BLACKBOOK

RIGHT LUNG
Left innom. vein
Arch of aorta
Ascending aorta
Pulmonary artery
Conus arteriosus
Right ventricle
Left ventricle
Left auricula

Disclaimer

This material is for **educational purposes only**.

It is not to be used to make medical decisions.
Medical decisions should be made only with the guidance of a licensed medical professional.

While efforts have been made to ensure
the accuracy of the content within,
the accuracy is not guaranteed.

Blackbook

Approaches to Medical Presentations

Produced by The Cumming School of Medicine, University of Calgary

UNIVERSITY OF CALGARY
CUMMING SCHOOL OF MEDICINE

Blackbook: Approaches to Medical Presentations

Fifteenth Edition (2022). First Printing.

First Edition	2007 (Reprint 2008)	Tenth Edition	2017
Second Edition	2009 (Reprints 2009, 2010)	Eleventh Edition	2018
Third Edition	2010	Twelfth Edition	2019
Fourth Edition	2011	Thirteenth Edition	2020
Seventh Edition	2014	Fourteenth Edition	2021
Eighth Edition	2015	Fifteenth Edition	2022
Ninth Edition	2016		

ISBN Pending Assignment

Medical decisions should be made only with the guidance of a licensed medical professional. While efforts have been made to ensure accuracy of the content within, the accuracy is not guaranteed.

The Black Book Project may be contacted at:
Undergraduate Medical Education
Faculty of Medicine, University of Calgary
Health Sciences Centre
3330 Hospital Drive N.W.
Calgary, Alberta, Canada T2N 4H1
blackbk@ucalgary.ca

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

Printed in Calgary, Alberta, Canada.

Design
Michael Cheshire

Illustrations
Cover: Fajr Haq (Class of 2023)
Gray's Anatomy (Public Domain)
Vecteezy.com

A Message from the Editors

Welcome to the *Blackbook*, an ongoing project organizing medical presentations into schemes. The *Blackbook* is the result of the hard work and dedication of medical students and faculty at the University of Calgary, Cumming School of Medicine. We are proud that healthcare practitioners and trainees around the world find the *Blackbook* to be a useful tool in their learning.

The *Blackbook* continues to evolve with each new version. This fifteenth edition features cover artwork hand drawn by a talented medical student in our class, Fajr. You can check out more of her artwork on Instagram @artbyfajr.

As medical students, we are often asked, "What is your approach to X?". The *Blackbook* presents information that is organized into scheme-based approaches. The *Blackbook* website continues to integrate with other University of Calgary resources, the Calgary Guide and Calgary Cards, an online study aid using patient case centered multiple choice questions. These resources aim to facilitate the direct translation of scheme-oriented learning into clinical scenario practice so that students can confidently answer the question, "What is your approach to X?".

We continue to strive to make the *Blackbook* a leading study resource. Please email **blackbk@ucalgary.ca** with any feedback, corrections, or ideas for new schemes.

Thank you and happy learning!
Anya Friesen & Kamiko Bressler

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 to develop 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?)

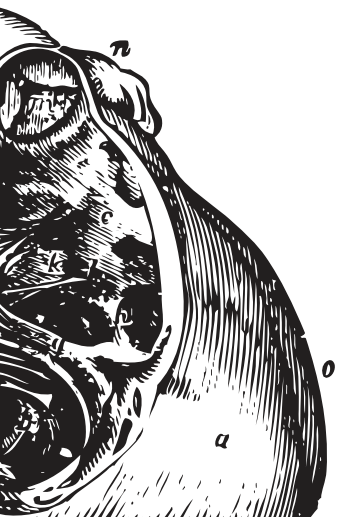
By adhering to these principles, the schemes presented in this book, or any modifications to them done by the reader, will enhance knowledge storage and long term retrieval from memory, while making the medical problem-solving task a more accurate and enjoyable endeavour.

Dr. Henry Mandin
Dr. Sylvain Coderre

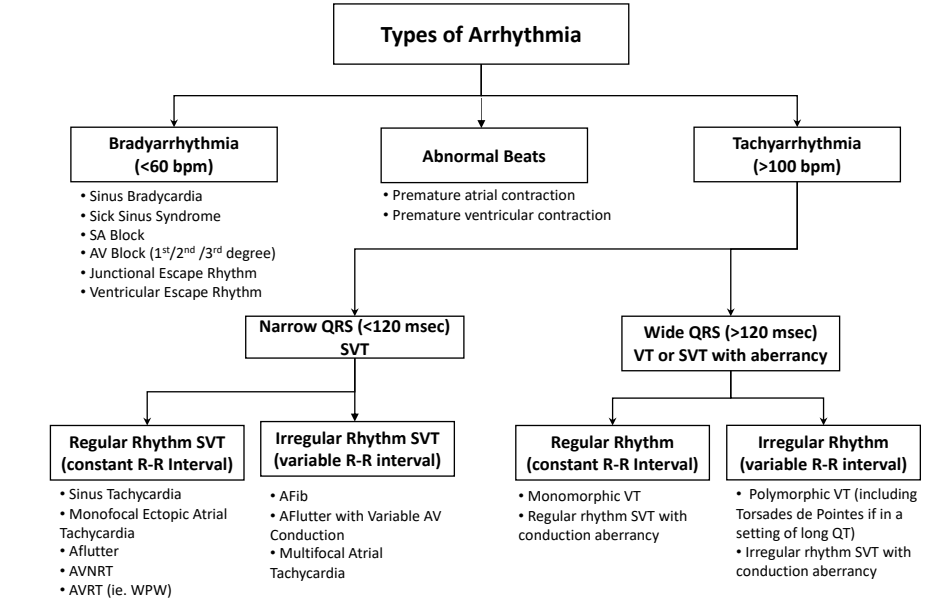
Table of Contents

Dermatologic 221

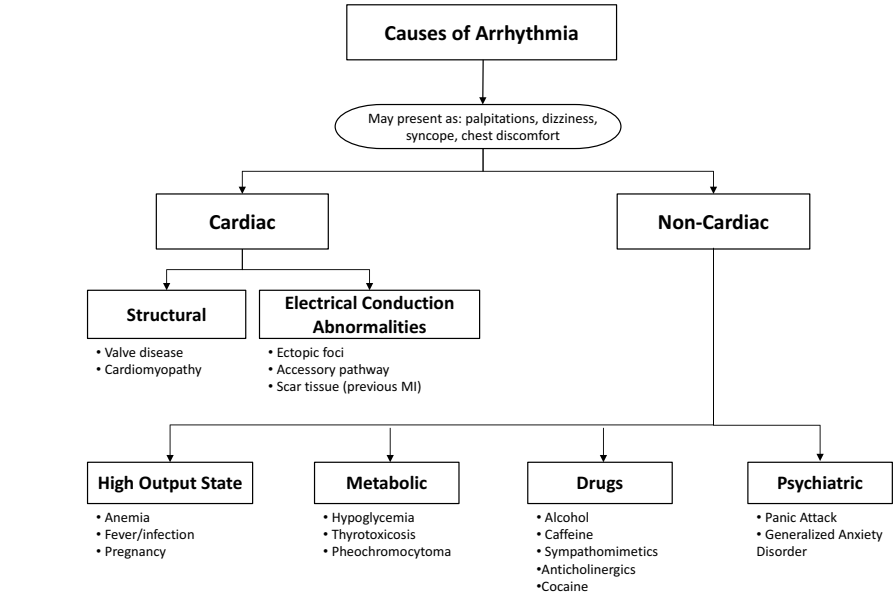
Cardiovascular



Abnormal Rhythm (1)

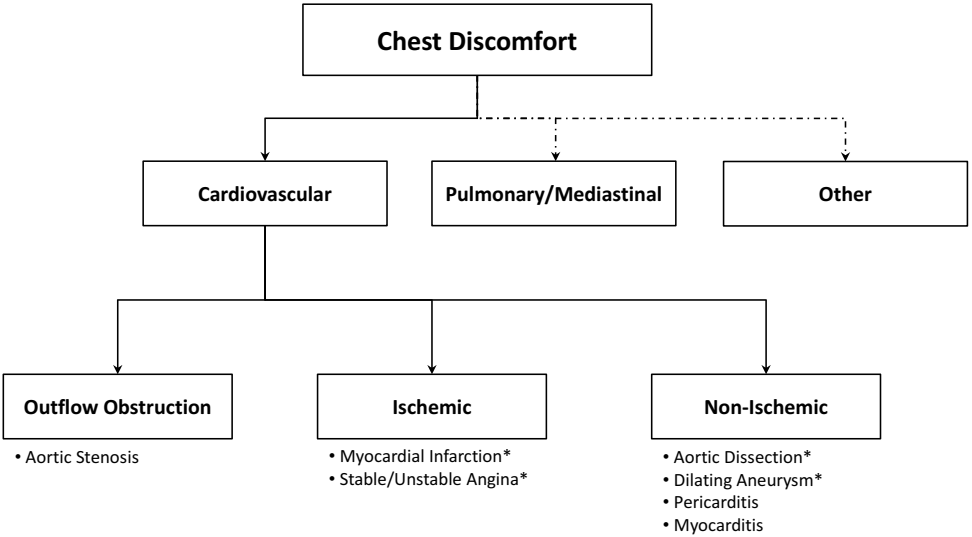


Abnormal Rhythm (2)



Chest Discomfort

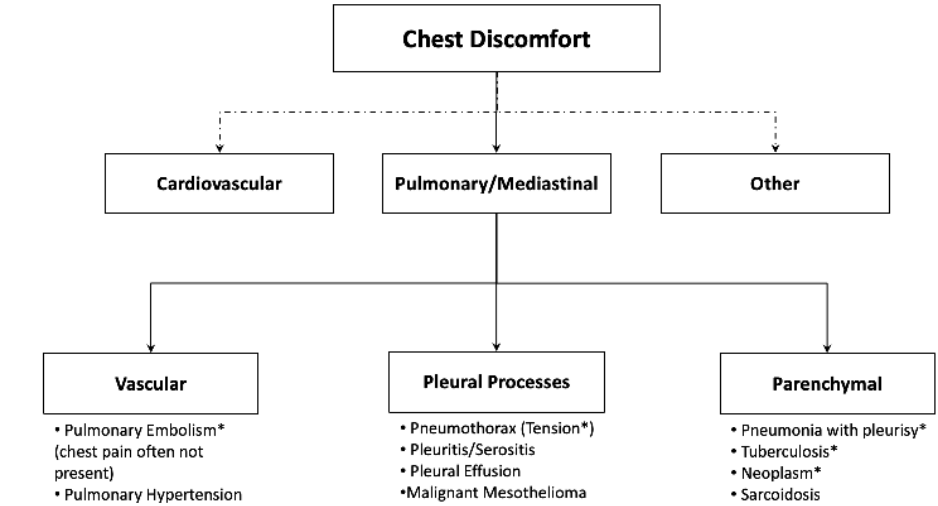
Cardiovascular



* Denotes acutely life-threatening causes

Chest Discomfort

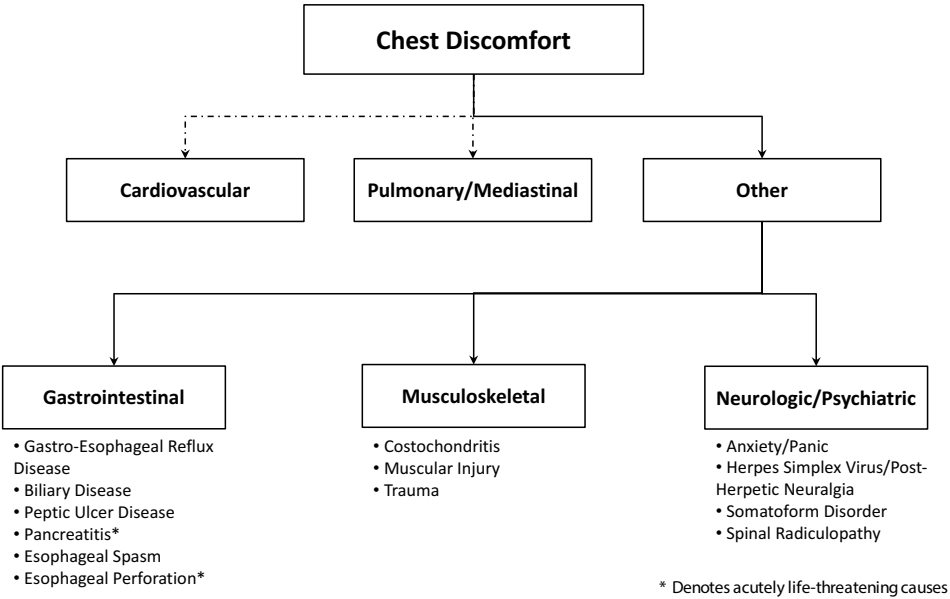
Pulmonary / Medistinal



** Denotes acutely life-threatening causes*

Chest Discomfort

Other



Diastolic Murmur

Diastolic Murmur

Early Diastolic

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

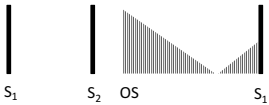
•Aortic Regurgitation/ Pulmonary Regurgitation

Mid-Diastolic

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

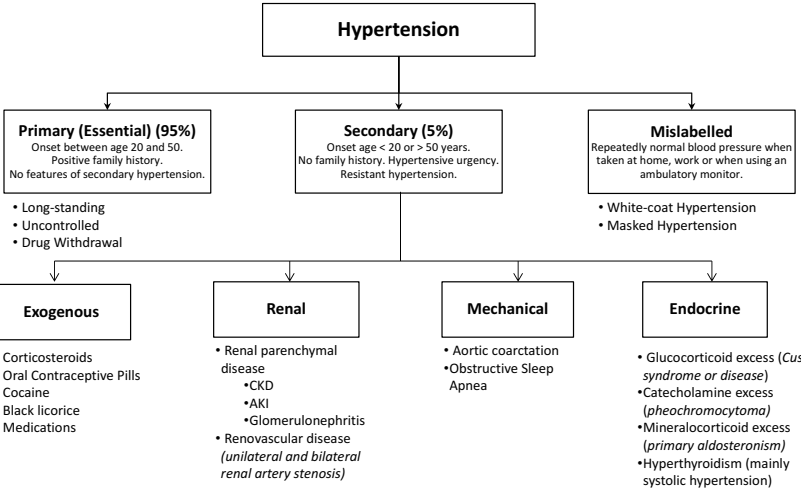
Late Diastolic

- Mitral Stenosis*
- Tricuspid Stenosis*
- Myxoma



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

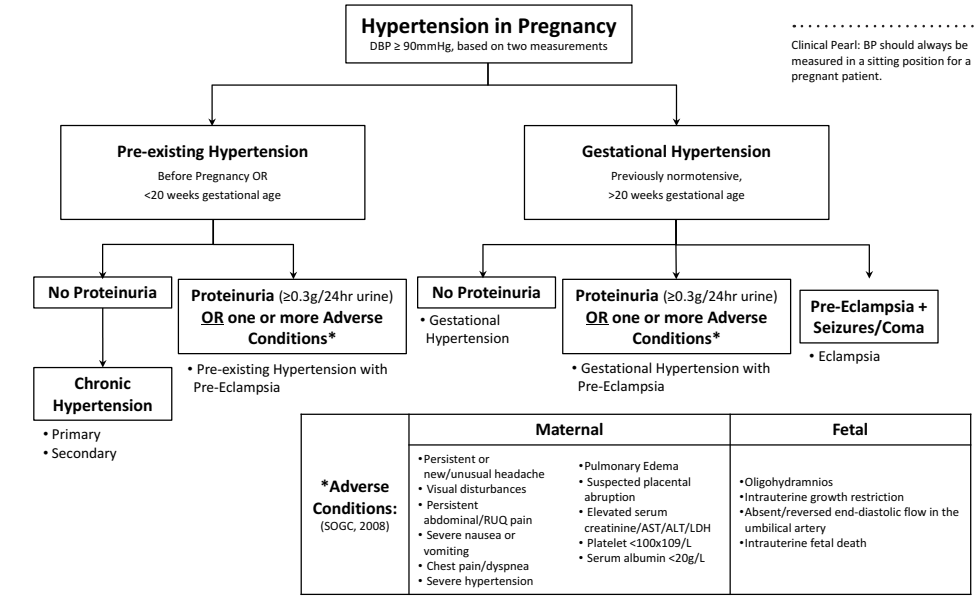
Hypertension



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**.

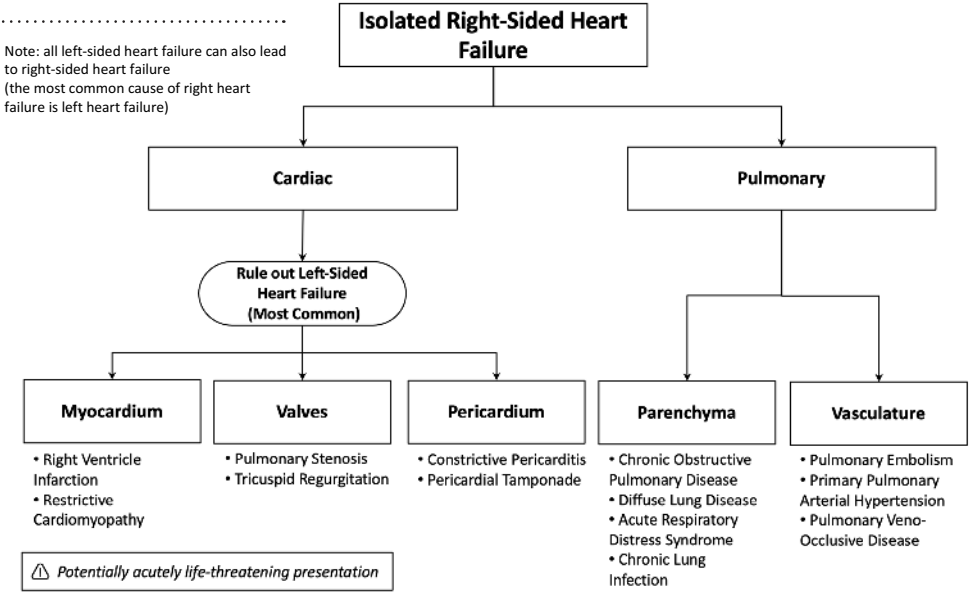
Hypertensive Urgency: BP usually >180/110mmHg or asymptomatic Diastolic BP >130mmHg with target organ damage usually present but not acutely changing
Hypertensive Emergency: BP usually >220/140mmHg with evolving target organ damage

Hypertension in Pregnancy

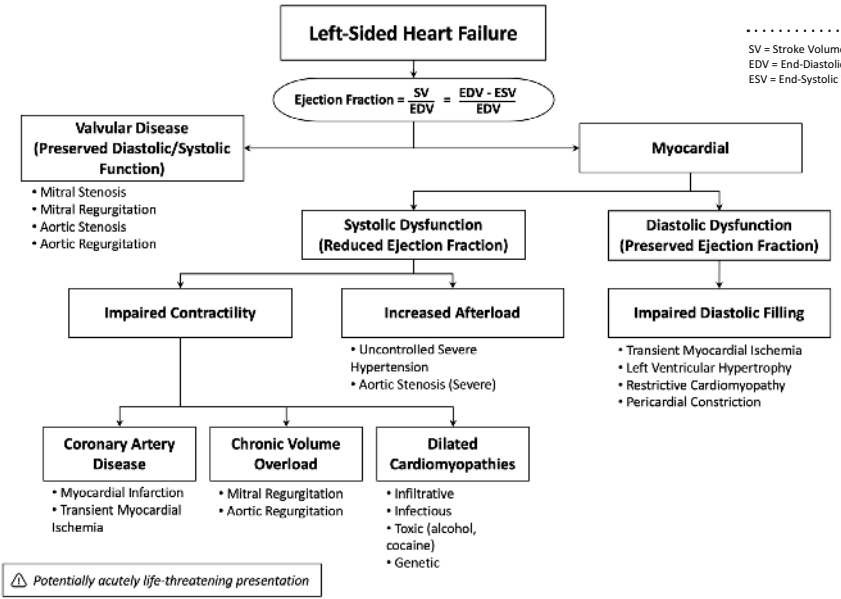


Isolated Right-Sided Heart Failure

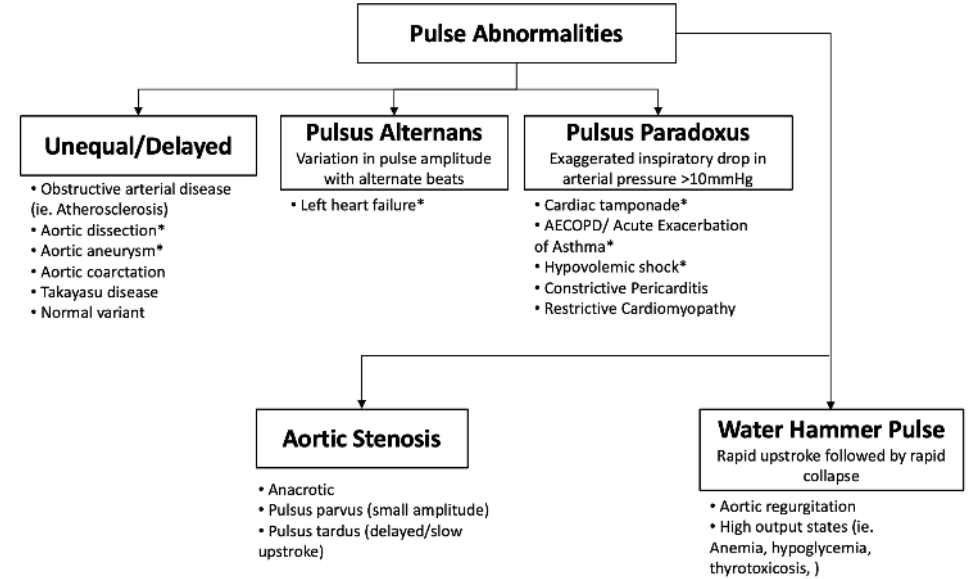
Note: all left-sided heart failure can also lead to right-sided heart failure (the most common cause of right heart failure is left heart failure)



Left-Sided Heart Failure

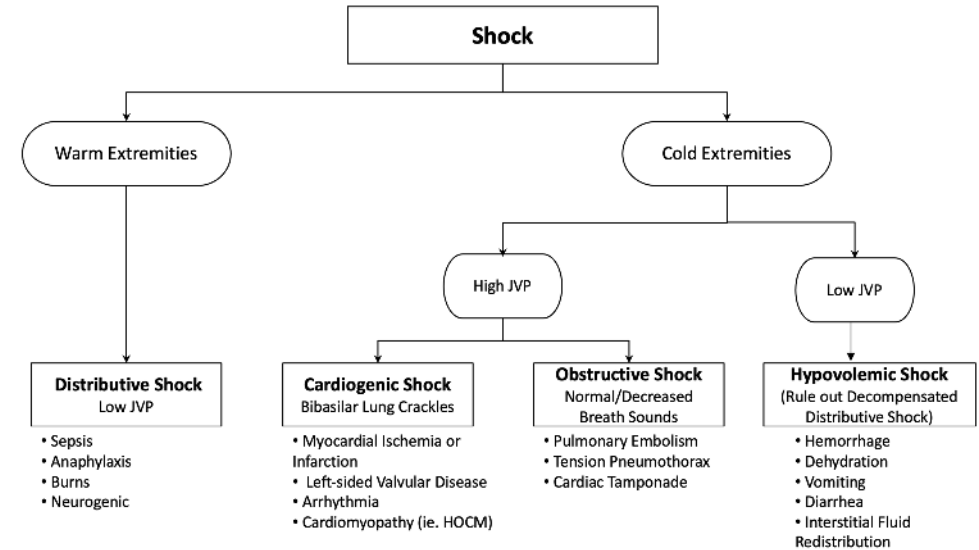


Pulse Abnormalities



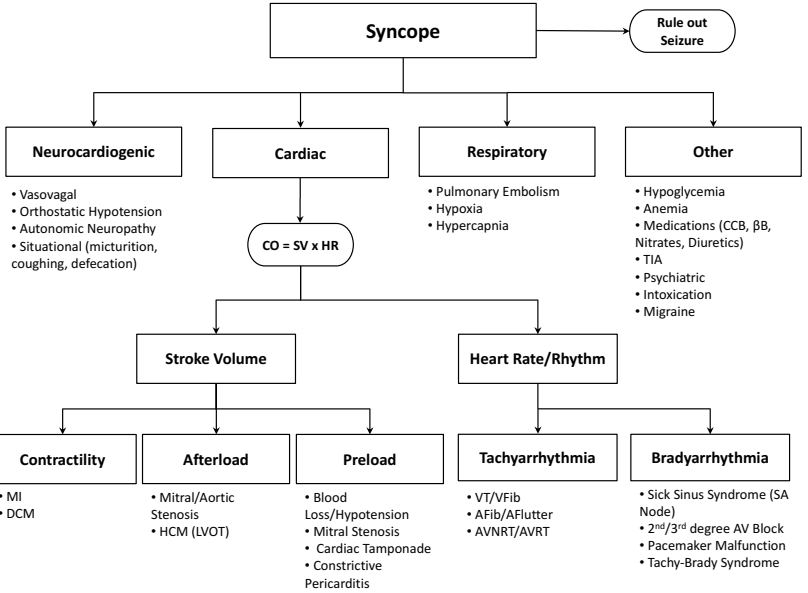
** Denotes acutely life-threatening causes*

Shock



⚠ *Potentially acutely life-threatening presentation*

Syncope

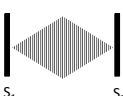


Systolic Murmur

Benign & Stenotic

Systolic Murmur

- **Benign/Flow/ Hyperdynamic**
  - Pregnancy
  - Fever
  - Anemia
- **Stenosis**
  - **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***

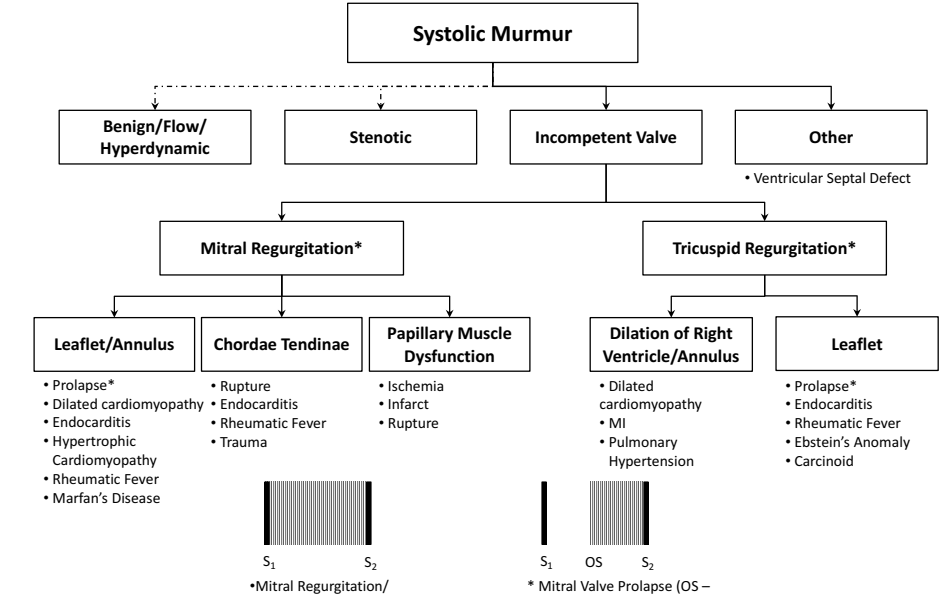


•Aortic Stenosis/ Pulmonary Stenosis

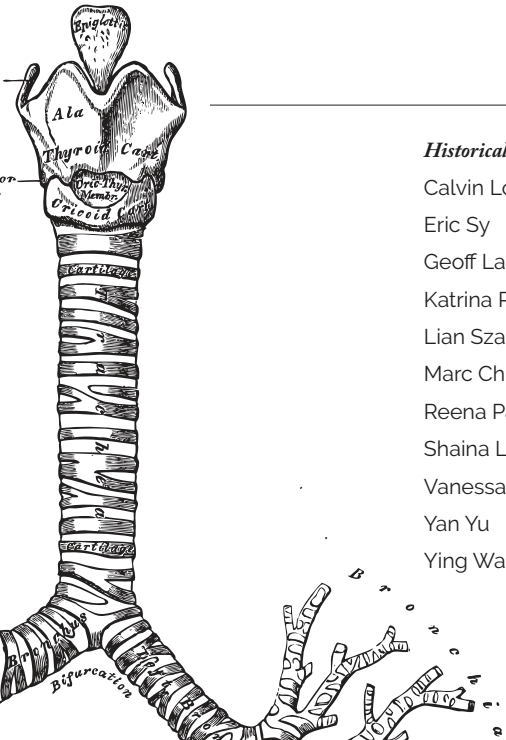
- **Incompetent Valve**
- **Other**

Systolic Murmur

Valvular & Other



Respiratory



Historical Editors

Calvin Loewen
Eric Sy
Geoff Lampard
Katrina Rodrigues
Lian Szabo
Marc Chretien
Reena Pabari
Shaina Lee
Vanessa Millar
Yan Yu
Ying Wang

Student Editors

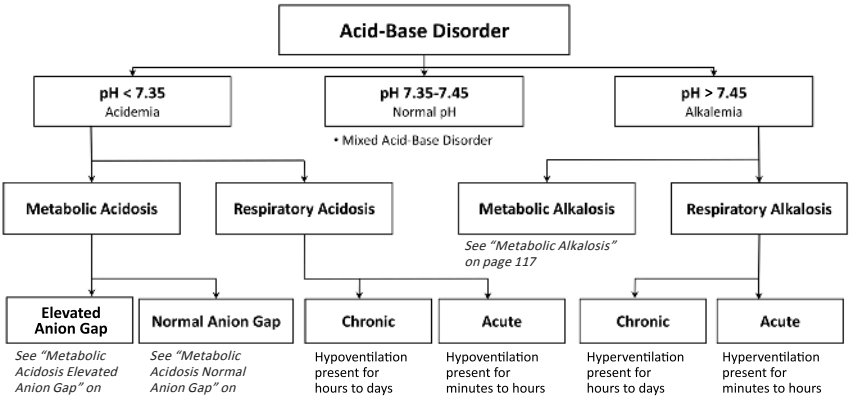
Amanda Comeau
Annie Wu
Shaye Lafferty
Sravya Kakumanu

Faculty Editor

Dr. Naushad Hirani
Dr. Daniel Miller

Acid-Base Disorder

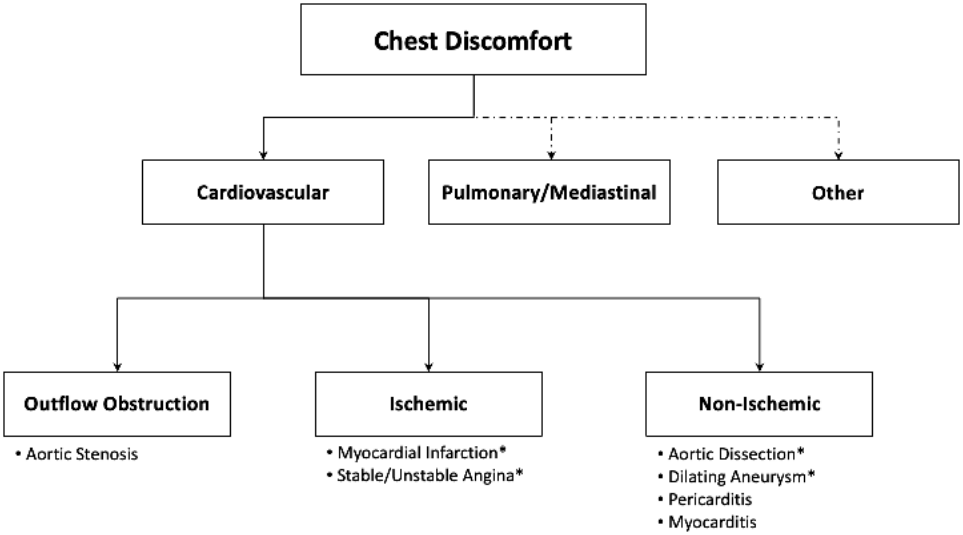
Pulmonary



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

Chest Discomfort

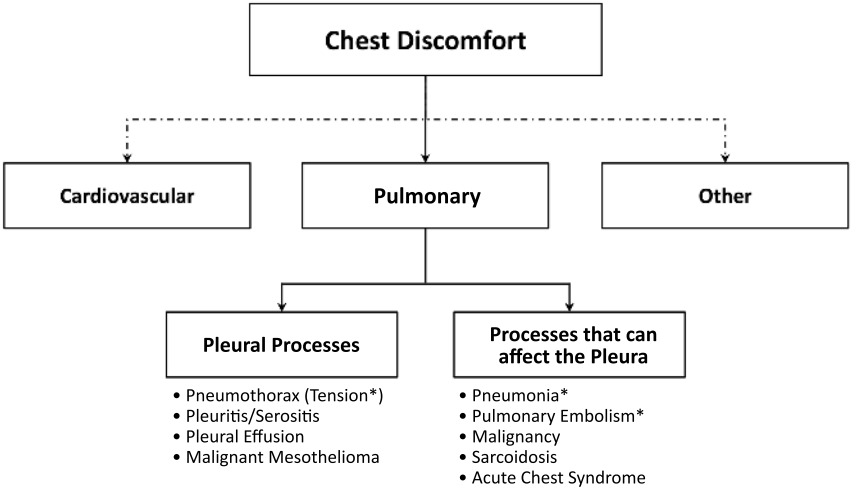
Cardiovascular



** Denotes acutely life-threatening causes*

Chest Discomfort

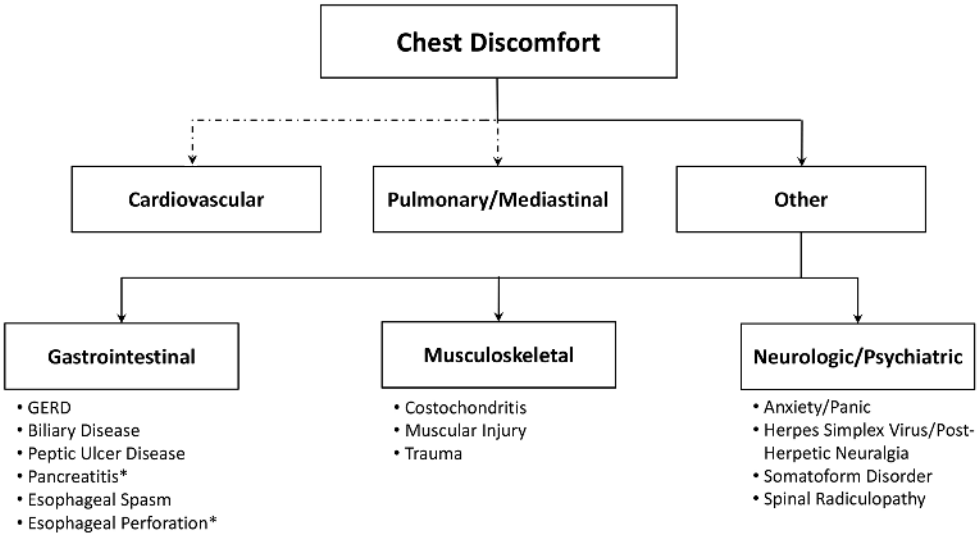
Pulmonary



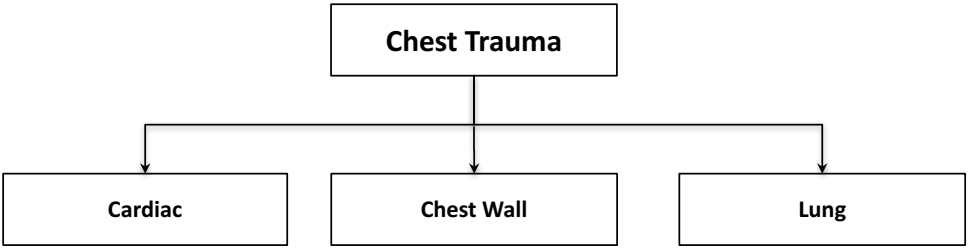
 ** Potentially acutely life-threatening*

Chest Discomfort

Other



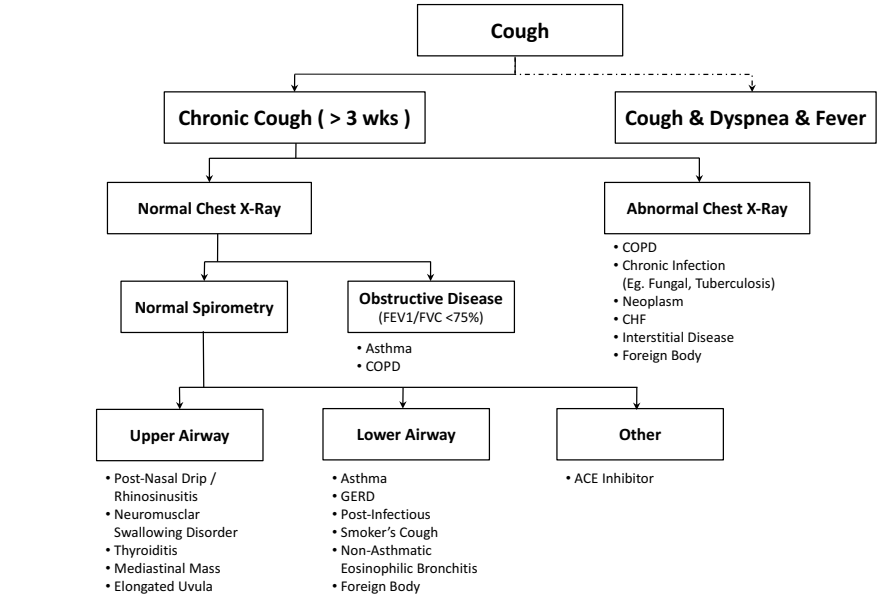
Chest Trauma Complications



** Potentially acutely life-threatening*

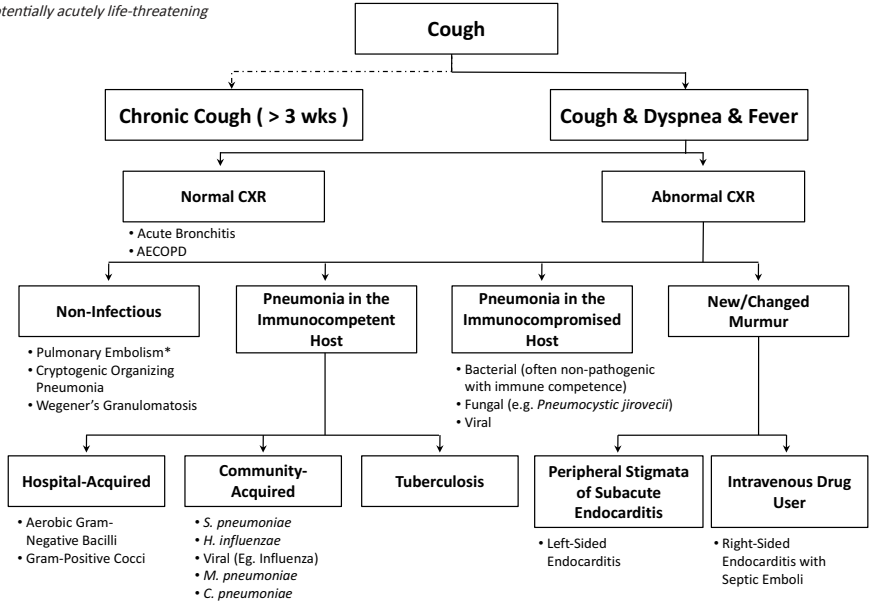
Cough

Chronic



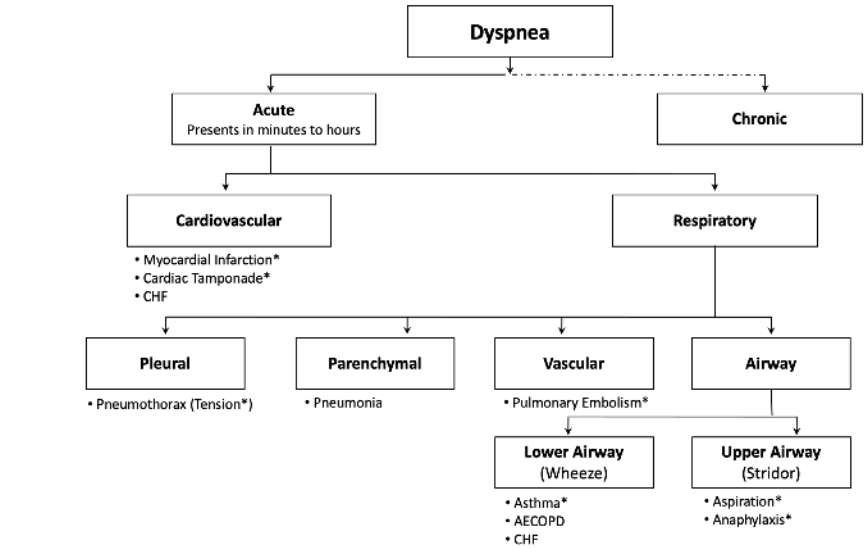
Cough, Dyspnea & Fever

** Potentially acutely life-threatening*



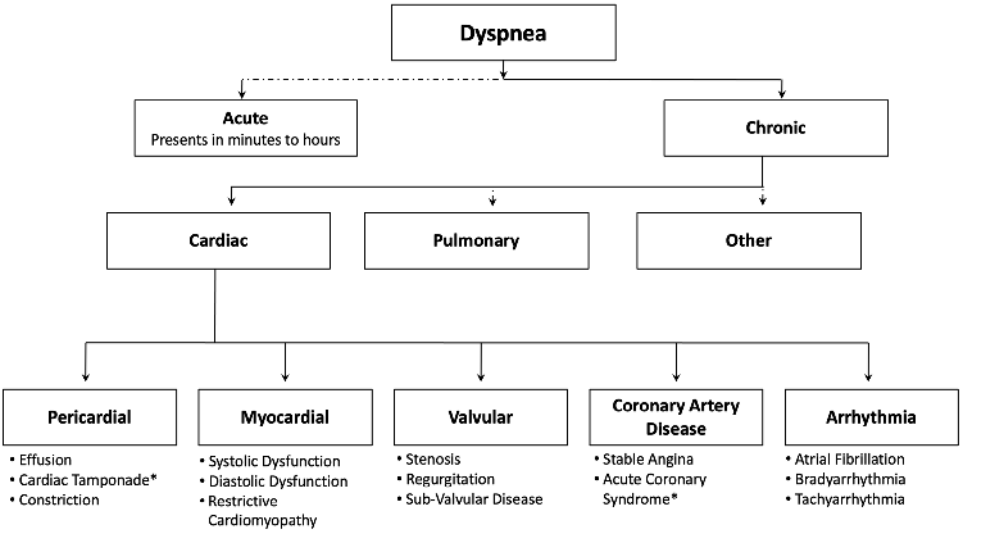
Dyspnea

Acute



Dyspnea Chronic

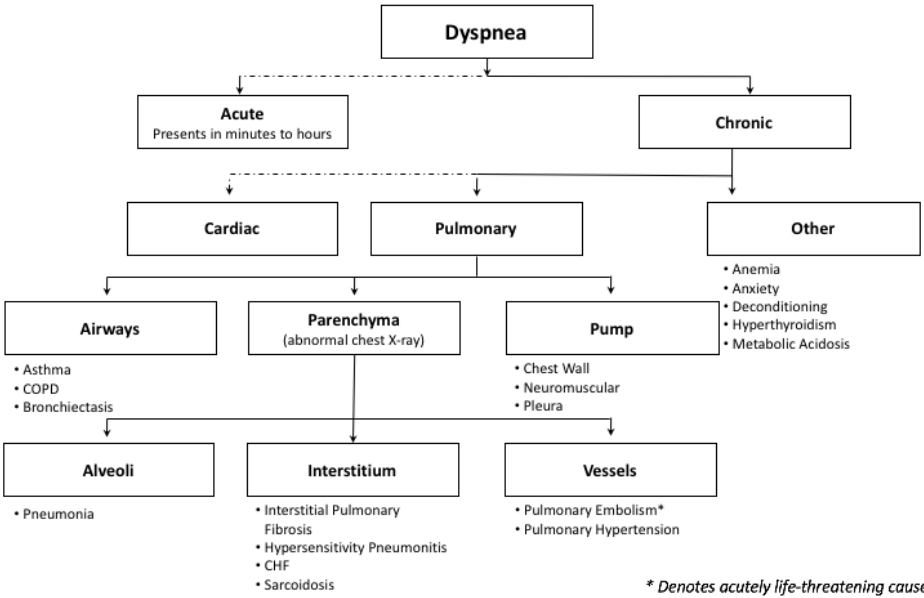
Cardiac



** Denotes acutely life-threatening causes*

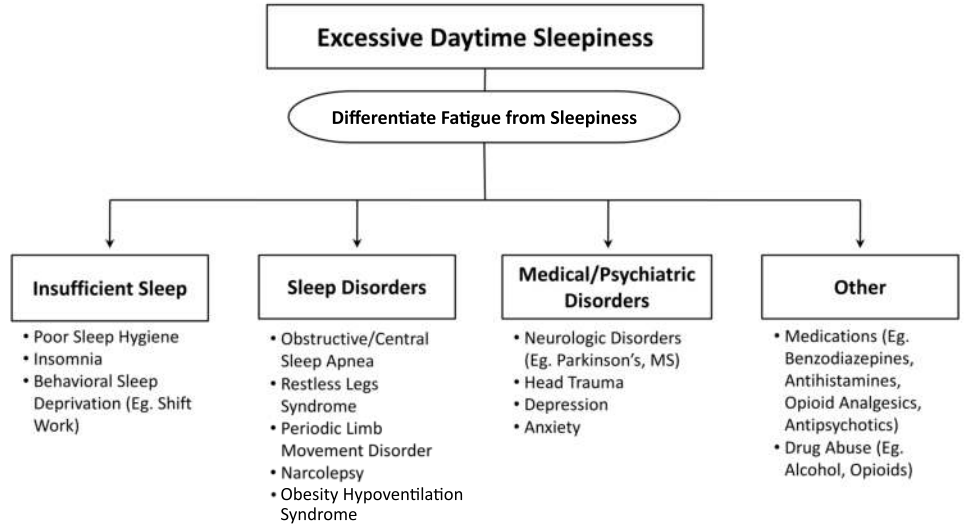
Dyspnea Chronic

Pulmonary / Other

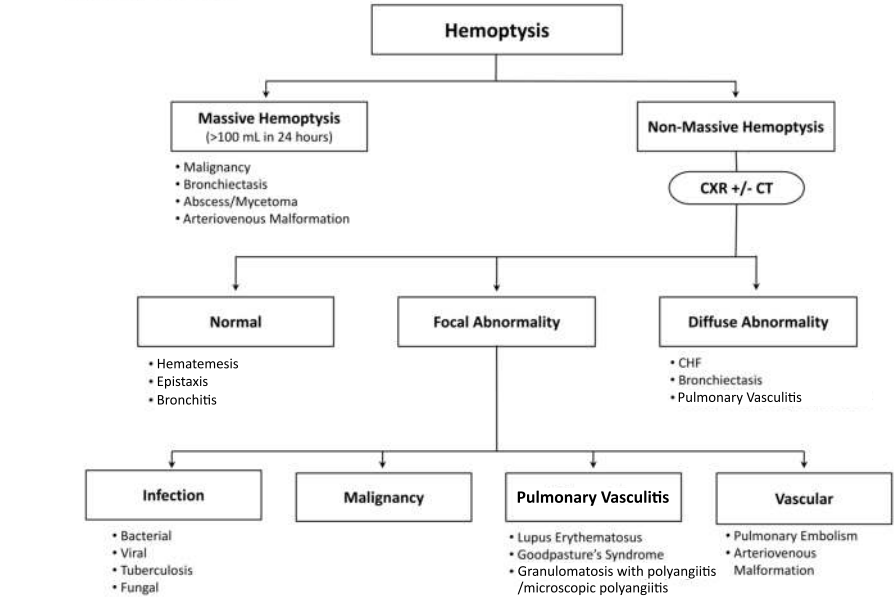


** Denotes acutely life-threatening causes*

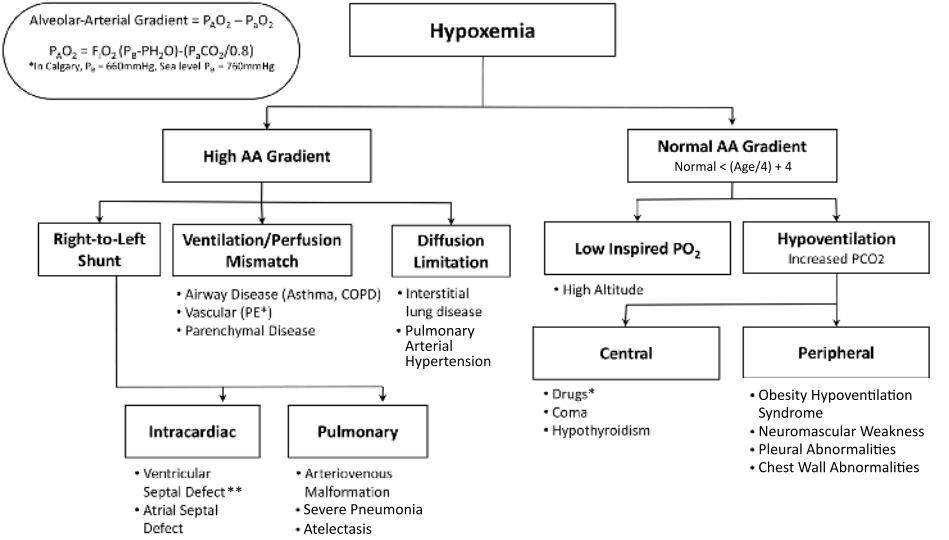
Excessive Daytime Sleepiness



Hemoptysis



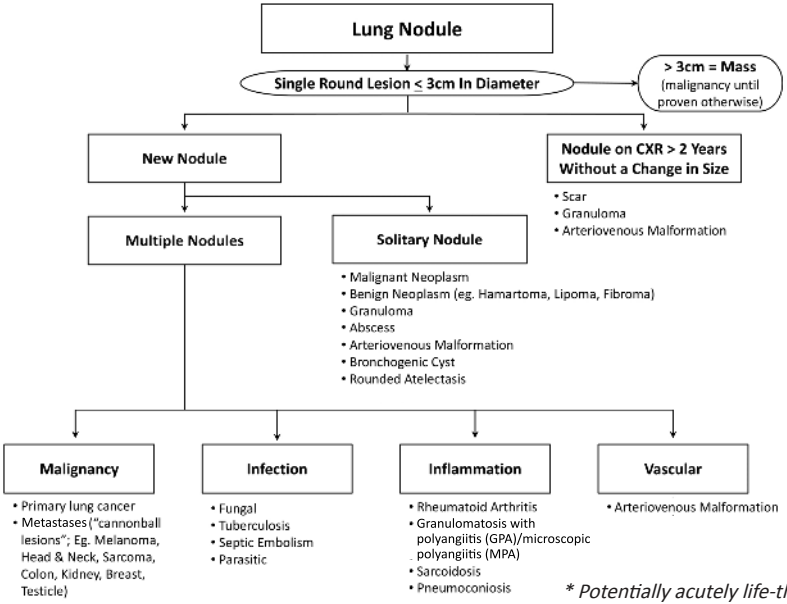
Hypoxemia



** Potentially acutely life-threatening.*

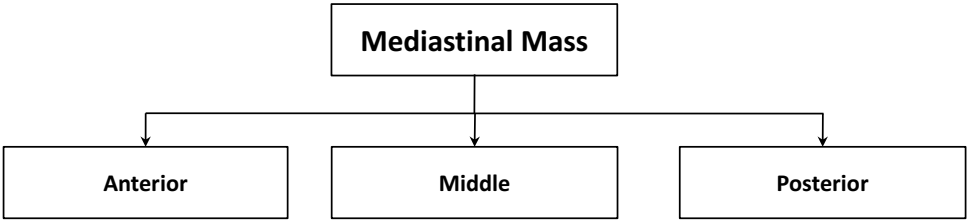
*** VSDs will be a Right-to-left shunt in infancy, become a Left-to-Right shunt in childhood to adulthood, and revert back to a right-to-left shunt when the left ventricle fails in severe disease, contributing to Eisenmenger's Syndrome.*

Lung Nodule

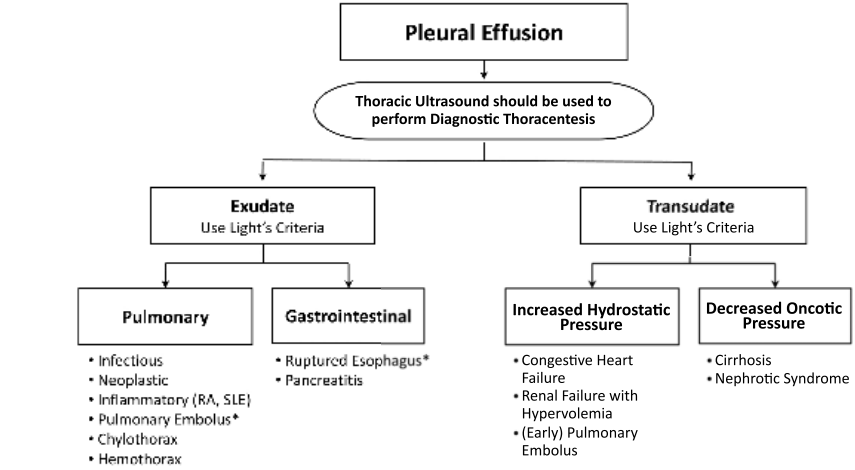


** Potentially acutely life-threatening*

Mediastinal Mass



Pleural Effusion

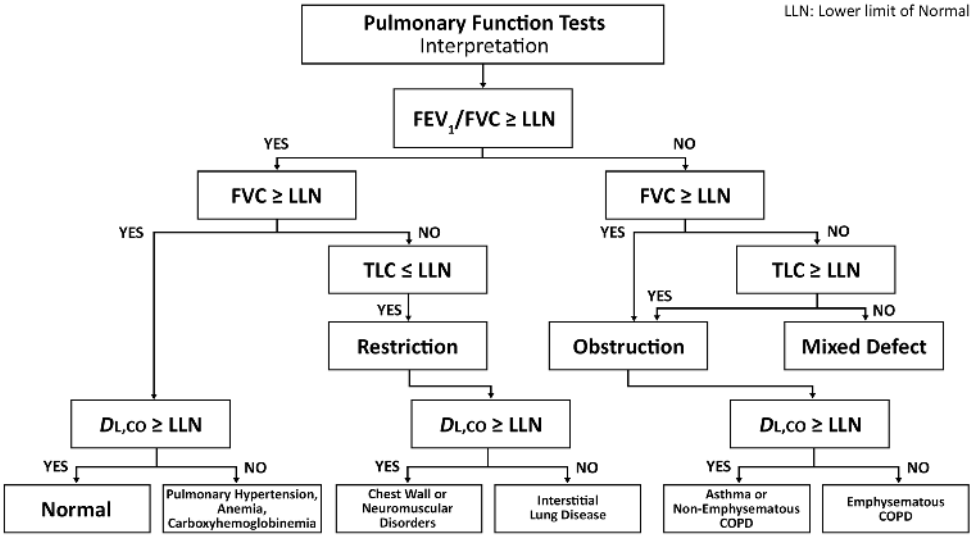


Light's Criteria
Pleural Fluid Protein/Serum Protein > 0.5
Pleural Fluid Lactate Dehydrogenase (LDH)/Serum LDH > 0.6
Pleural Fluid LDH > 2/3 Serum LDH Upper Limit of Normal

** Potentially acutely life-threatening*

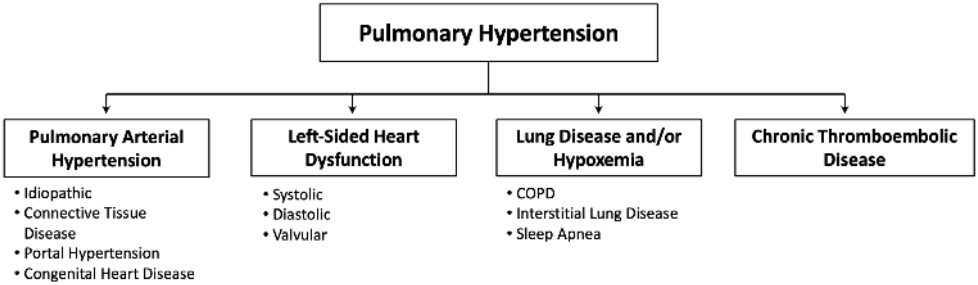
Pulmonary Function Tests

Interpretation

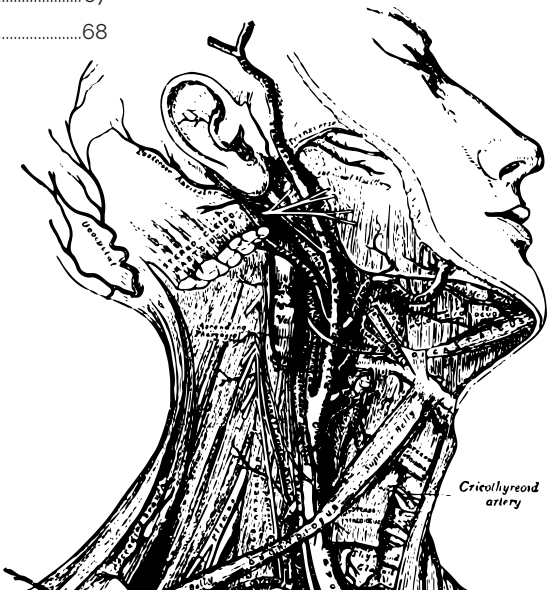


Adapted from: Pellegrino et al. Eur Respir J. 2005;26:948-968.

