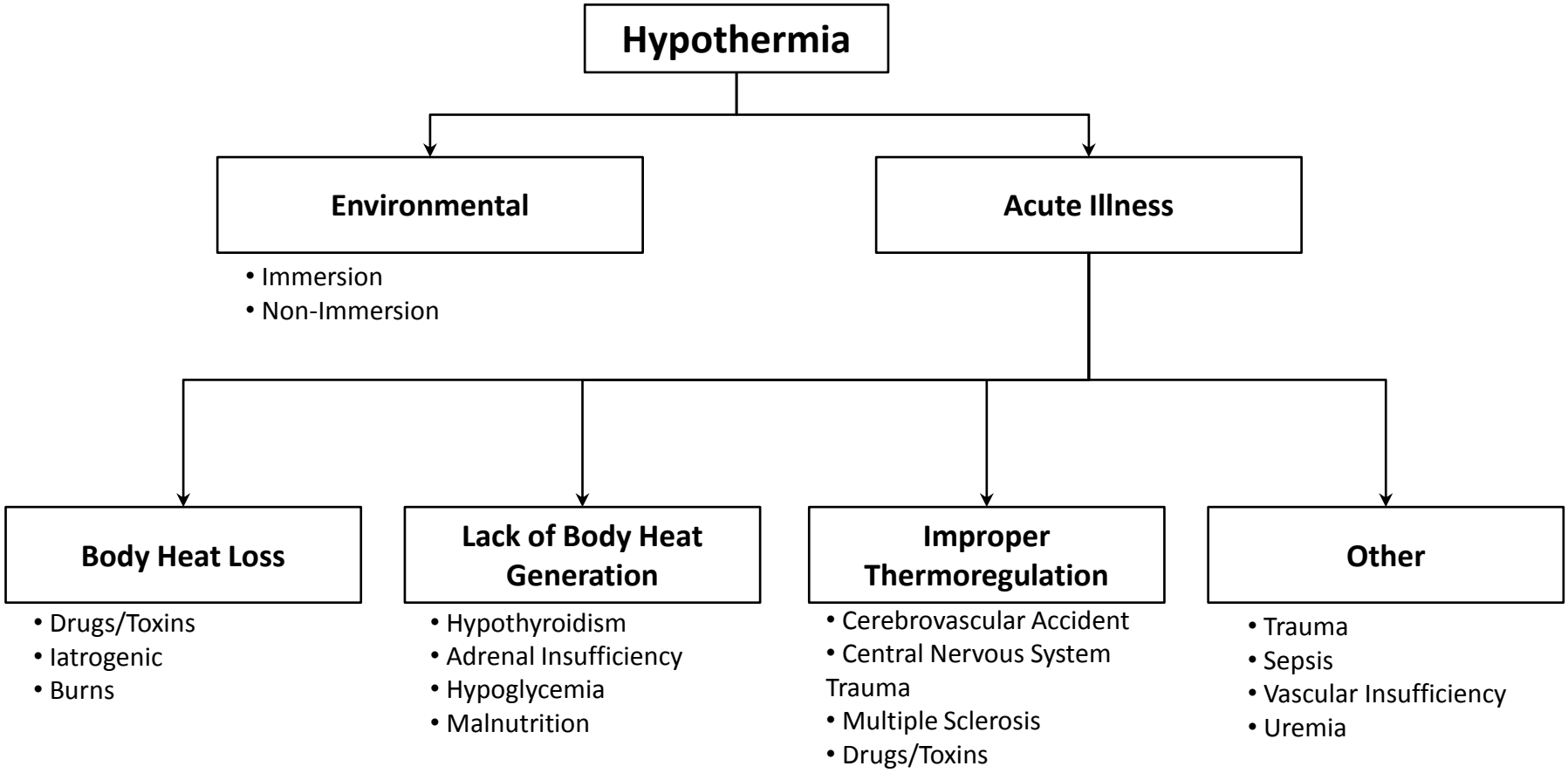
ACUTE FEVER


Fever (acute onset)
Infectious
Non-infectious
Viral
Bacterial
Other
Inflammatory
Iatrogenic
Endocrine
Other
• Rhinovirus
• Influenza Virus
• Parainfluenza Virus
• Adenovirus
• Enterovirus
• Coronavirus
• HIV
• Fungal
• Protozoa (eg. malaria)
• Other parasites
• PE
• Thrombophlebitis
• DVT
• Pancreatitis
• Transfusion reaction
• Malignant Hyperthermia
• Neuroleptic malignant syndrome
• Thyroid storm
• Acute Adrenal Insufficiency
• Heat stroke
• Sickle Cell disease
• Drug fever
• MI
Bacteremia
Septic Shock
Acute Organ Specific Infection
Abscess
• Intermittent Bacteremia
• Continuous Bacteremia
• Upper Respiratory Tract Infection
• Urinary Tract Infection
• Pneumonia
• Pyelonephritis
• Meningitis
• Skin Infection
•Head and neck
• Thoracic
• Abdominal
• Pelvic
• Extremity