Pulmonary Hypertension



Hematologic



Historical Editors

Soreya Dhanji
Jen Corrigan
Jennifer Mikhayel
Yang (Steven) Liu
Megan Barber
Lorie Kwong
Khaled Ahmed
Aravind Ganesh
Jesse Heyland
Tyrone Harrison
Nancy Nixon
Nahbeel Premji
Connal Robertson-More
Lian Szabo
Evan Woldrum
Ying Wang

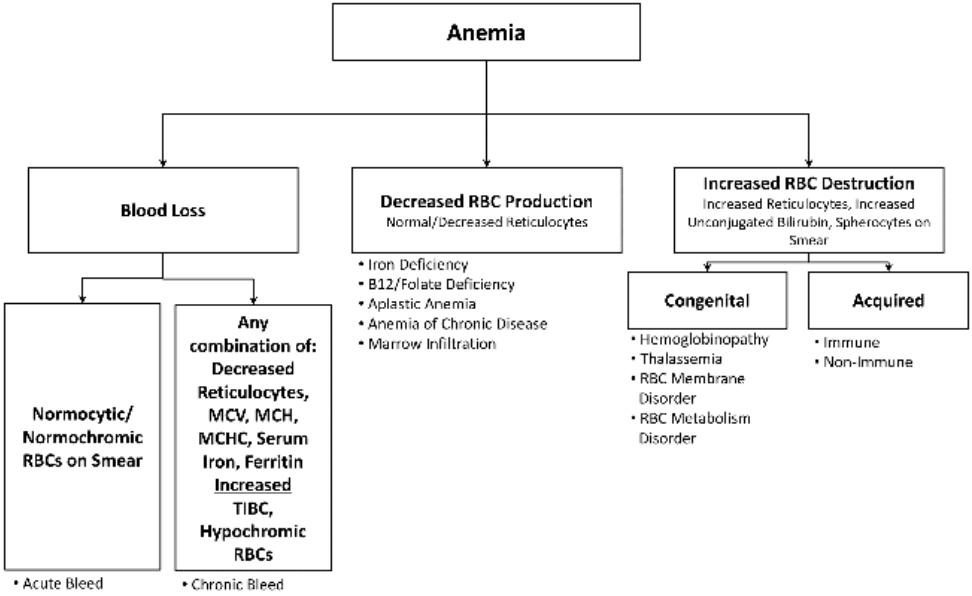
Student Editors

Andrea Letourneau
Sravya Kakumanu
Victoria David

Faculty Editor

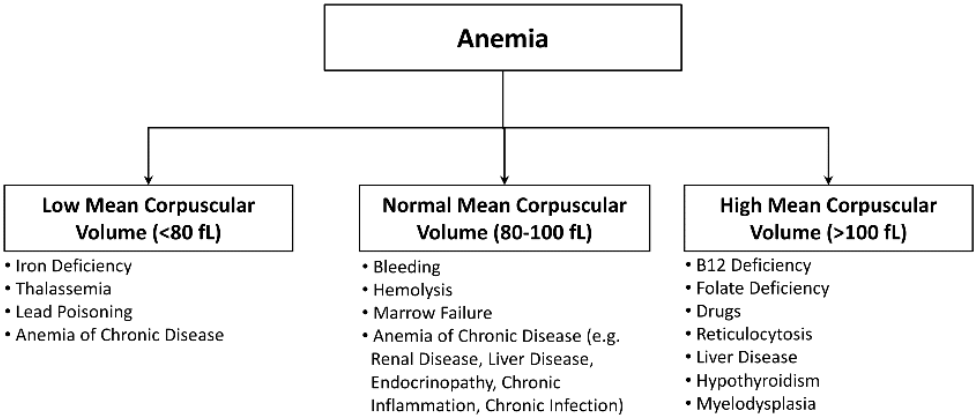
Dr. Kareem Jamani
Dr. Lynn Savoie

Overall Approach to Anemia

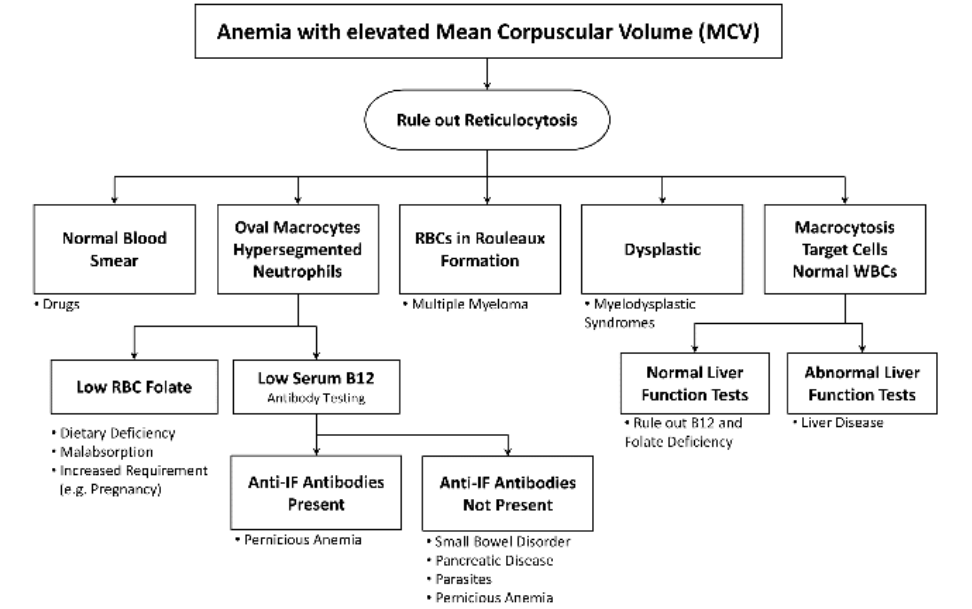


Approach to Anemia

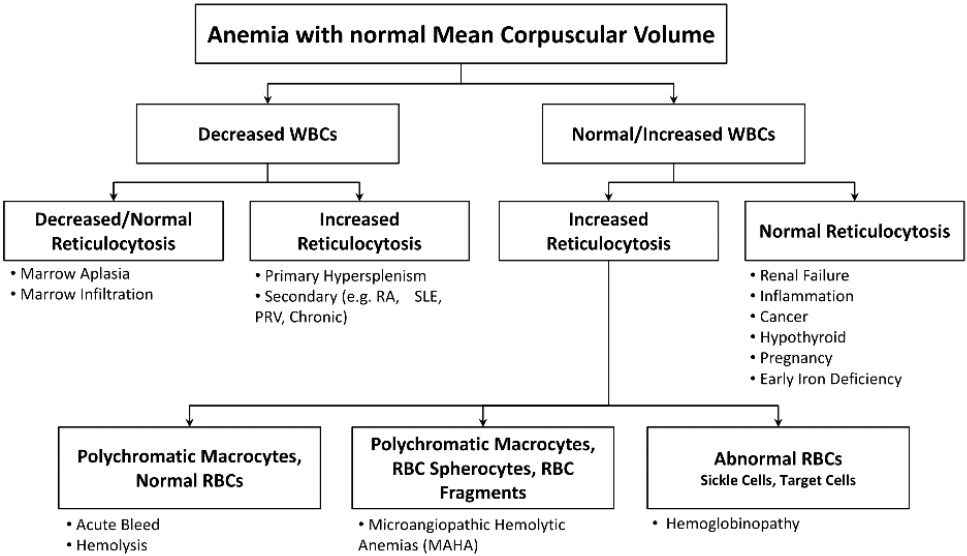
Mean Corpuscular Volume



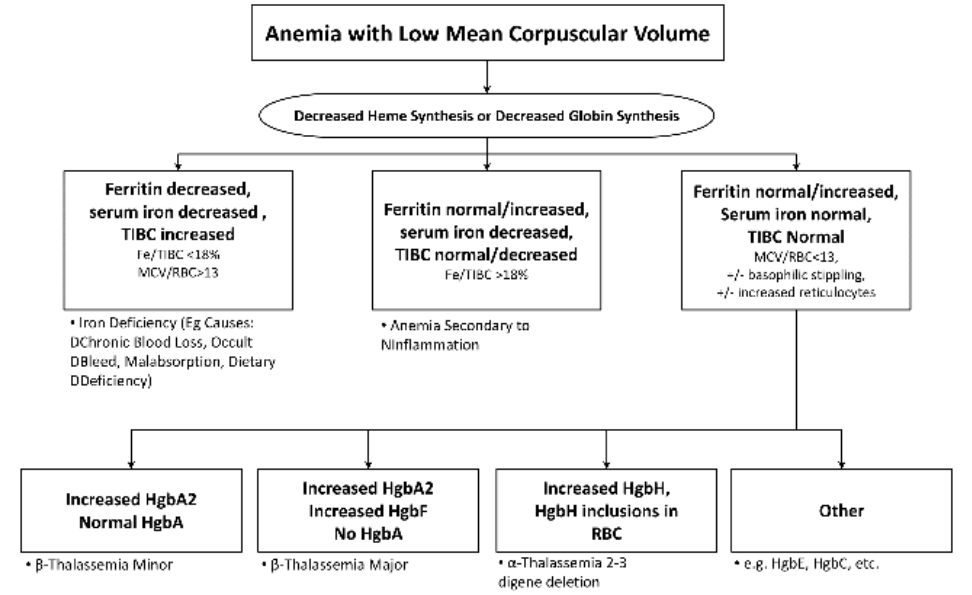
Anemia with Elevated MCV



Anemia with Normal MCV

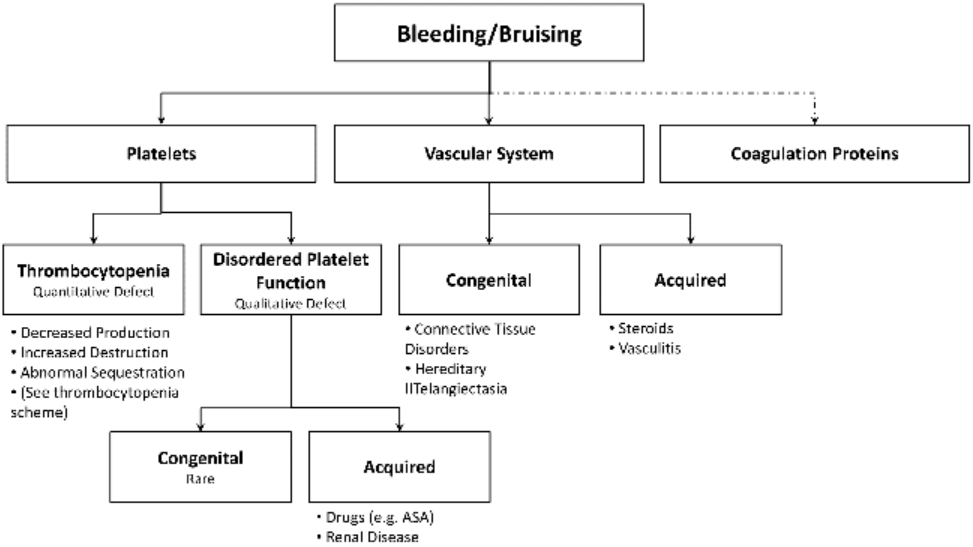


Anemia with Low MCV



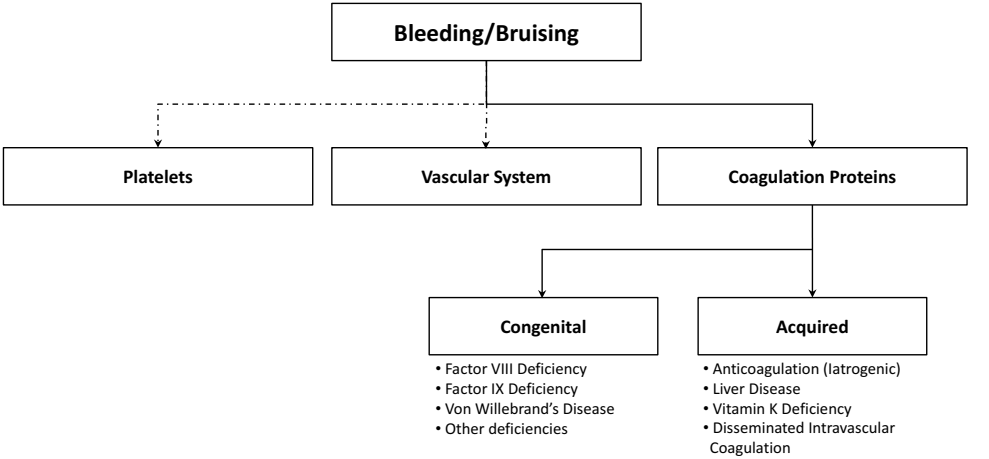
Approach to Bleeding / Bruising

Platelets & Vascular System

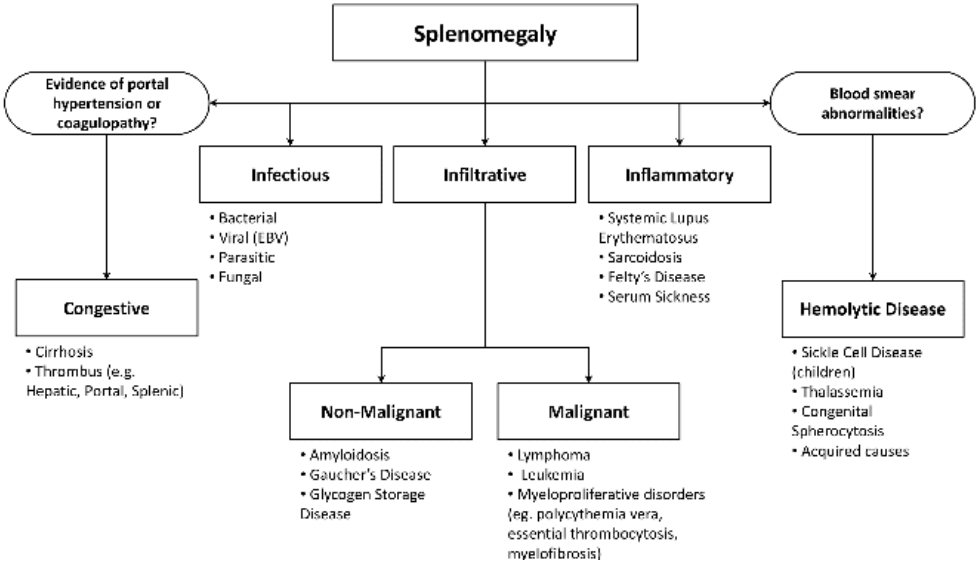


Approach to Bleeding / Bruising

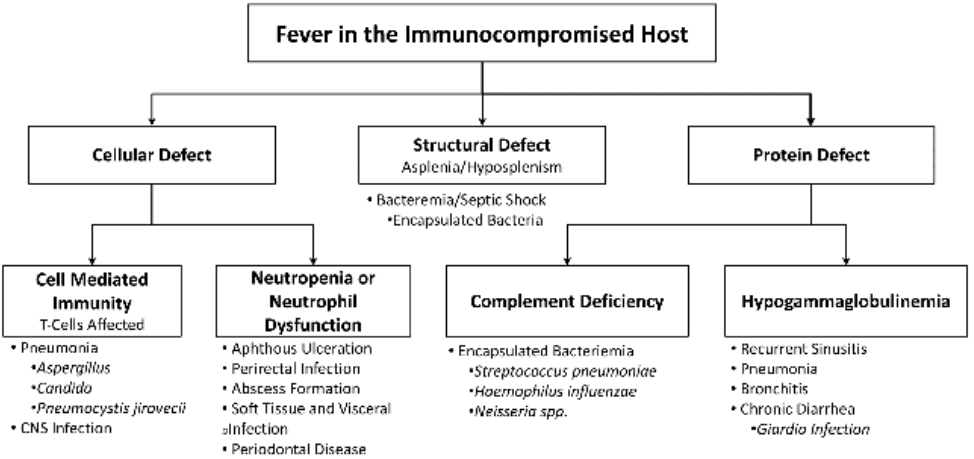
Coagulation Proteins



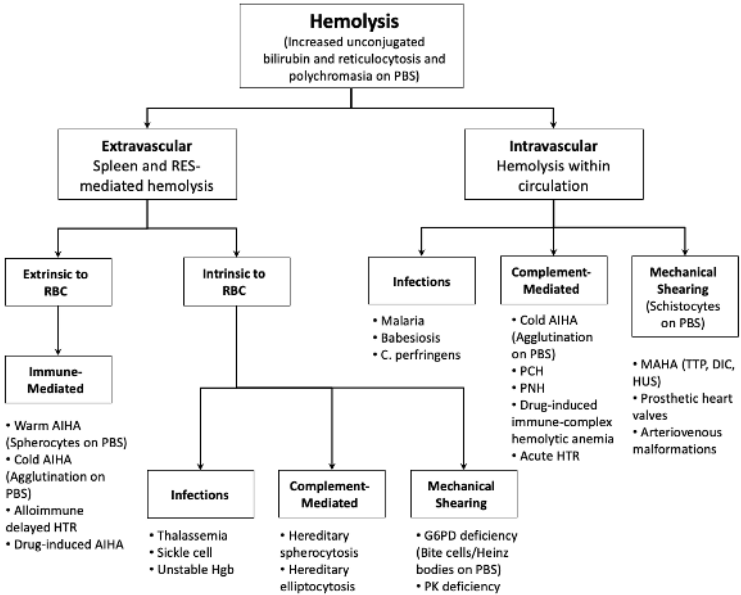
Approach to Splenomegaly



Fever in the Immunocompromised Host

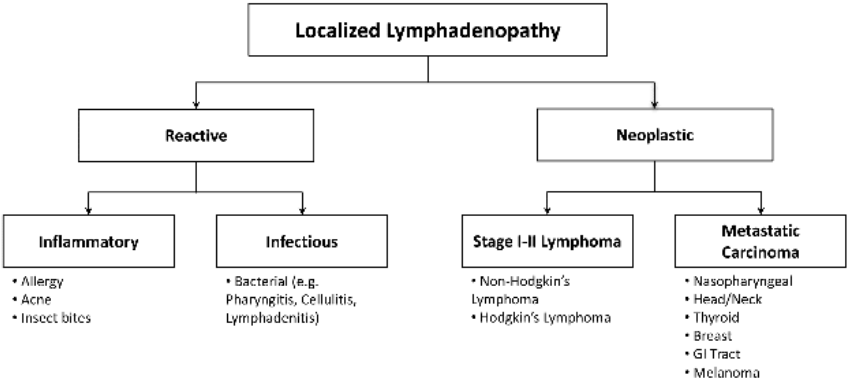


Hemolysis



Lymphadenopathy

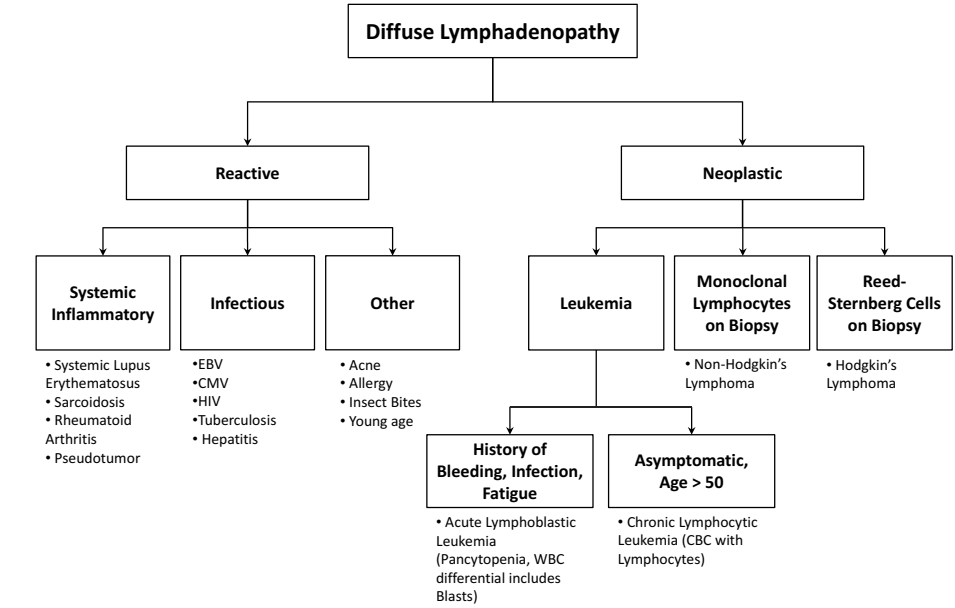
Localized



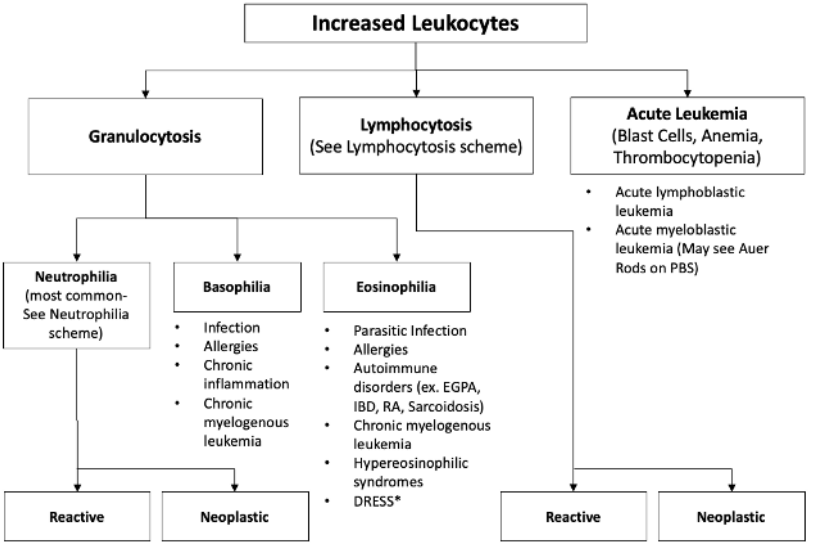
Cervical	Supraclavicular	Axillary	Epitrochlear (Always pathologic)	Inguinal
Anterior • Infection (e.g. Mononucleosis, Toxoplasmosis) Posterior • TB • Lymphoma • Kikuchi Disease • Head/Neck Malignancy	• Thoracic Malignancy (Breast, Mediastinum, Lungs, Esophagus) • Abdominal Malignancy (Virchow's Node)	• 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

Lymphadenopathy

Diffuse

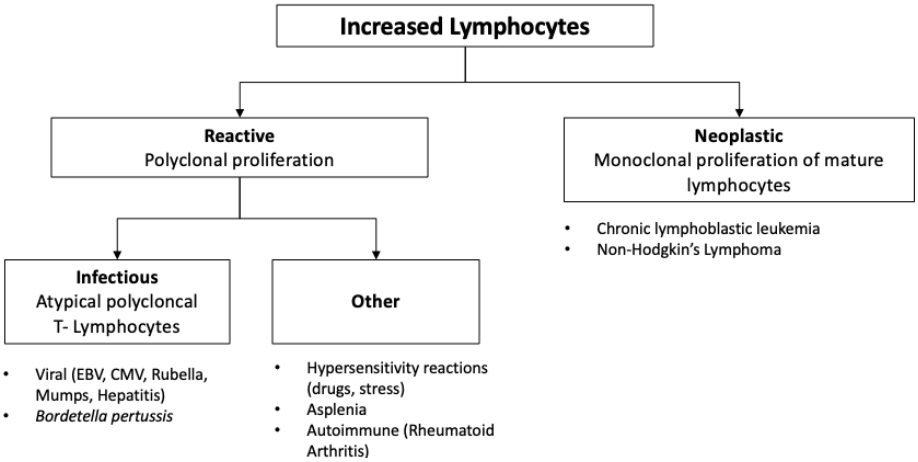


Approach to Leukocytosis

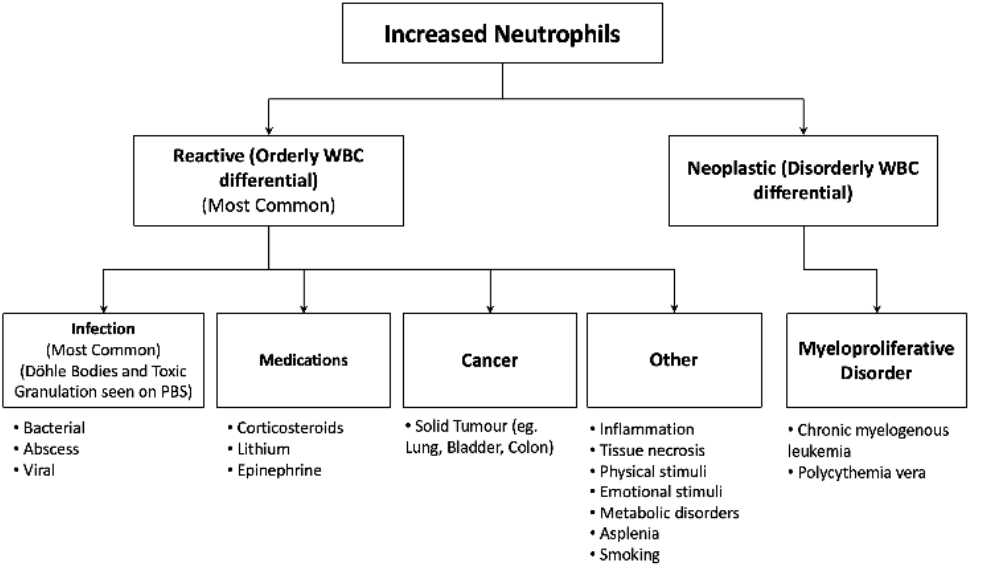


*Denotes acutely life-threatening condition

Lymphocytosis

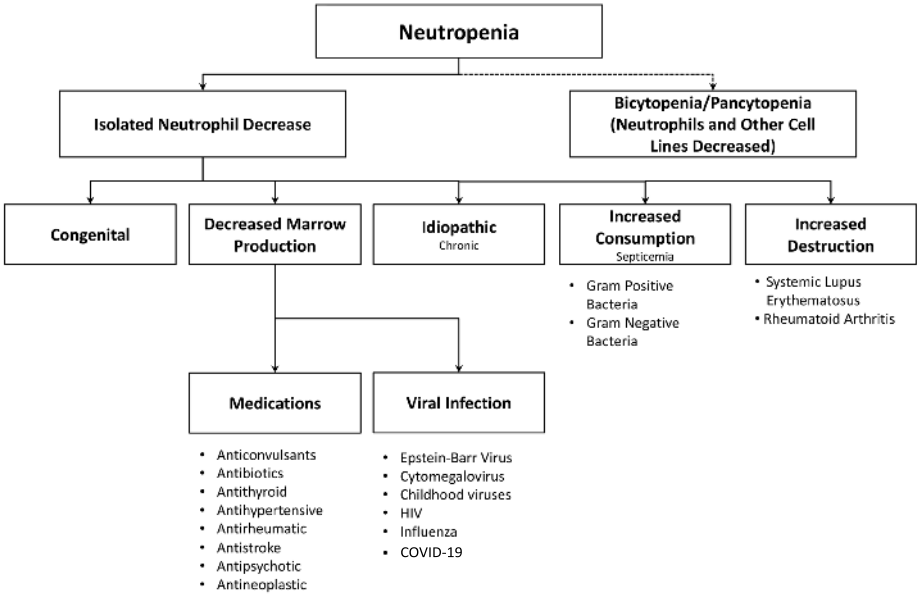


Neutrophilia



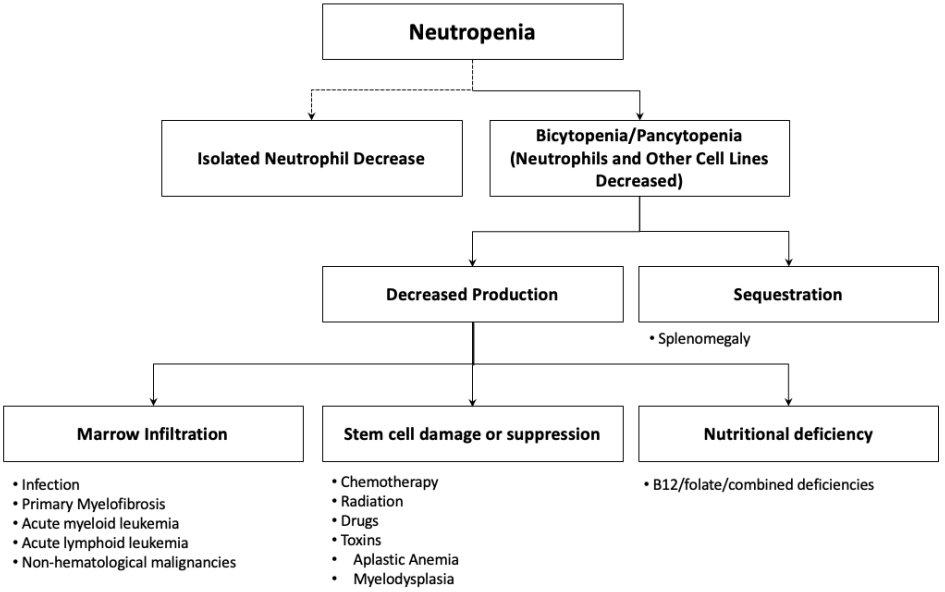
Neutropenia

Decreased Neutrophils Only

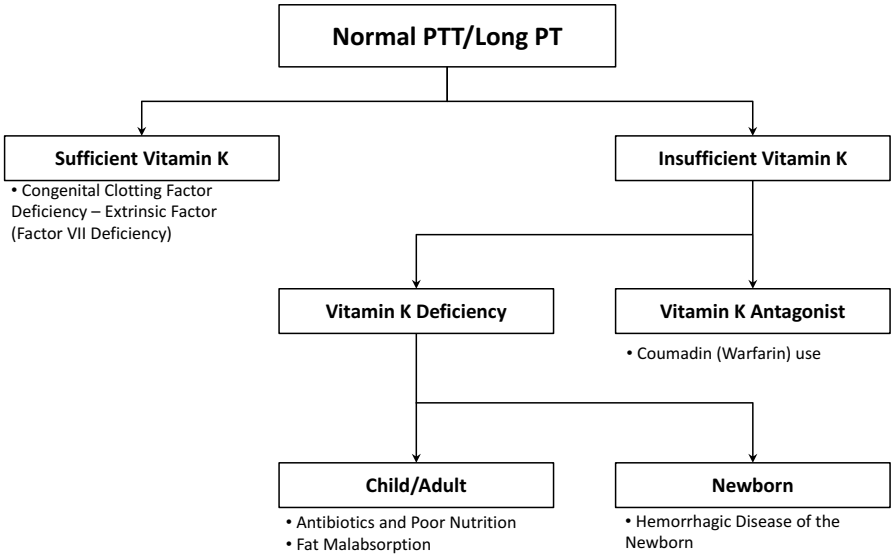


Neutropenia

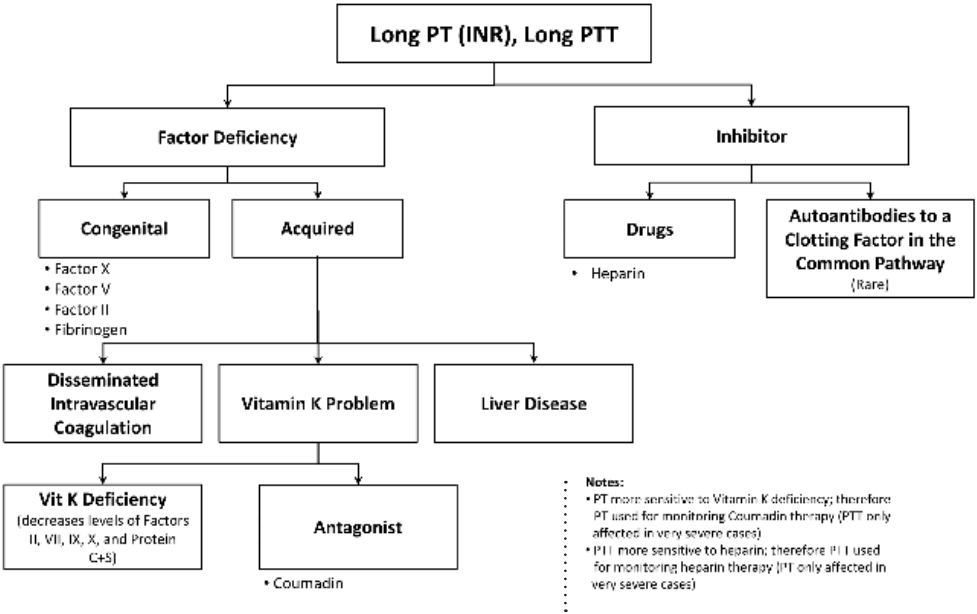
Bicytopenia / Pancytopenia



Prolonged PT (INR), Normal PTT

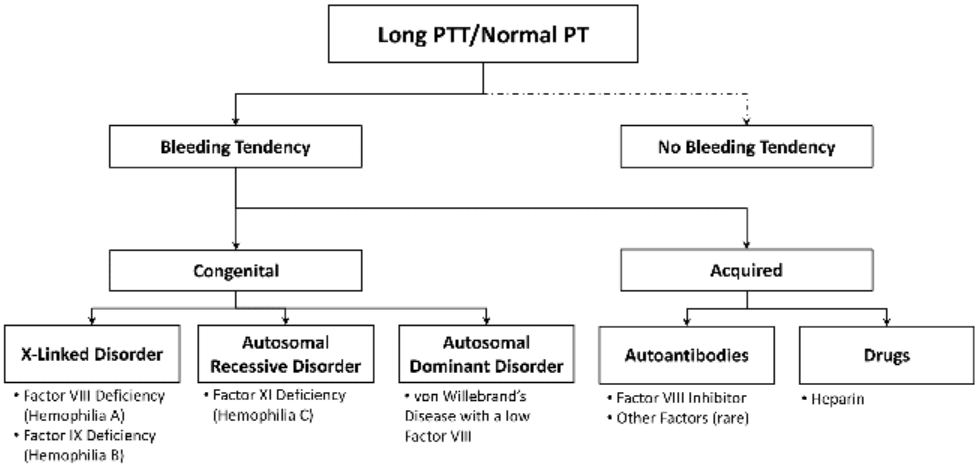


Approach to Prolonged PT (INR), Prolonged PTT



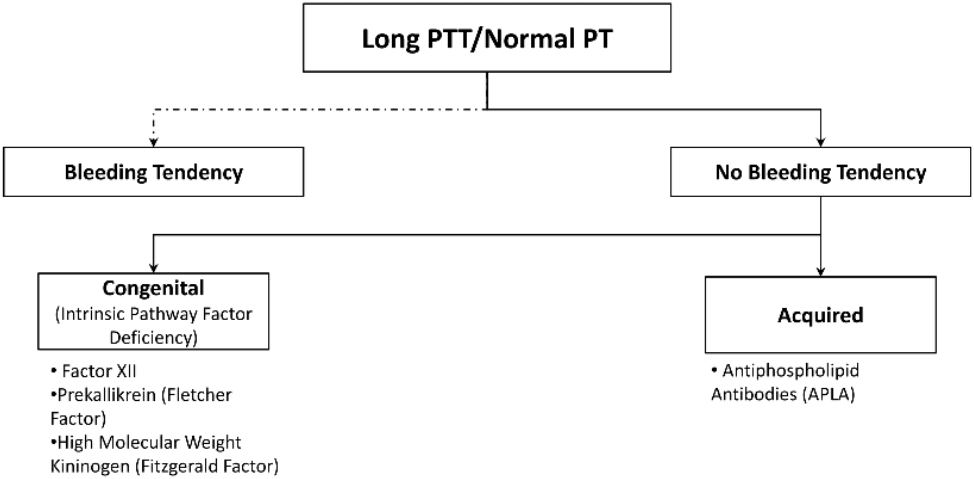
Prolonged PTT, Normal PT (INR)

Bleeding Tendency

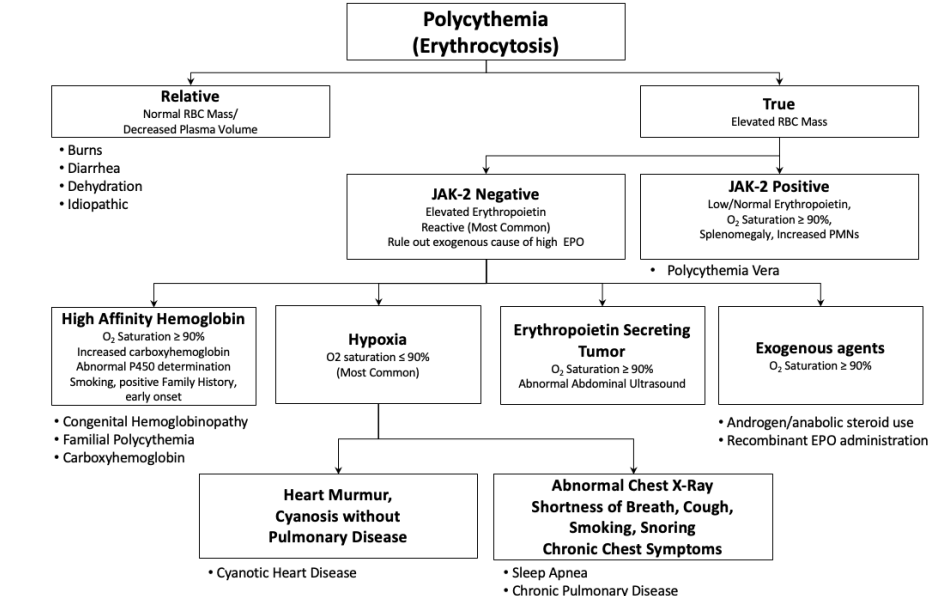


Prolonged PTT, Normal PT (INR)

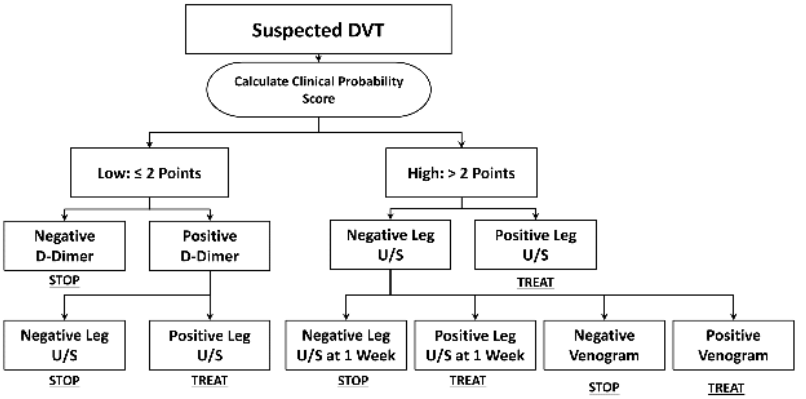
No Bleeding Tendency



Polycythemia



Suspected Deep Vein Thrombosis (DVT)

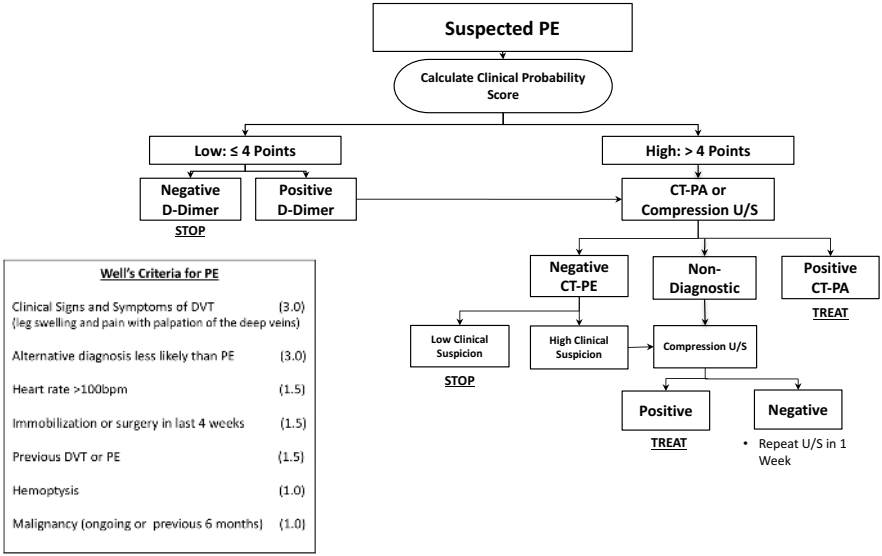


Well's Criteria for DVT

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)	

b, P.S. et al. (2006). Evaluation of D-dimer in the diagnosis of suspected deep-vein thrombosis. *New England Journal of Medicine*, 355, 1

Suspected Pulmonary Embolism (PE)

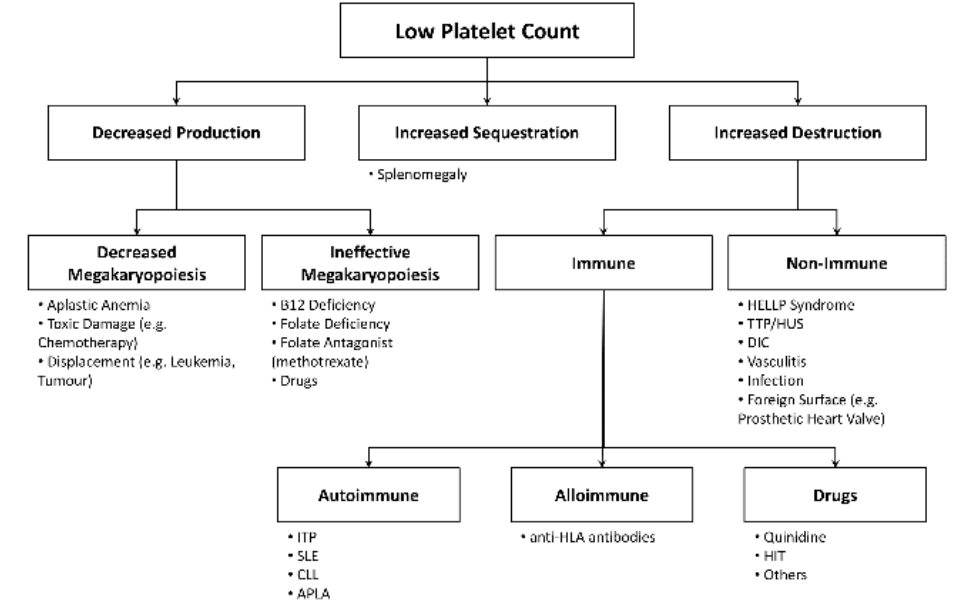


Well's Criteria for PE

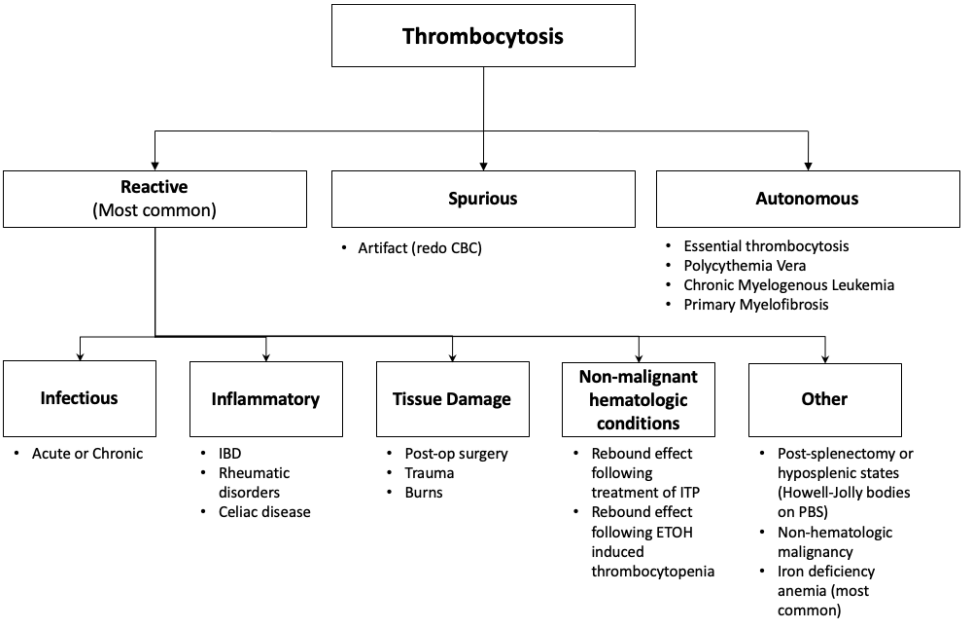
Clinical Signs and Symptoms of DVT (leg swelling and pain with palpation of the deep veins)	(3.0)
Alternative diagnosis less likely than PE	(3.0)
Heart rate >100bpm	(1.5)
Immobilization or surgery in last 4 weeks	(1.5)
Previous DVT or PE	(1.5)
Hemoptysis	(1.0)
Malignancy (ongoing or previous 6 months)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

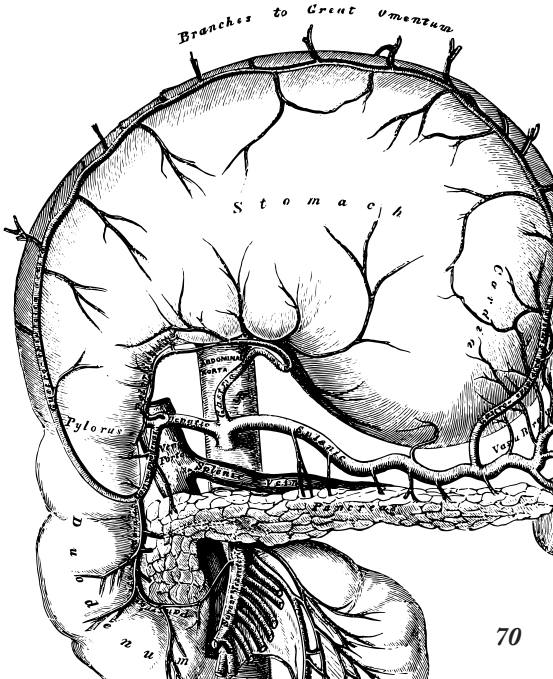
Thrombocytopenia



Thrombocytosis



Gastrointestinal



Historical Editors

Dr. Chris Andrews

Khaled Ahmed

Jennifer Amyotte

Stacy Cormack

Beata Komierowski

James Lee

Shaina Lee

Matt Linton

Michael Prystajecky

Daniel Shafran

Robbie Sidhu

Mia Steiner

Shabaz Syed

Ying Wang

Student Editors

Jacob Charette

Jonathan Seto

Scott Assen

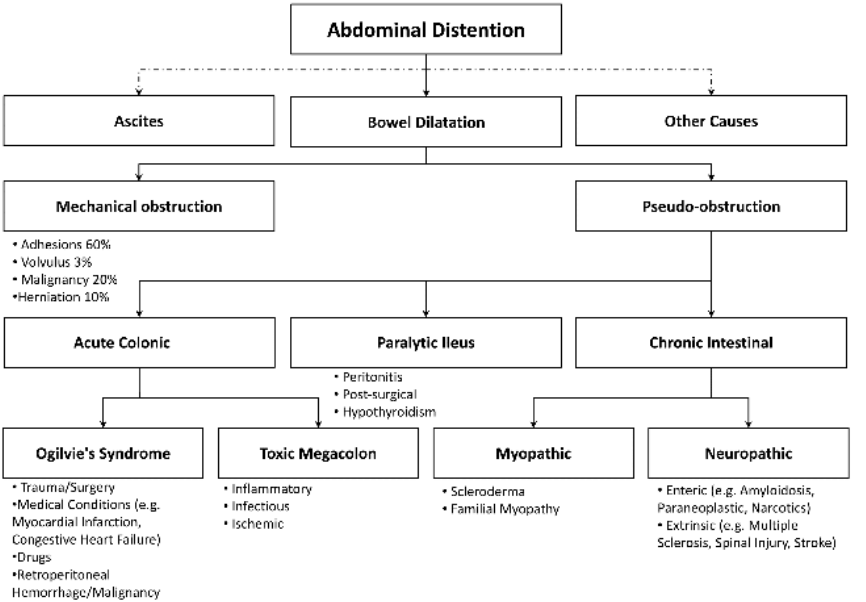
Sravya Kakumanu

Faculty Editor

Dr. Sylvain Coderre

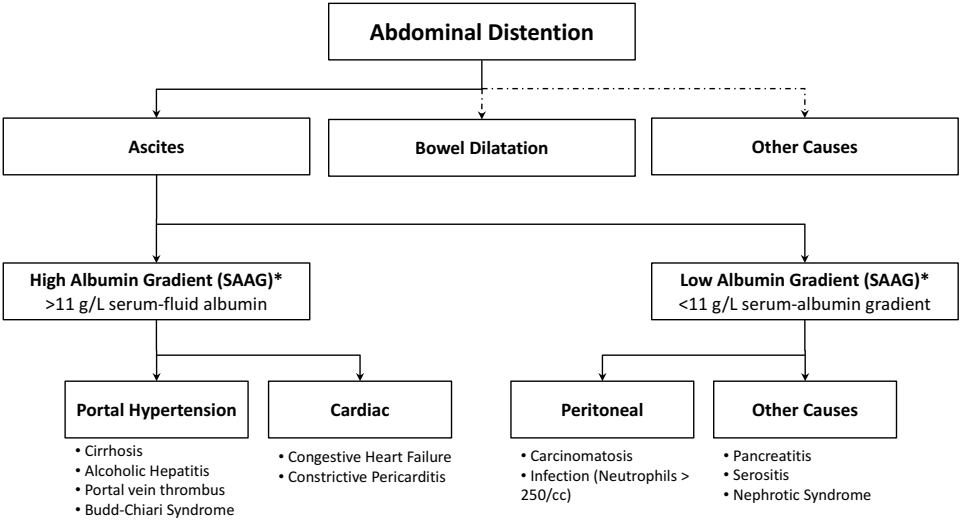
Dr. Kelly Burak

Abdominal Distention



Abdominal Distention

Ascites

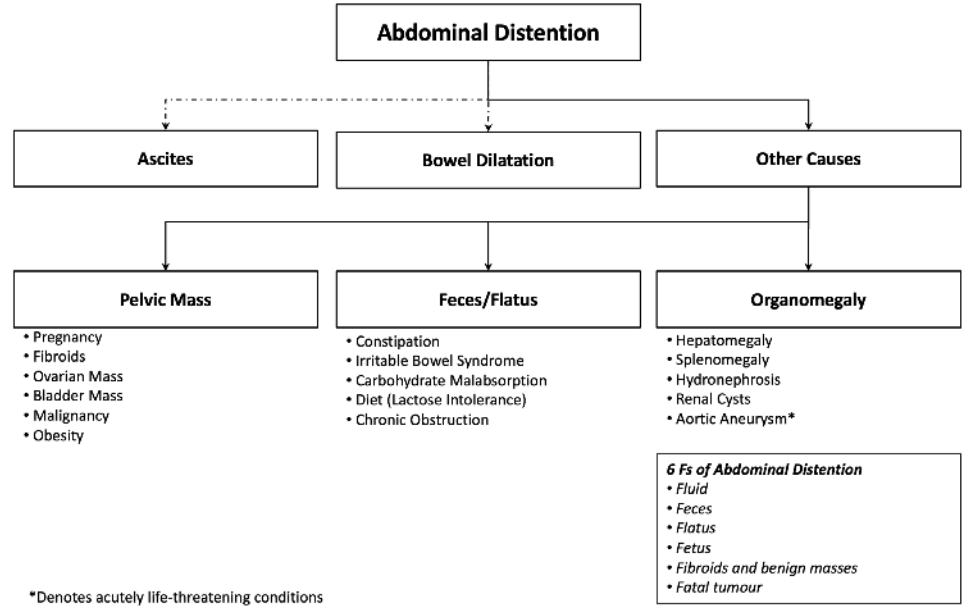


Clinical pearl: "rule of 97": SAAG 97% accurate. If high SAAG, 97% of time it is cirrhosis/portal hypertension. If low SAAG, 97% time carcinomatosis (and cytology 97% sensitive)

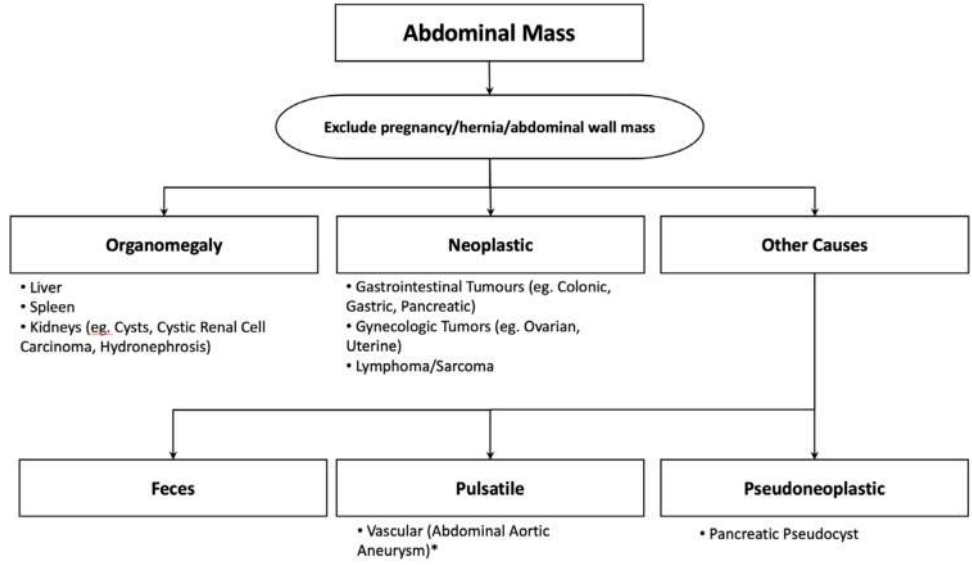
*Serum Ascites Albumin Gradient (SAAG) = [Serum albumin] – [Peritoneal fluid albumin]

Abdominal Distention

Other Causes



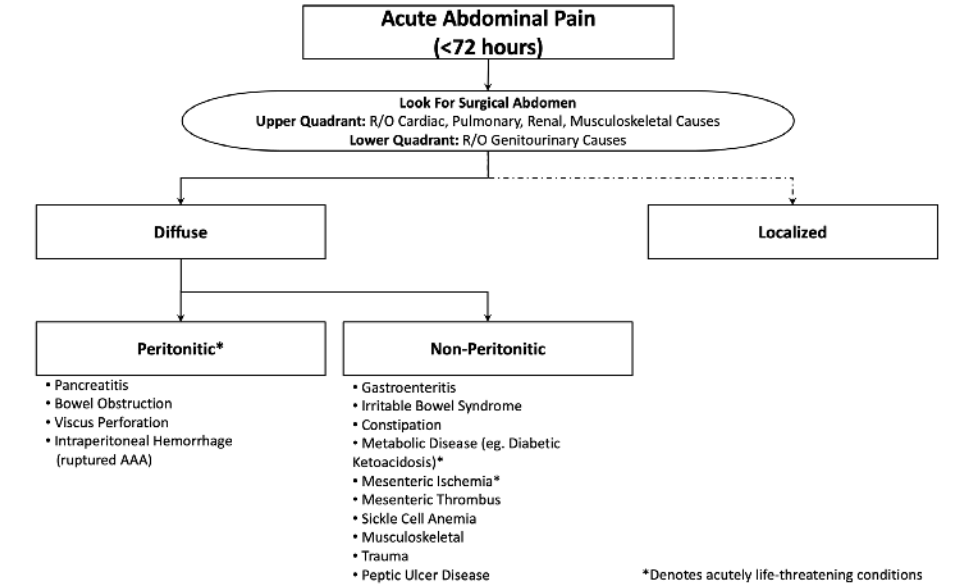
Abdominal Mass



*Denotes acutely life-threatening conditions

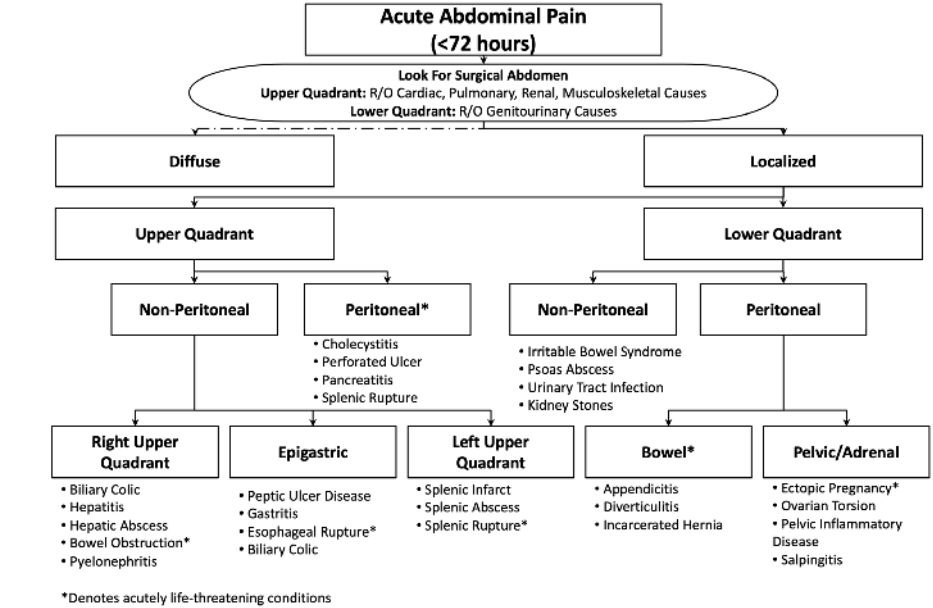
Abdominal Pain (Adult)

Acute - Diffuse



Abdominal Pain (Adult)

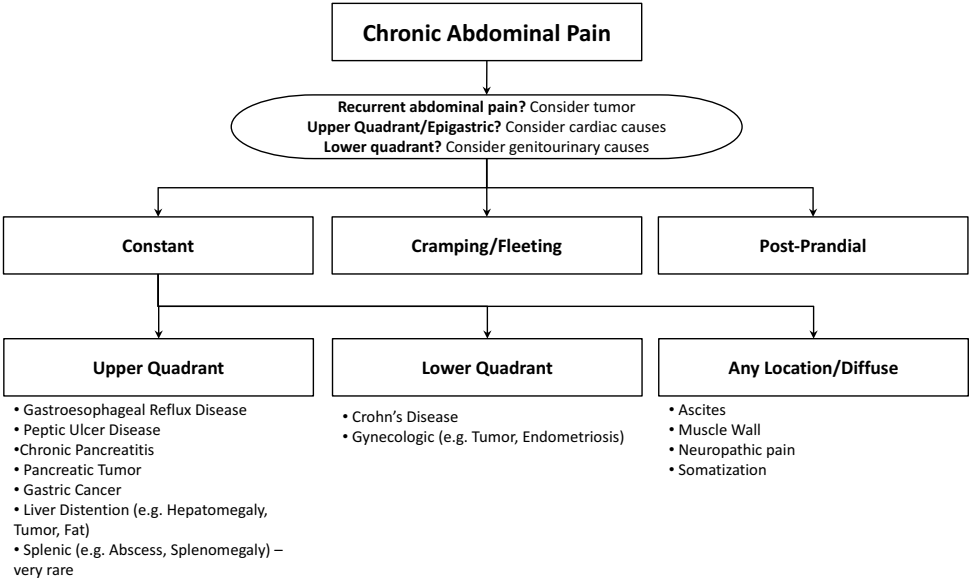
Acute - Localized



*Denotes acutely life-threatening conditions

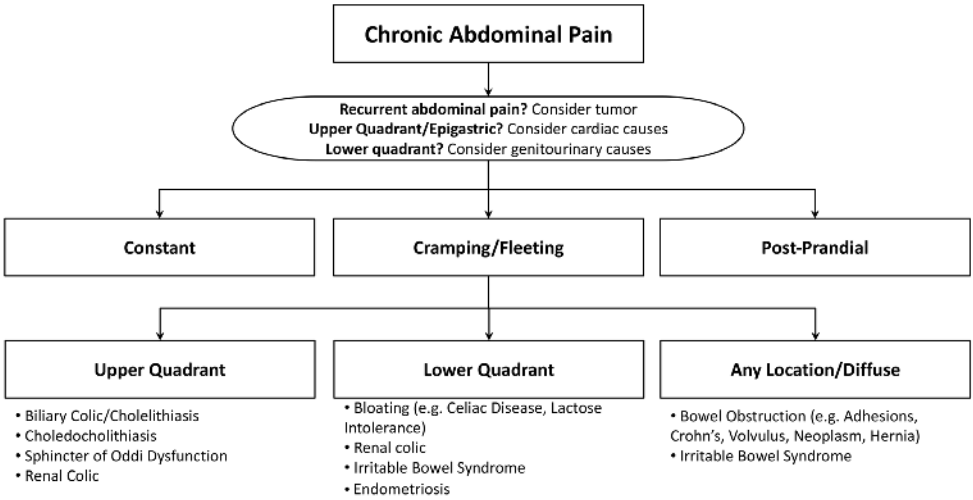
Abdominal Pain (Adult)

Chronic - Constant



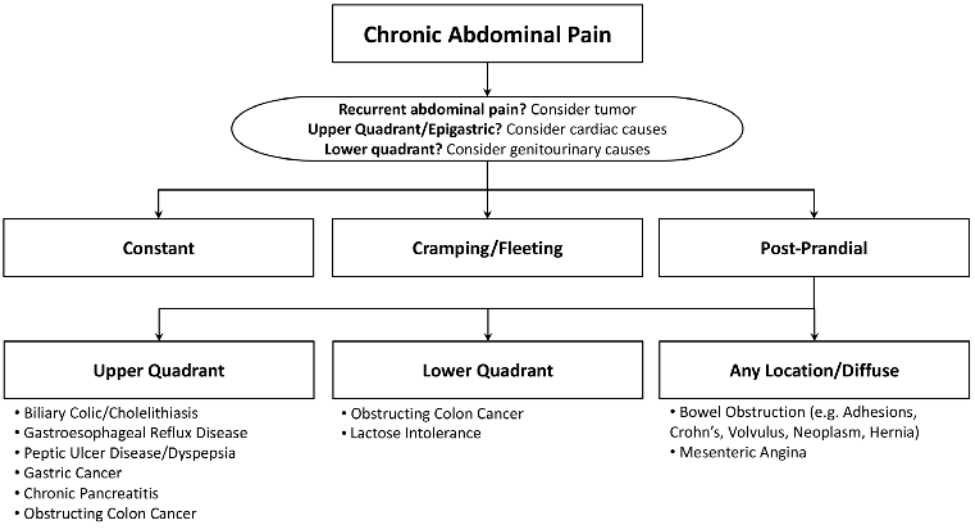
Abdominal Pain (Adult)

Chronic - Crampy / Fleeting

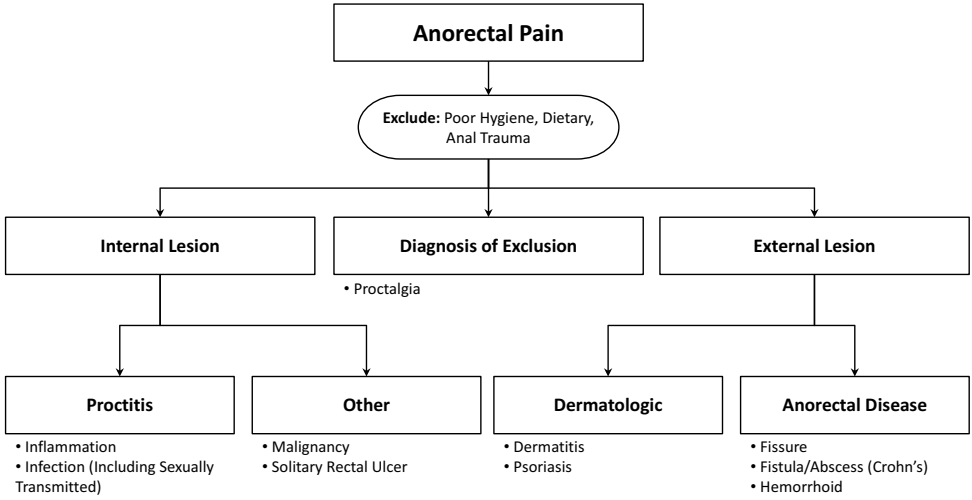


Abdominal Pain (Adult)

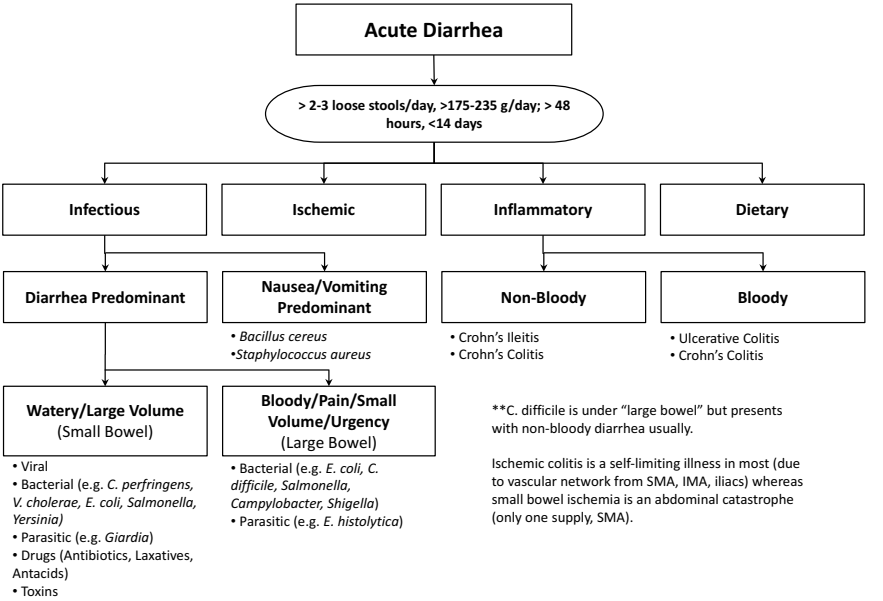
Chronic - Post-Prandial



Anorectal Pain



Acute Diarrhea

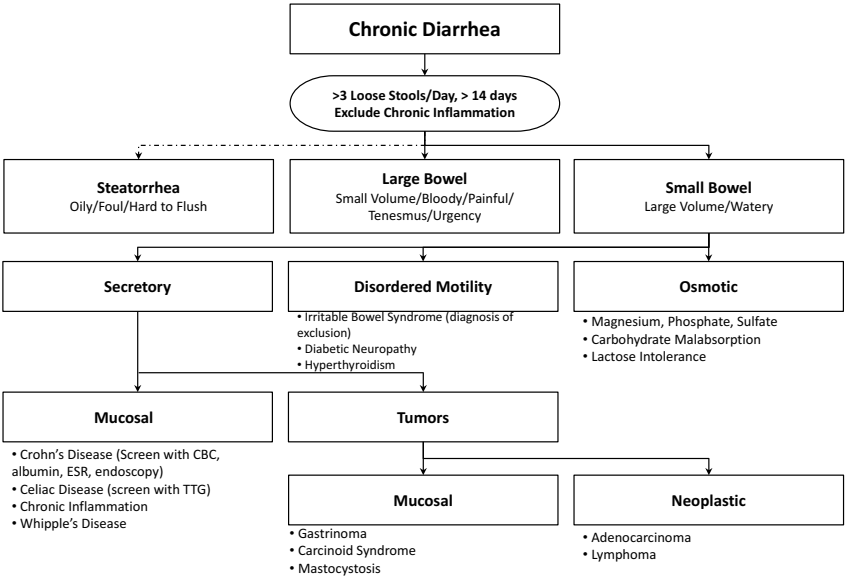


**C. difficile is under "large bowel" but presents with non-bloody diarrhea usually.

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).

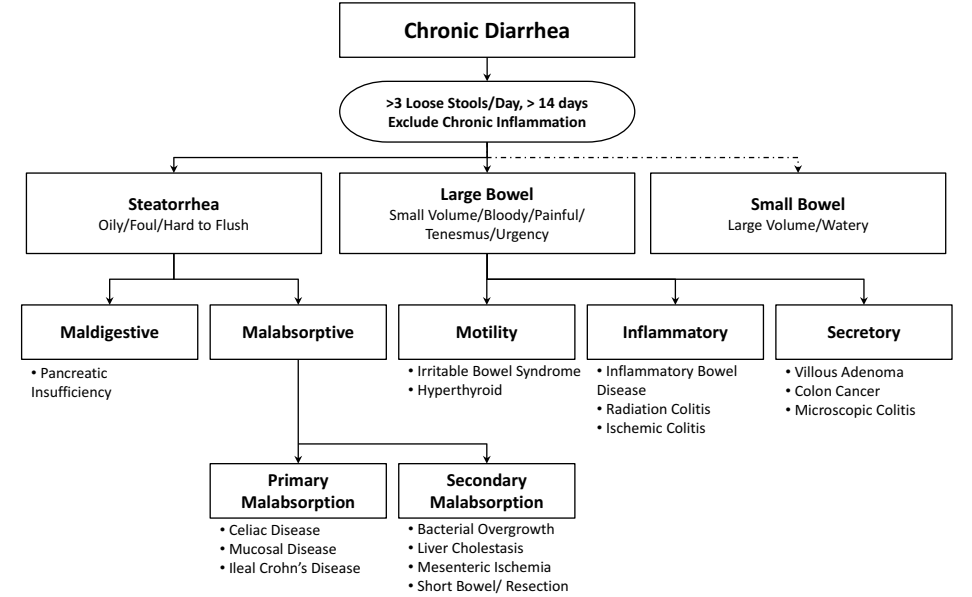
Chronic Diarrhea

Small Bowel



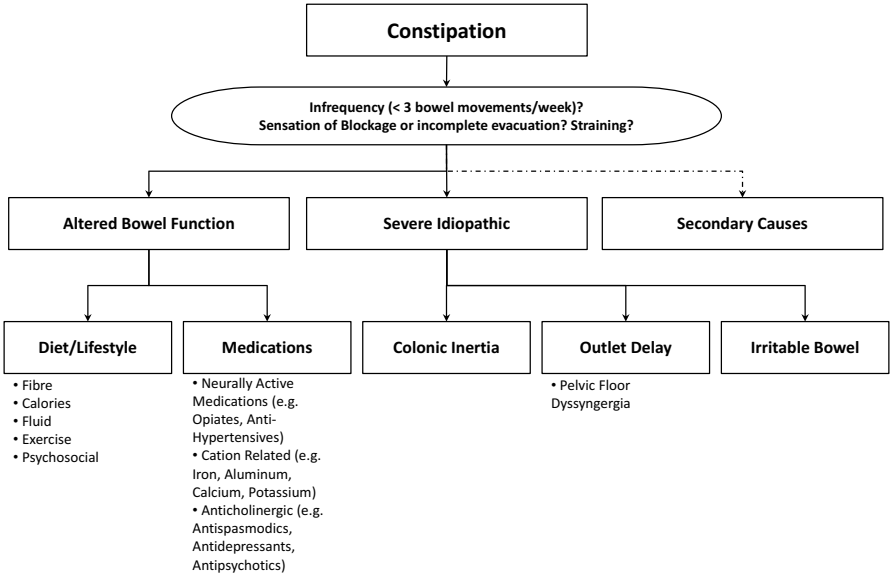
Chronic Diarrhea

Steatorrhea & Large Bowel



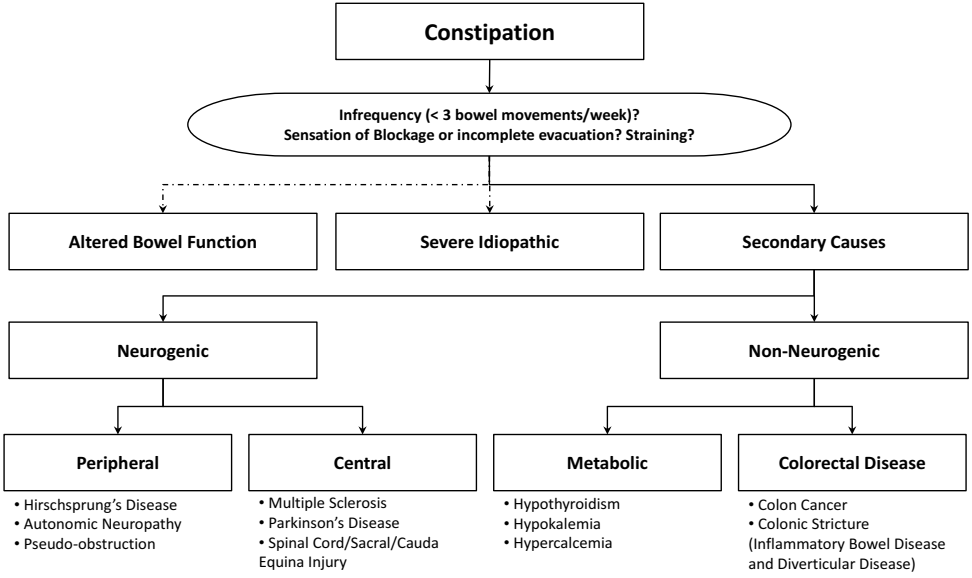
Constipation (Adult)

Altered Bowel Function & Idiopathic

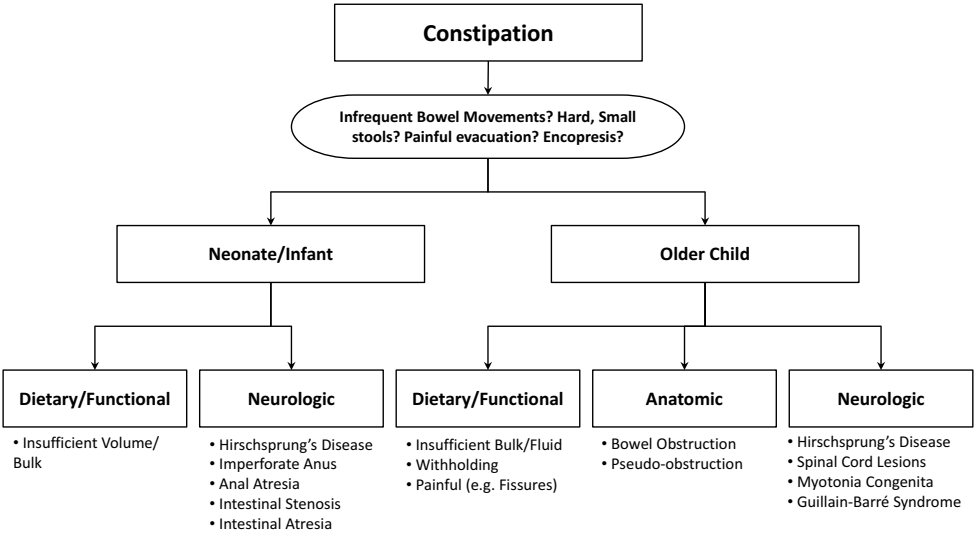


Constipation (Adult)

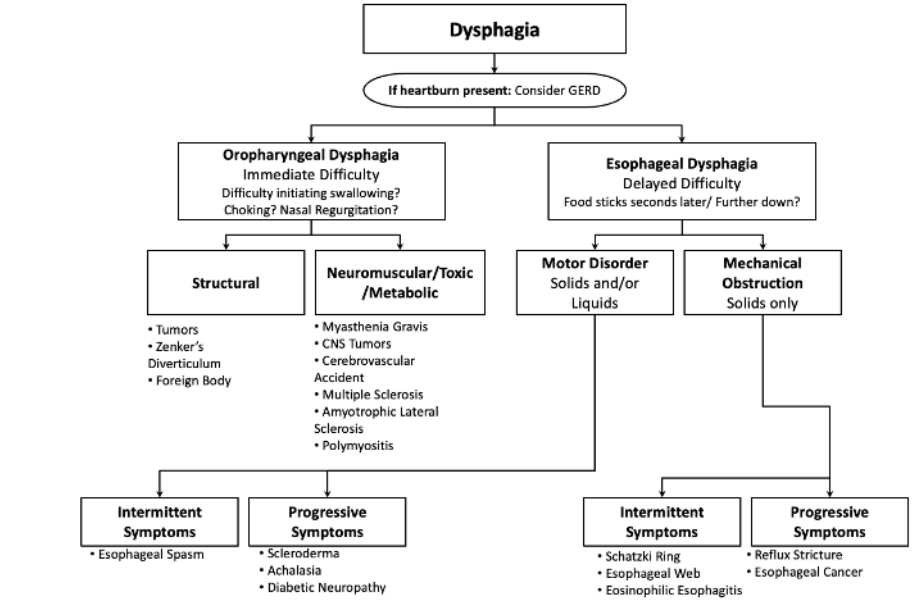
Secondary Causes



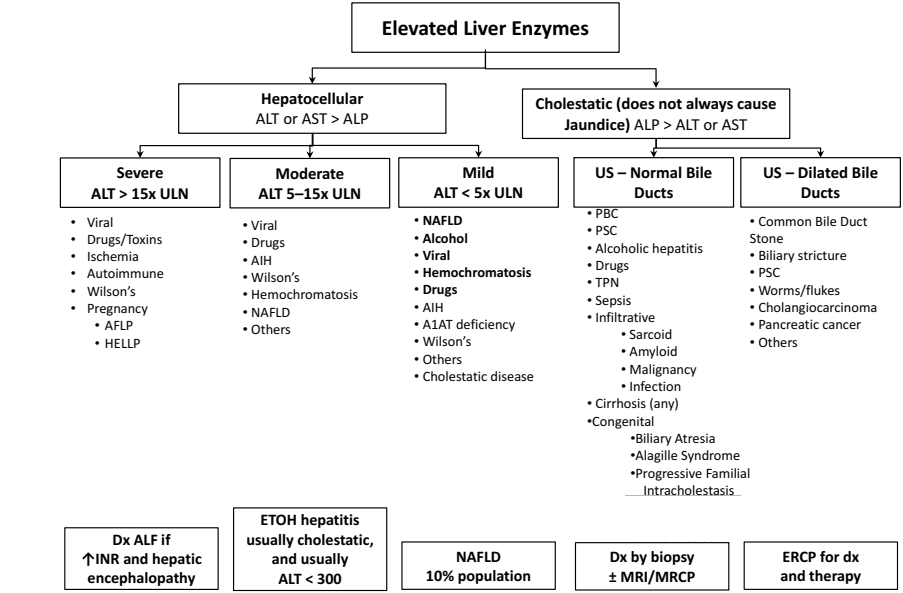
Constipation (Pediatric)



Dysphagia

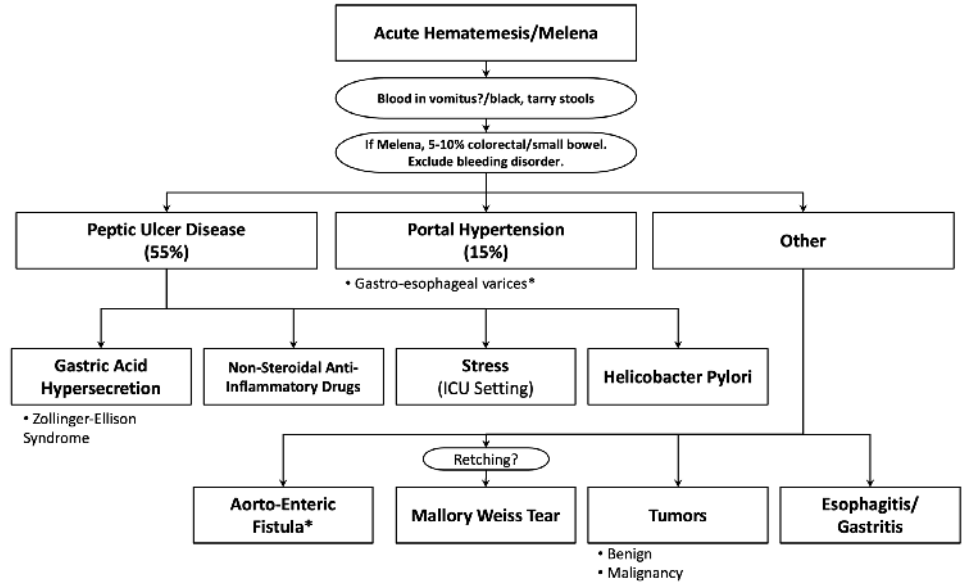


Elevated Liver Enzymes



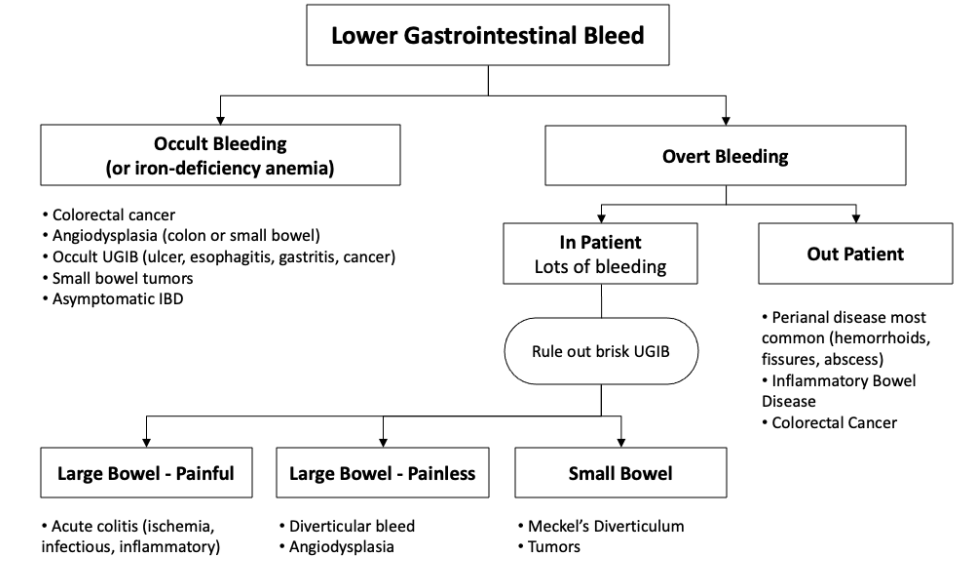
Upper Gastrointestinal Bleed

(Hematemesis / Melena)

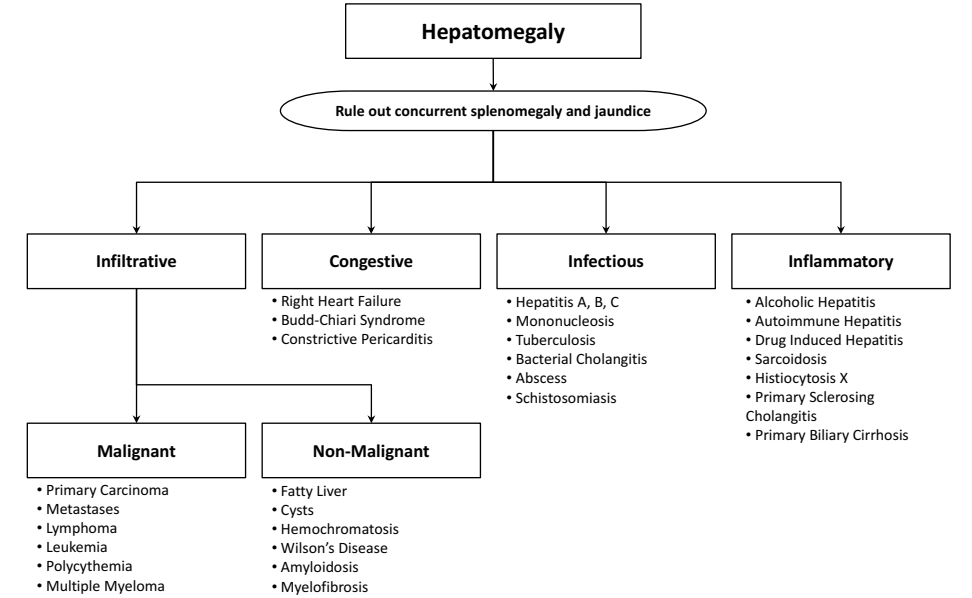


*Denotes acutely life-threatening conditions

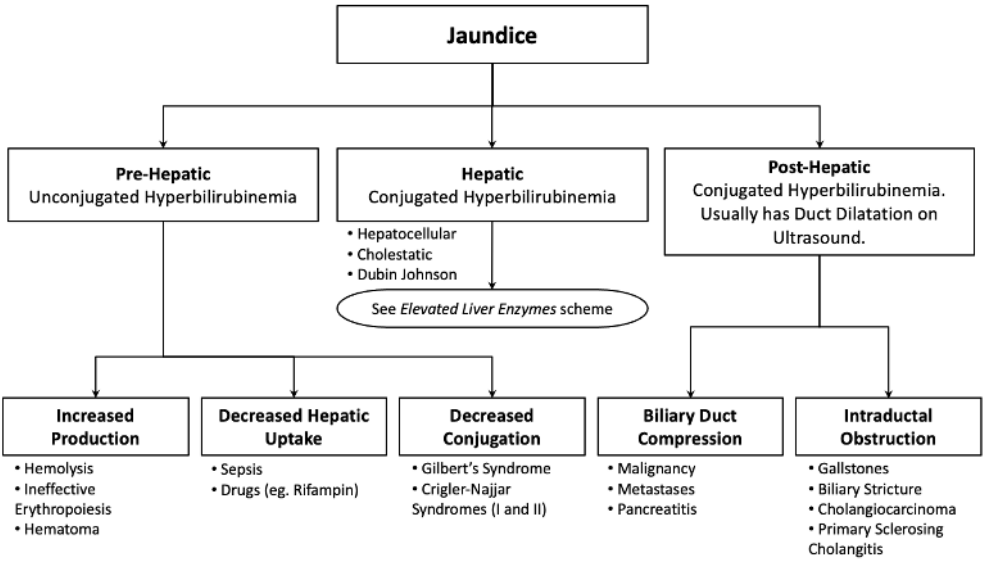
Lower Gastrointestinal Bleed



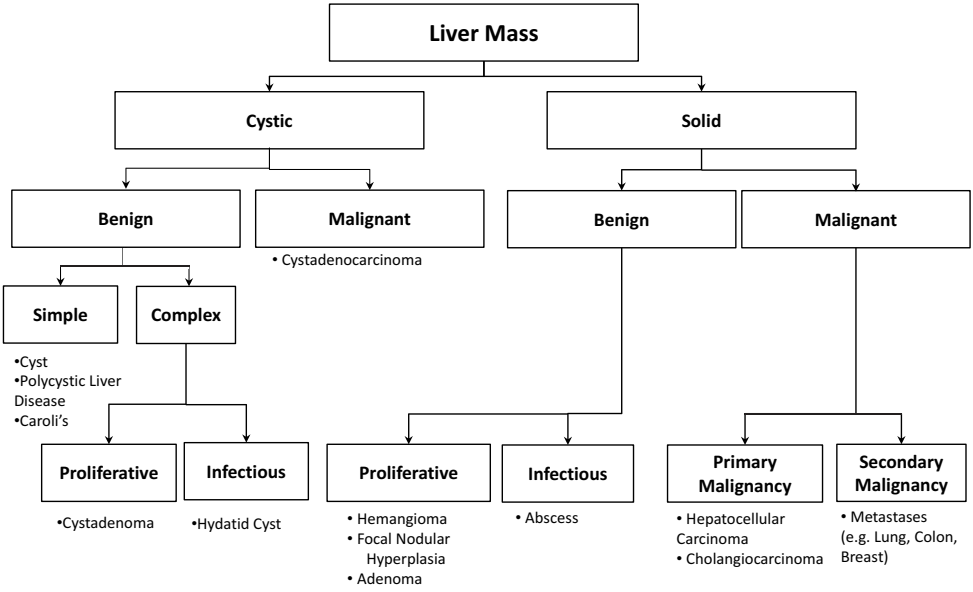
Hepatomegaly



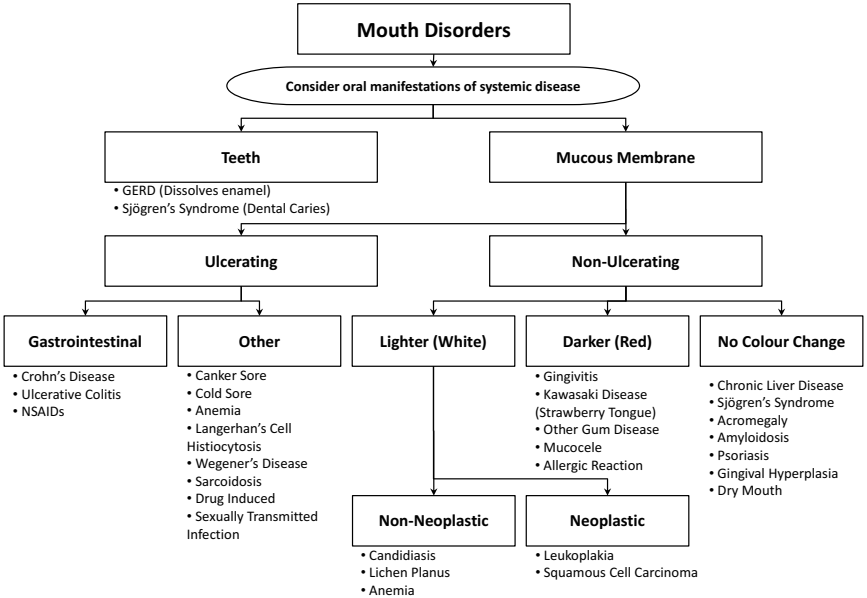
Jaundice



Liver Mass

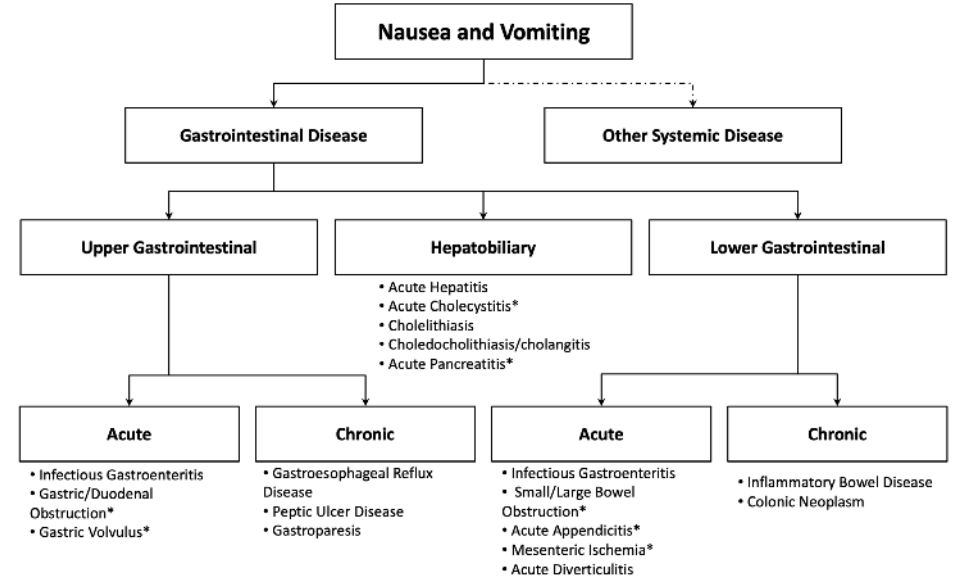


Mouth Disorders (Adult & Elderly)