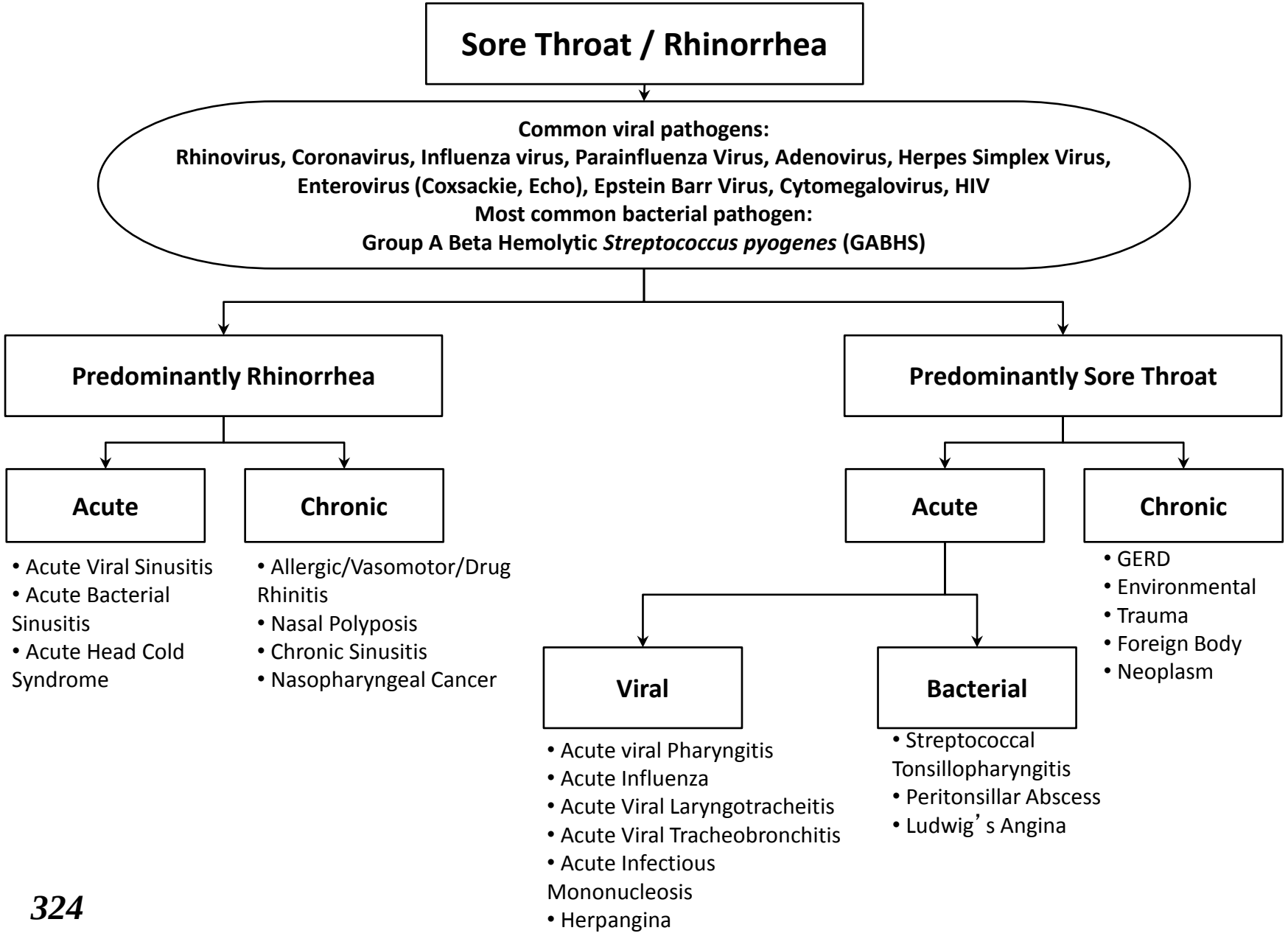
FEVER OF UNKNOWN ORIGIN/CHRONIC FEVER



HYPOTHERMIA



SORE THROAT / RHINORRHEA



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List of Abbreviations

AAA	Abdominal Aortic Aneurysm
ACE	Angiotensin-Converting Enzyme
ACTH	Adrenocorticotropic Hormone
ADPKD	Autosomal Dominant Polycystic Kidney Disease
ADH	Antidiuretic Hormone
AIN	Acute Interstitial Nephritis
ALS	Amyotrophic Lateral Sclerosis
ARB	Angiotensin Receptor Blocker
ARF	Acute Renal Failure
ARPKD	Autosomal Recessive Polycystic Kidney Disease
BPH	Benign Prostatic Hypertrophy
CCD	Cortical Collecting Duct
CHF	Congestive Heart Failure
CIN	Chronic Interstitial Nephritis
CLL	Chronic Lymphocytic Leukemia
CNS	Central Nervous System
COPD	Chronic Obstructive Pulmonary Disease
CRF	Chronic Renal Failure
CRH	Corticotropic Releasing Hormone
CT	Computed Tomography
DCIS	Ductal Carcinoma In Situ
DHEA	Dehydroepiandrosterone
DHEA-S	Dehydroepiandrosterone Sulfate
DIC	Disseminated Intravascular Coagulation
DKA	Diabetic Ketoacidosis
DRE	Digital Rectal Exam
DVT	Deep Vein Thrombosis
EABV	Effective Arterial Blood Volume
ECF	Extracellular Fluid
ENaC	Epithelial Sodium Channel
FEV1	Forced Expiratory Volume in One Second
FJN	Familial Juvenile Nephronophthisis
FSGS	Focal Segmental Glomerulosclerosis
FSH	Follicle Stimulating Hormone
FVC	Forced Vital Capacity
GBM	Glomerular Basement Membrane
GERD	Gastrointestinal Esophageal Reflux Disease