Nausea & Vomiting

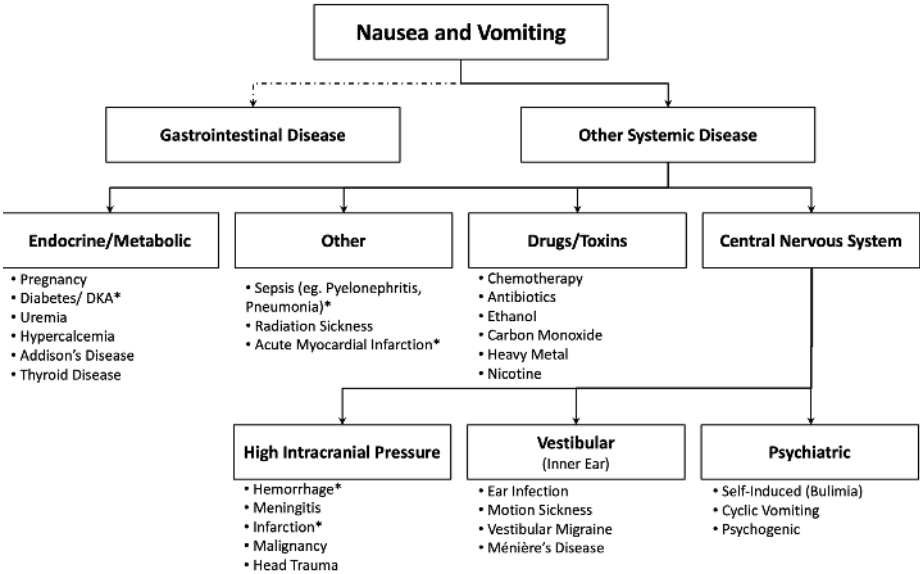
Gastrointestinal Disease



*Denotes acutely life-threatening conditions

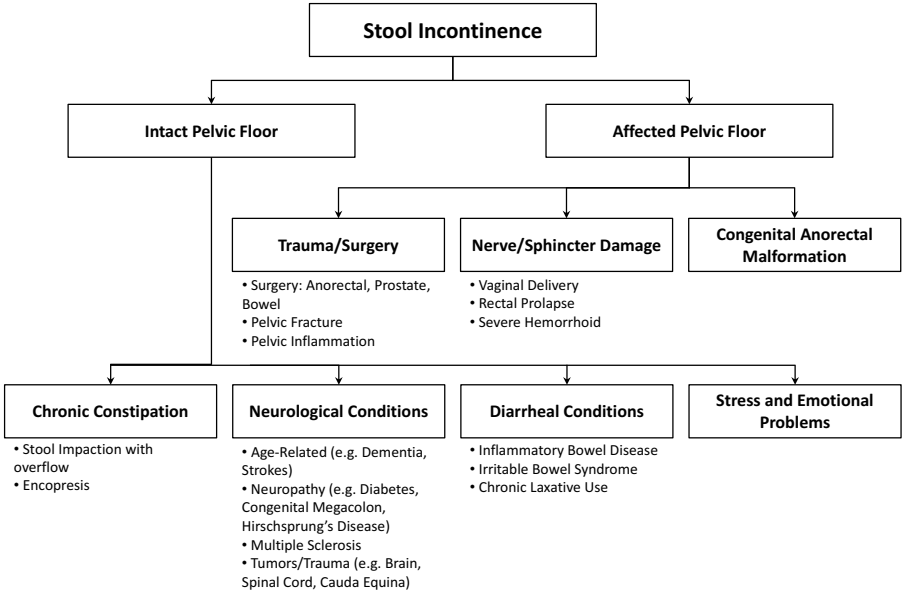
Nausea & Vomiting

Other Systemic Disease

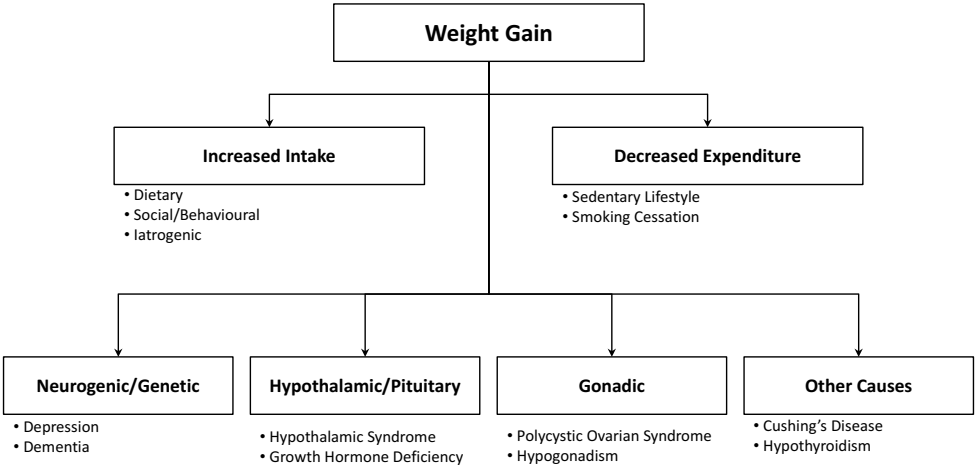


*Denotes acutely life-threatening conditions

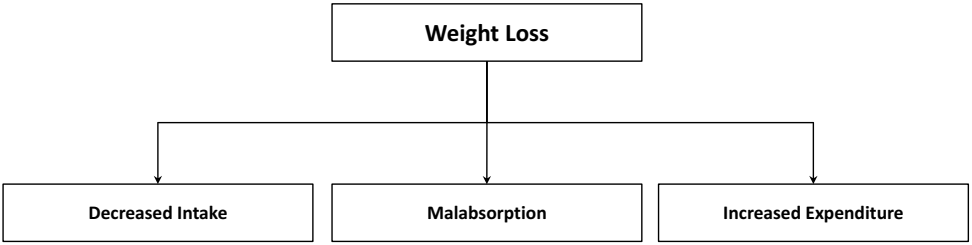
Stool Incontinence



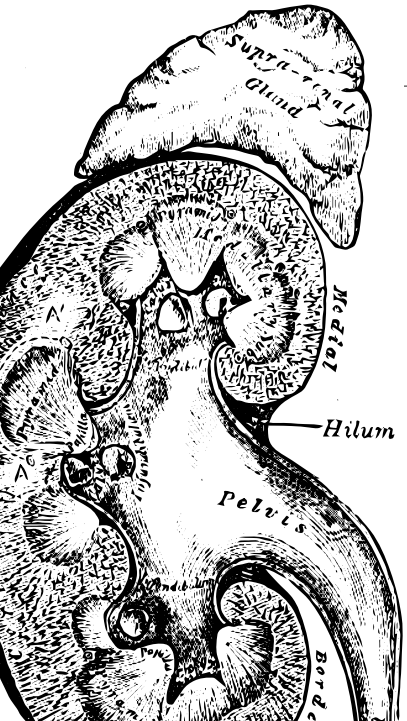
Weight Gain



Weight Loss



Renal



Historical Editors

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

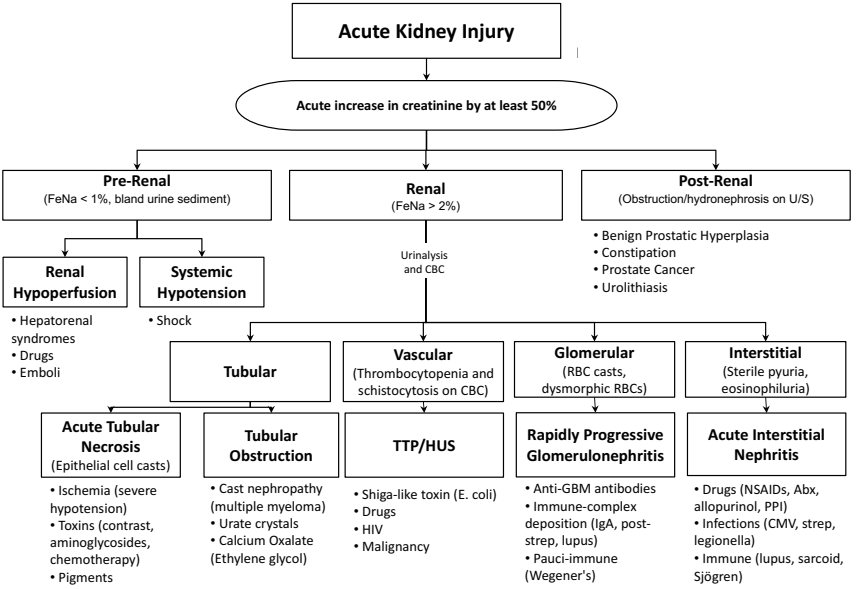
Student Editors

Colin Roscher *(Co-editor)*
Mark Elliot *(Co-editor)*

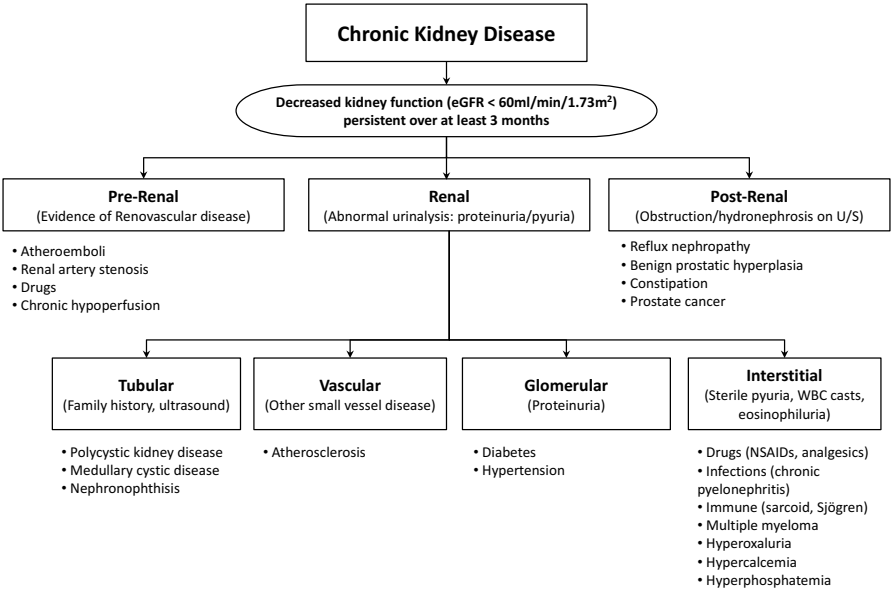
Faculty Editor

Dr. Kevin McLaughlin

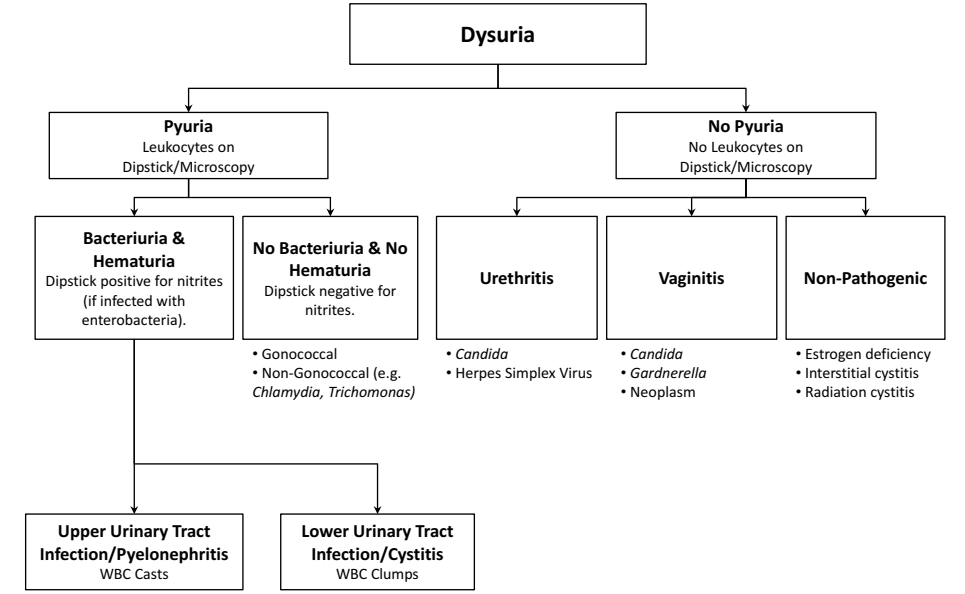
Acute Kidney Injury



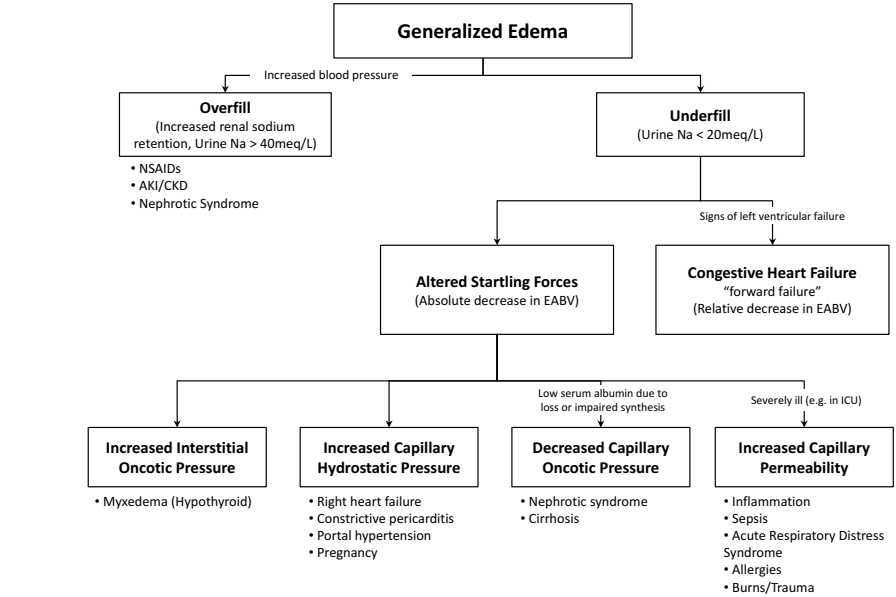
Chronic Kidney Disease



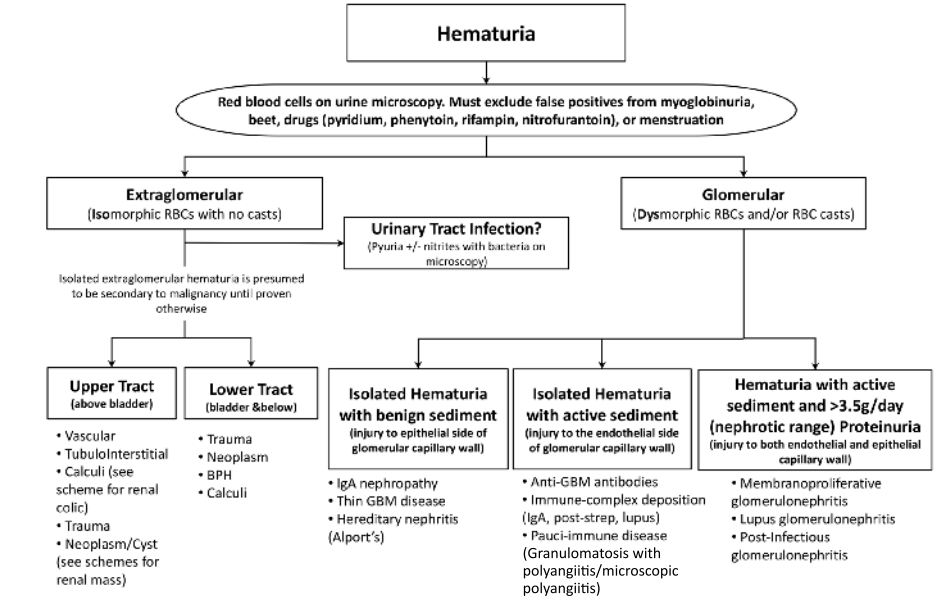
Dysuria


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

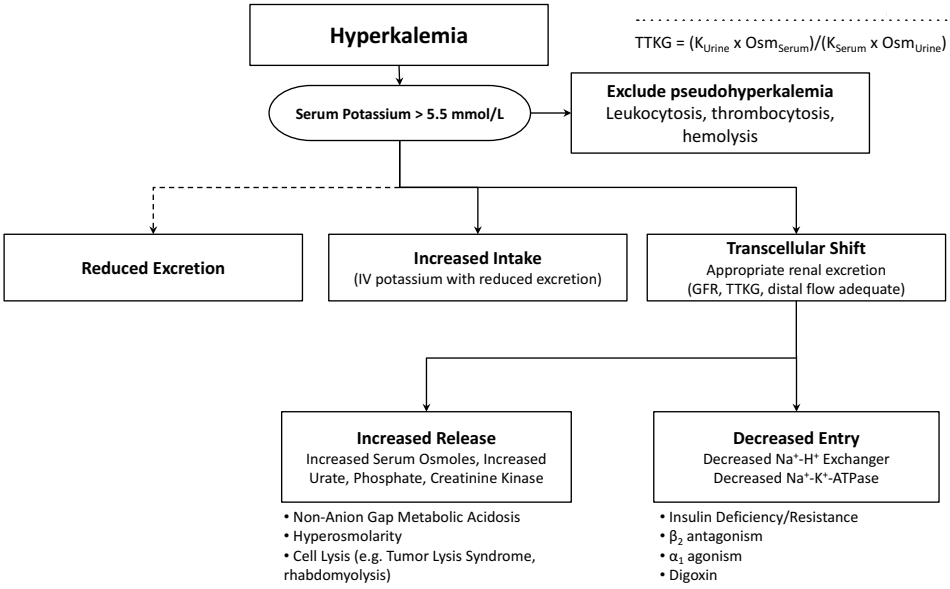


Hematuria



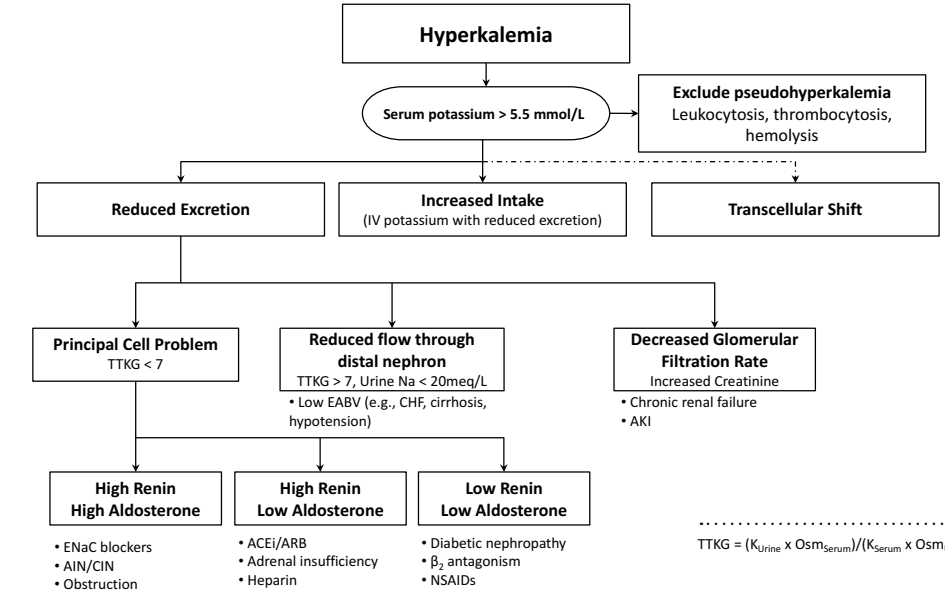
Hyperkalemia

Intercellular Shift



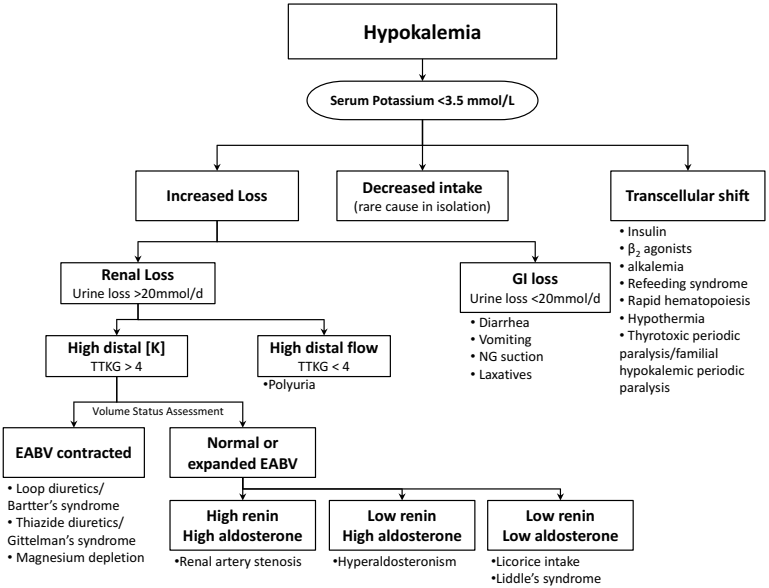
Hyperkalemia

Reduced Excretion

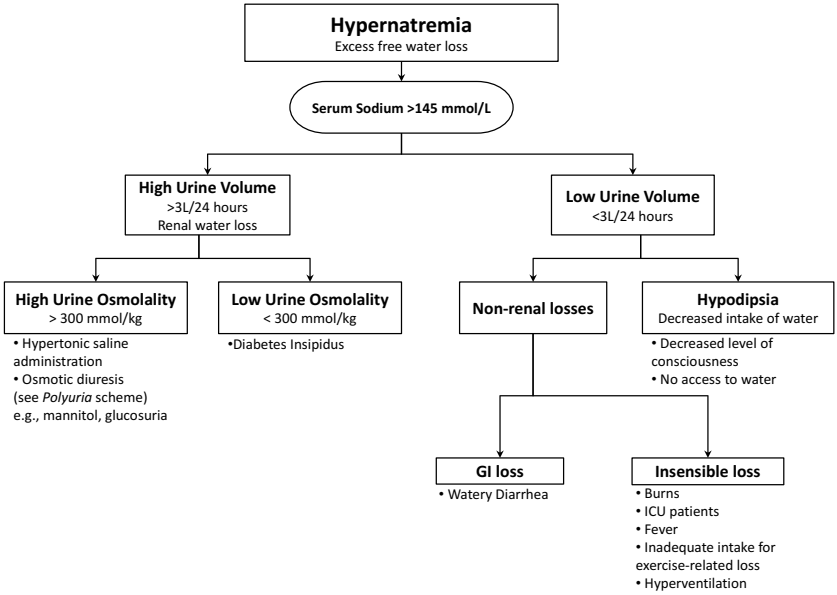


$TTKG = (K_{Urine} \times Osm_{Serum})/(K_{Serum} \times Osm_{Urine})$

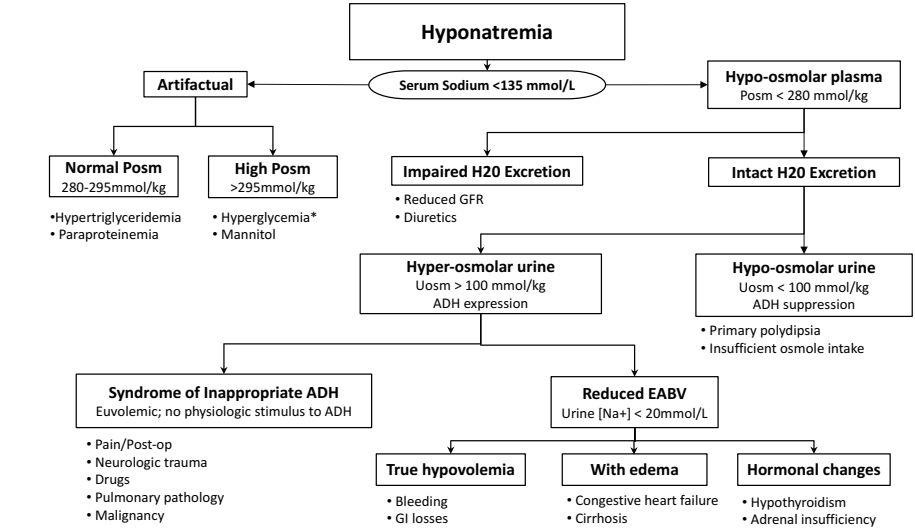
Hypokalemia



Hypernatremia

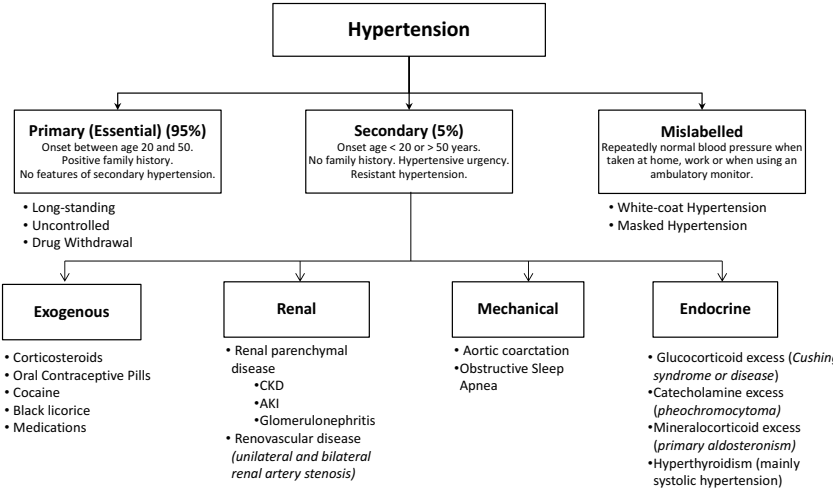


Hyponatremia



*serum sodium correction in hyperglycemia:
$[Na^+]_{corrected} = [Na^+] + (0.3 * ([glucose] – 5))$

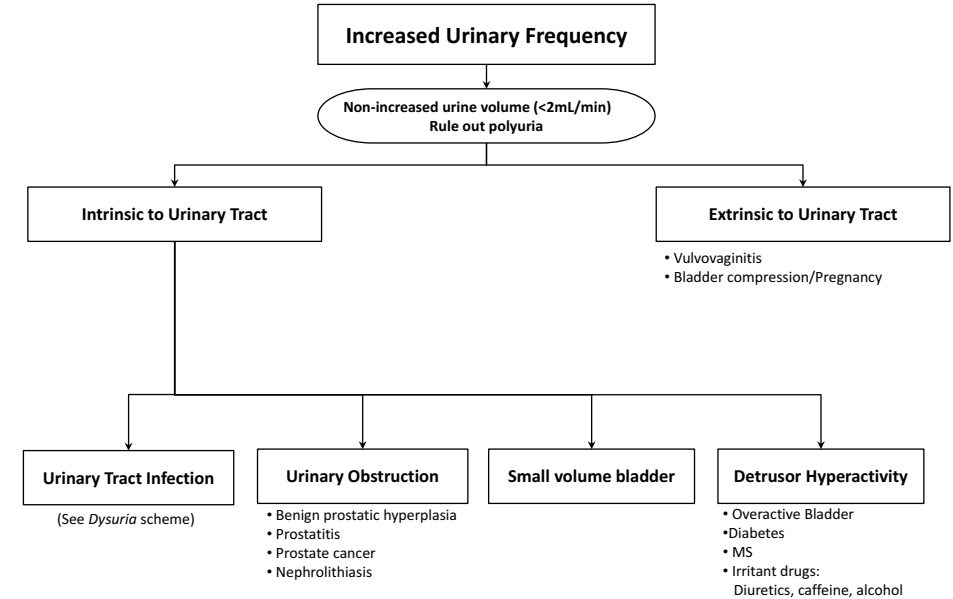
Hypertension



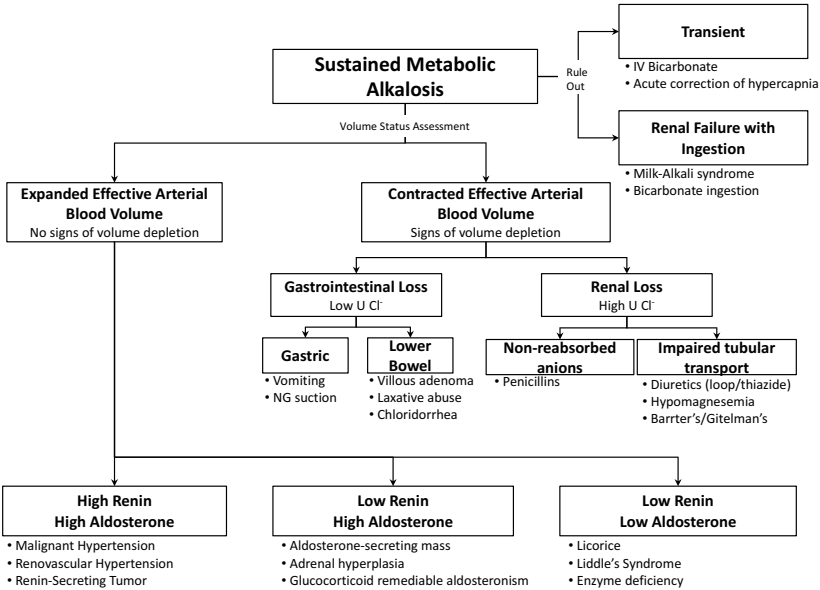
Definition of hypertension:
Systolic BP ≥ 140mmHg or Diastolic BP ≥ 90mmHg
Isolated systolic hypertension in the elderly: ≥ 160mmHg
Diabetes mellitus ≥ 130/80mmHg
Note: In children, the definition of hypertension is different (either systolic or diastolic BP >95%ile), **but the approach is the same**.

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

Increased Urinary Frequency

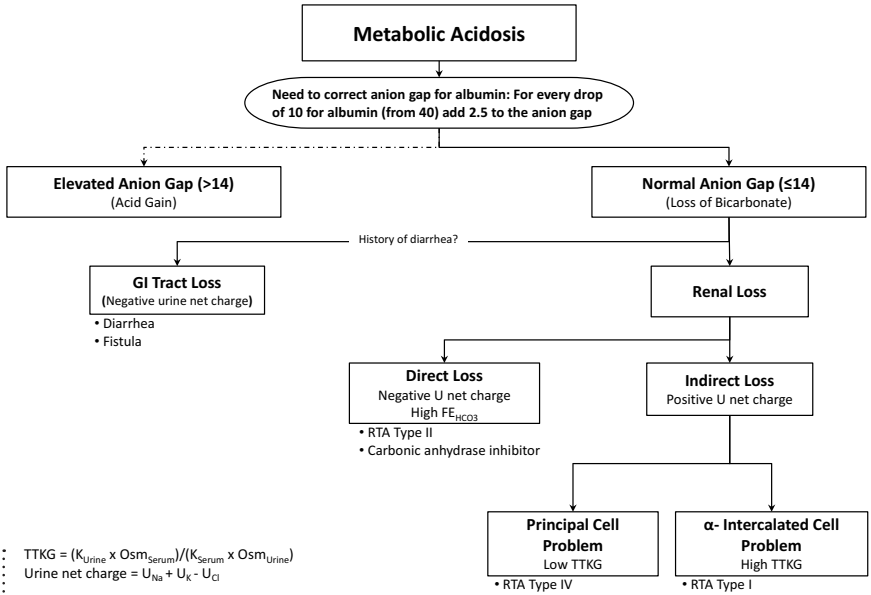


Metabolic Alkalosis



Metabolic Acidosis

Normal Anion Gap

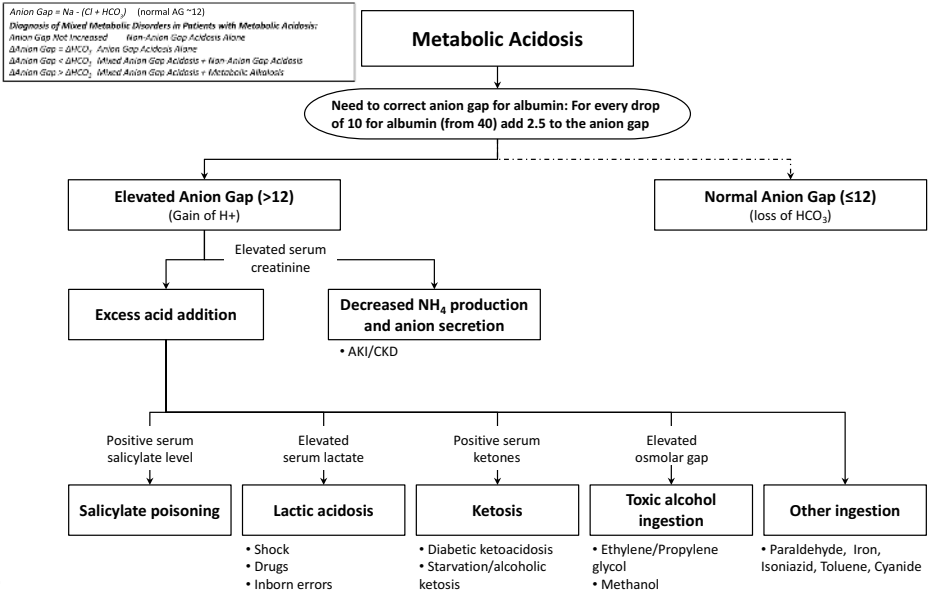


$TTKG = (K_{Urine} \times Osm_{Serum})/(K_{Serum} \times Osm_{Urine})$

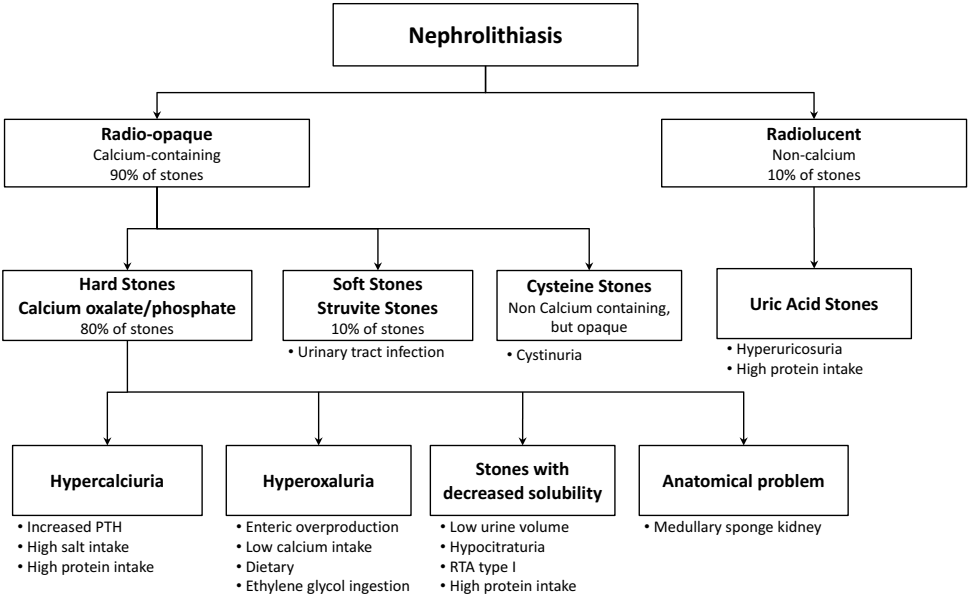
$Urine\ net\ charge = U_{Na} + U_K - U_{Cl}$

Metabolic Acidosis

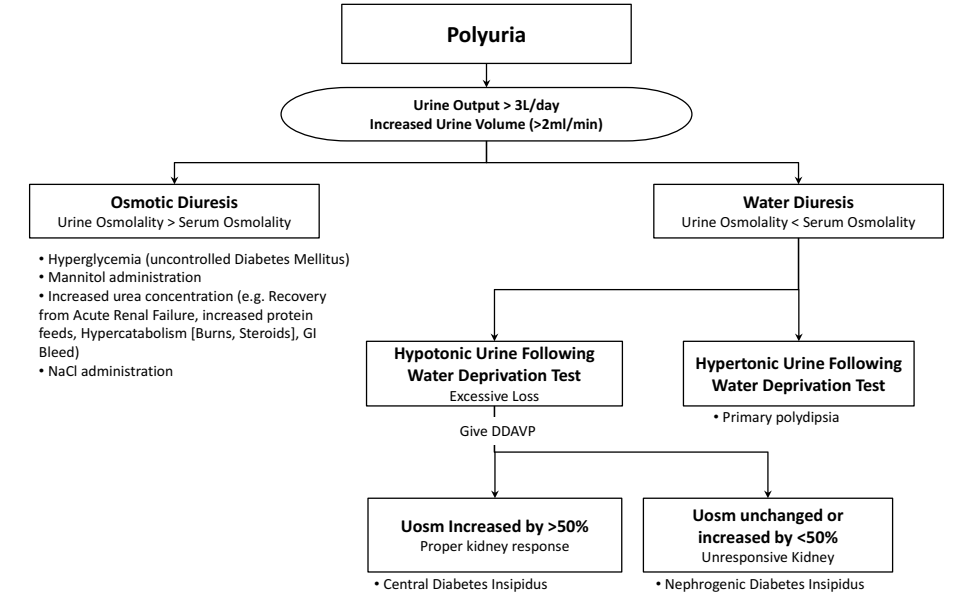
Elevated Anion Gap



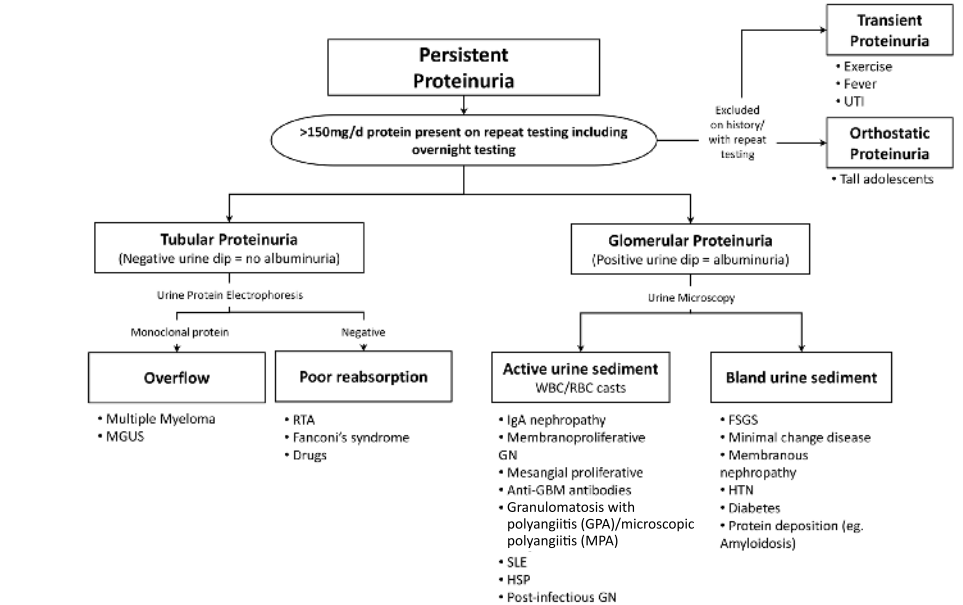
Nephrolithiasis



Polyuria

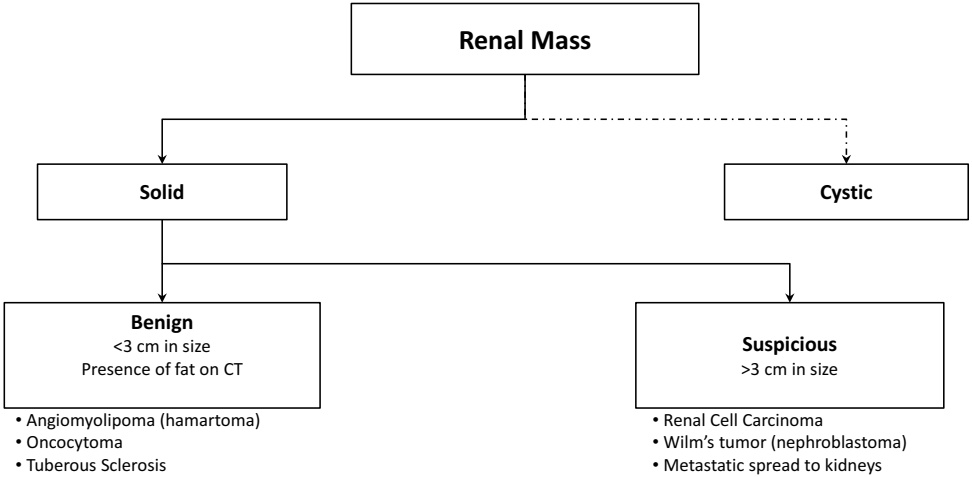

Polyuria
Urine Output > 3L/day
Increased Urine Volume (>2ml/min)
Osmotic Diuresis
Urine Osmolality > Serum Osmolality
• Hyperglycemia (uncontrolled Diabetes Mellitus)
• Mannitol administration
• Increased urea concentration (e.g. Recovery from Acute Renal Failure, increased protein feeds, Hypercatabolism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

Proteinuria



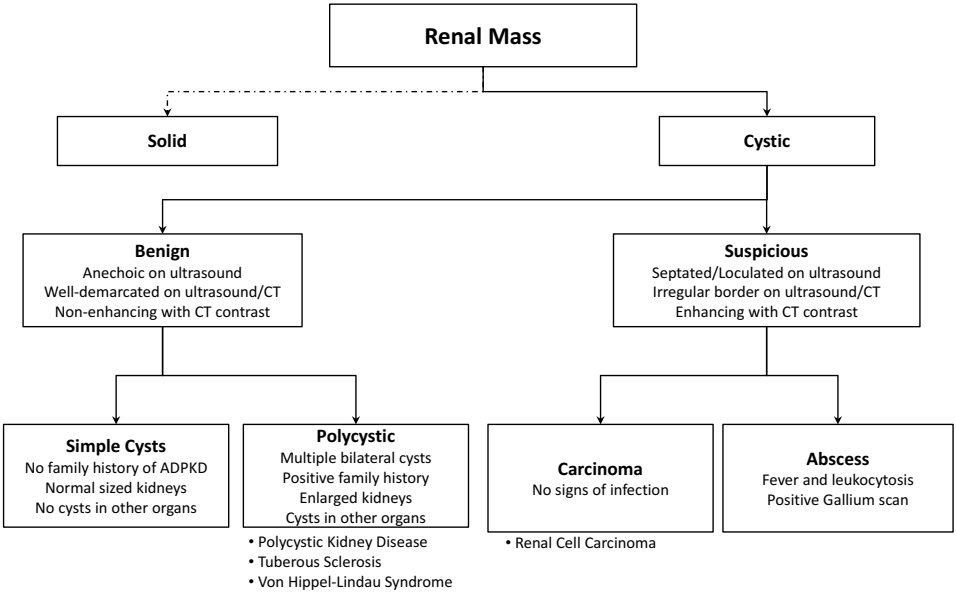
Renal Mass

Solid

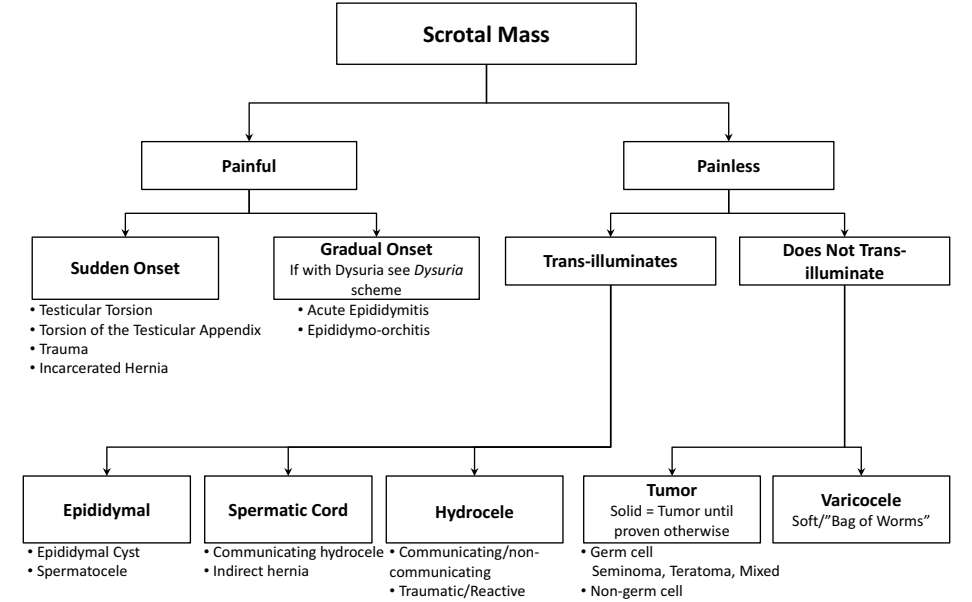


Renal Mass

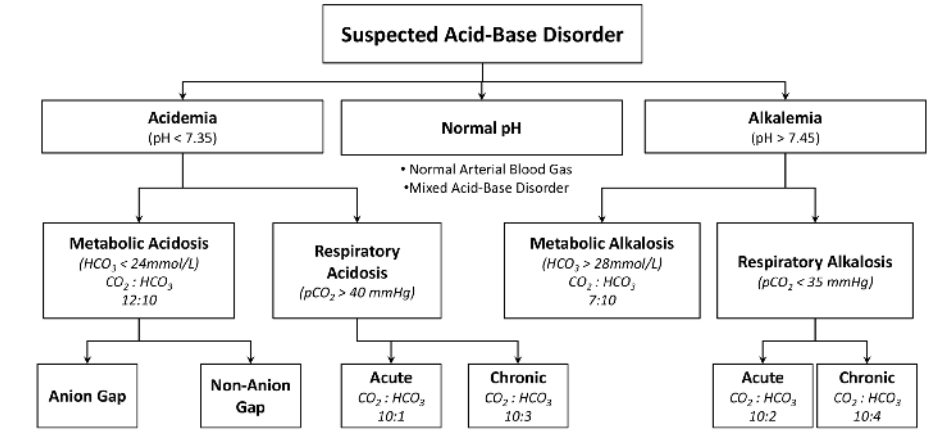
Cystic



Scrotal Mass



Suspected Acid-Base Disturbance



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

Anion Gap = Na - (Cl + HCO_3) (normal AG ~12)

Diagnosis of Mixed Metabolic Disorders in Patients with Metabolic Acidosis:

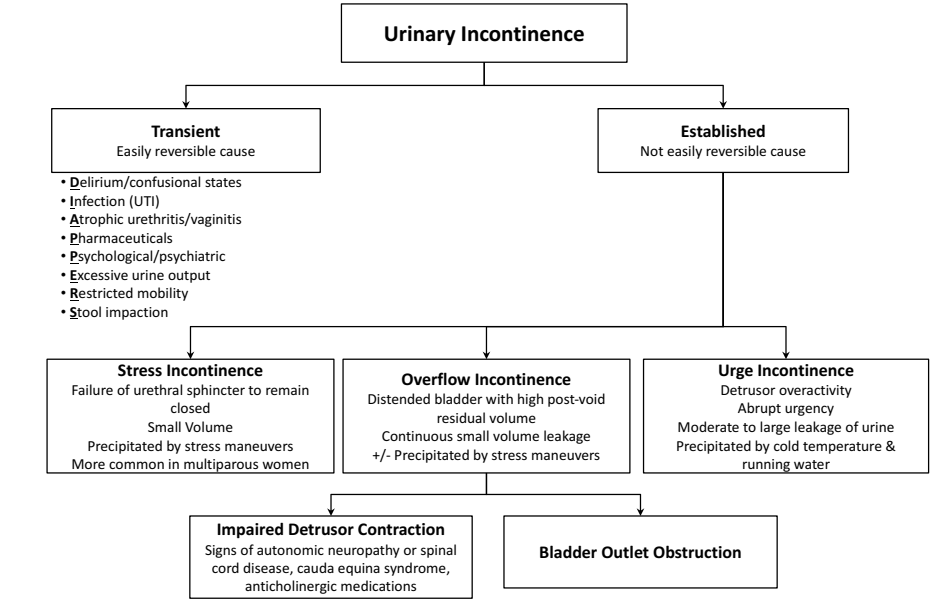
Anion Gap Not Increased — *Non-Anion Gap Acidosis Alone*

ΔAnion Gap = ΔHCO_3 — *Anion Gap Acidosis Alone*

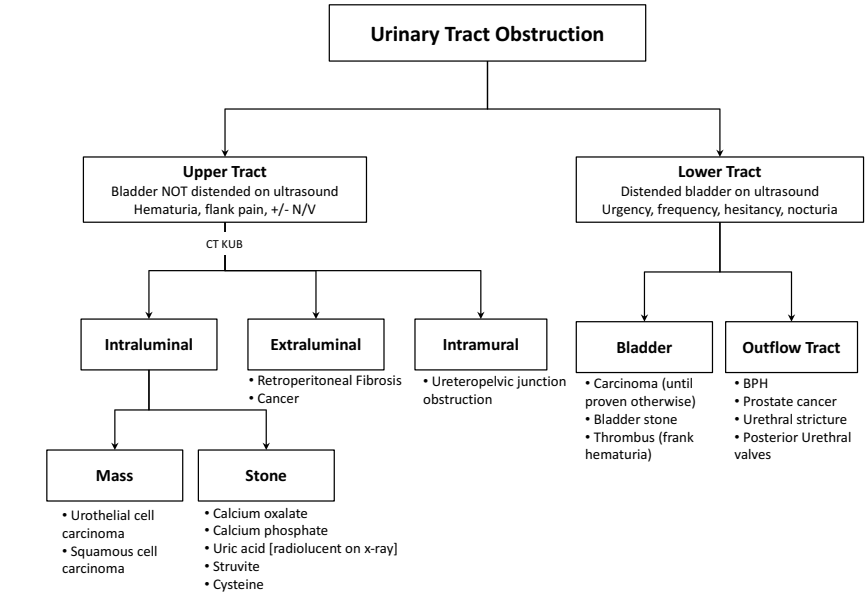
ΔAnion Gap < ΔHCO_3 — *Mixed Anion Gap Acidosis + Non-Anion Gap Acidosis*

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

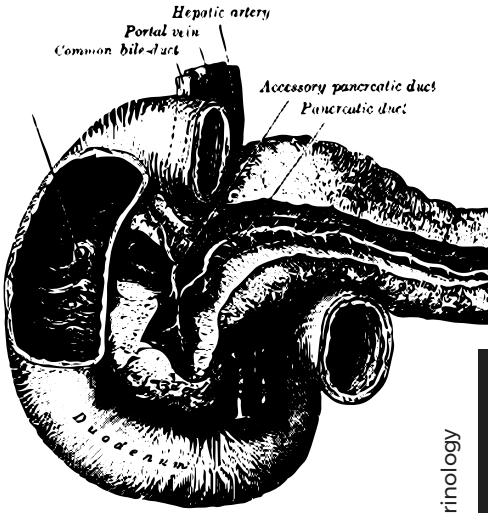
Urinary Incontinence



Urinary Tract Obstruction



Endocrinology



Historical Editors

Dr. Andrew Wade

Dr. Sophia Chou

Dave Campbell

Derrick Chan

Marc Chretien

Mollie Ferris

Kody Johnson

Becky Kennedy

Vera Krejcik

Keith Lawson

Vanessa Millar

Eric Sy

Maria Wu

Student Editors

Parul Khanna *(Co-editor)*

Patricia Wong *(Co-editor)*

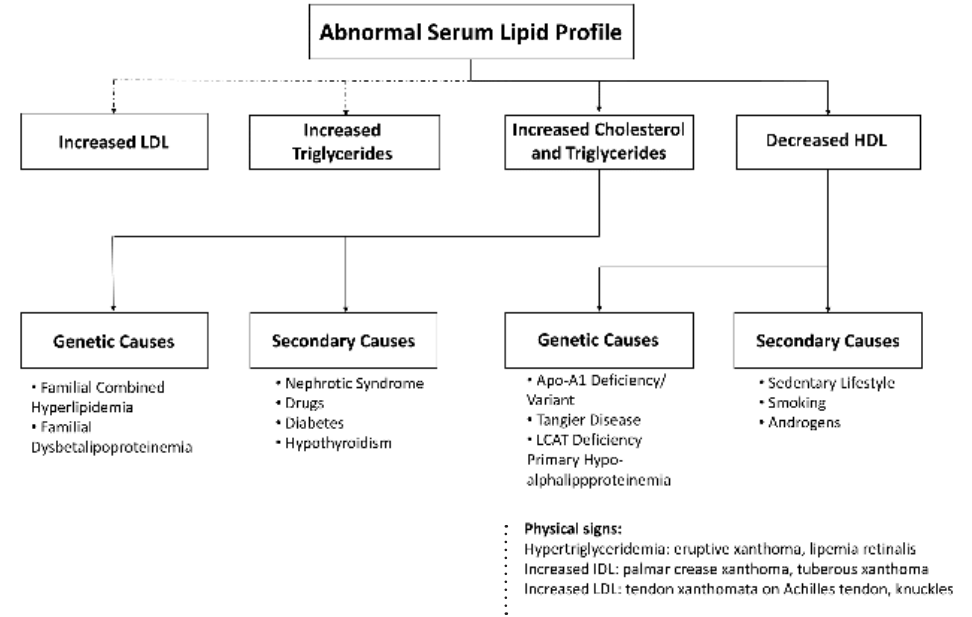
Soreya Dhanji

Faculty Editor

Dr. Kevin McLaughlin

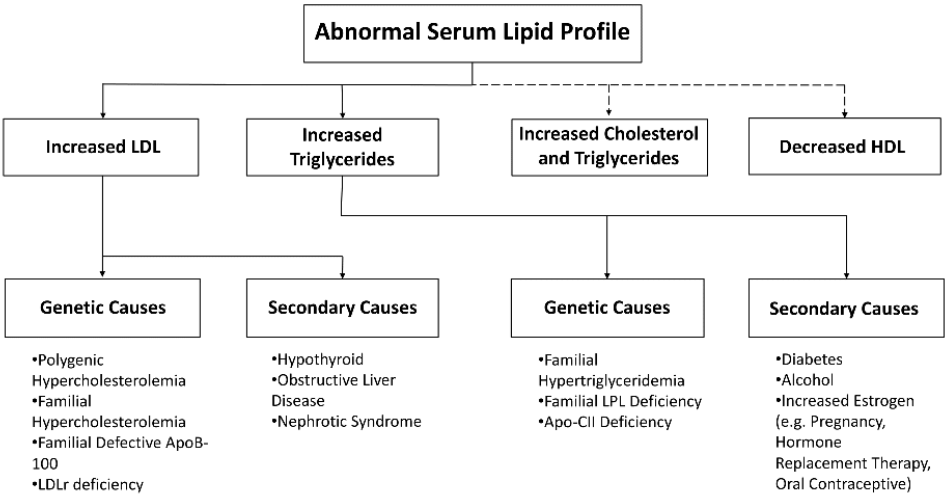
Abnormal Lipid Profile

Combined & Decreased HDL



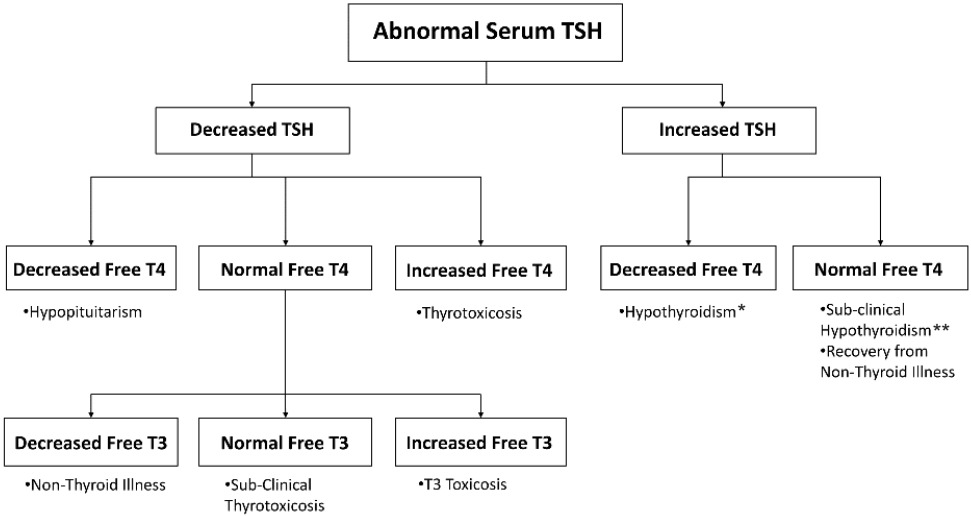
Abnormal Lipid Profile

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

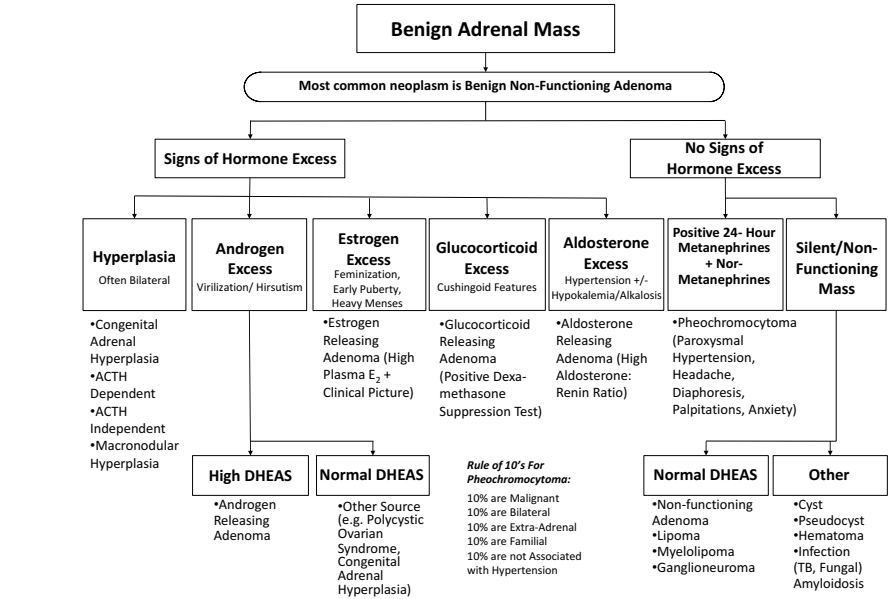
Abnormal Serum TSH



*Refer to Hyperthyroidism (1) on page 154
**Refer to Hyperthyroidism (2) on page 155

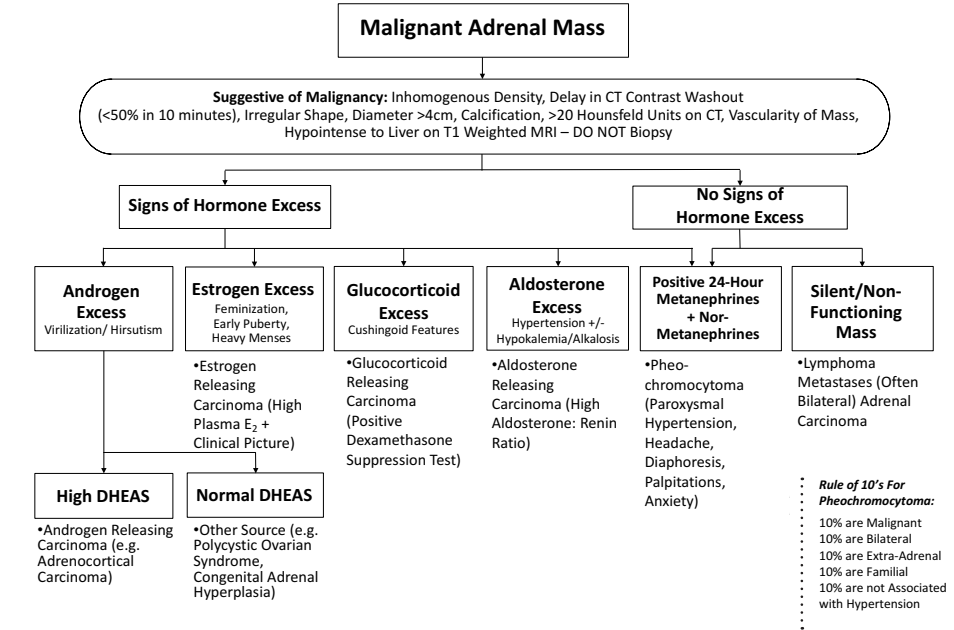
Adrenal Mass

Benign

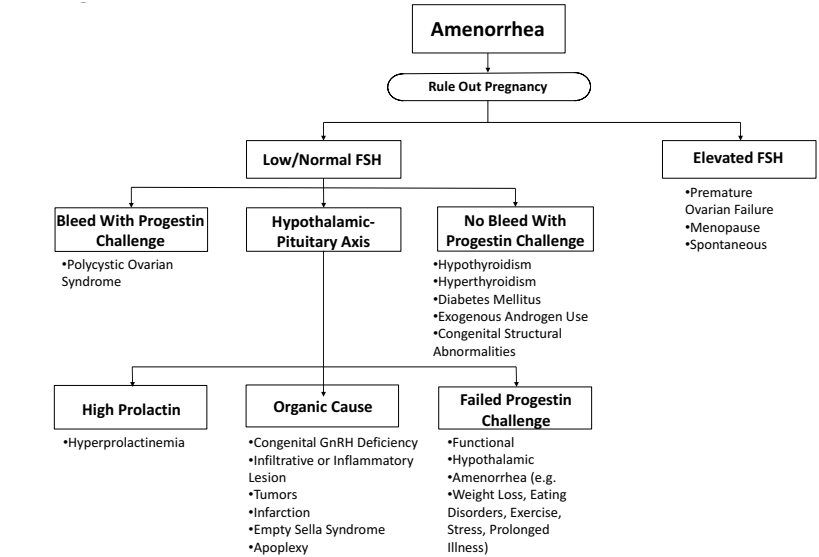


Adrenal Mass

Malignant

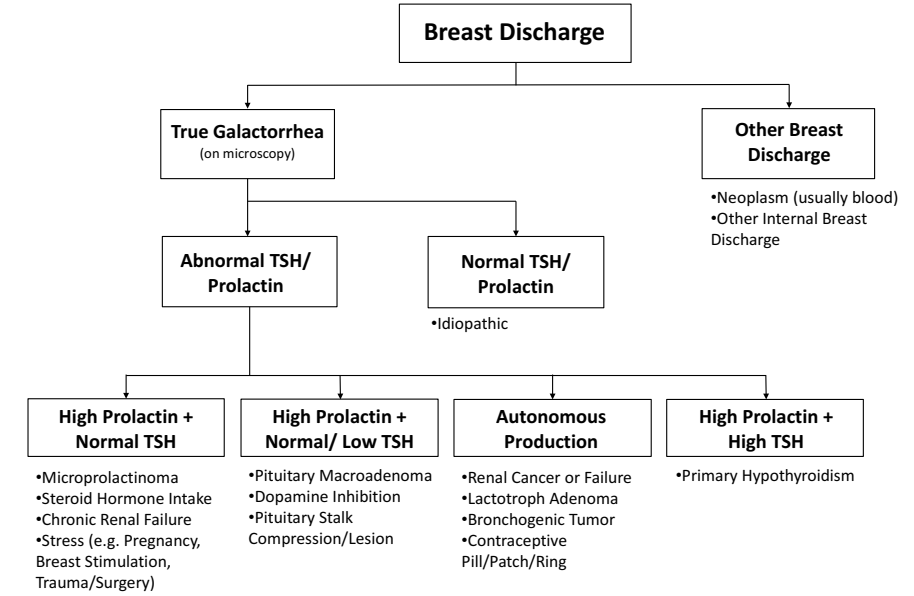


Amenorrhea



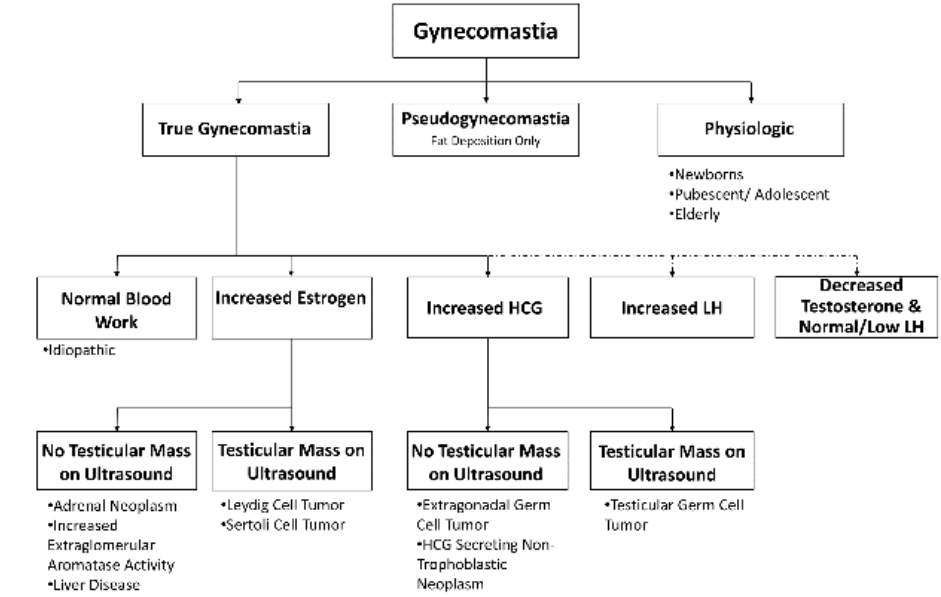
If bleed with progestin challenge = estrogenized
If no bleed with progestin challenge = non-estrogenized

Breast Discharge



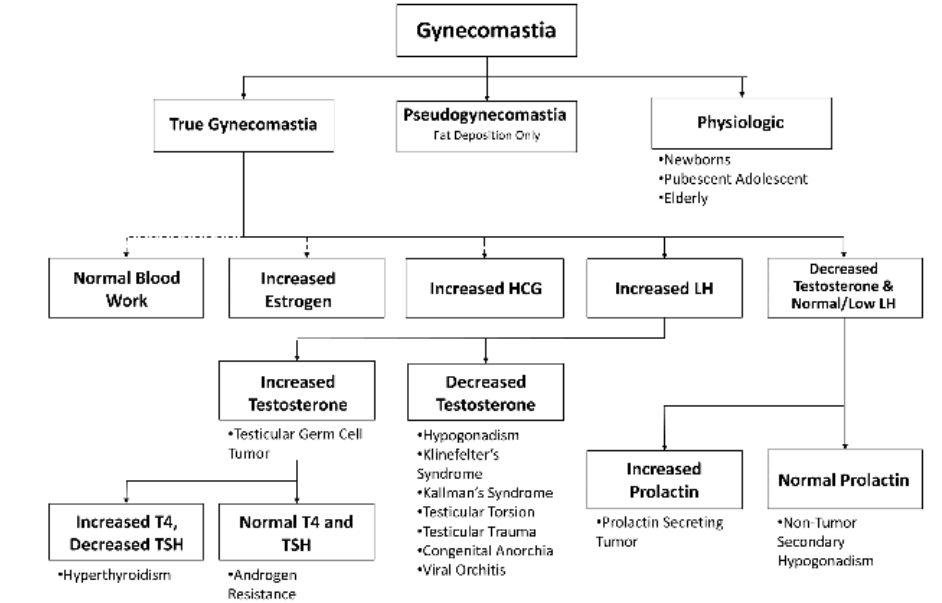
Gynecomastia

Increased Estrogen & Increased HCG

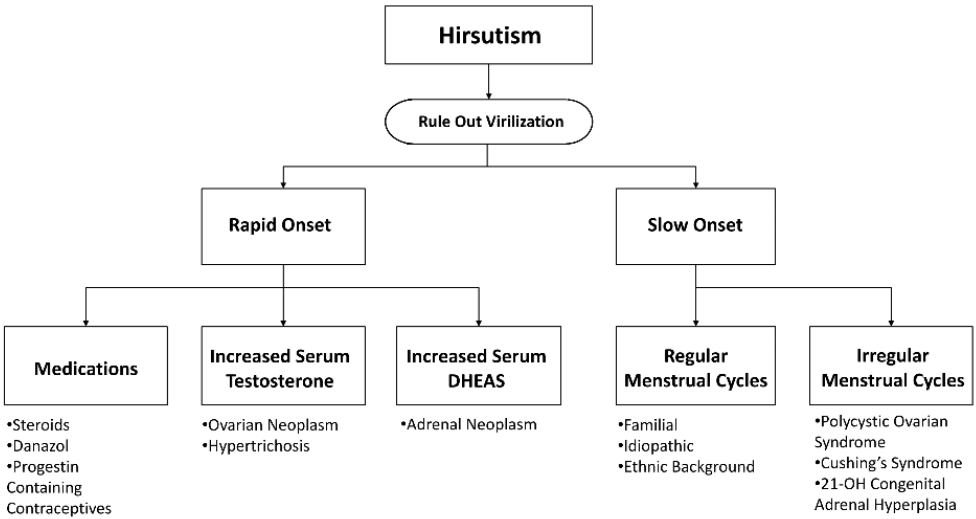


Gynecomastia

Increased LH & Decreased Testosterone

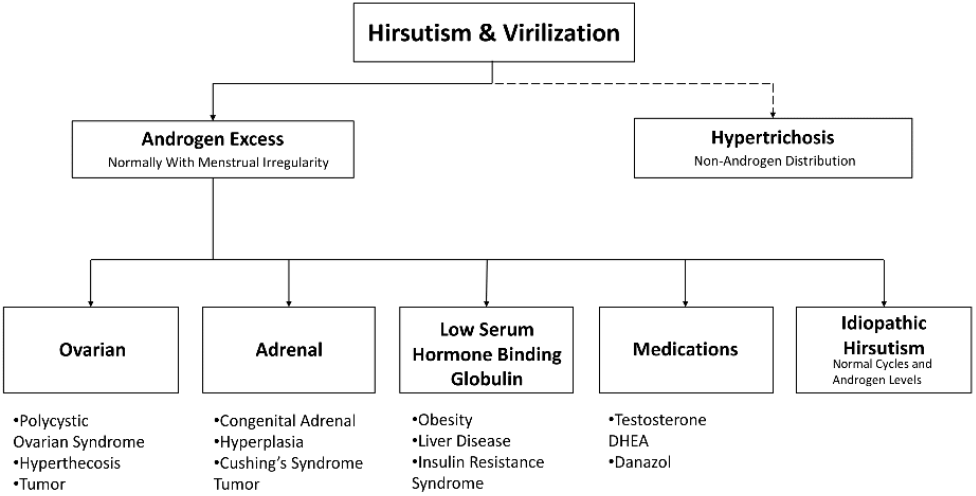


Hirsutism



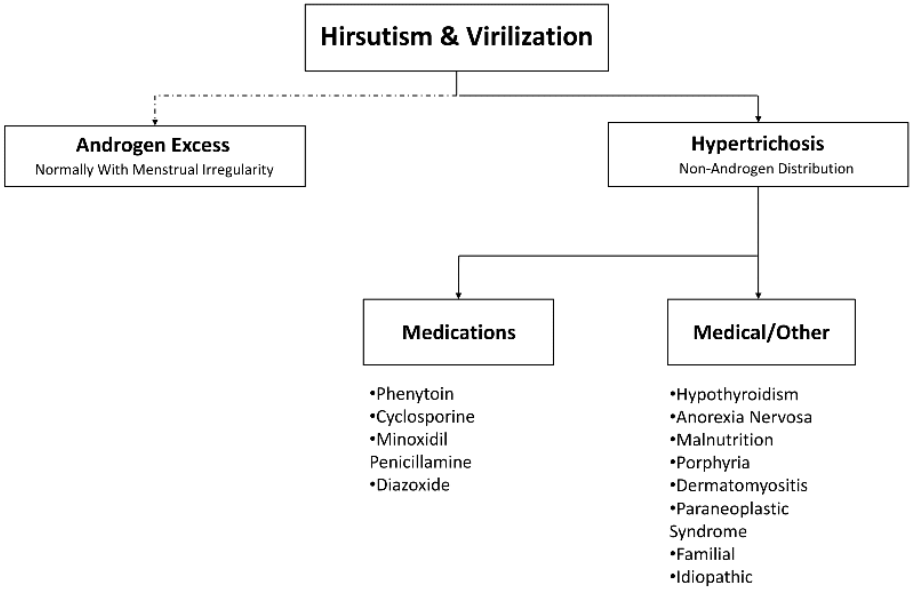
Hirsutism & Virilization

Androgen Excess



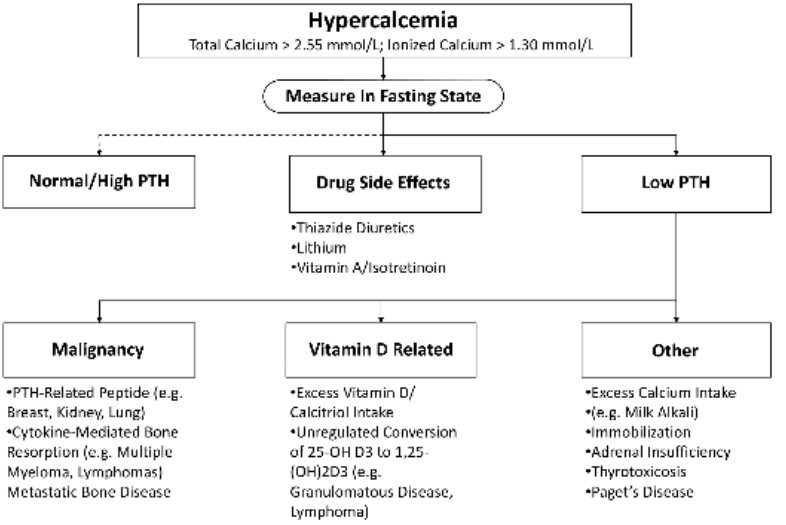
Hirsutism & Virilization

Hypertrichosis



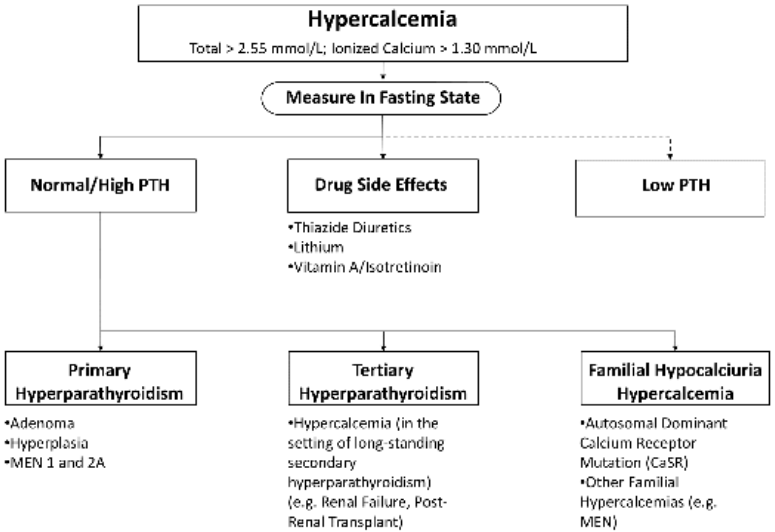
Hypercalcemia

Low PTH



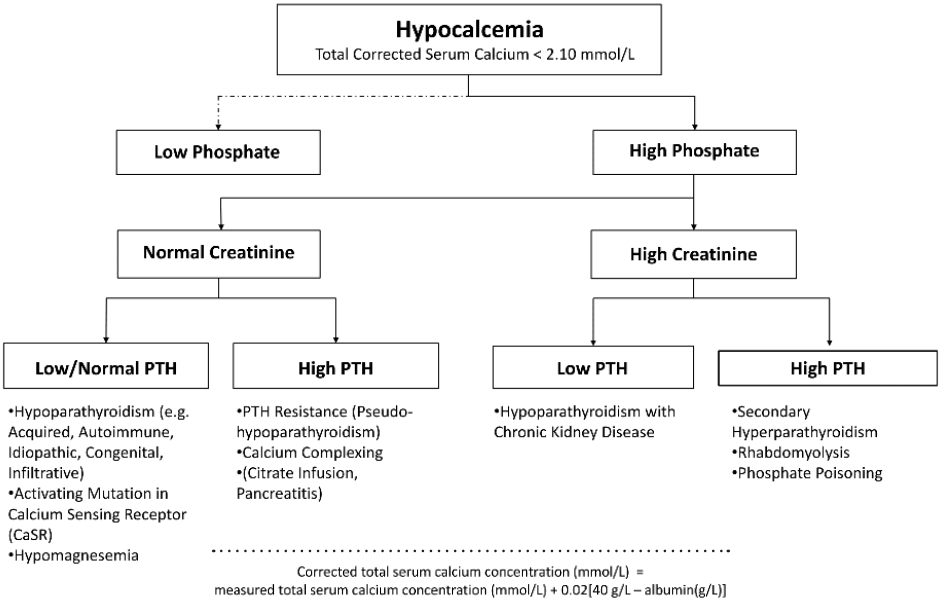
Hypercalcemia

Normal / High PTH



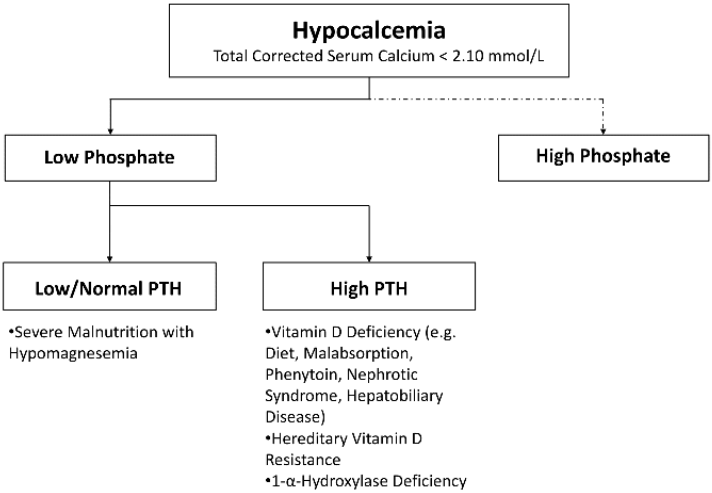
Hypocalcemia

High Phosphate



Hypocalcemia

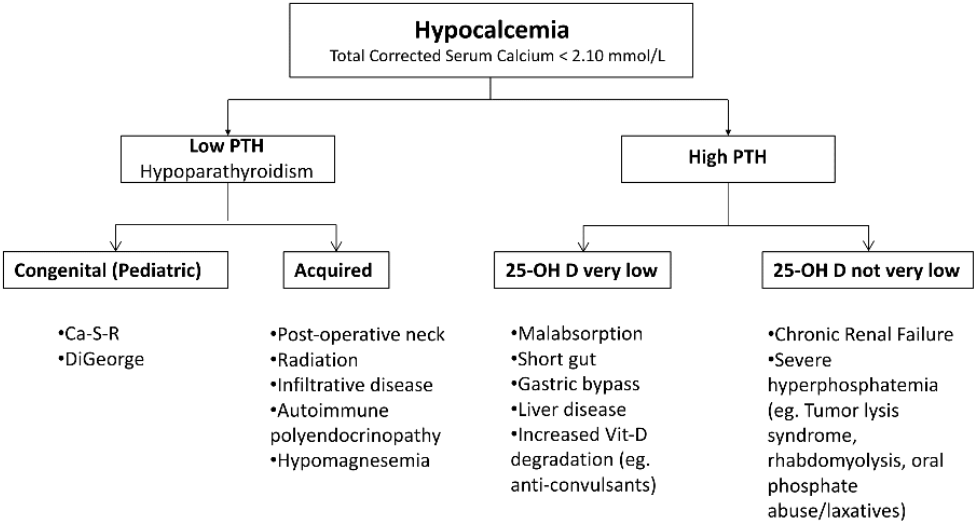
Low Phosphate



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

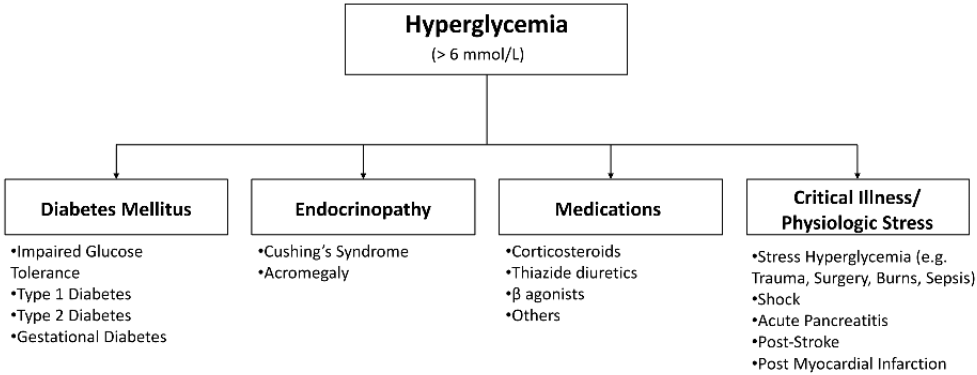
Hypocalcemia

High / Low PTH



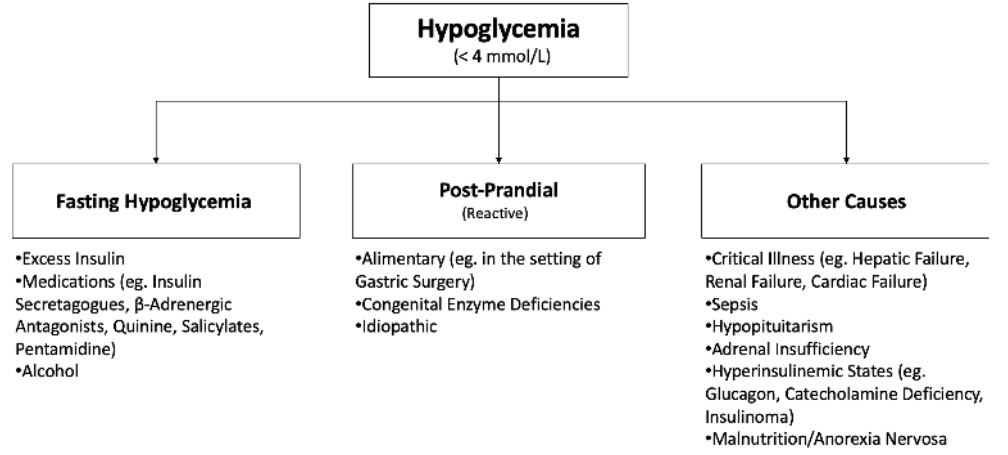
Corrected total serum calcium concentration (mmol/L) =
measured total serum calcium concentration (mmol/L) + 0.02[40 g/L – albumin(g/L)]

Hyperglycemia



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

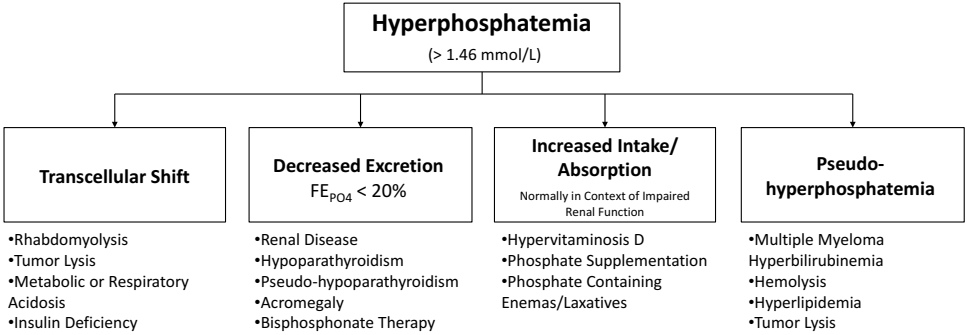
Hypoglycemia



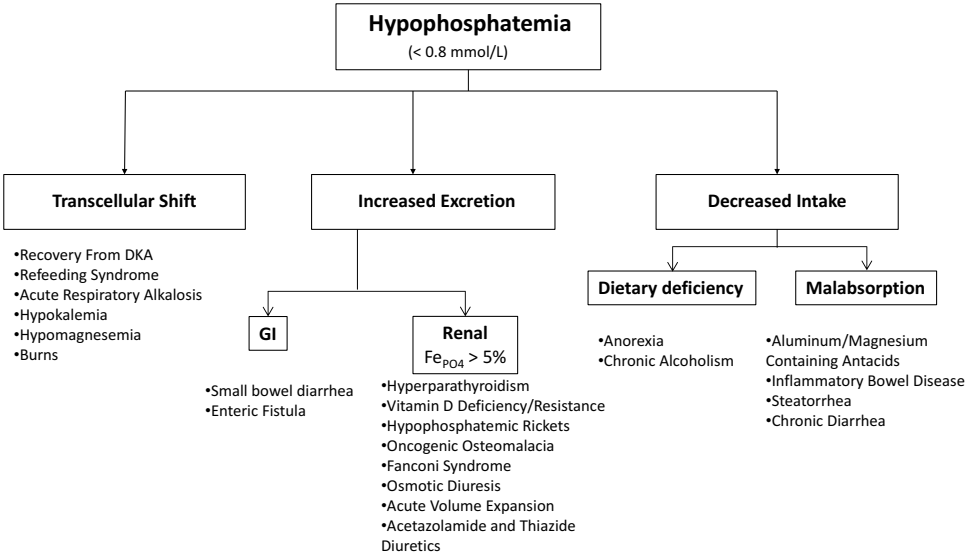
Signs/Symptoms of Hypoglycemia:
Neurogenic: irritability, tremor, anxiety, palpitations, tachycardia, sweating, pallor, paresthesias
Neuroglycopenia: confusion, lethargy, abnormal behaviour, amnesia, weakness, blurred vision, seizures

⚠ *Potentially acutely life-threatening presentation*

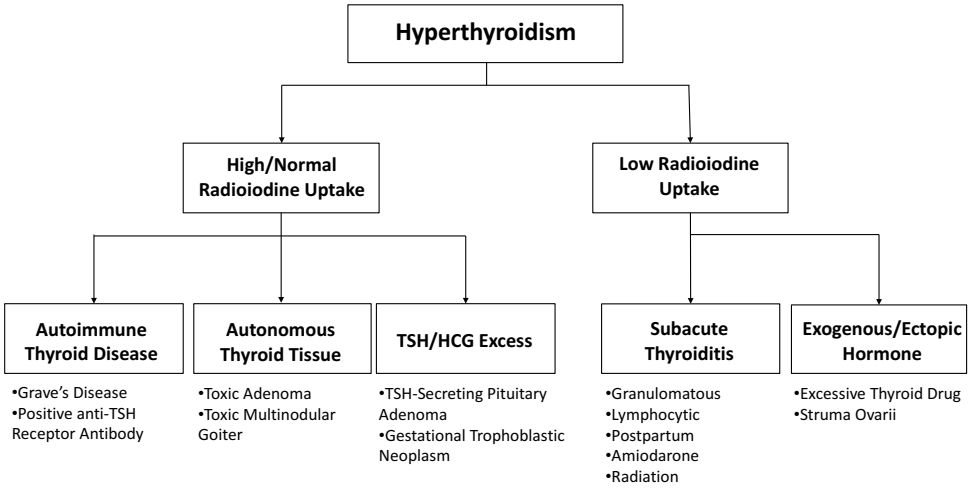
Hyperphosphatemia



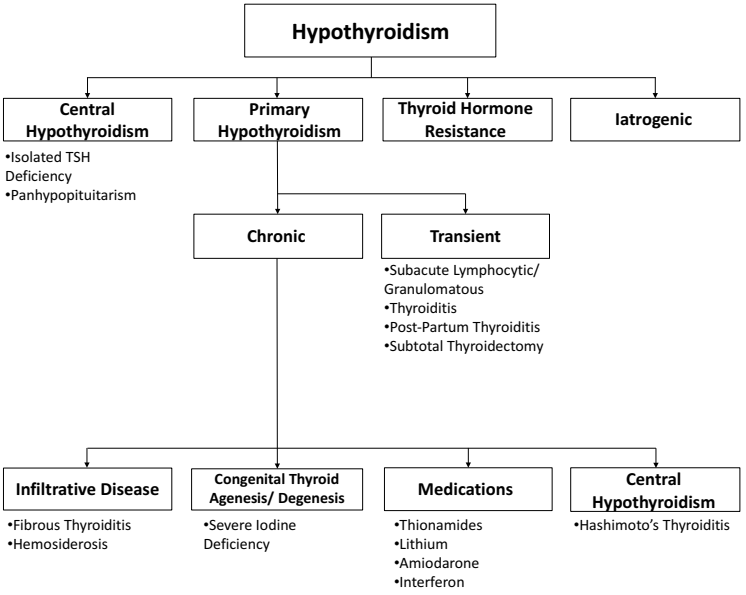
Hypophosphatemia



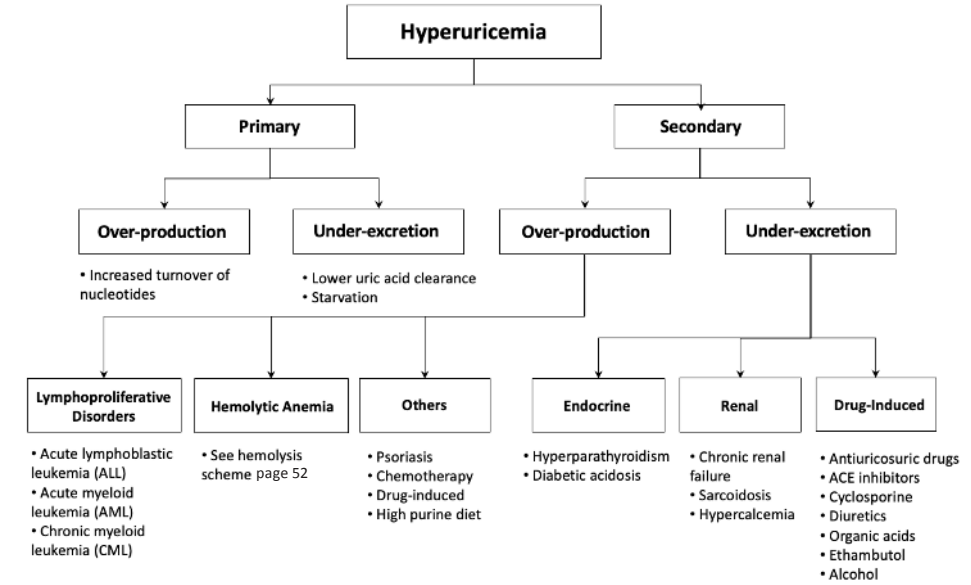
Hyperthyroidism



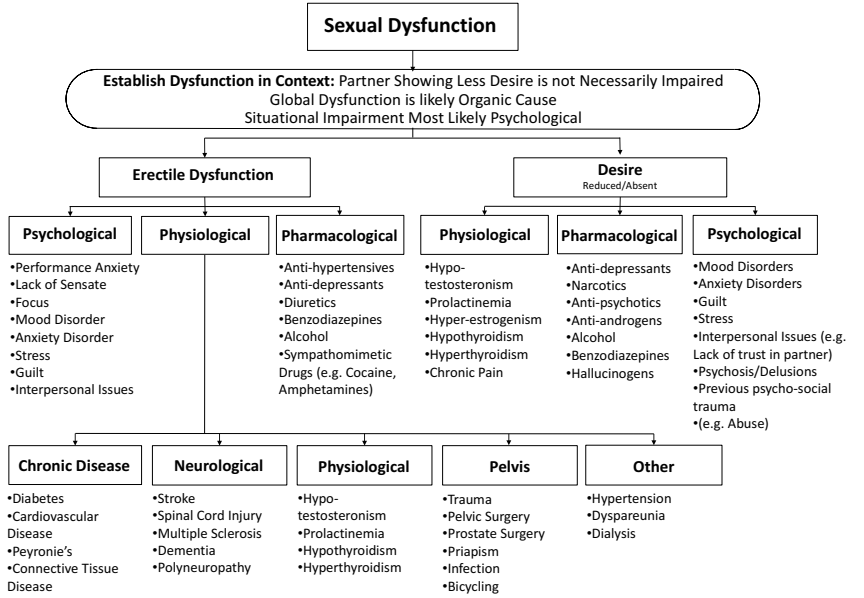
Hypothyroidism



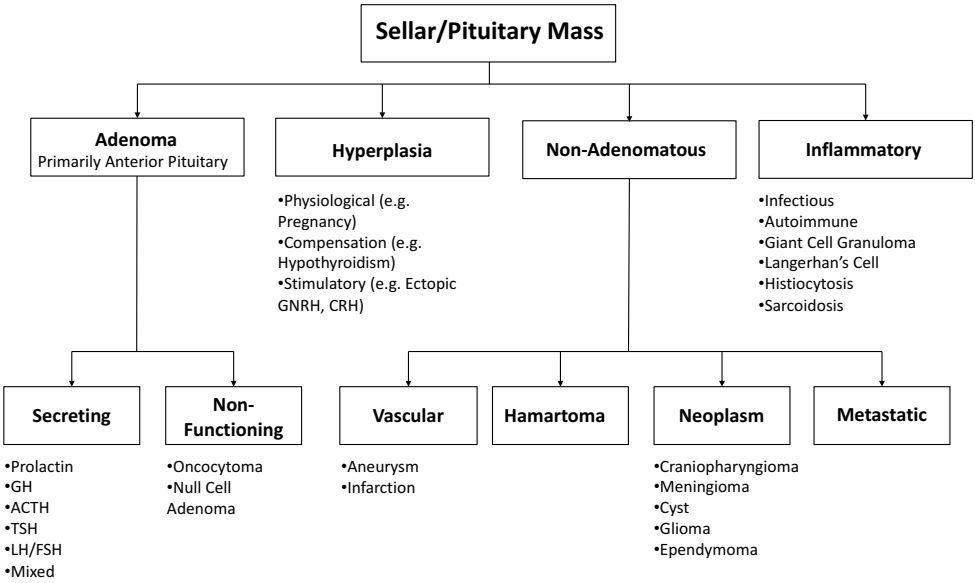
Hyperuricemia



Male Sexual Dysfunction

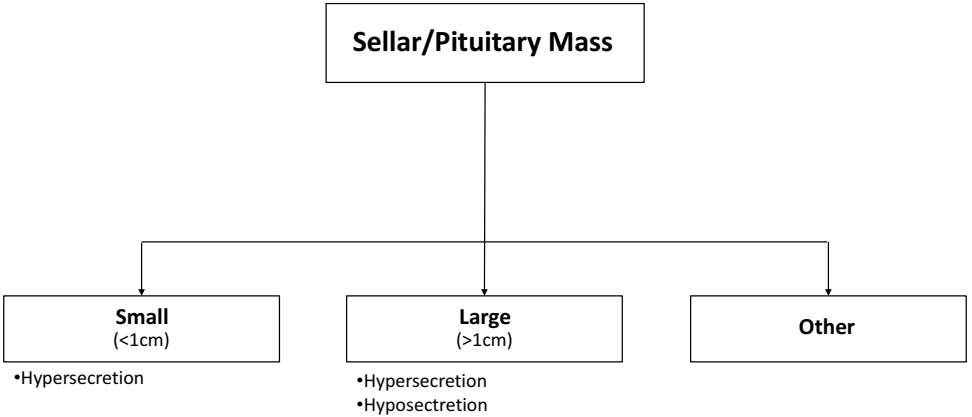


Sellar / Pituitary Mass

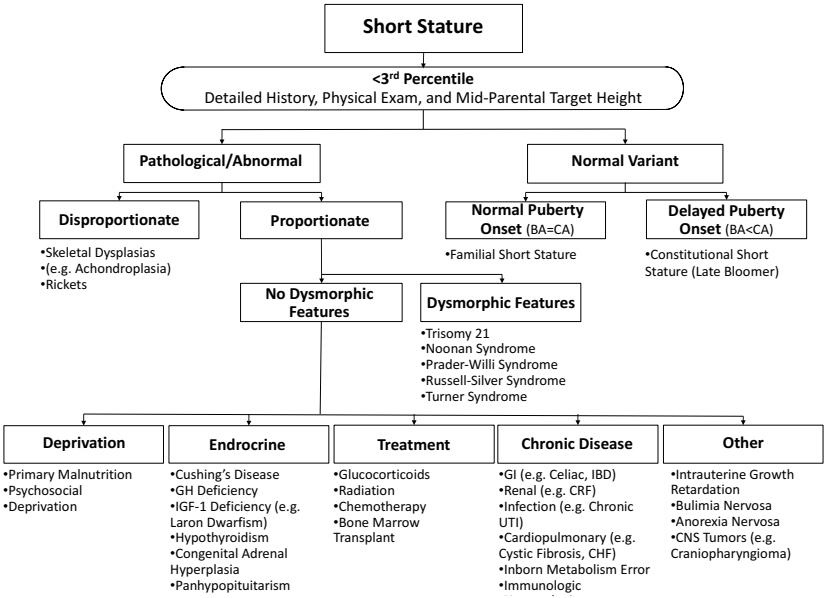


Sellar / Pituitary Mass

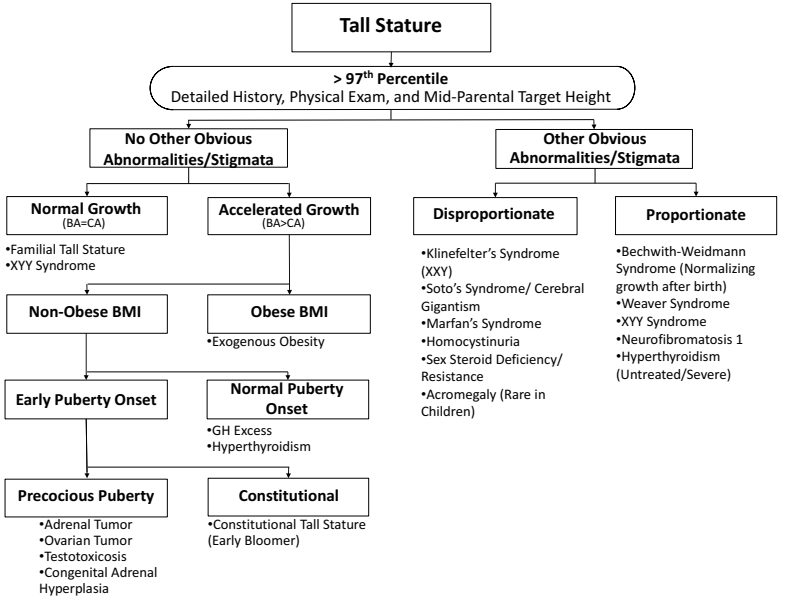
Size



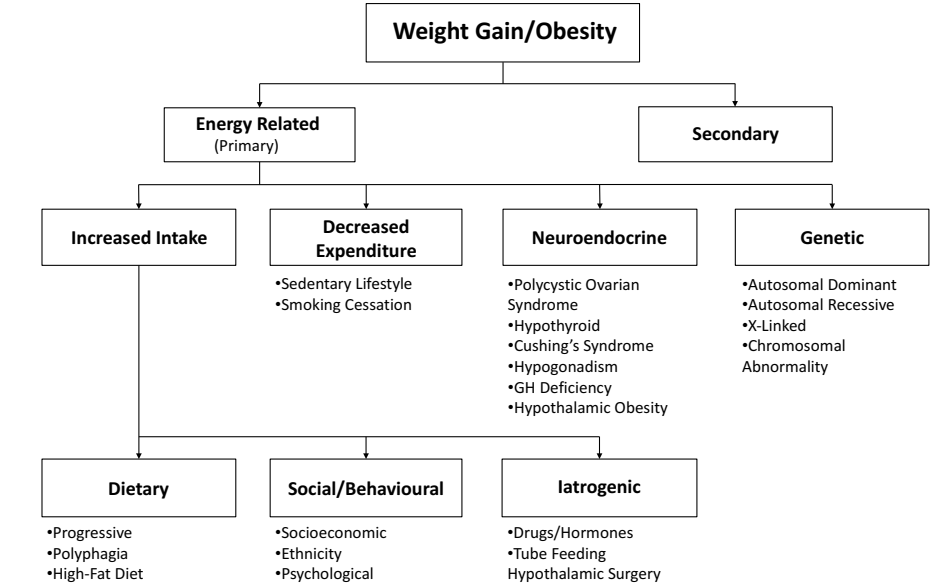
Short Stature



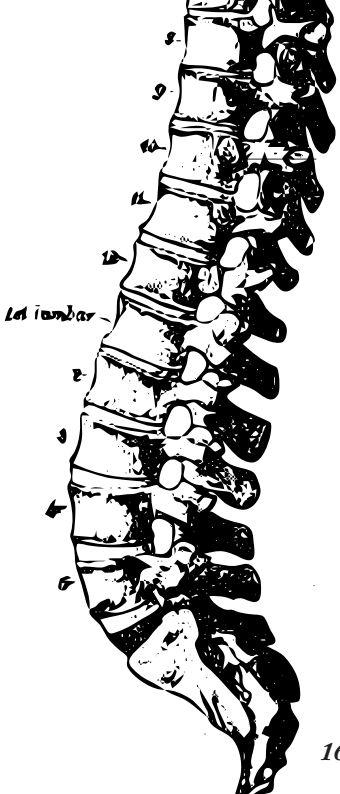
Tall Stature



Weight Gain / Obesity



Neurologic



Historical Editors

Dr. Darren Burback
Dr. Brian Klassen
Dr. Gary Klein
Dr. Dawn Pearson
Dr. Oksana Suchowersky
Erin Butler
Aaron Wong
Sophie Flor-Henry
Ted Hoyda
Andrew Jun
Khaled Ahmed
Anastasia Aristarkhova
John Booth
Kaitlin Chivers-Wilson
Lindsay Connolly
Nichelle Desilets
Jonathan Dykeman
Vikram Lekhi
Chris Ma
Sandeep Saran
Jeff Shrum
Siddhartha Srivastava
Stephanie Yang

Student Editors

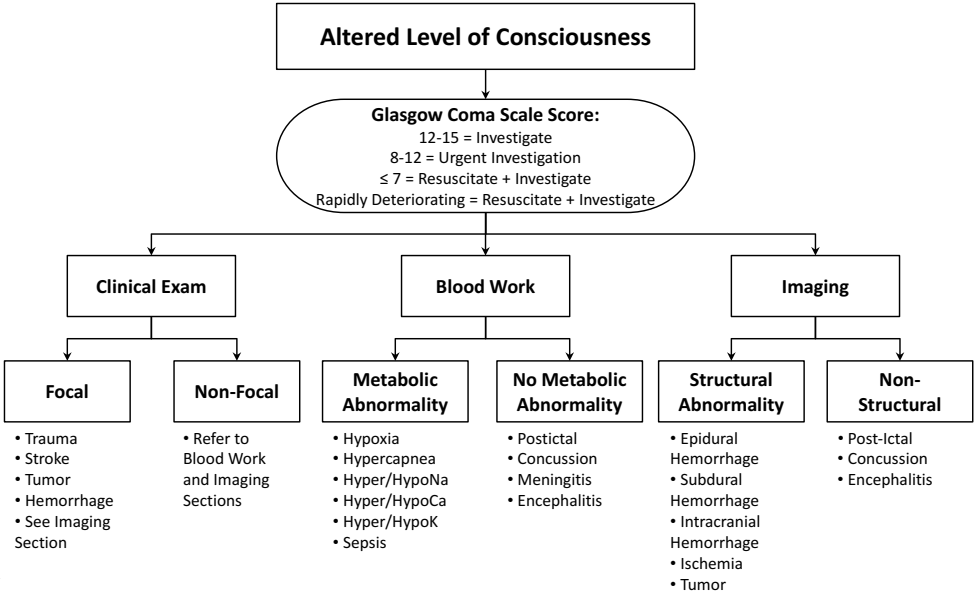
Jared McCormick
Dilip Koshy
Aleksandra Ivanovic

Faculty Editor

Dr. Kevin Busche

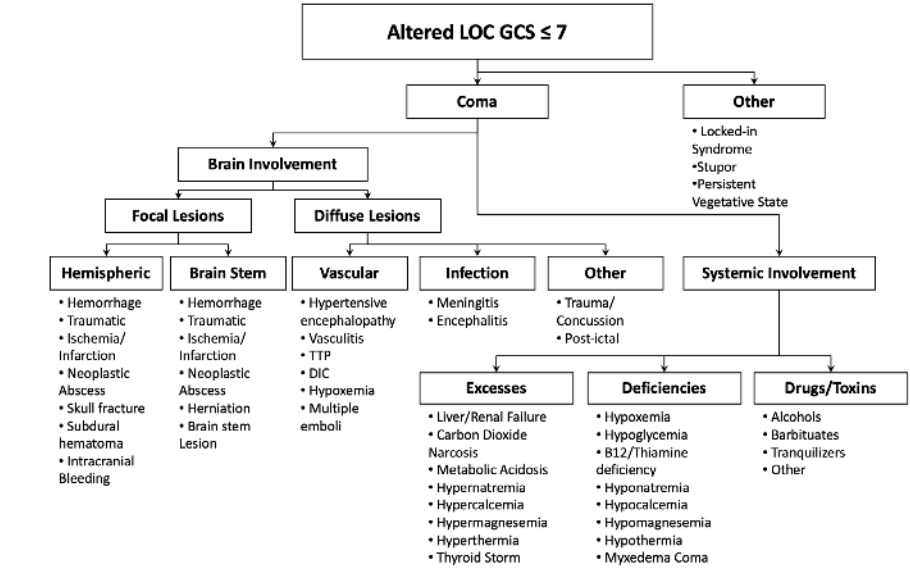
Altered Level of Consciousness

Approach



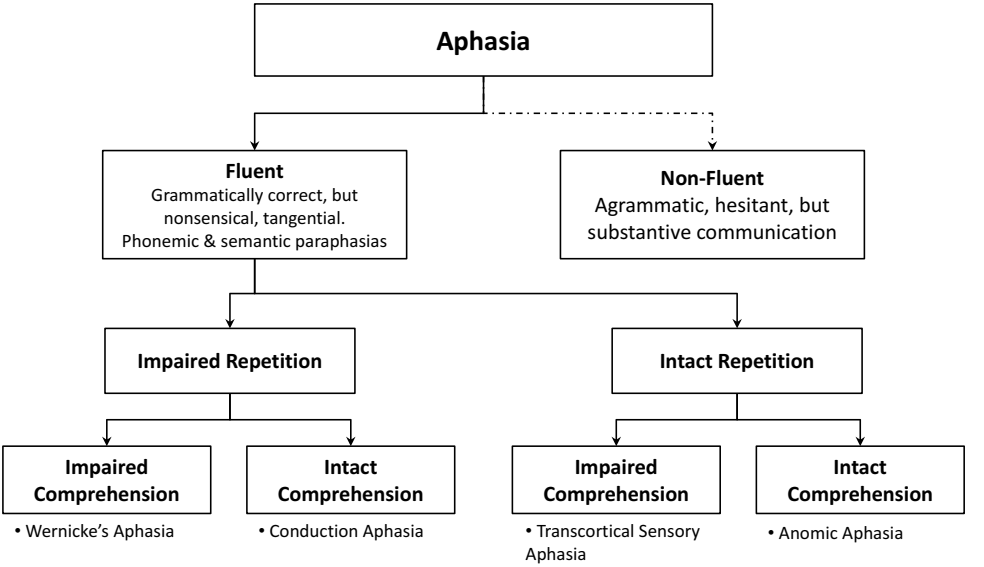
Altered Level of Consciousness

GCS ≤ 7



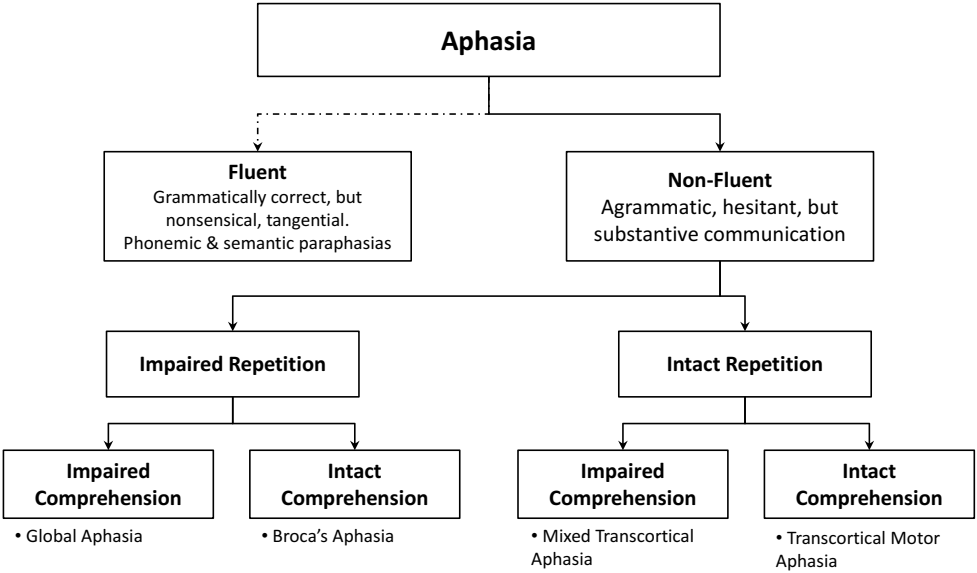
Aphasia

Fluent

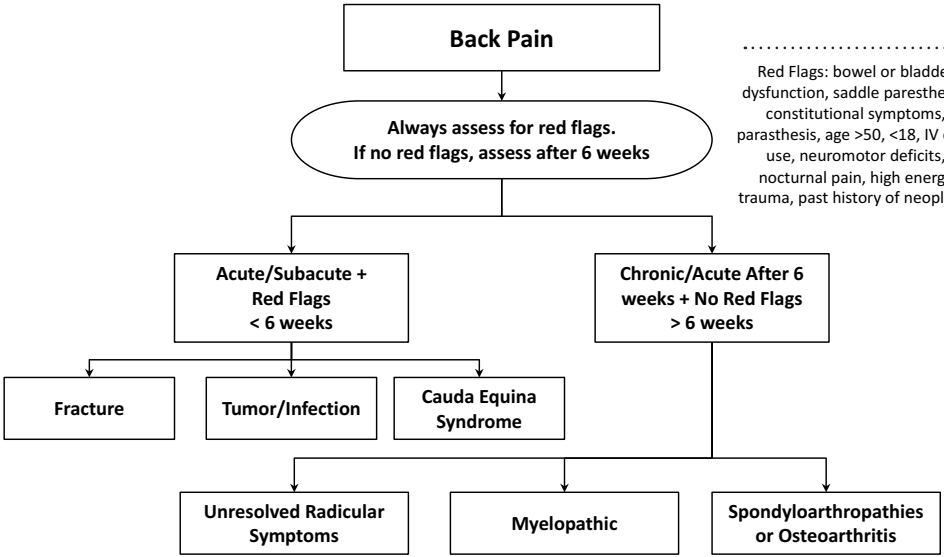


Aphasia

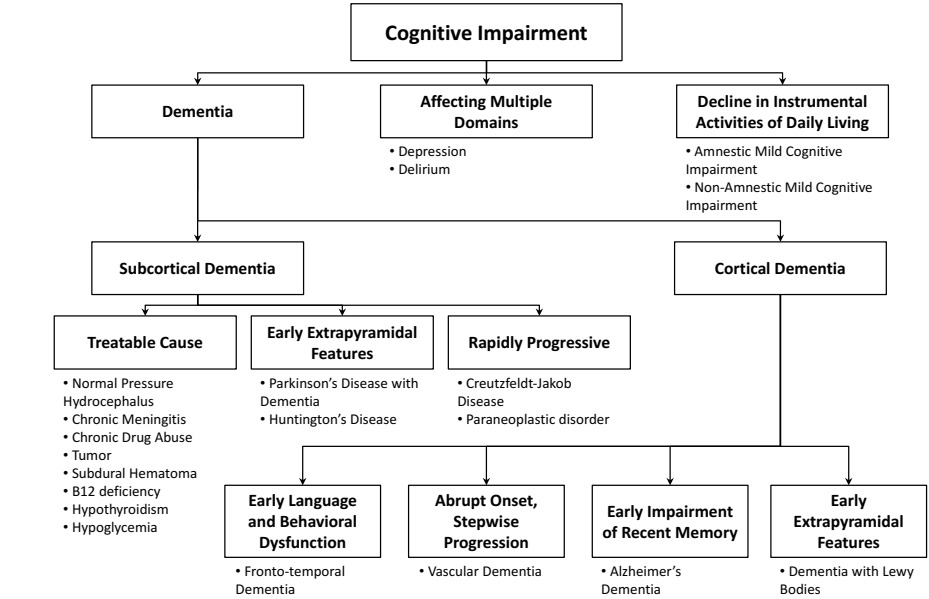
Non-Fluent



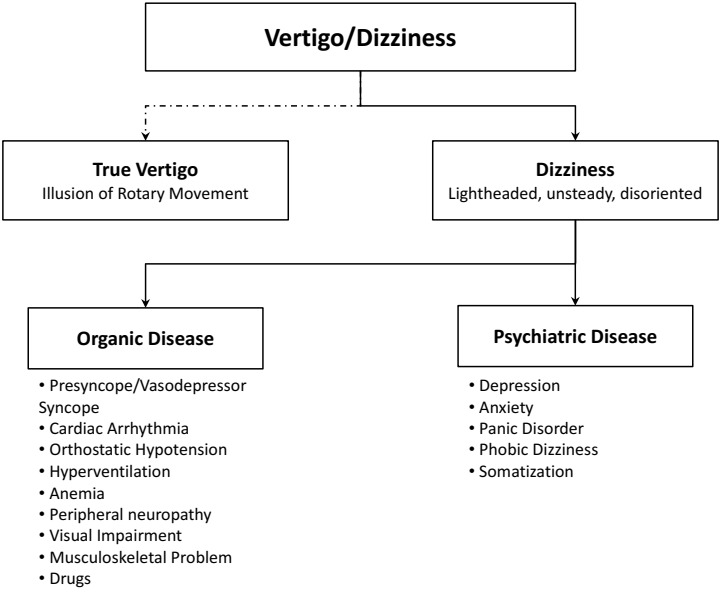
Back Pain


Back Pain
Always assess for red flags.
If no red flags, assess after 6 weeks
Red Flags: bowel or bladder dysfunction, saddle paresthesia, constitutional symptoms, parasthesis, age >50, <18, IV drug use, neuromotor deficits, nocturnal pain, high energy trauma, past history of neoplasm
Acute/Subacute + Red Flags < 6 weeks
Chronic/Acute After 6 weeks + No Red Flags > 6 weeks
Fracture
Tumor/Infection
Cauda Equina Syndrome
Unresolved Radicular Symptoms
Myelopathic
Spondyloarthropathies or Osteoarthritis