GFR	Glomerular Filtration Rate
GHRH	Growth Hormone Releasing Hormone
GH	Growth Hormone
GI	Gastrointestinal
GN	Glomerulonephritis
GnRH	Gonadotropin Releasing Hormone
GRA	Glucocorticoid-Remediable Aldosteronism
GTN	Gestational Trophoblastic Neoplasm
H+	Hydrogen
HCG	Human Chorionic Gonadatropin
HDL	High Density Lipoprotein
HELLP	Hemolysis, Elevated Liver Enzymes, Low Platelets
HIV	Human Immunodeficiency Virus
HPL-1a	Human Peripheral Lung Epithelial Cell Line 1a
HRT	Hormone Replacement Therapy
HSP	Henoch-Schönlein Purpura
HSV	Herpes Simplex Virus
HUS	Hemolytic-Uremic Syndrome
IBD	Irritable Bowel Disease
IBS	Irritable Bowel Syndrome
ICP	Increased Intracranial Pressure
ICU	Intensive Care Unit
IGF	Insulin-like Growth Factor
INR	International Normalized Ratio
ITP	Idiopathic Thrombocytopenic Purpura
IUGR	Intrauterine Growth Restriction
IV	Intravenous
IVP	Intravenous Pyelogram
JVP	Jugular Venous Pressure
K^+	Potassium
KUB	Kidney, Ureter, Bladder
LCIS	Lobular Carcinoma In Situ
LDL	Low Density Lipoprotein
LGA	Large for Gestational Age
LH	Luteinizing Hormone
LOC	Level of Consciousness
LPL	Lipoprotein Lipase
MCD	Minimal Change Disease
MCH	Mean Corpuscular Hemoglobin
MCHC	Mean Corpuscular Hemoglobin Concentration
MCV	Mean Corpuscular Volume

MEN	Multiple Endocrine Neoplasia
MI	Myocardial Infarction
MPGN	Membranoproliferative Glomerulonephritis
MS	Multiple Sclerosis
MSK	Musculoskeletal
Na^+	Sodium
NSAIDs	Non-Steriodal Anti-Inflammatories
OCP	Oral Contraceptive Pill
OSM	Osmolality
PE	Pulmonary Embolism
PID	Pelvic Inflammatory Disease
PMN	Polymorphic Neutrophils
POSM	Plasma Osmolality
PPROM	Preterm Premature Rupture of Membranes
PROM	Premature Rupture of Membranes
PT	Prothrombin Time
PTH	Parathyroid Hormone
PTT	Partial Thromboplastin Time
PUD	Peptic Ulcer Disease
PUJ	Pelviureteric Junction
RAPD	Right Afferent Pupillary Defect
RAS	Renal Artery Stenosis
RBC	Red Blood Cell
RTA	Renal Tubular Acidosis
SGA	Small for Gestational Age
SLE	Systemic Lupus Erythematosus
TORCH	Toxoplasmosis, Other (Hepatitis B, Syphilis, Varicella-Zoster virus, HIV, Parvovirus B19), Rubella, Cytomegalovirus, Herpes Simplex Virus
TSH	Thyroid Stimulating Hormone
TSHR	Thyroid Stimulating Hormone Receptor
TTKG	Transtubular Potassium Gradient
TTP	Thrombotic Thrombocytopenic Purpura
UTI	Urinary Tract Infection
US	Ultrasound
VACTERL	Vertebral Anomalies, Anal Atresia, Cardiovascular Anomalies, Tracheoesophageal Fistula, Esophageal Atresia, Renal Anomalies, Limb Anomalies
VSD	Ventricular Septal Defect
VUJ	Vesicoureteral Junction

Approaching Medical Presentations with Schemes

Superficially resembling flowcharts, schemes are a way to ease the memorization of differential diagnoses by breaking large lists into sets of smaller, conceptually-intuitive information packets. Using the Medical Council of Canada's Clinical Presentation List, *The Calgary Black Book* organizes the most common medical presentations of patients into diagnostic schemes. As a tool for medical students, residents, allied health trainees, and health care educators, medical presentation schemes will ease the learning of the volume of medical diagnoses, and will facilitate recall when needed.

Based on the medical presentation schemes used in the University of Calgary Medical curriculum, *The Calgary Black Book* is a joint production of the students and Faculty of Medicine of the University of Calgary.