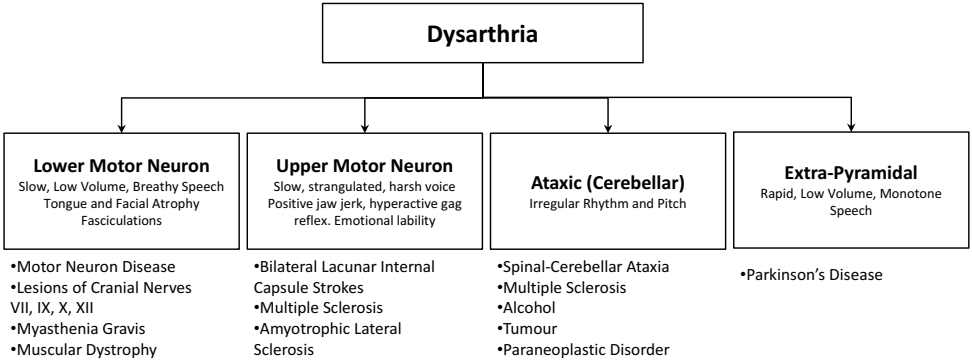
Cognitive Impairment



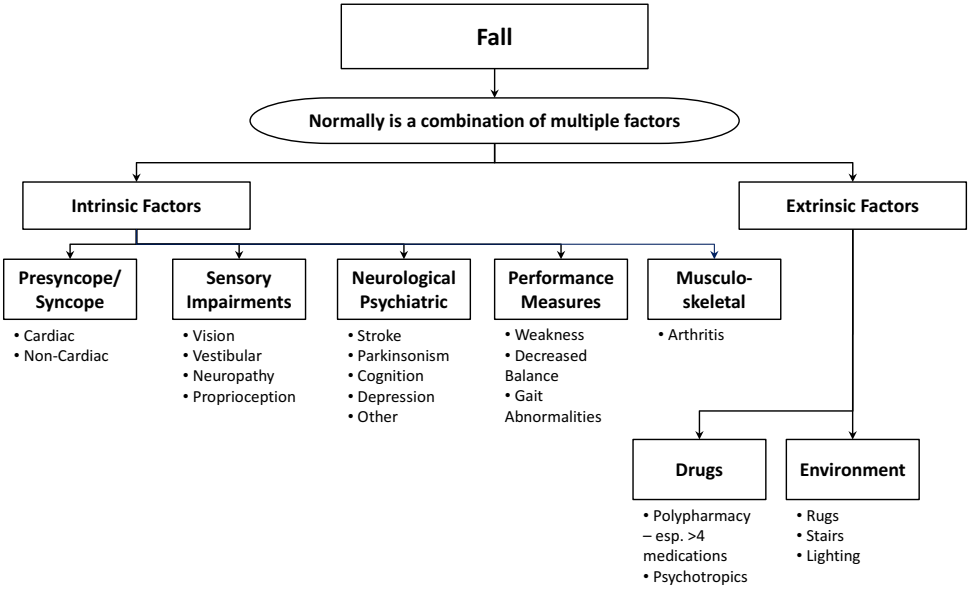
Dizziness



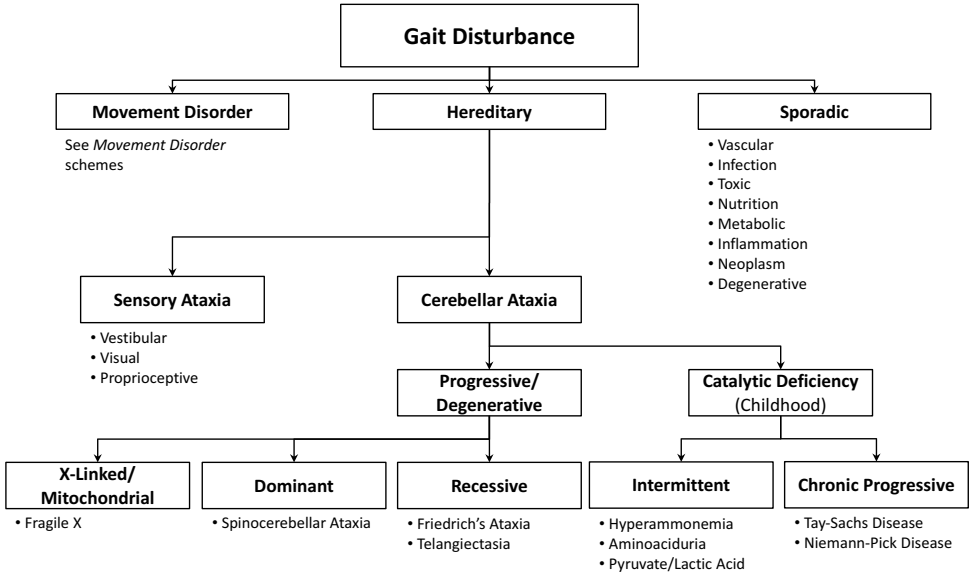
Dysarthria



Falls in the Elderly

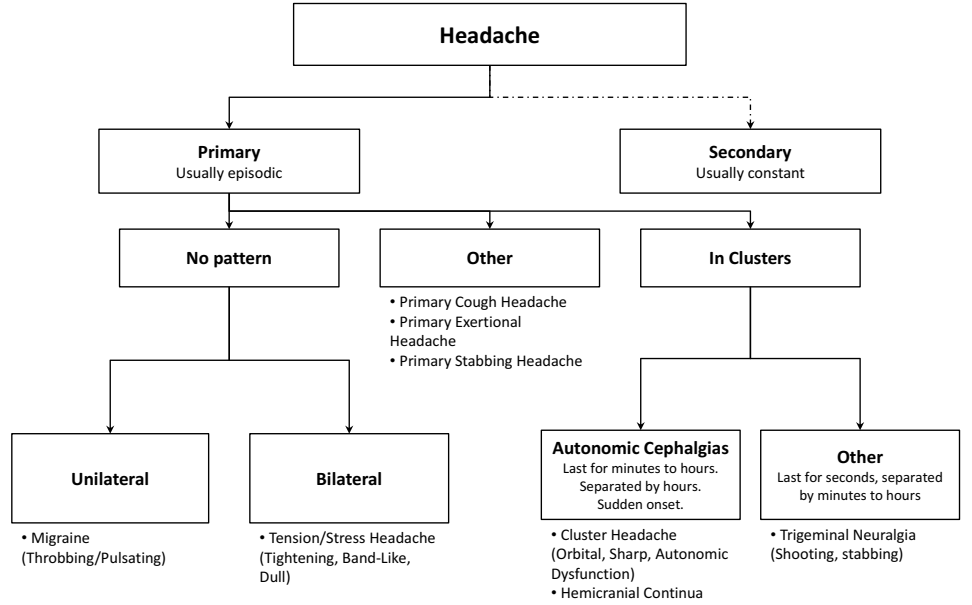


Gait Disturbance



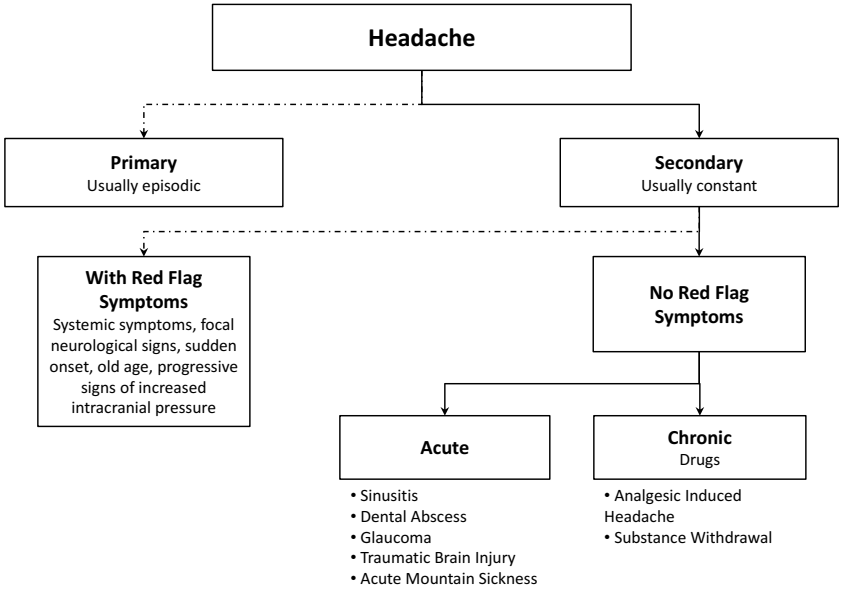
Headache

Primary

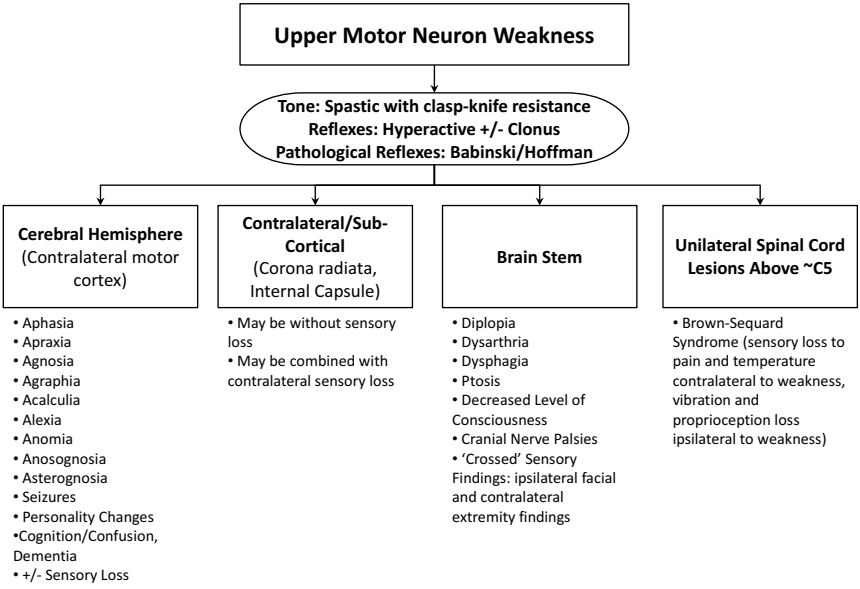


Headache

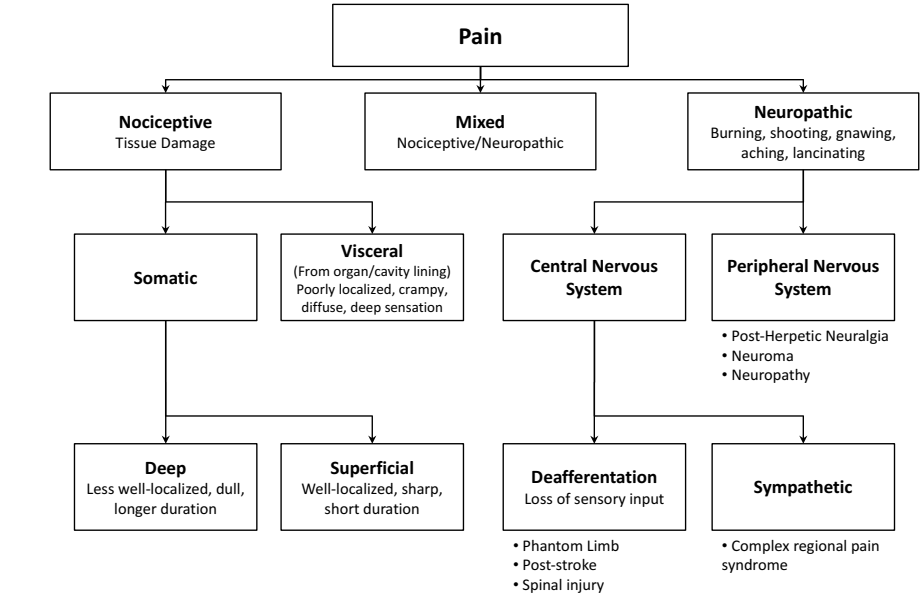
Secondary, without Red Flag Symptoms



Hemiplegia

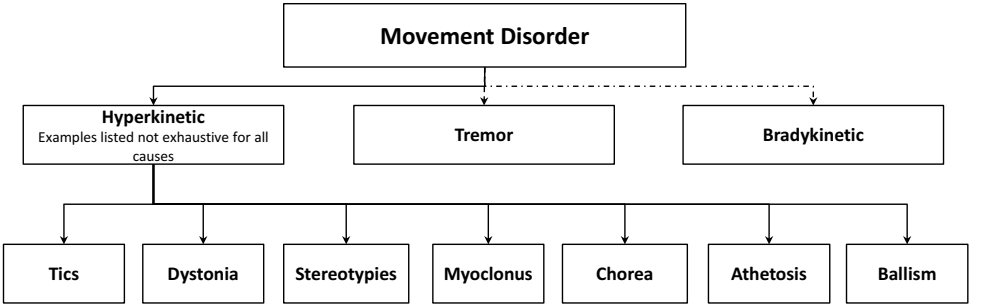


Mechanisms of Pain



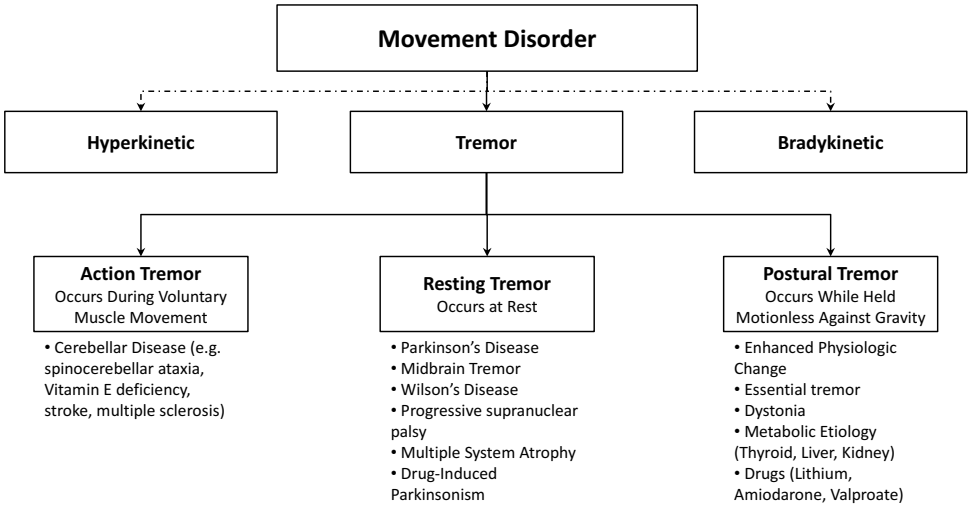
Movement Disorder

Hyperkinetic



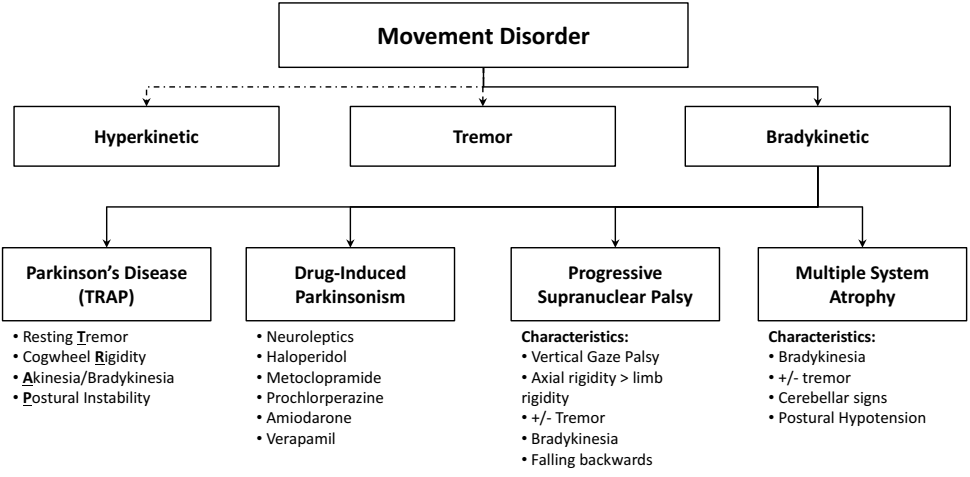
Movement Disorder

Tremor

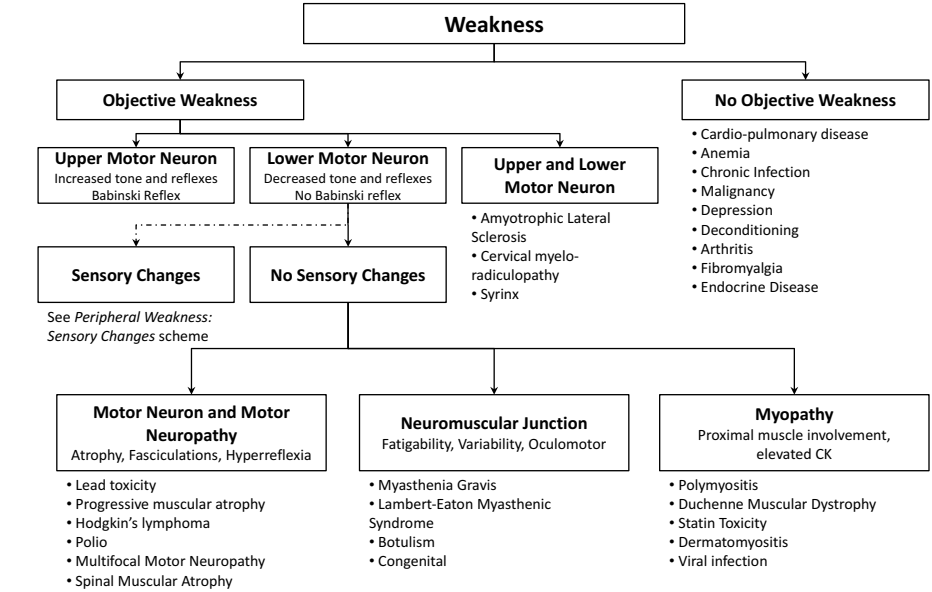


Movement Disorder

Bradykinetic

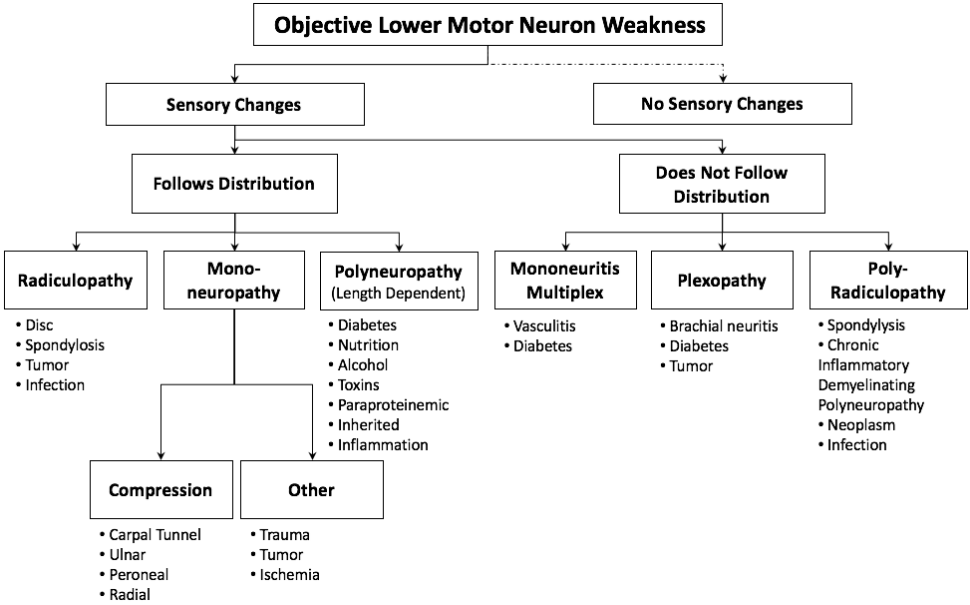


Peripheral Weakness



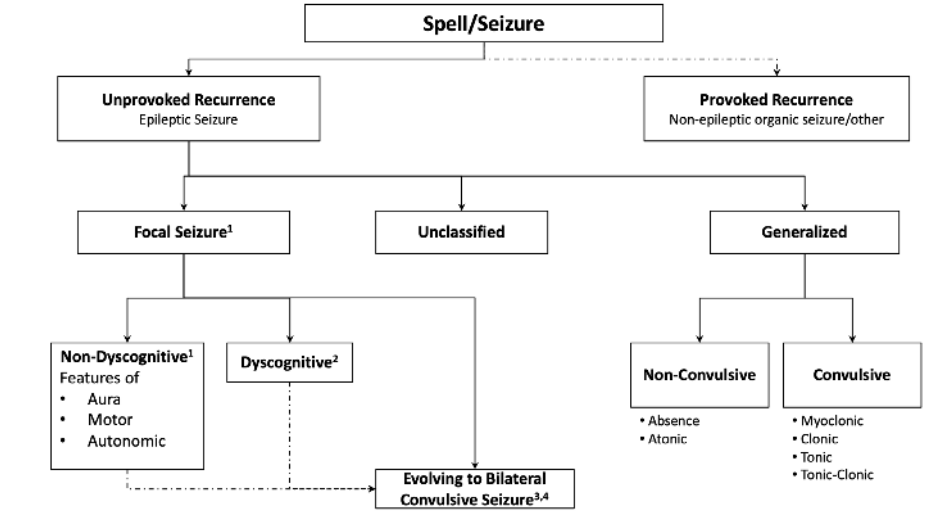
Peripheral Weakness

Sensory Changes



Spell / Seizure

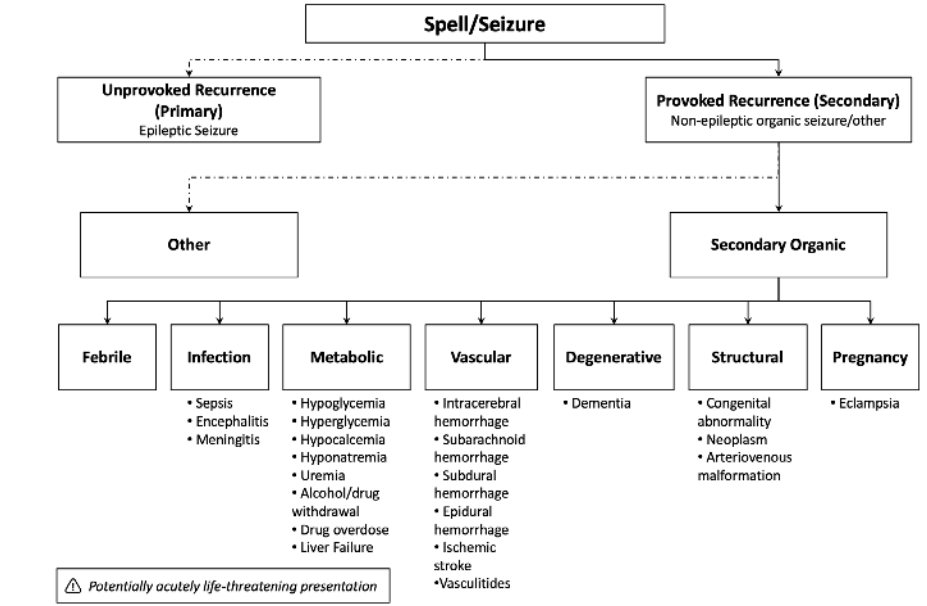
Epileptic Seizure



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.

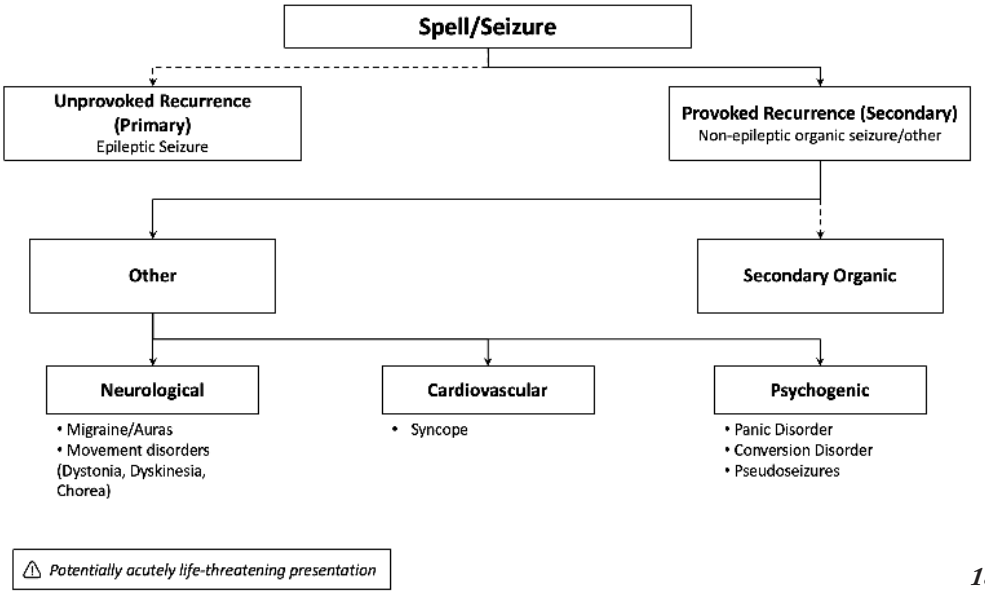
Spell / Seizure

Secondary Organic



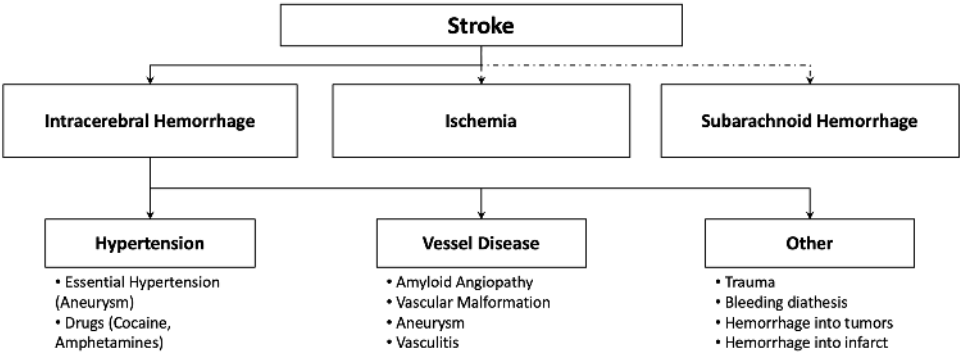
Spell / Seizure

Other



Stroke

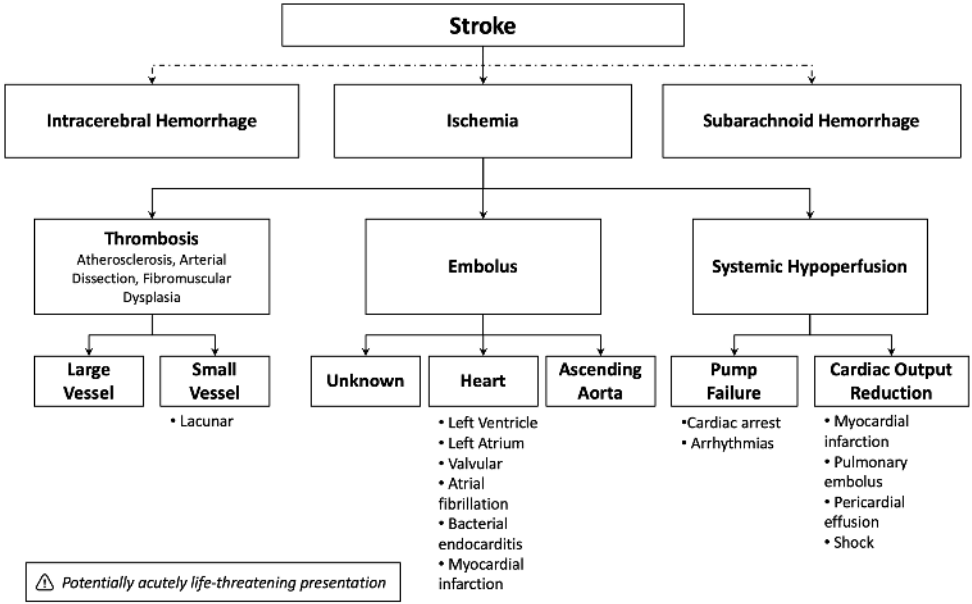
Intracerebral Hemorrhage



⚠ *Potentially acutely life-threatening presentation*

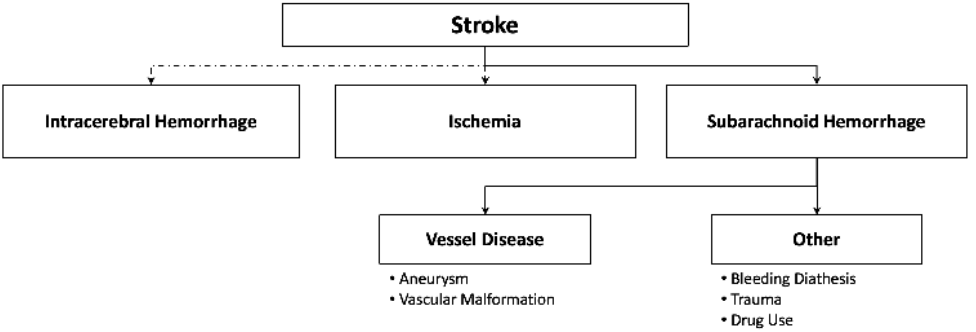
Stroke

Ischemia



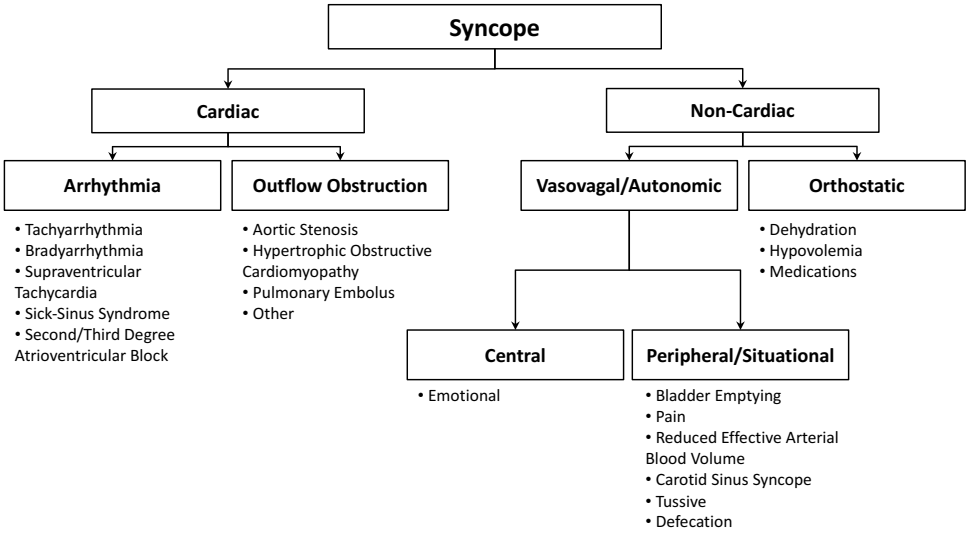
Stroke

Subarachnoid Hemorrhage

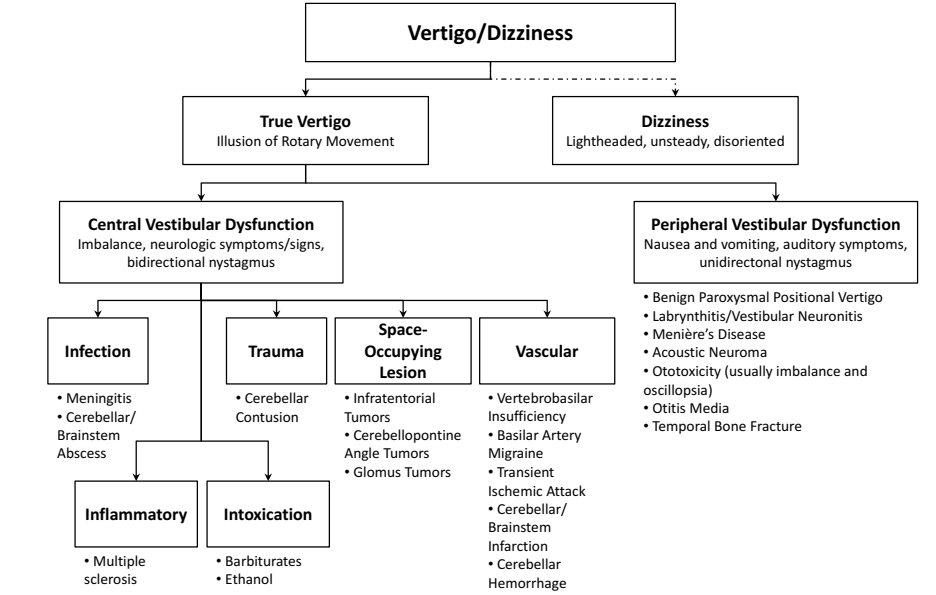


⚠ *Potentially acutely life-threatening presentation*

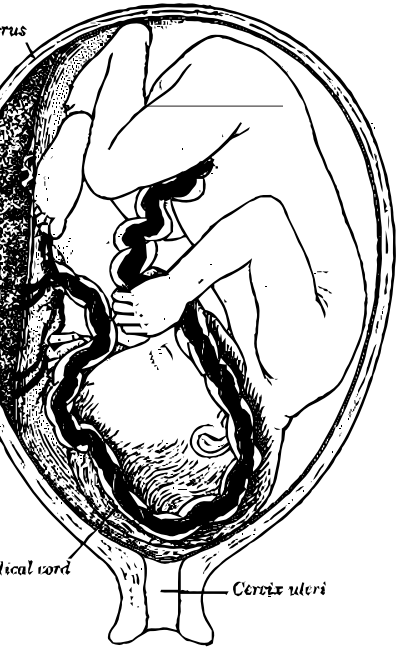
Syncope



Vertigo



Obstetrical & Gynecological



Historical Editors

Dr. Heather Baxter
Dr. Dorothy Igras
Dr. Clinton Chow
Dr. Calvin Greene
Dr. Magali Robert
Dr. Maire Duggan
Dr. Barbara Walley
Vera Krejcik
Shaina Lee
Mia Steiner
Maria Wu
Danny Chao
Neha Sarna

Student Editors

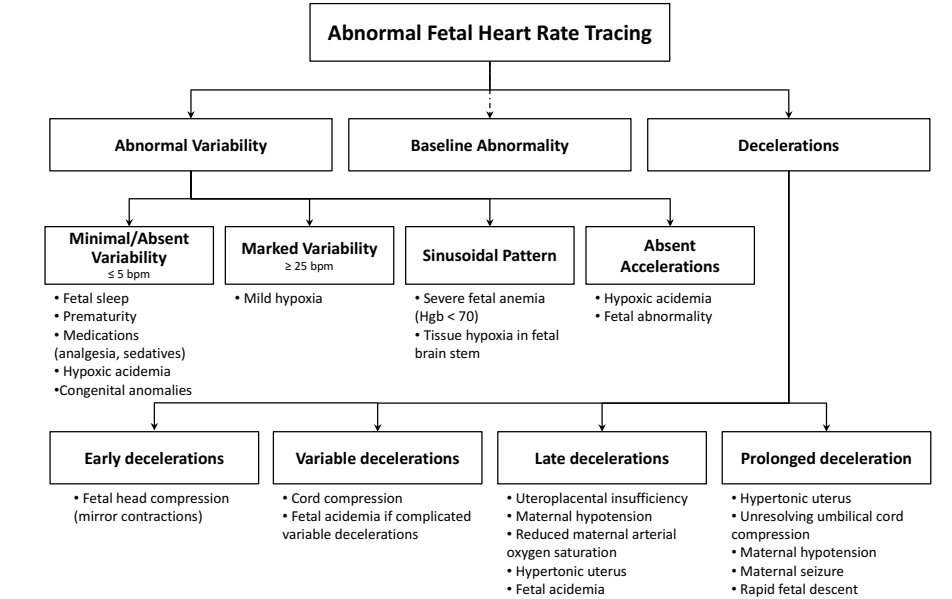
Neha Chadha *(Co-editor)*
Angela Deane *(Co-editor)*

Faculty Editor

Dr. Ronald Cusano

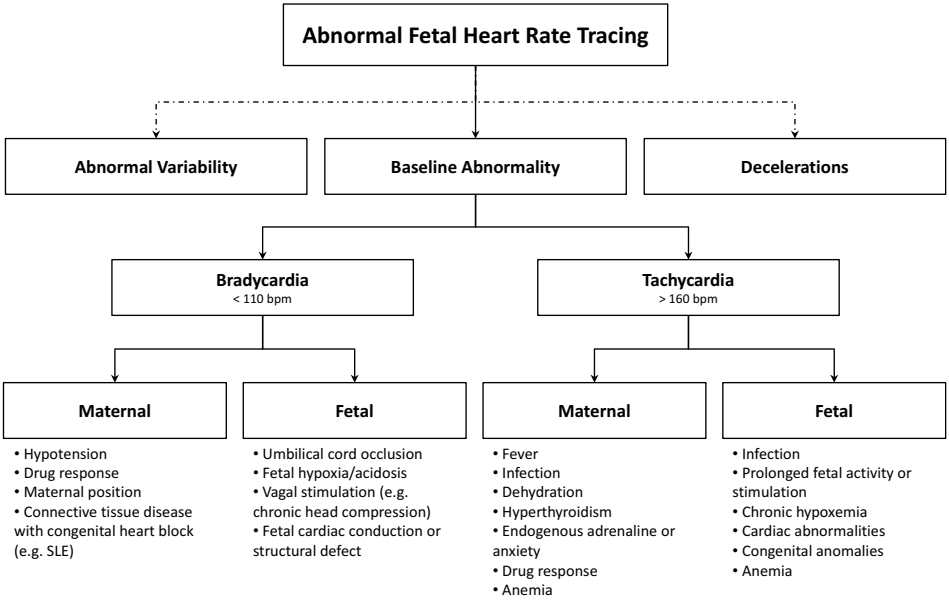
Intrapartum Abnormal Fetal HR Tracing

Variability & Decelerations

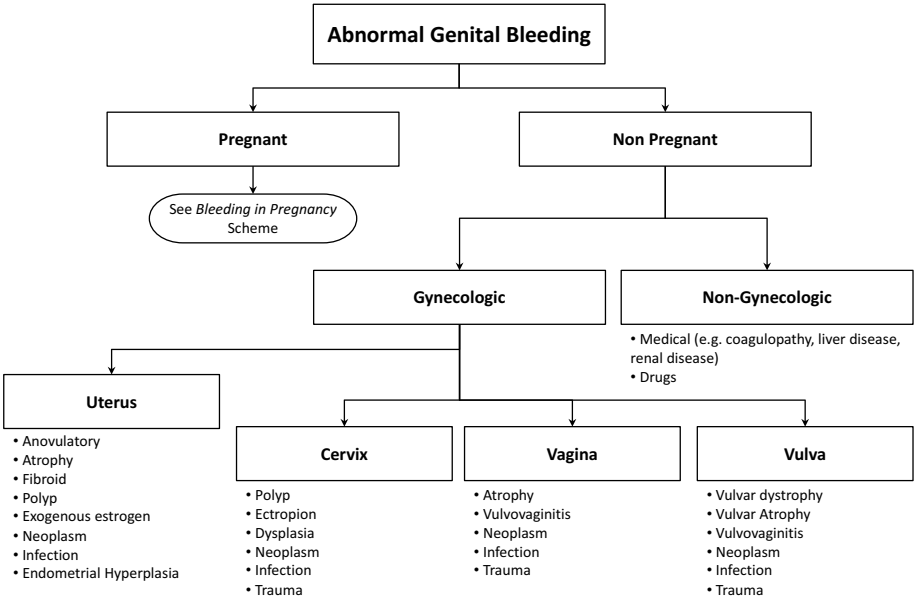


Intrapartum Abnormal Fetal HR Tracing

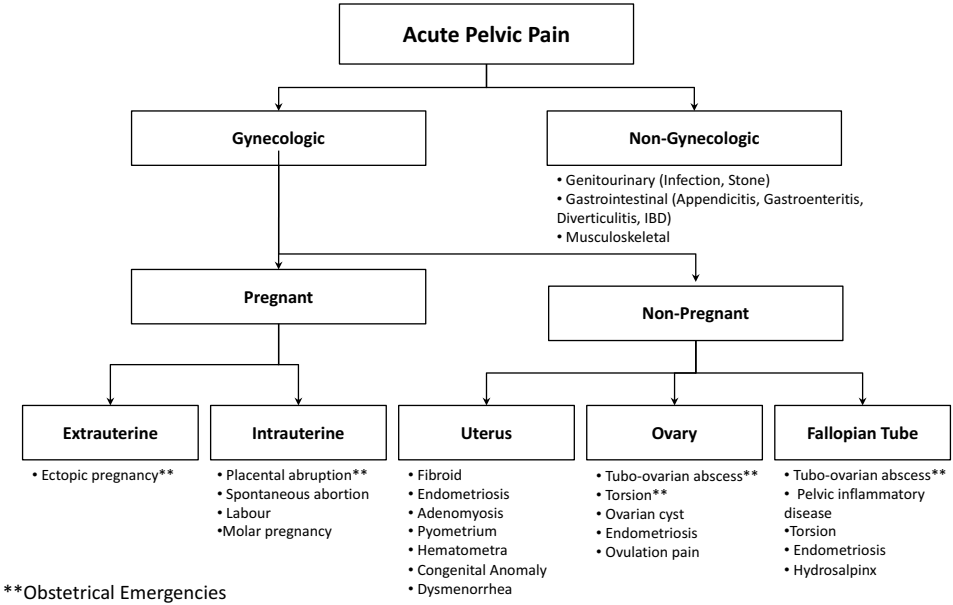
Baseline



Abnormal Genital Bleeding

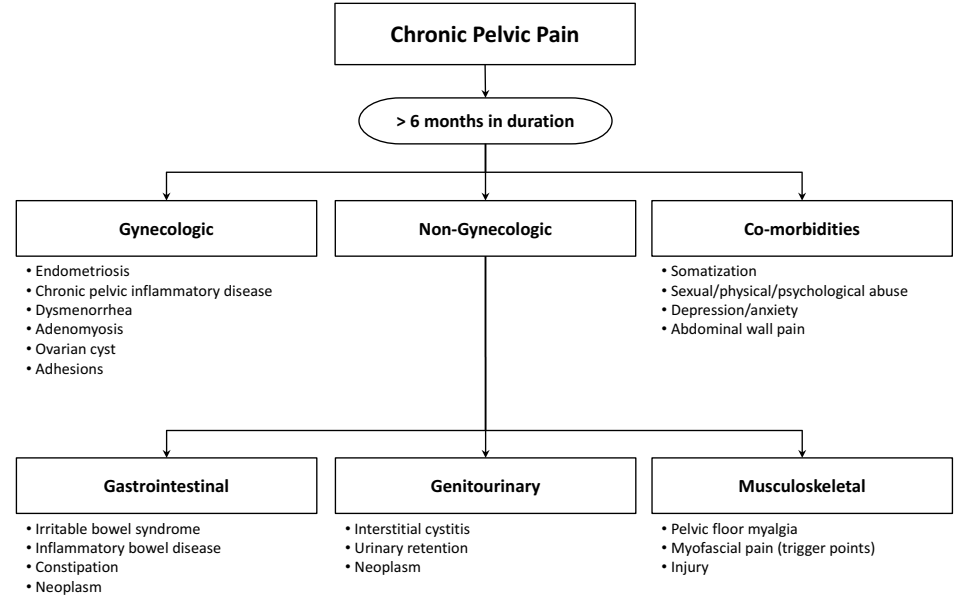


Acute Pelvic Pain



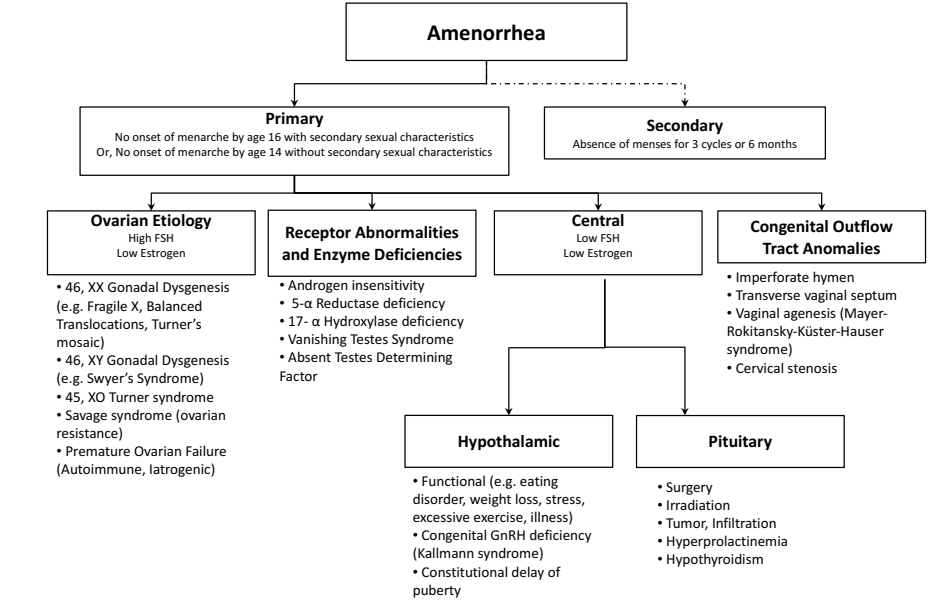
**Obstetrical Emergencies

Chronic Pelvic Pain



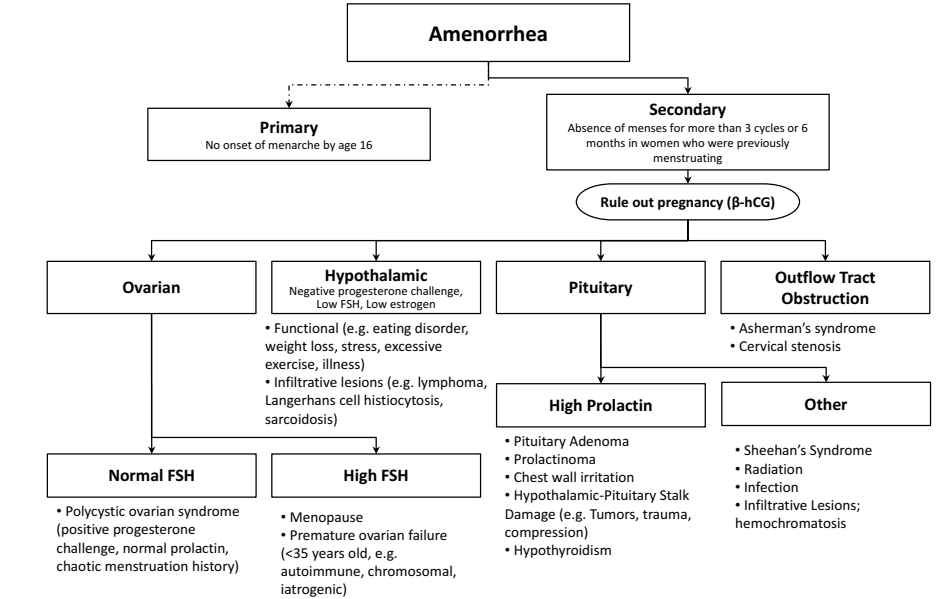
Amenorrhea

Primary

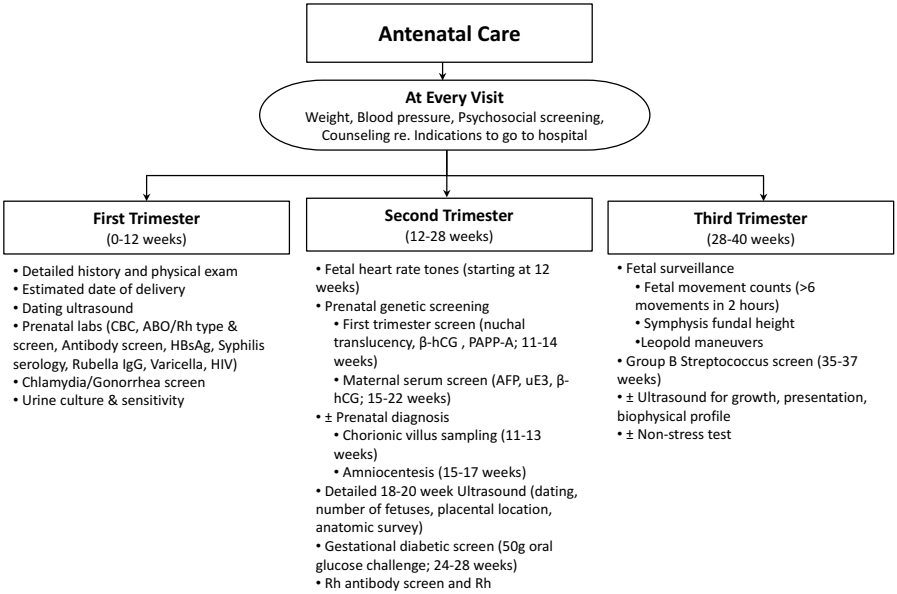


Amenorrhea

Secondary

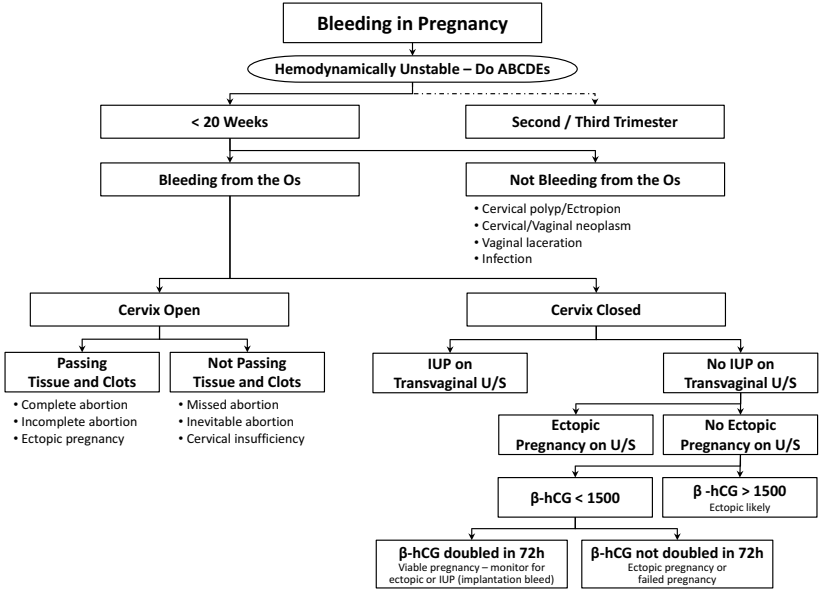


Antenatal Care



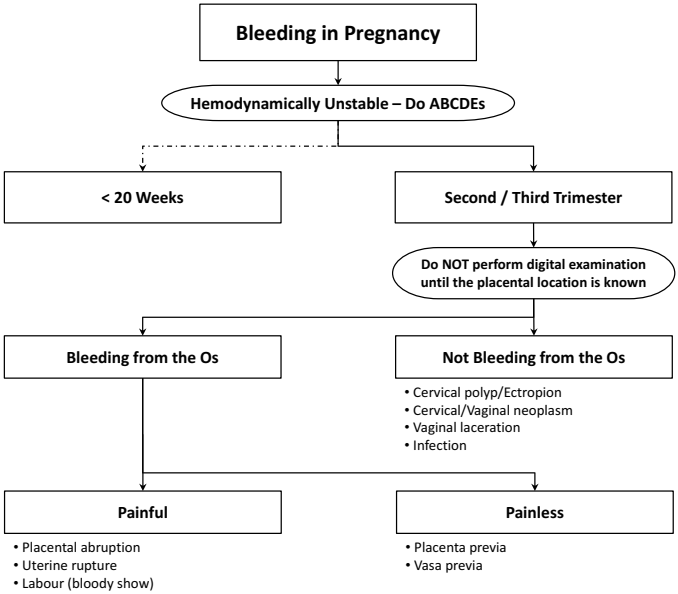
Bleeding in Pregnancy

< 20 Weeks

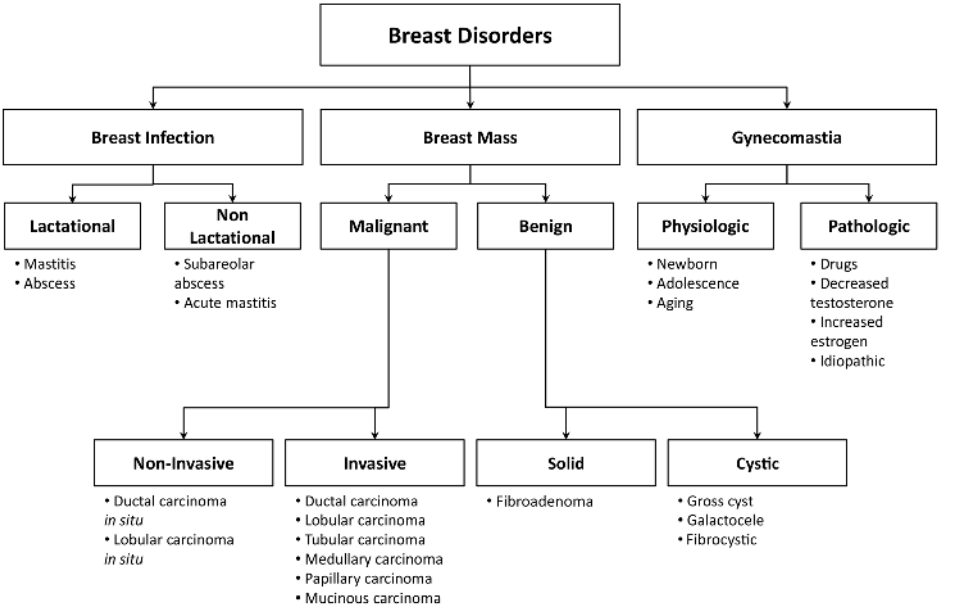


Bleeding in Pregnancy

2nd & 3rd Trimester

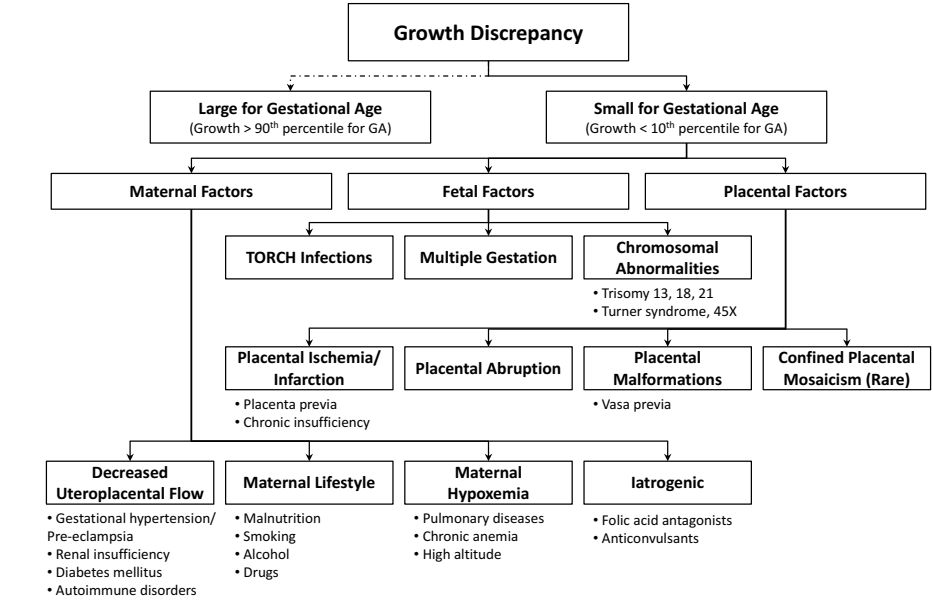


Breast Disorder



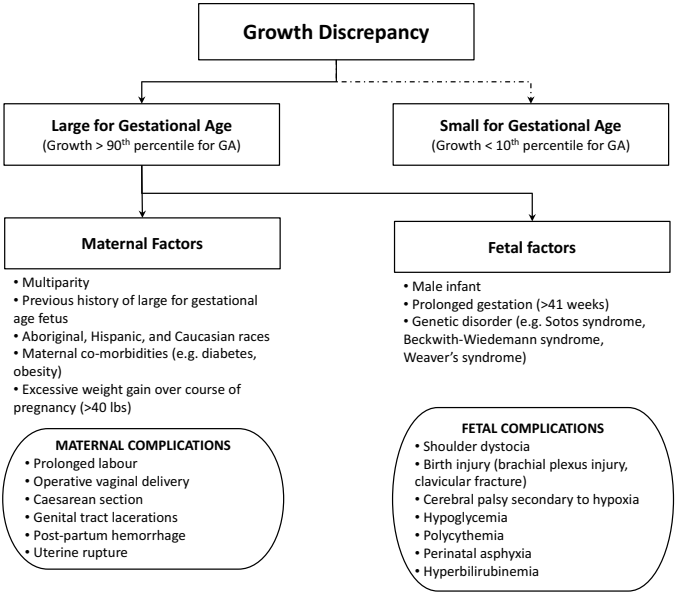
Growth Discrepancy

Small for Gestational Age / Intrauterine Growth Restriction

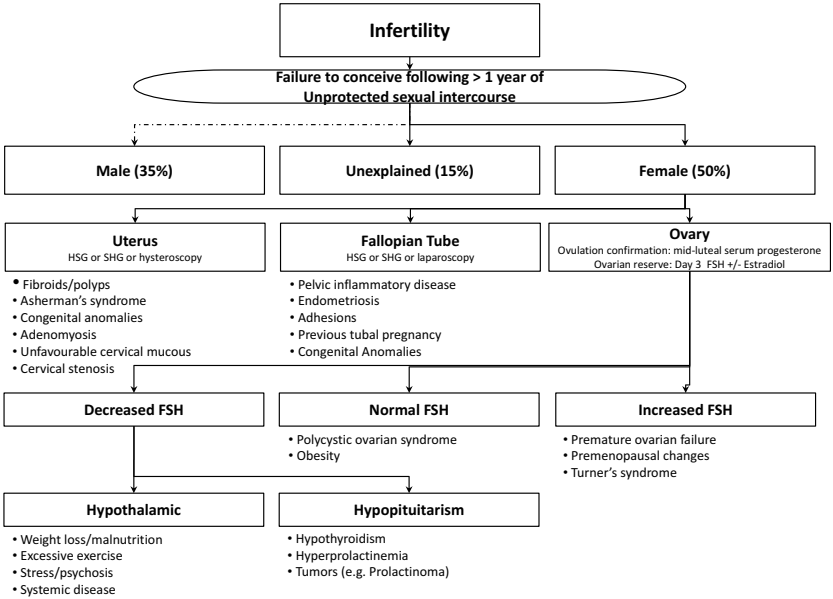


Growth Discrepancy

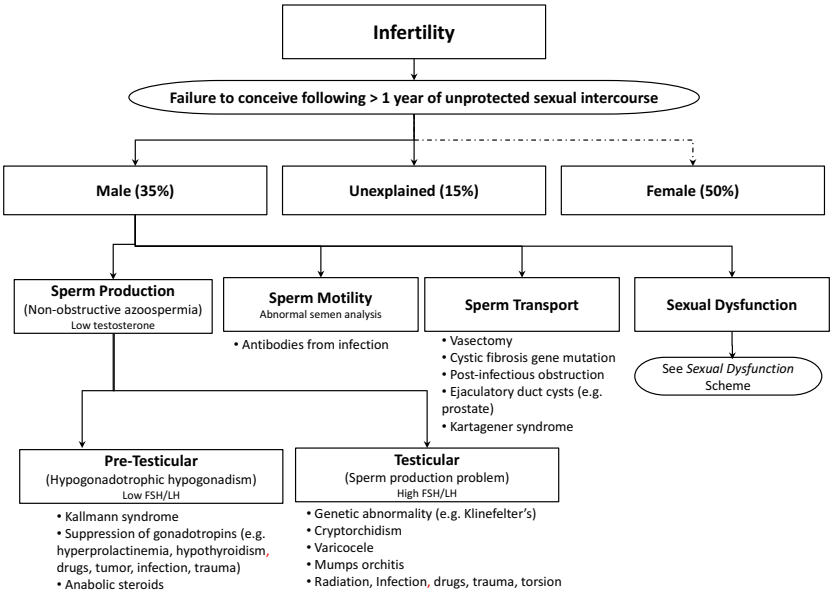
Large for Gestational Age



Infertility (Female)

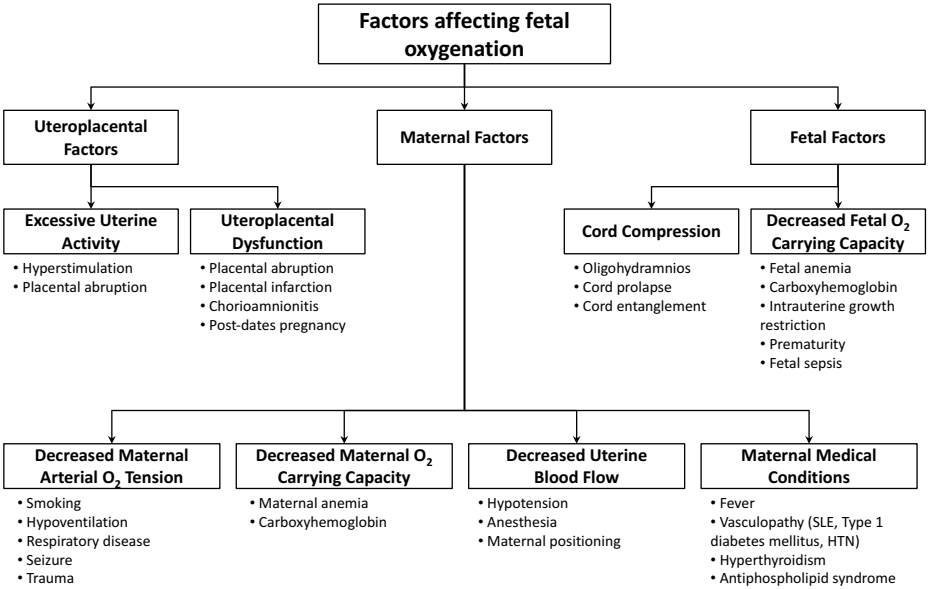


Infertility (Male)

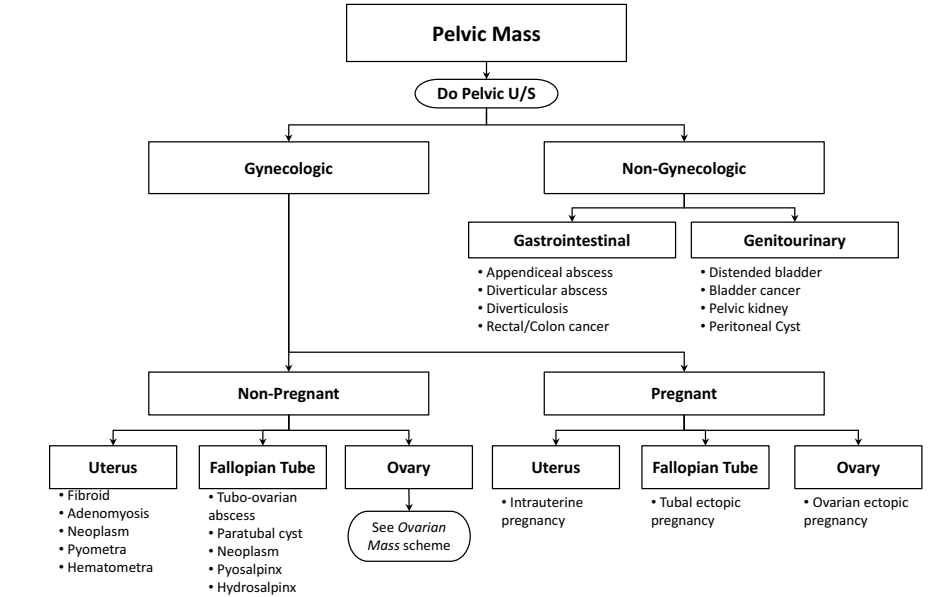


Intrapartum

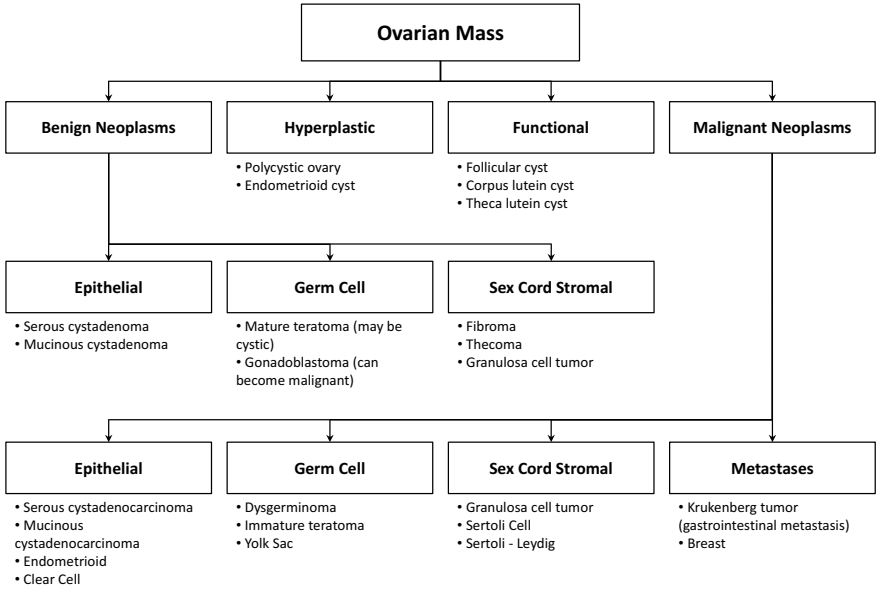
Factors that May Affect Fetal Oxygenation



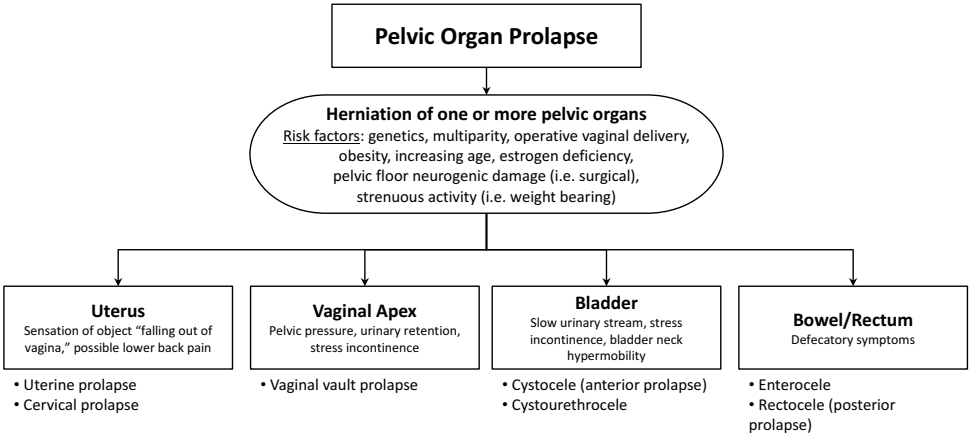
Pelvic Mass



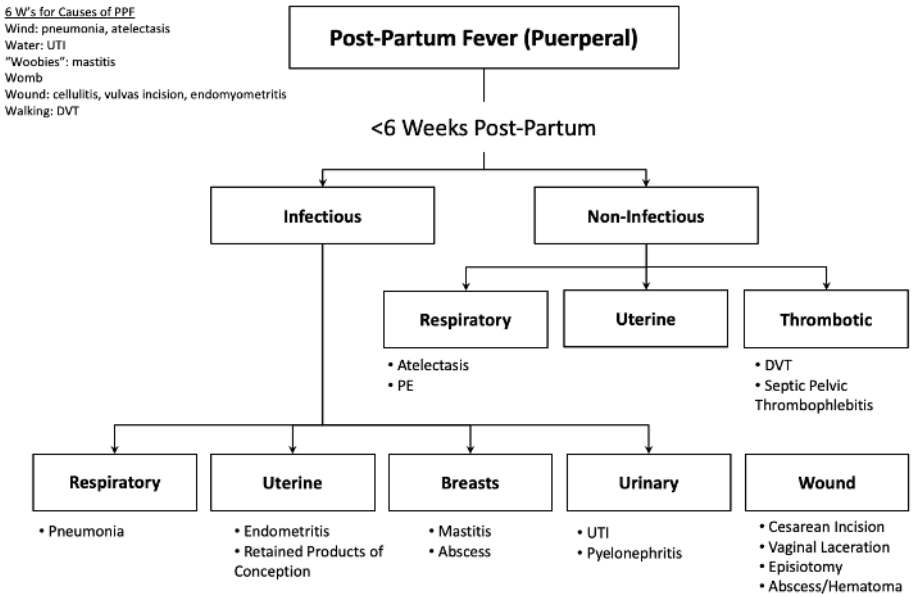
Ovarian Mass



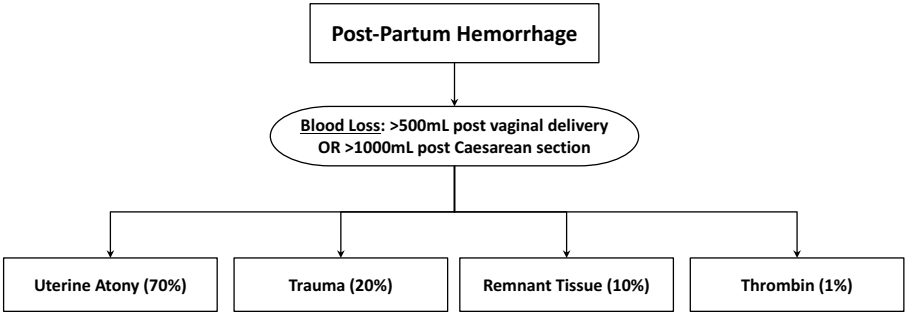
Pelvic Organ Prolapse



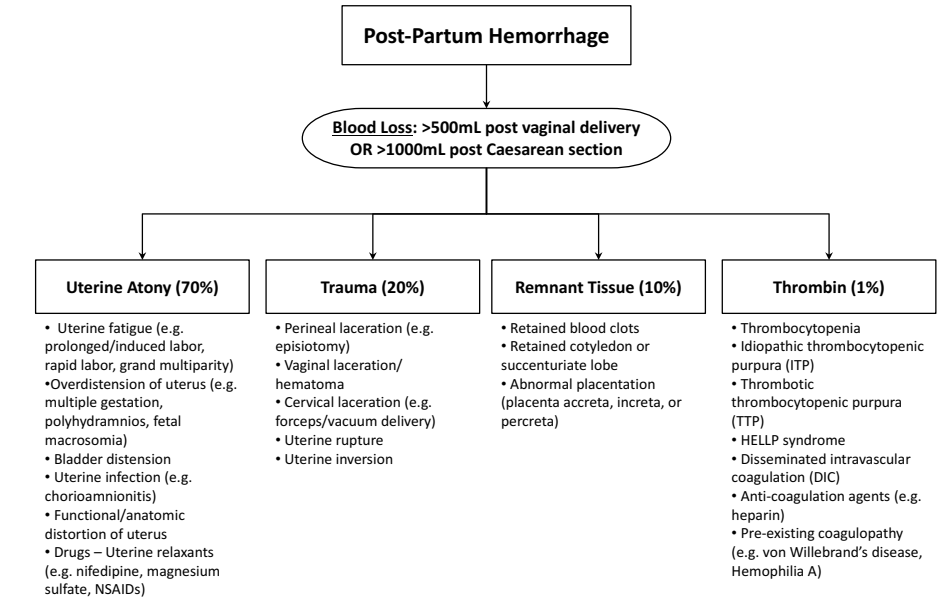
Post-Partum Fever



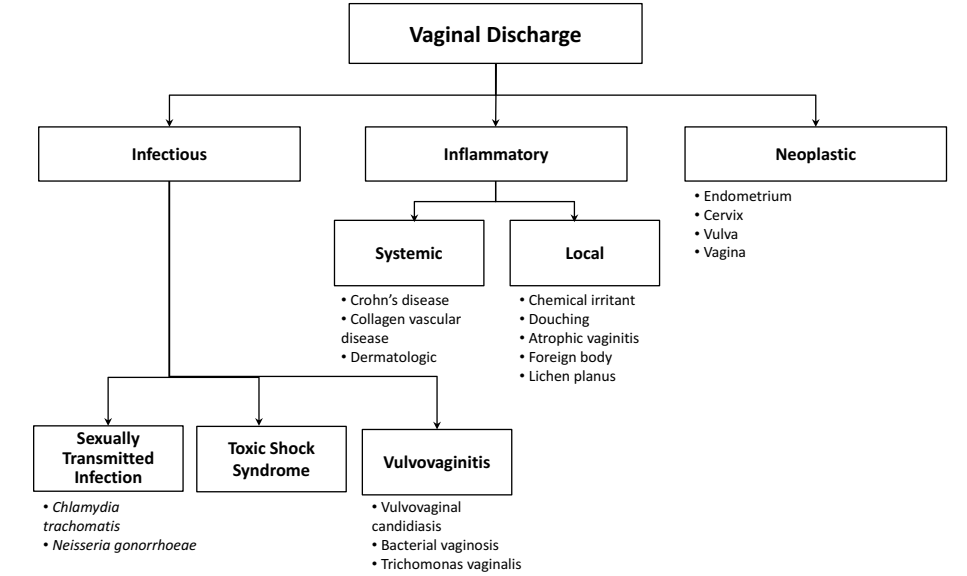
Post-Partum Hemorrhage



Recurrent Pregnancy Loss



Vaginal Discharge



Dermatologic

Historical Editors

Danny Guo

Rachel Lim

Dave Campbell

Joanna Debosz

Safiya Karim

Beata Komierowski

Natalia Liston

Arjun Rash

Jennifer Rodrigues

Sarah Surette

Yang Zhan

Student Editors

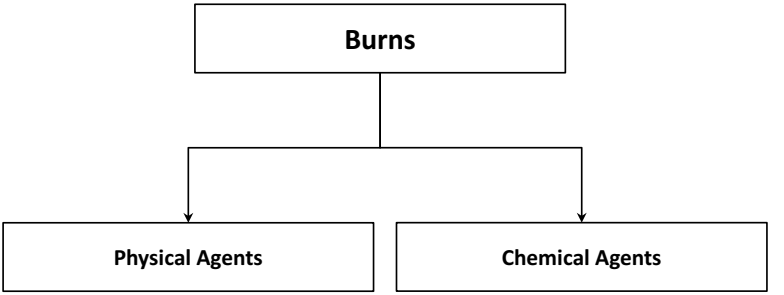
Noelle Wong *(Co-editor)*

Heena Singh *(Co-editor)*

Faculty Editor

Dr. Laurie Parsons

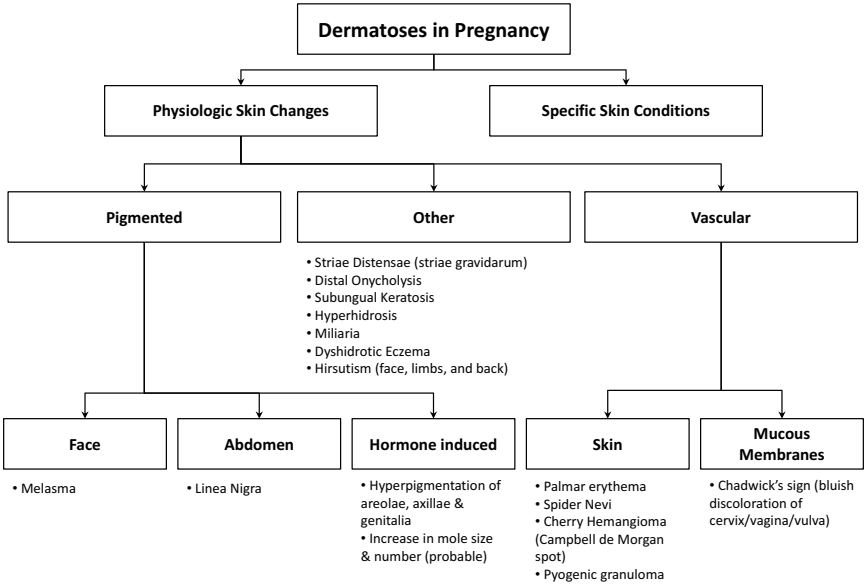
Burns



Parkland formula for fluid resuscitation:
4cc x Weight (kg) x %TBSA burn

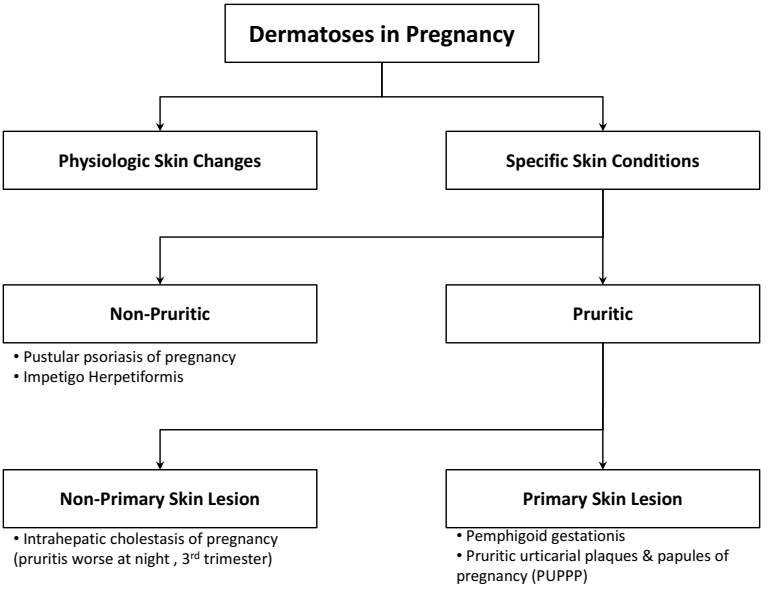
Dermatoses in Pregnancy

Physiologic Changes



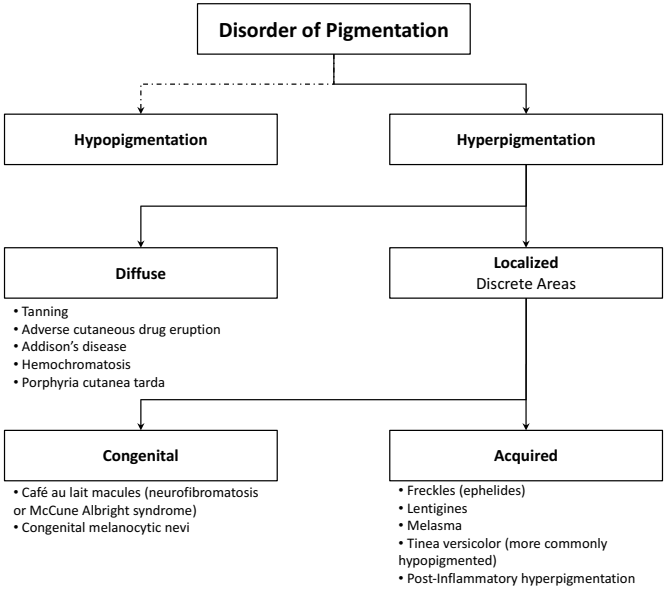
Dematoses in Pregnancy

Specific Skin Conditions



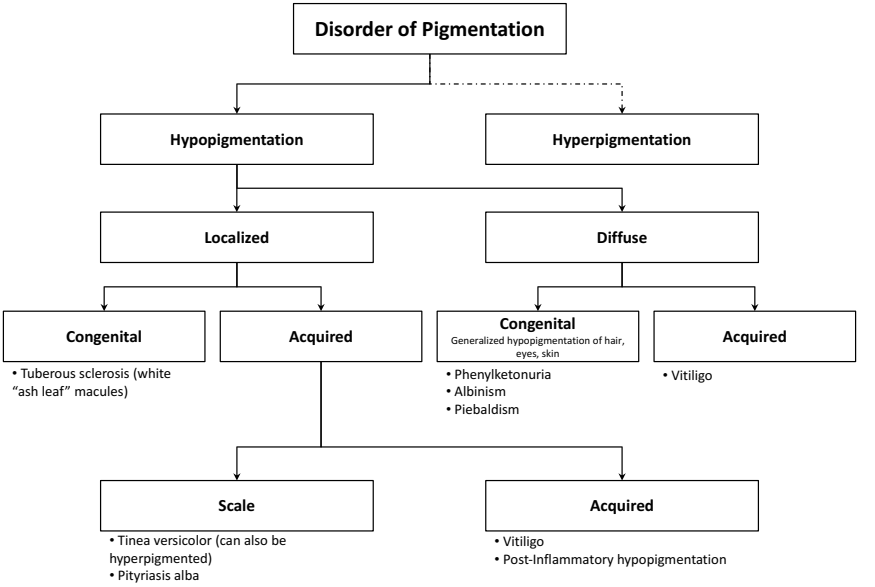
Disorders of Pigmentations

Hyperpigmentation

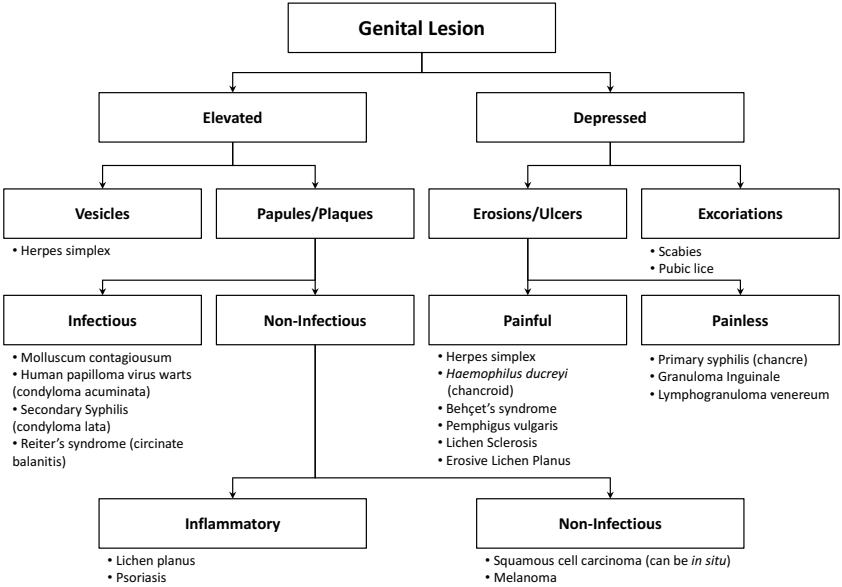


Disorders of Pigmentations

Hypopigmentation

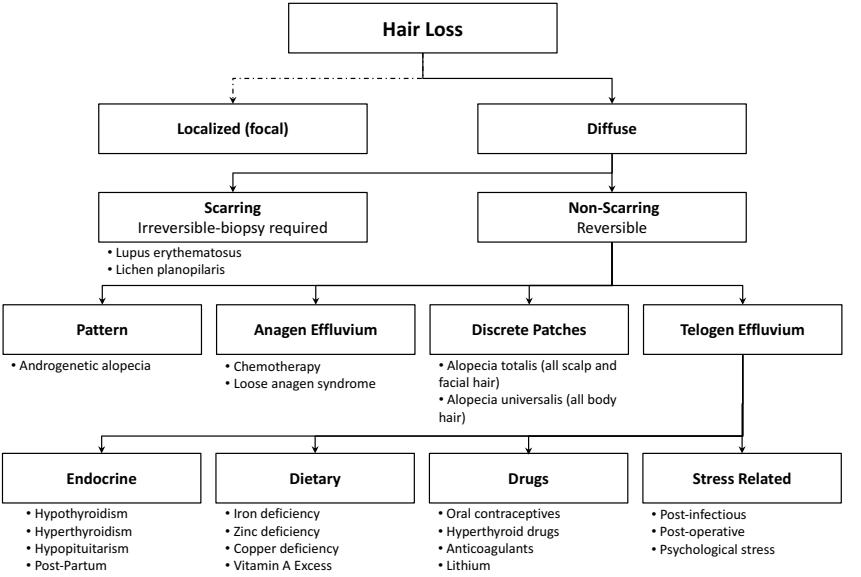


Genital Lesion



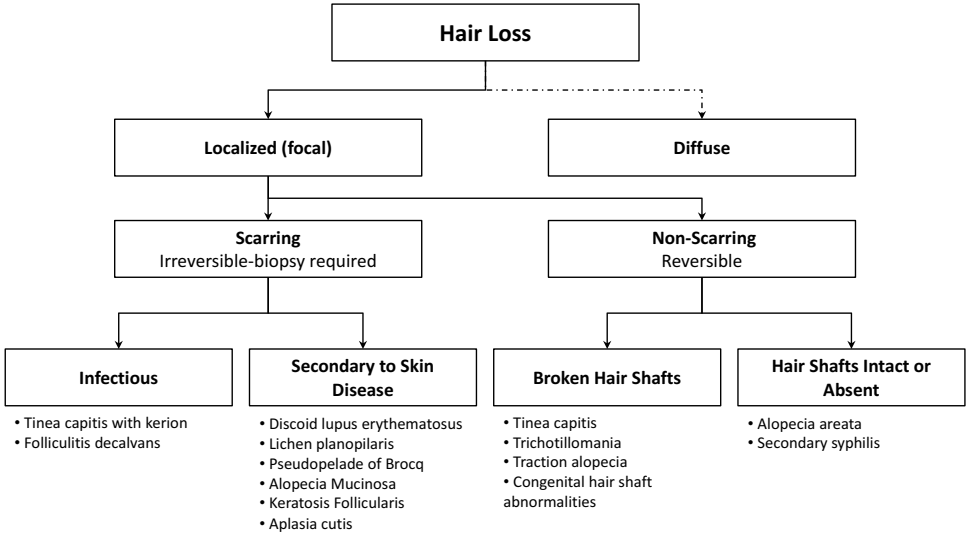
Hair Loss (Alopecia)

Diffuse



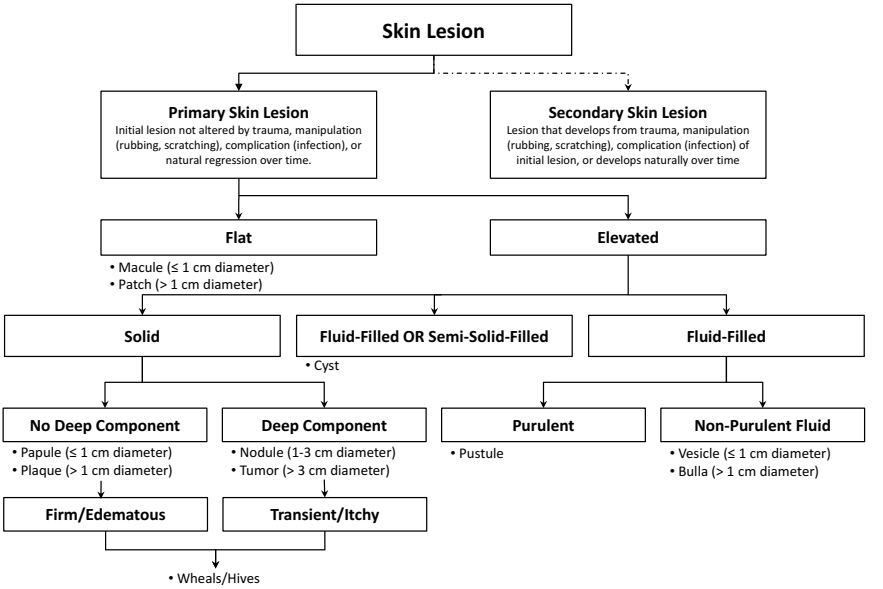
Hair Loss (Alopecia)

Localized



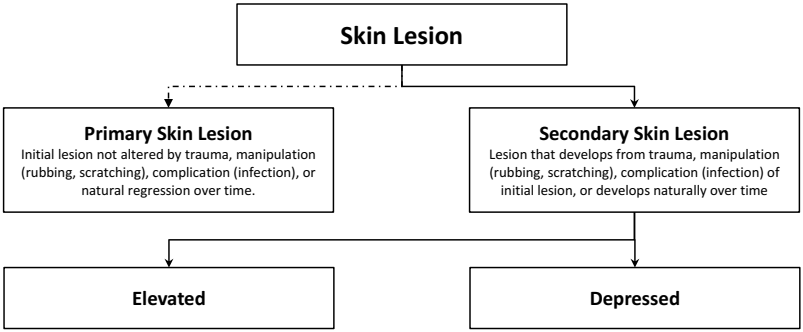
Morphology of Skin Lesions

Primary Skin Lesions



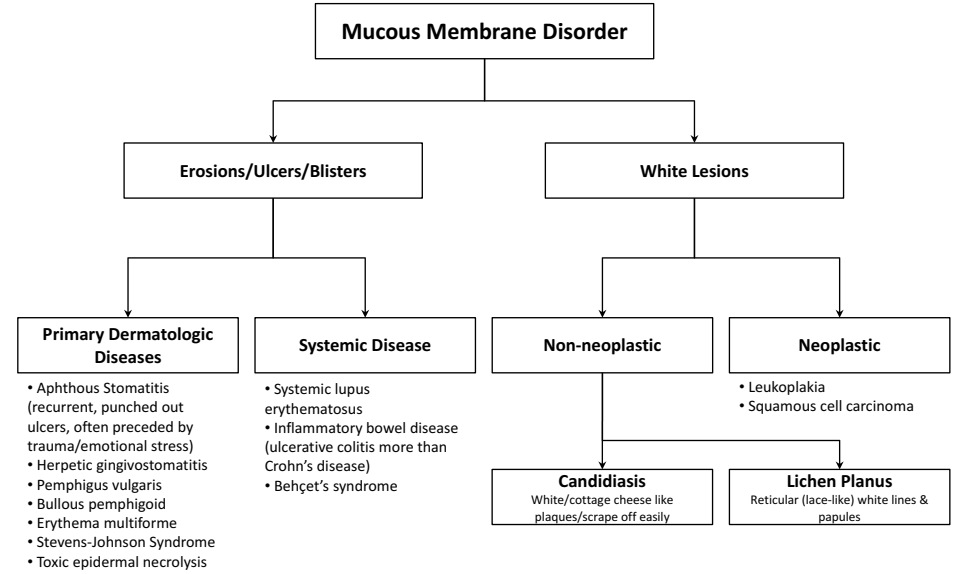
Morphology of Skin Lesions

Secondary Skin Lesions



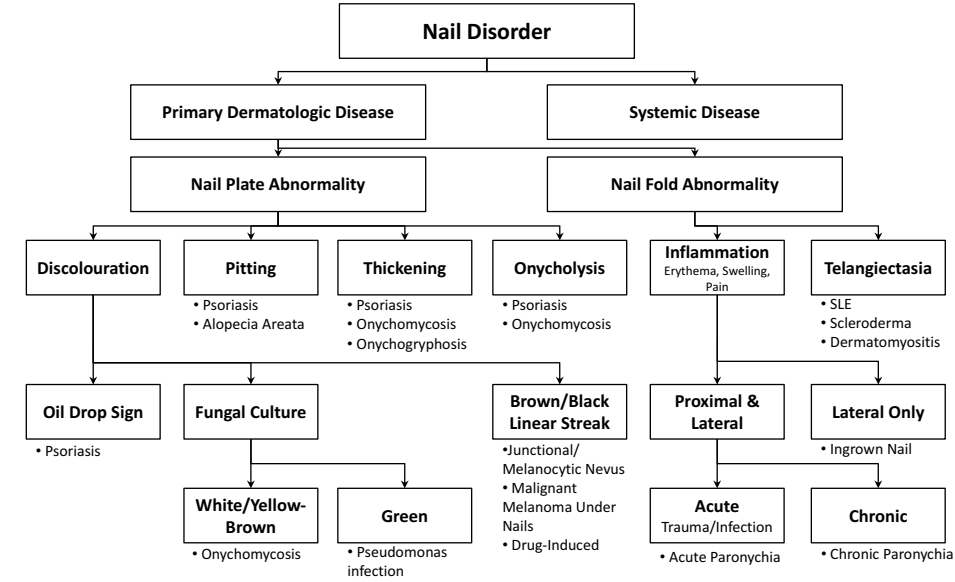
Mucous Membrane Disorder

Oral Cavity



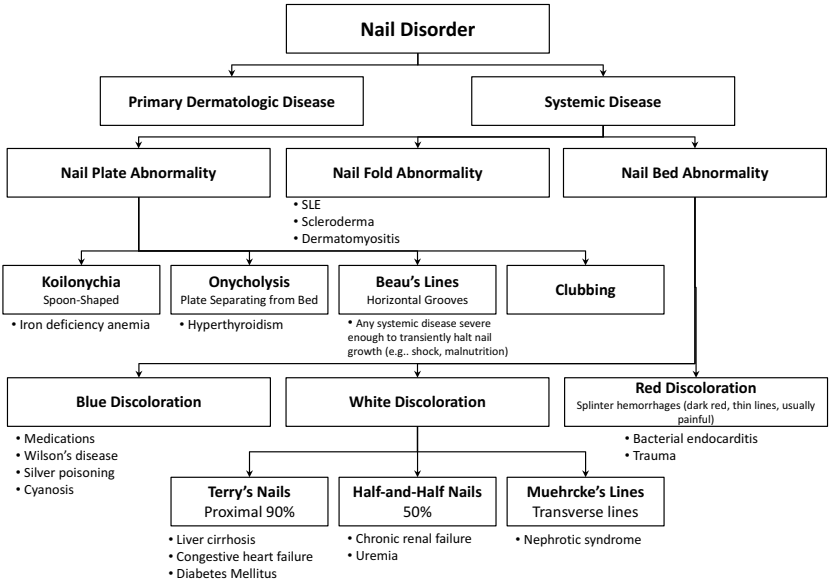
Nail Disorders

Primary Dermatologic Disease



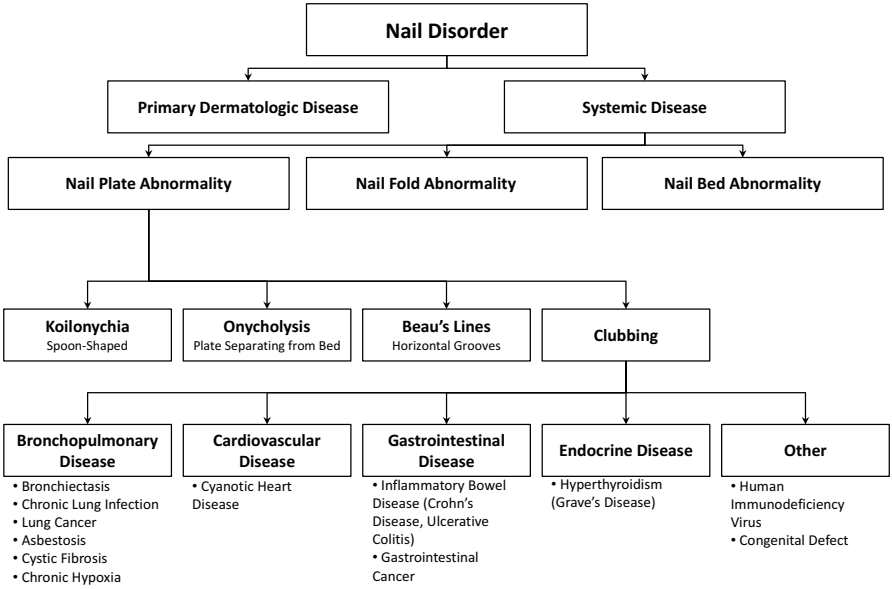
Nail Disorders

Systemic Disease



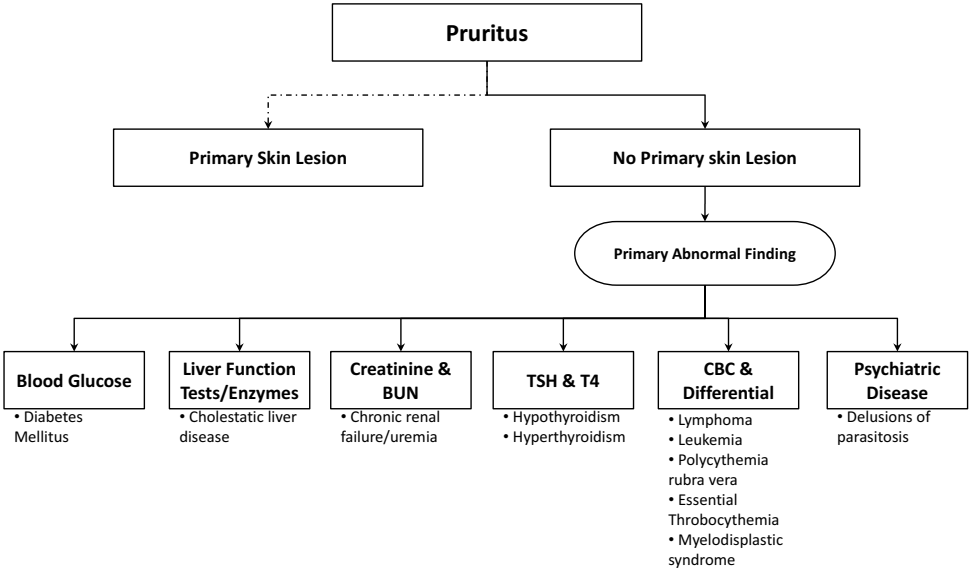
Nail Disorders

Systemic Disease - Clubbing



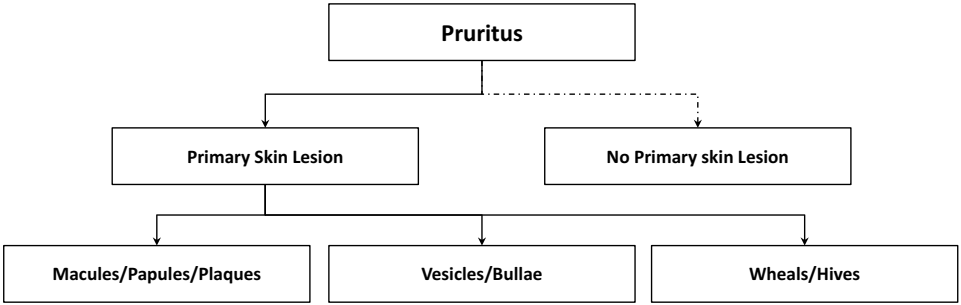
Pruritus

No Primary Skin Lesion



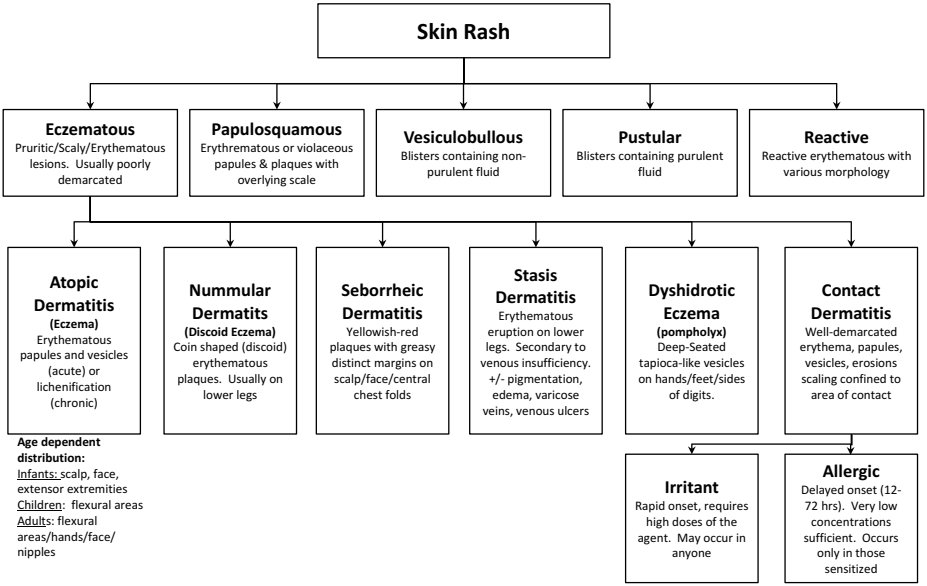
Pruritus

Primary Skin Lesion



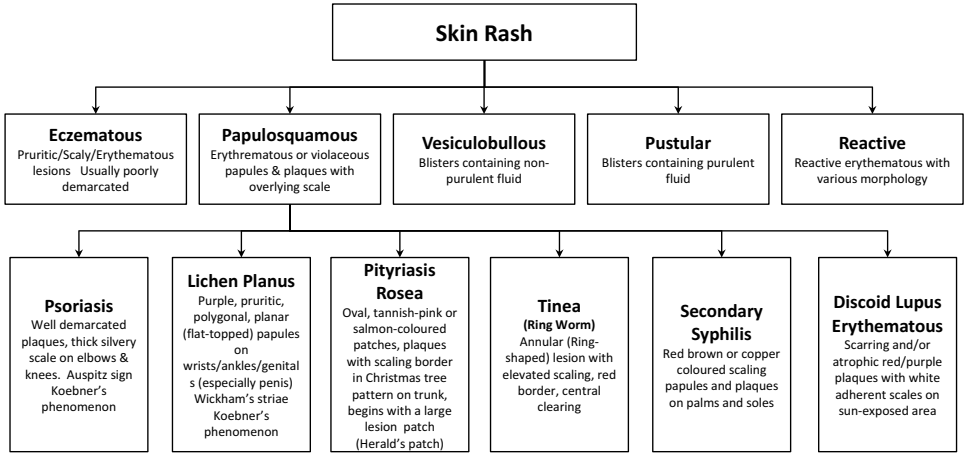
Skin Rash

Eczematous



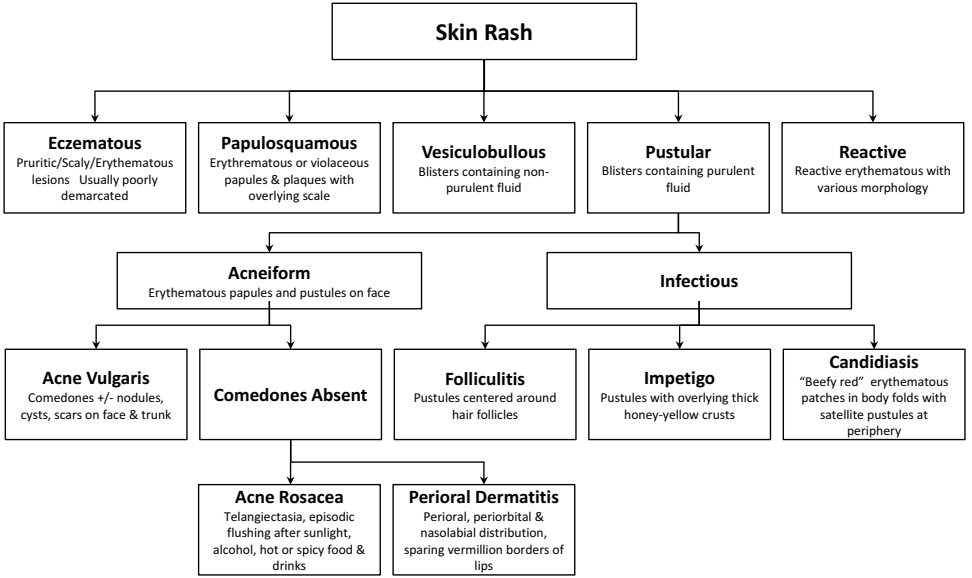
Skin Rash

Papulosquamous



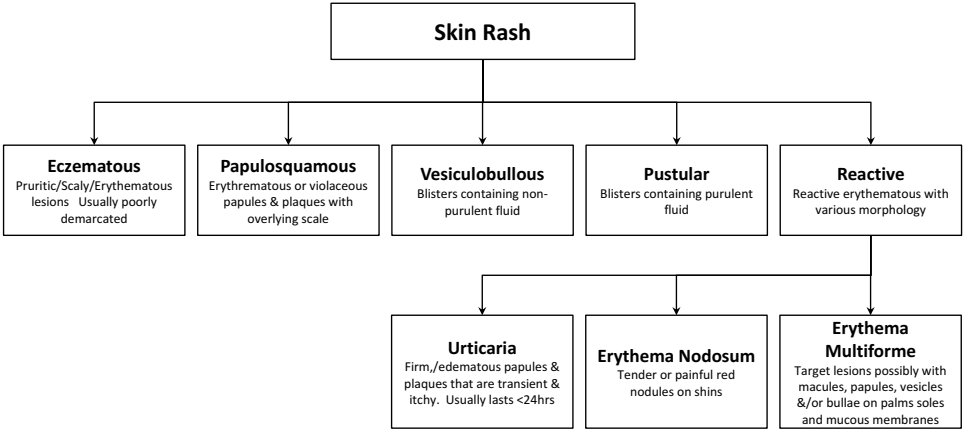
Skin Rash

Pustular



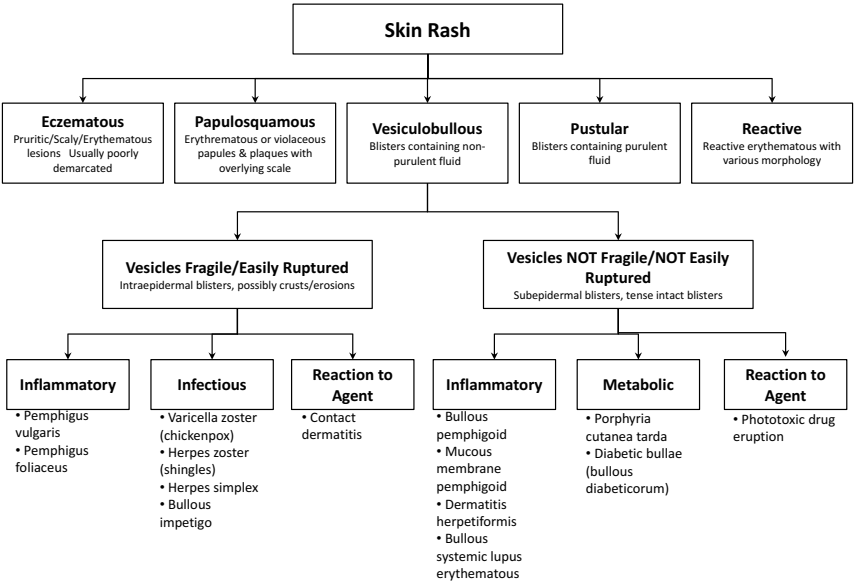
Skin Rash

Reactive

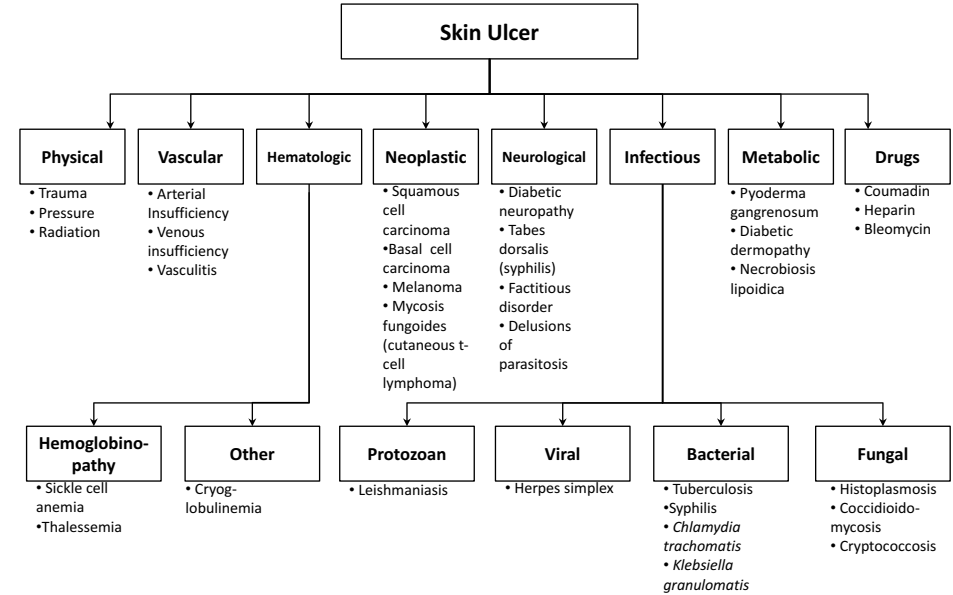


Skin Rash

Vesiculobullous

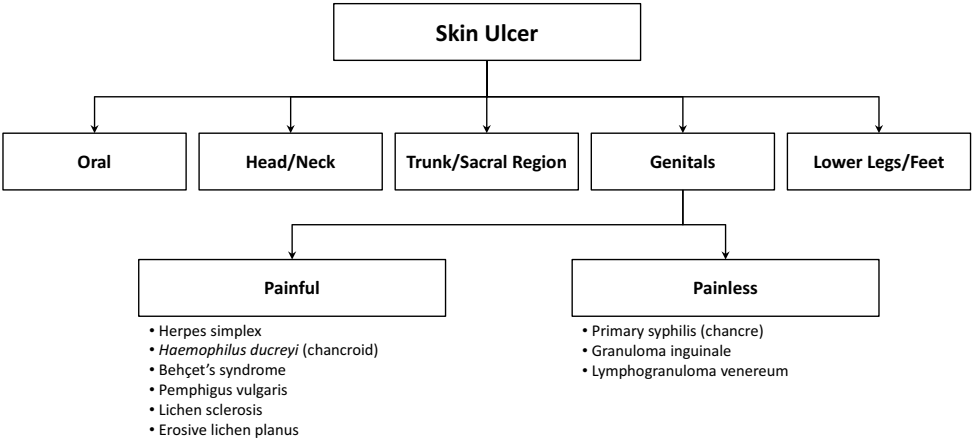


Skin Ulcer by Etiology



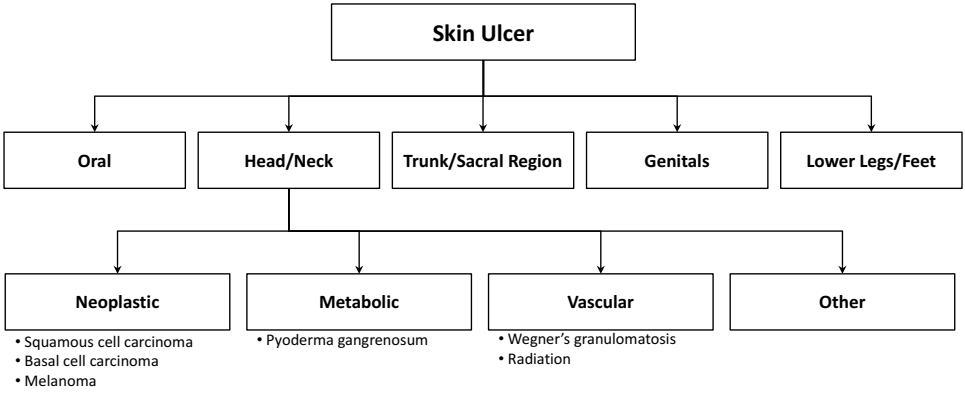
Skin Ulcer by Location

Genitals



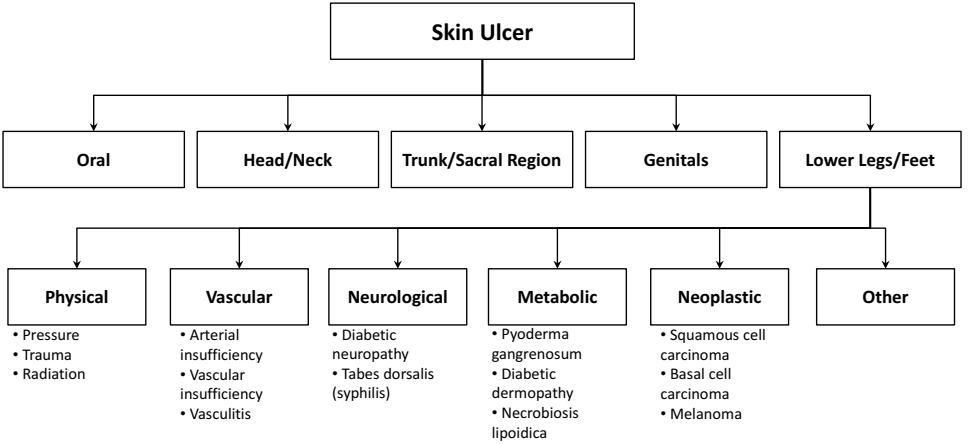
Skin Ulcer by Location

Head & Neck



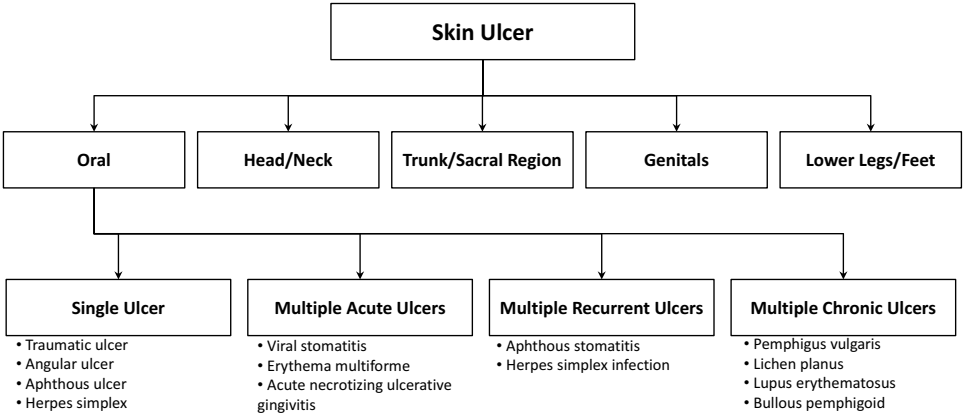
Skin Ulcer by Location

Lower Legs / Feet



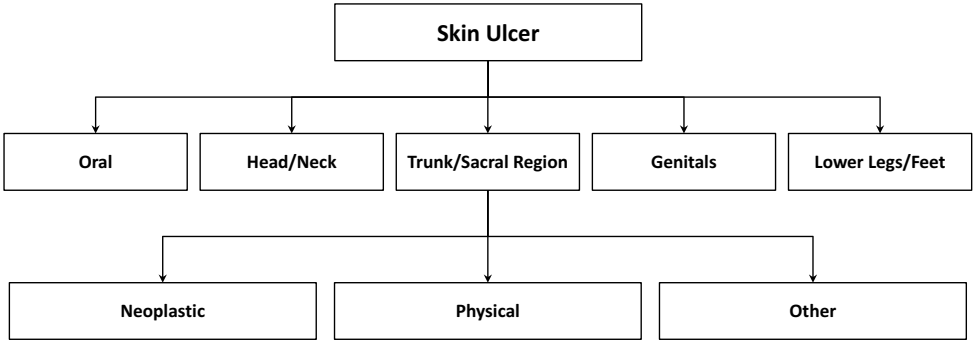
Skin Ulcer by Location

Oral Ulcers

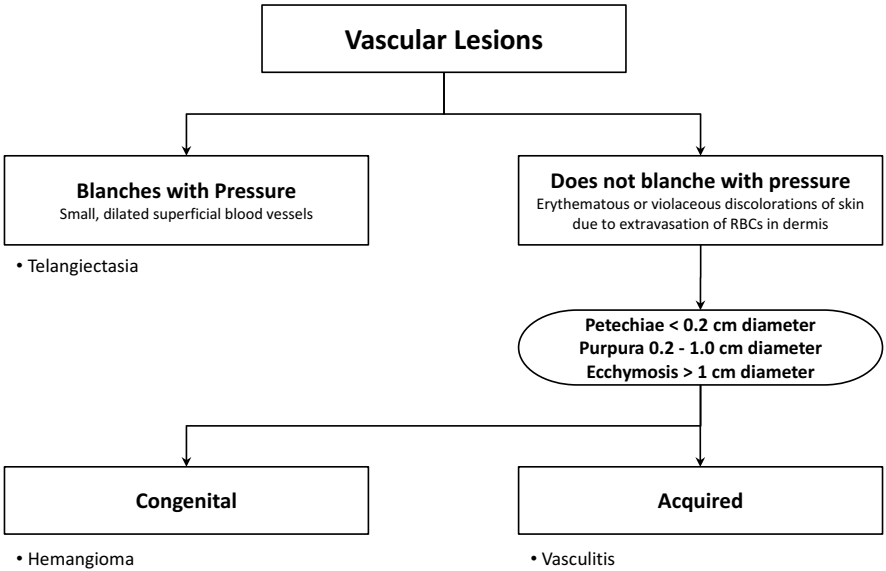


Skin Ulcer by Location

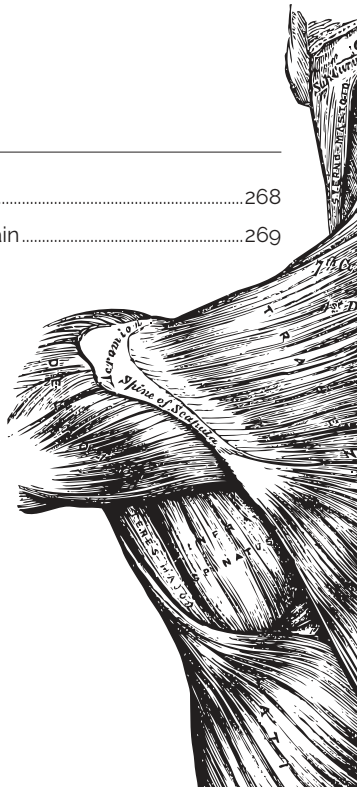
Trunk / Sacral Region

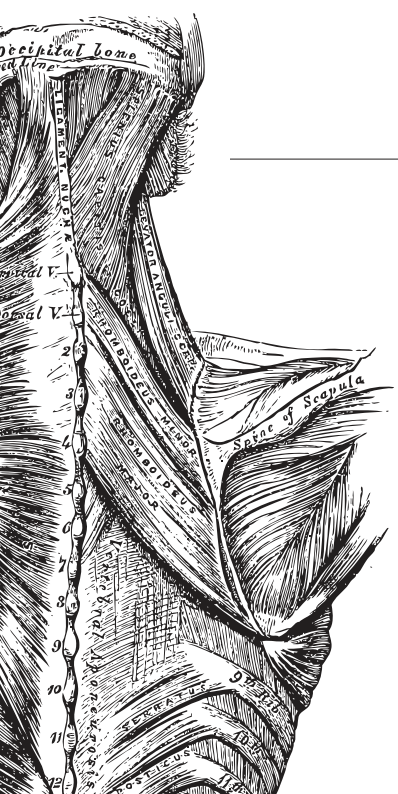


Vascular Lesions



Musculoskeletal



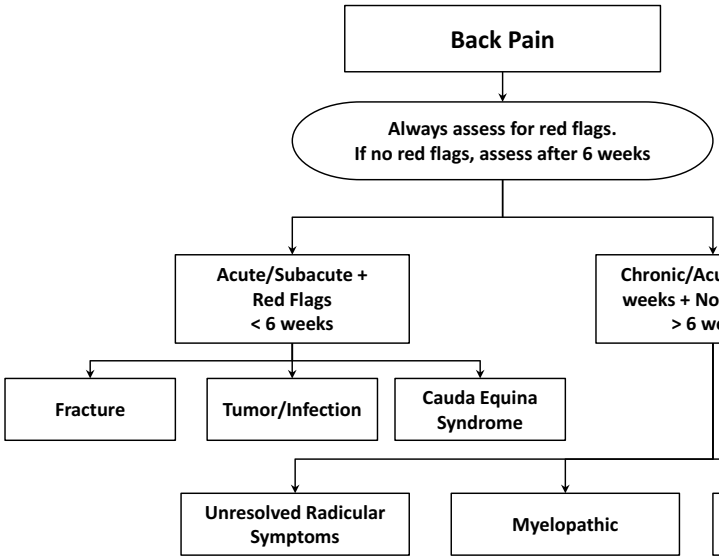


Acute Joint Pain

Vitamin CD

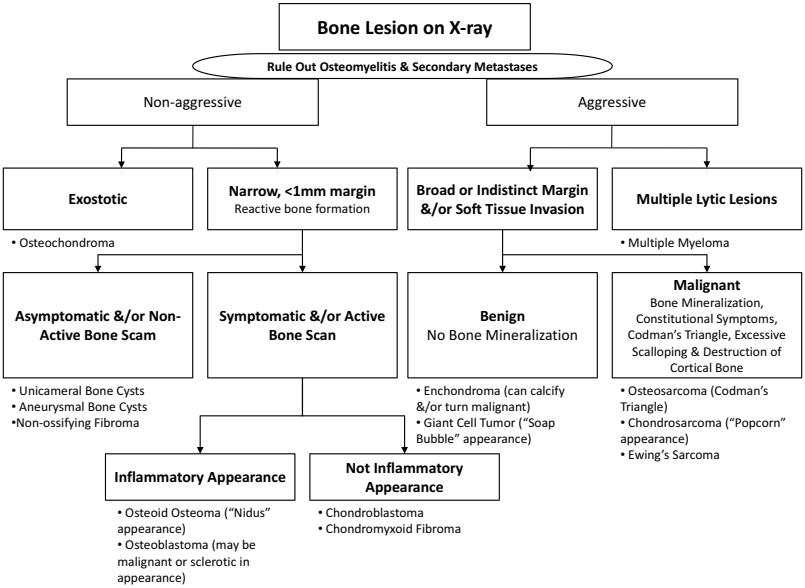
Vascular	- *See vascular joint pain*
Infectious	- *See infectious joint pain*
Trauma	- Multiple injury sites, Open Fracture, Infectious joint pain
Autoimmune	- *See inflammatory joint pain*
Metabolic	- *See pathologic fractures*
Iatrogenic	- Hx of prior surgery
Neoplastic	- *See Tumour*
Congenital	-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

Back Pain

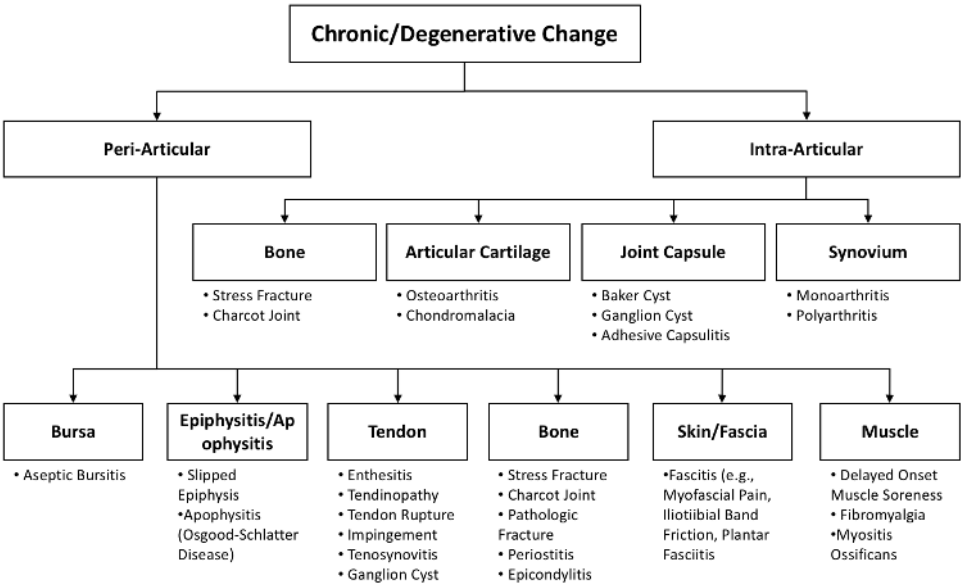


Red Flags: bowel or bladder dysfunction, saddle paresthesia, constitutional symptoms, parasthesis, age >50, <18, IV drug use, neuromotor deficits, nocturnal pain, high energy trauma, past history of neoplasm

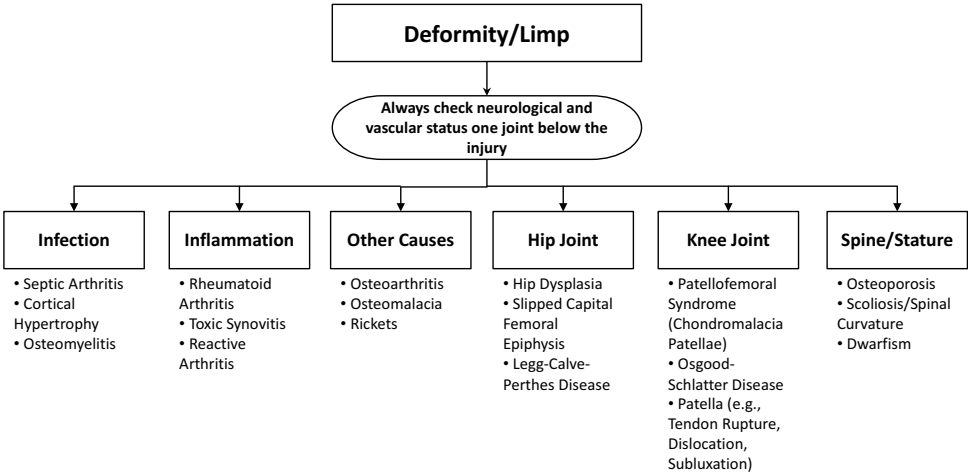
Bone Lesion


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

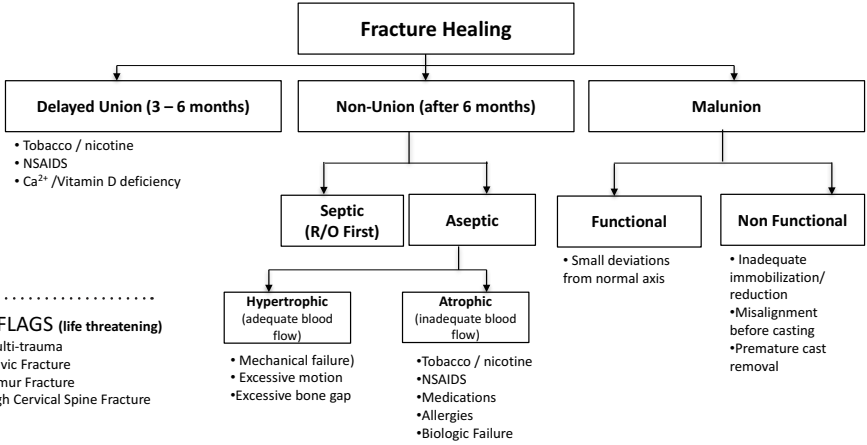
Chronic Joint Pain



Deformity / Limp



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

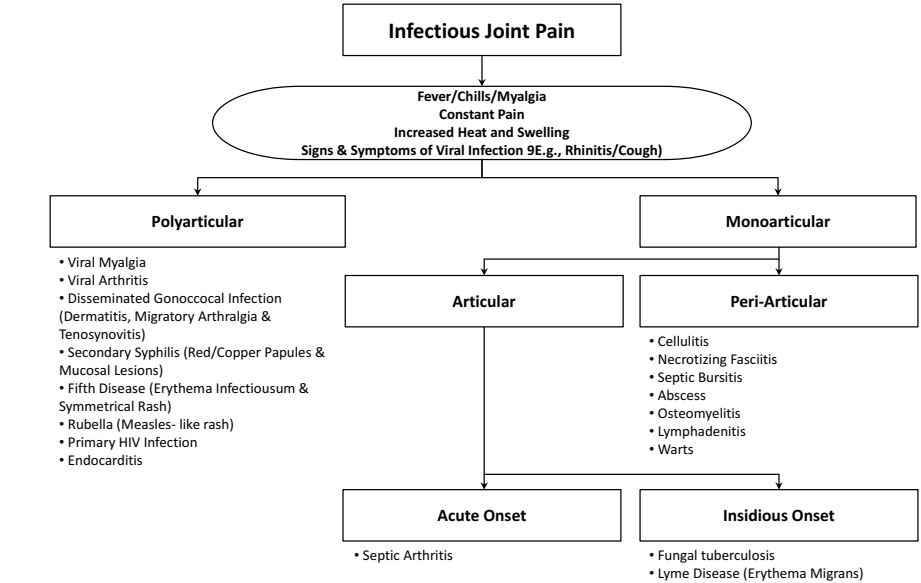
Guide to Spinal Cord Injury

UNIVERSITY OF CALGARY

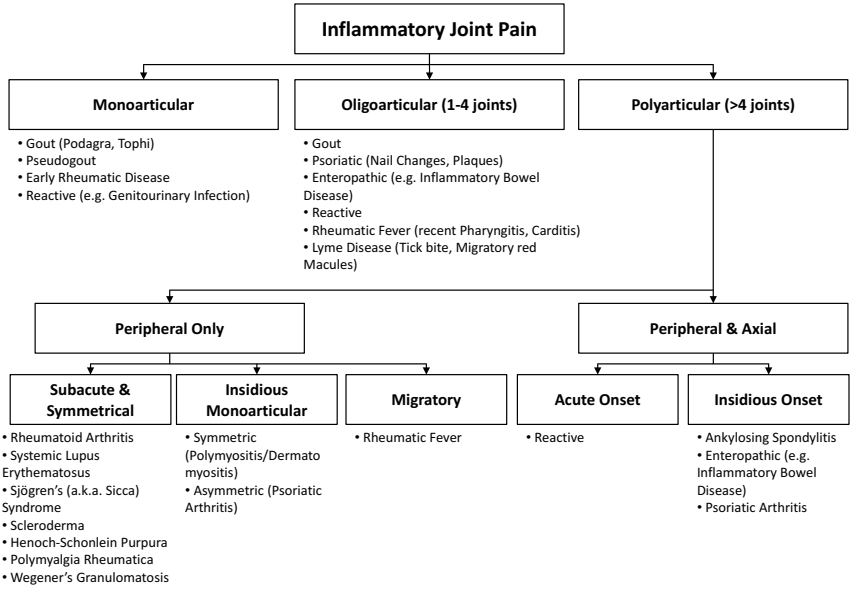
Spinal Root	Sensory	Motor	Reflex
C4	Acromioclavicular Joint	Respiration	None
C5	Radial Antecubital Fossa	Elbow Flexion	Biceps Reflex
C6	Dorsal Thumb	Wrist Extension	Brachioradialis Reflex
C7	Dorsal Middle Finger	Elbow Extension	Triceps Reflex
C8	Dorsal Little Finger	Finger Flexion	None
T1	Ulnar Antecubital 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

Infectious Joint Pain



Inflammatory Joint Pain



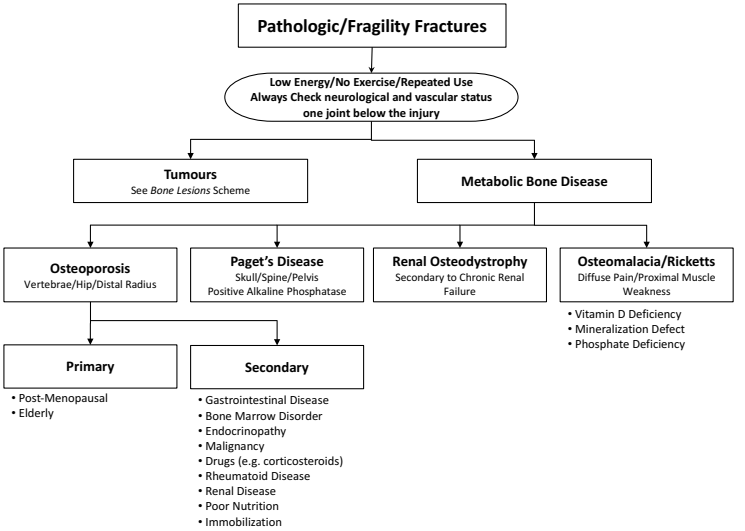
Mytomes

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

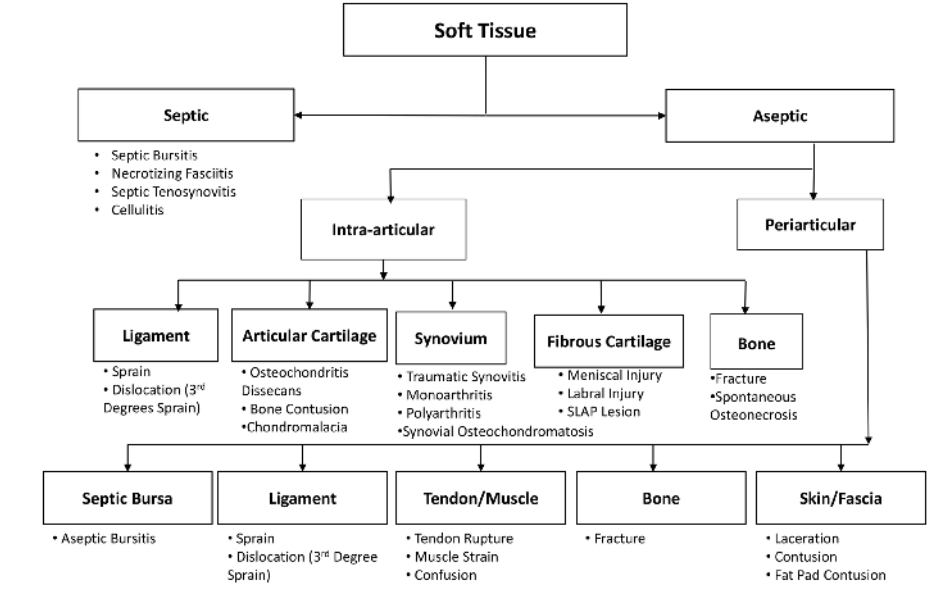
N.B. There is considerable overlap between myotomes for some actions. The myotomes listed are the dominant segments involved.

Pathologic Fractures



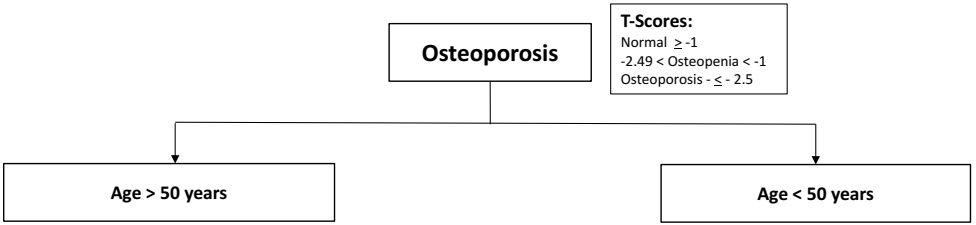
Toronto Notes for Medical Students, Inc. (2009). *Toronto Notes 209: Comprehensive Medical Reference and Review for MCCQE I & USMLE II*. McGraw-Hill: Toronto, Ontario.

Soft Tissue



Osteoporosis

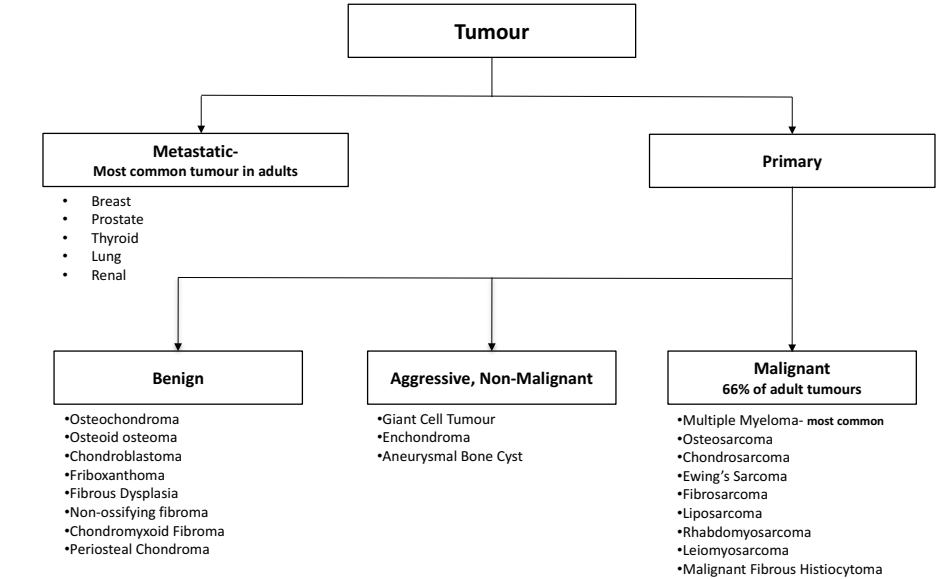
BMD Testing



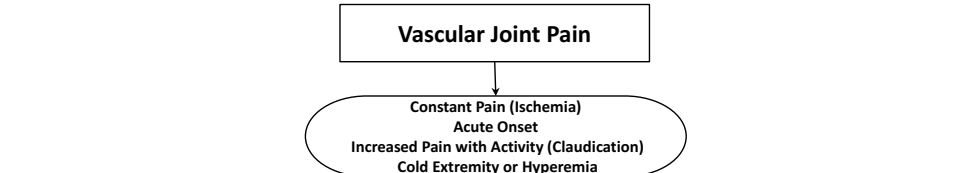
- All men and women ≥65
- Prior fragility fracture
- Prolonged glucocorticoid use
- Rheumatoid Arthritis
- Falls in past 12 months
- Parental Hip Fracture
- Other medications
- Vertebral fracture
- Osteopenia on X ray
- Smoking/ETOH
- Low body weight (<60kg) or major loss (>10% of when 25)

- 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



Vascular Joint Pain



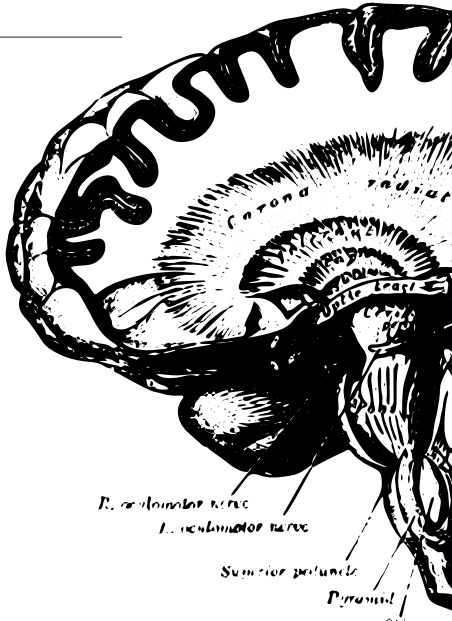
- Vasculitis

- Sickle Cell Anemia
- Peripheral Vascular Disease
- Atherosclerosis
- Deep Vein Thrombosis
- Septic Embolism (e.g. Infective Endocarditis)
- Fat Embolism (e.g. fractured long bone)
- Air Embolism
- Vasculitis

- Trauma to Vessel (dislocation/fracture)
- Hemarthrosis (Hemophilia or Trauma)
- Peripheral/Mycotic Aneurysm (e.g. Marfan's Syndrome, Infective Endocarditis, Atherosclerosis)

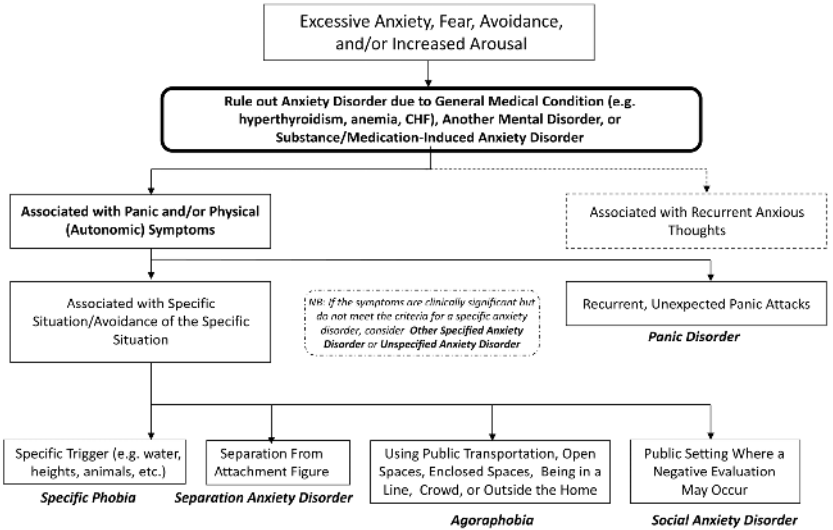
- Any structure compressing the blood vessels
- Abscess
- Cyst
- Neoplasm
- Dislocated Bone

Psychiatric



Anxiety Disorders

Associated with Panic

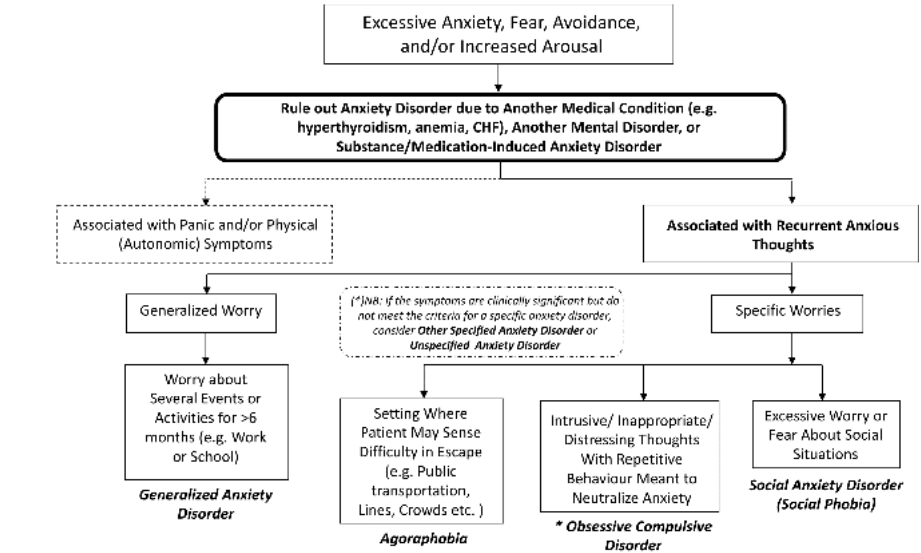


[1] Anxiety Review Panel, Evans M, Bradwejn J, Dunn L (Eds) (2000). Guidelines for the Treatment of Anxiety Disorders in Primary Care. Toronto: Queen's Printer of Ontario, pp. 41

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

Anxiety Disorders

Recurrent Anxious Thoughts

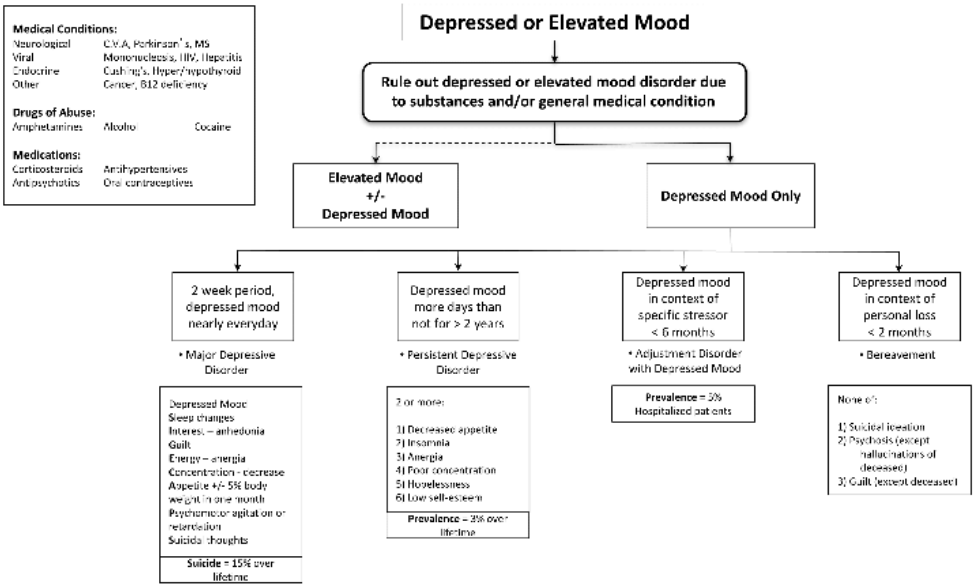


* Not considered an anxiety disorder according to DSM-V

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

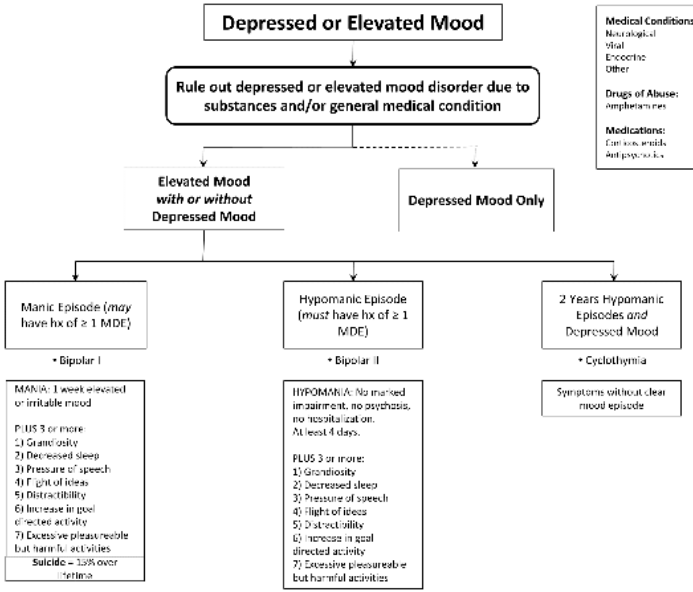
Mood Disorders

Depressed Mood

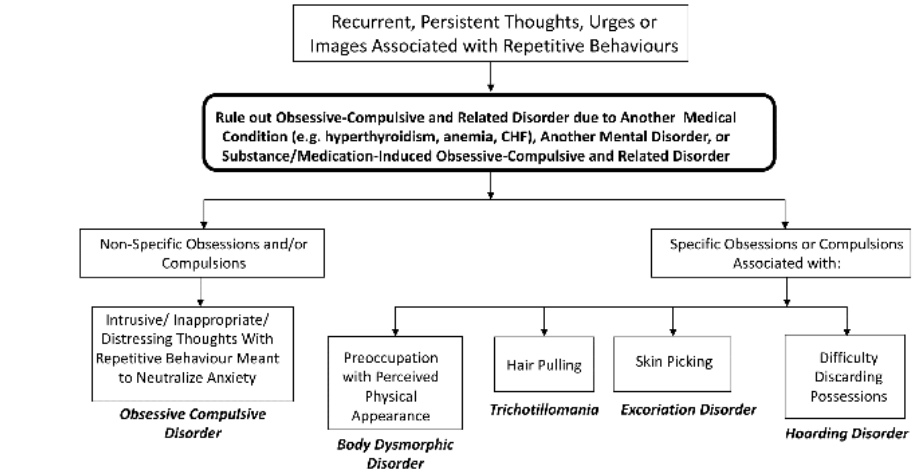


Mood Disorders

Elevated Mood

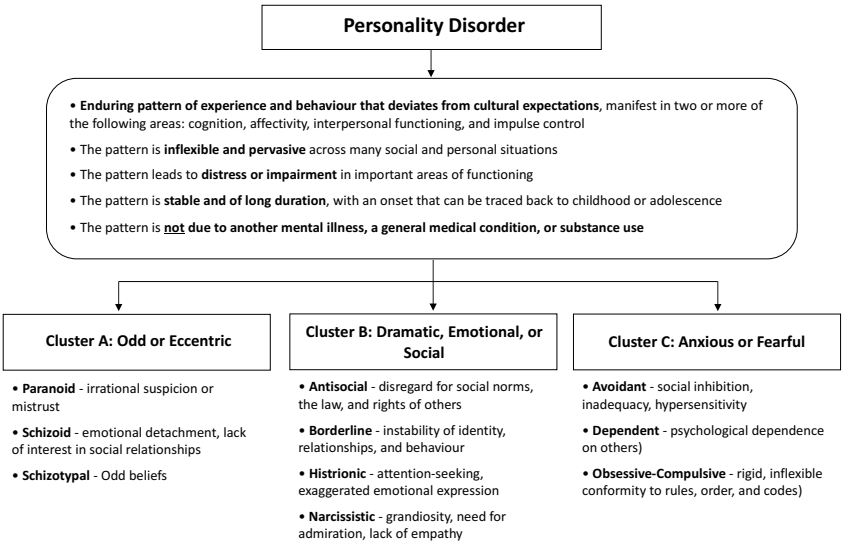


Obsessive-Compulsive & Related Disorders



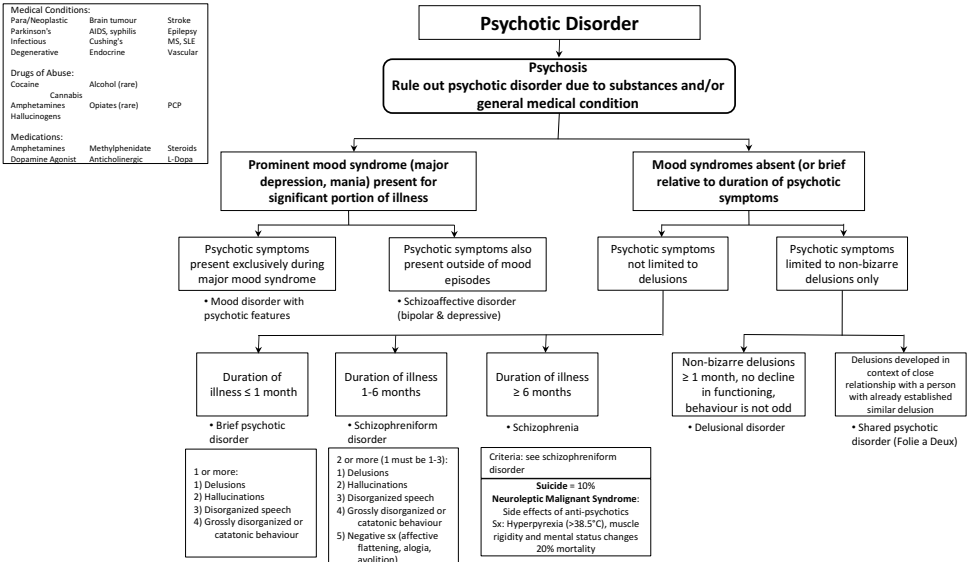
1. American Psychiatric Association (2013). Diagnostic and Statistical Manual of Mental Disorders (5th ed. DSM-V.

Personality Disorder

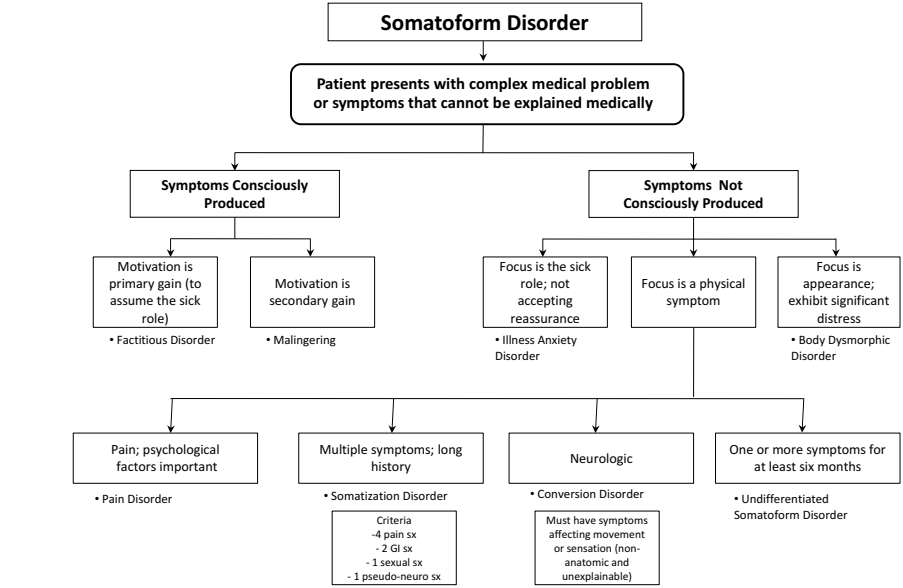


1. Black, D.W., and N.C. Andreasen (2011). Introductory Textbook of Psychiatry, 5th Ed. Washington: American Psychiatric Publishing, Inc. pp. 285-317

Psychotic Disorders

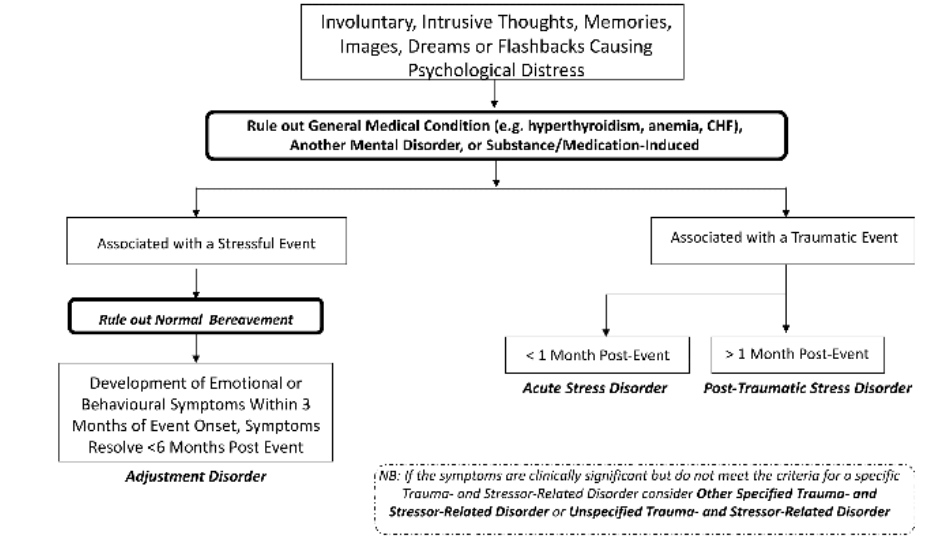


Somatoform Disorders



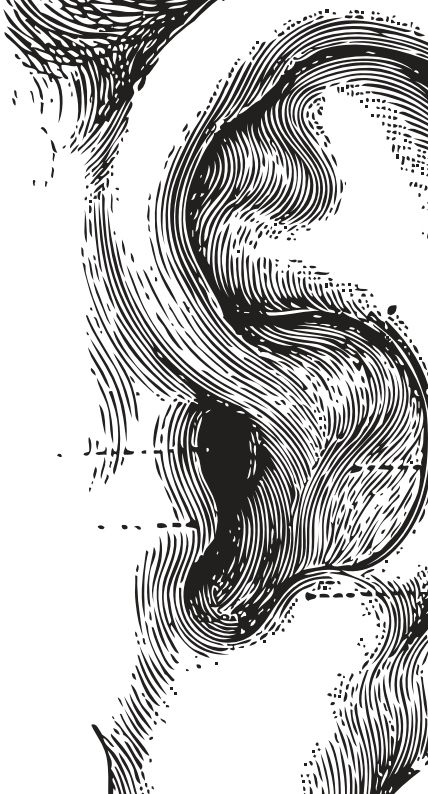
Trauma & Stressor

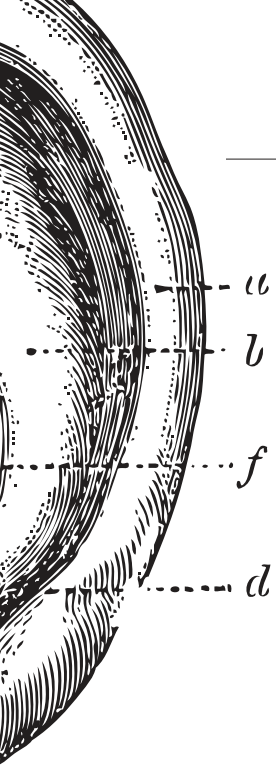
Related Disorders



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

Otolaryngologic





Historical Editors

Justin Lui

Andrew Jun

Dave Campbell

Joanna Debosz

Sarah Hajjar

Student Editors

Dilip V. Koshy

Wesley Chan

Faculty Editors

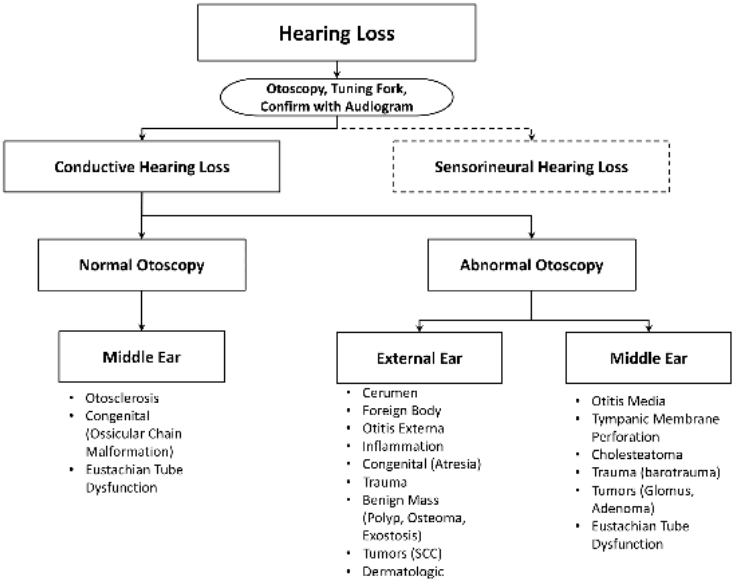
Dr. Doug Bosch

Dr. James Brookes

Dr. Justin Chau

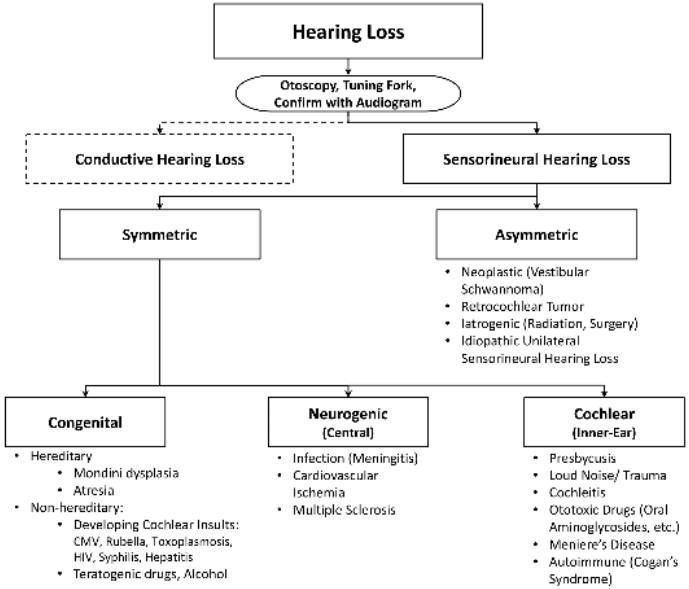
Hearing Loss

Conductive



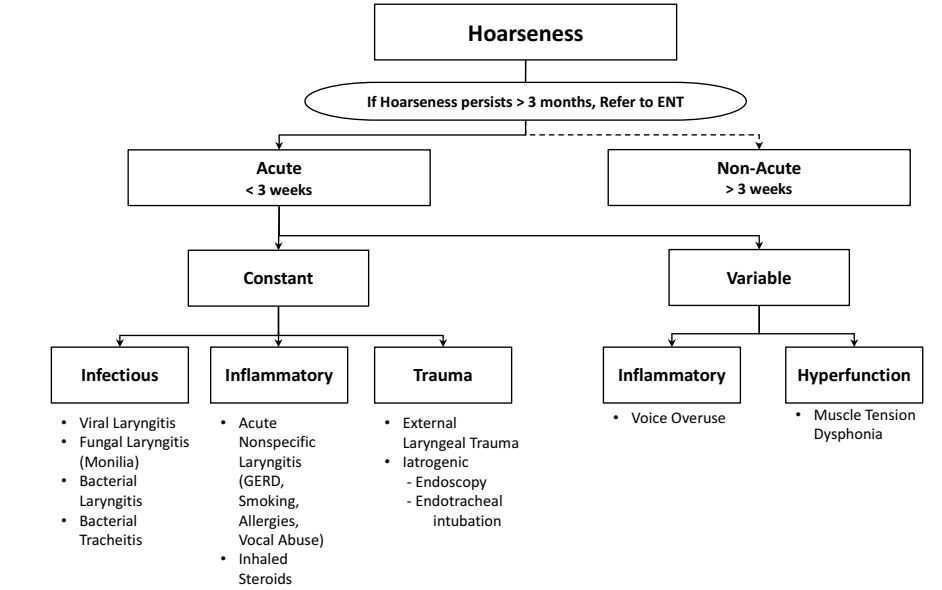
Hearing Loss

Sensorineural



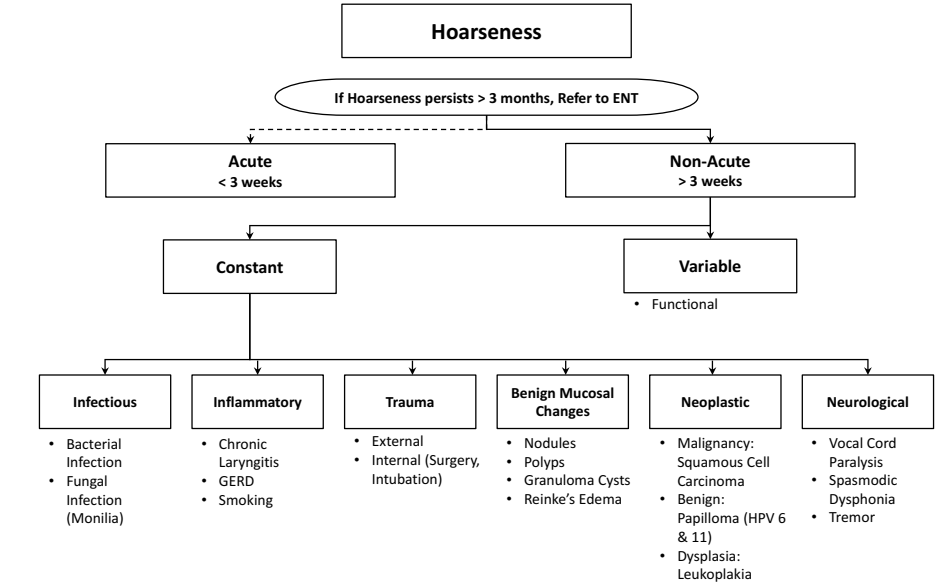
Hoarseness

Acute

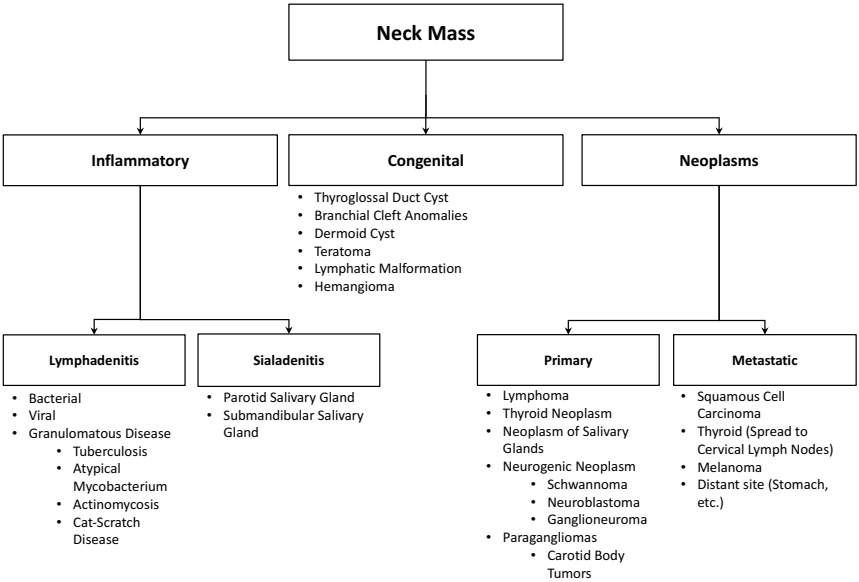


Hoarseness

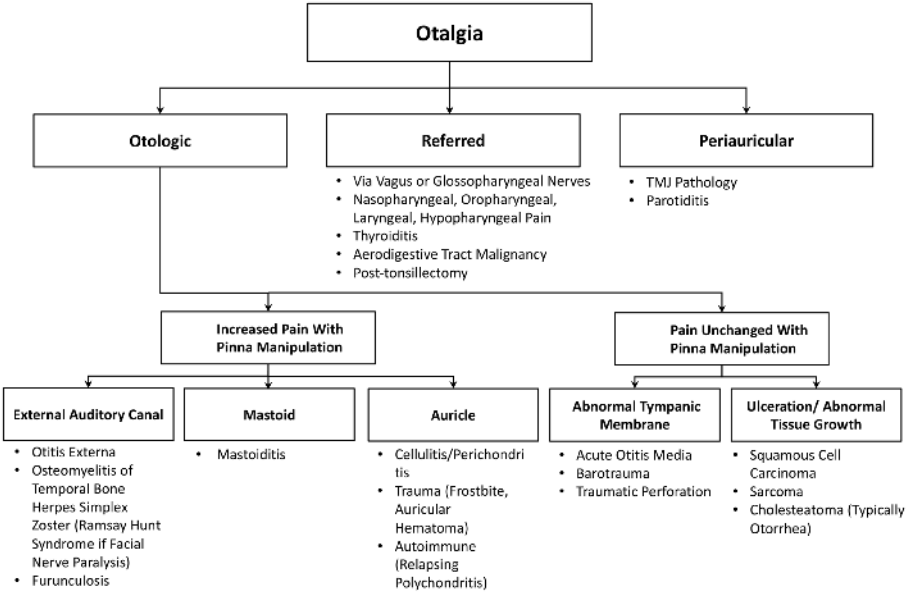
Non-Acute



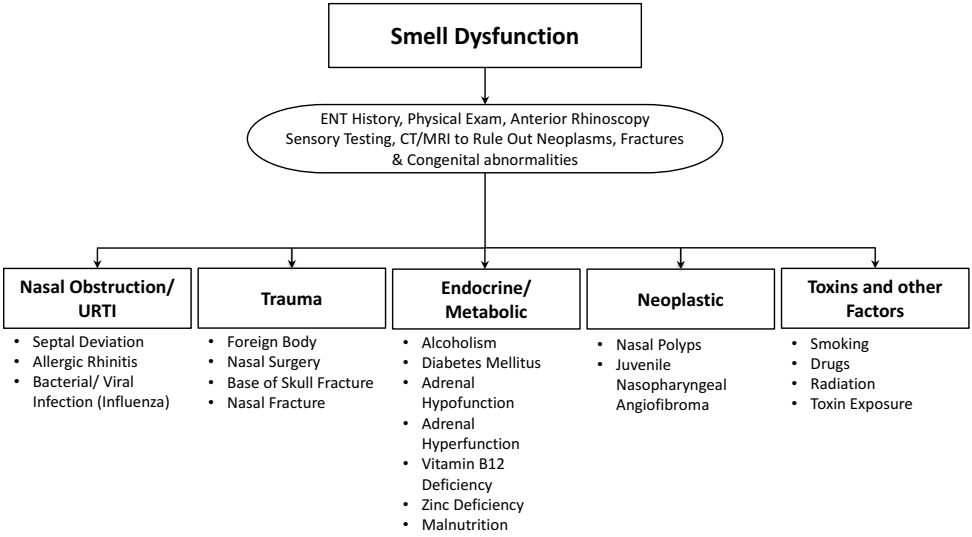
Neck Mass



Otaligia

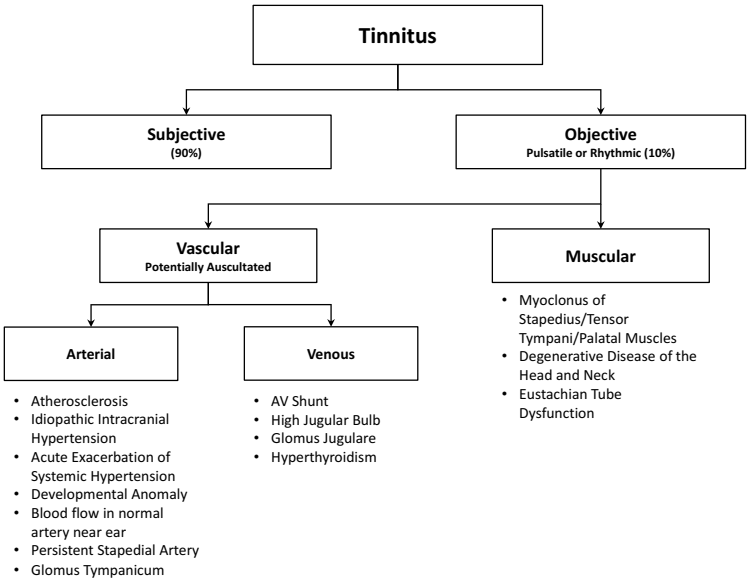


Smell Dysfunction



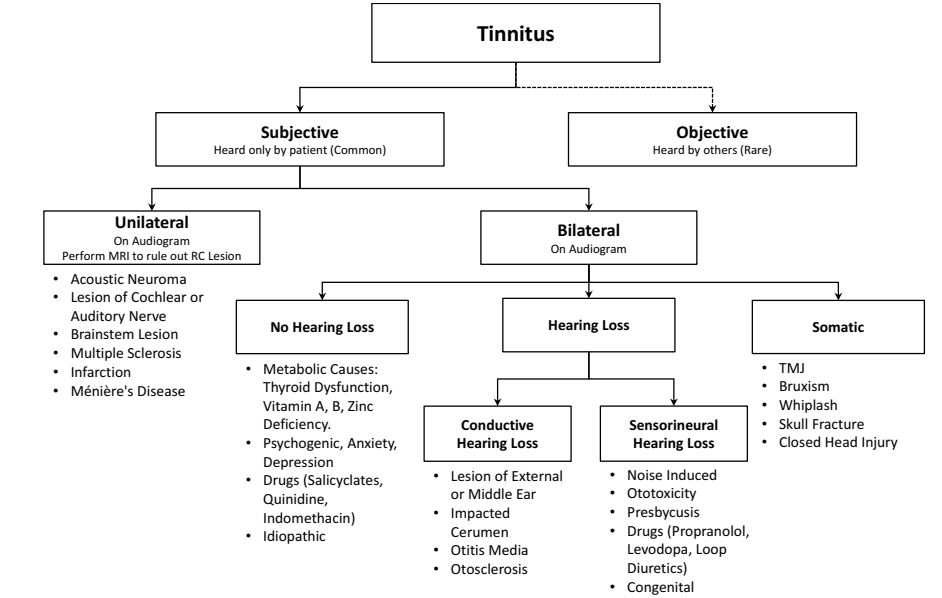
Tinnitus

Objective

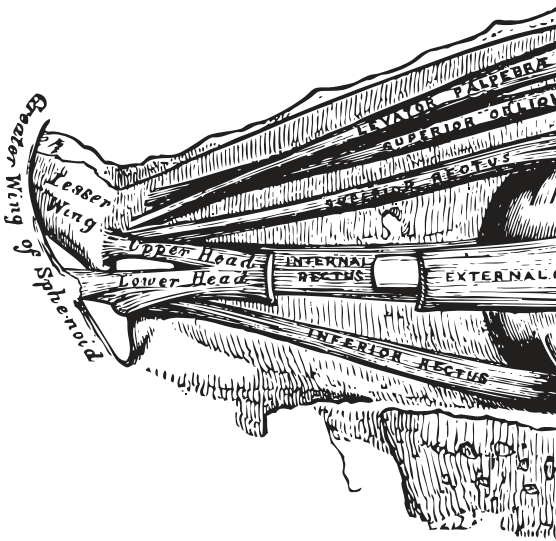


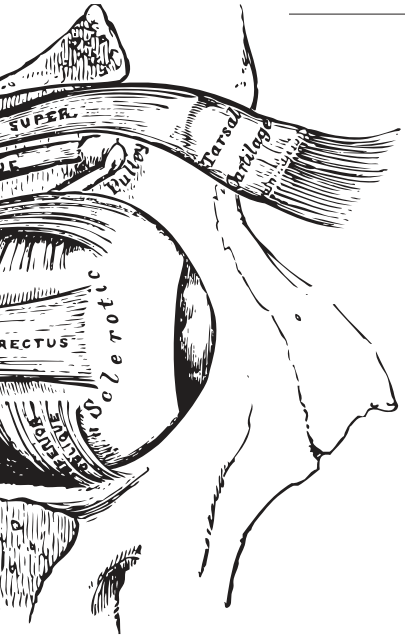
Tinnitus

Subjective

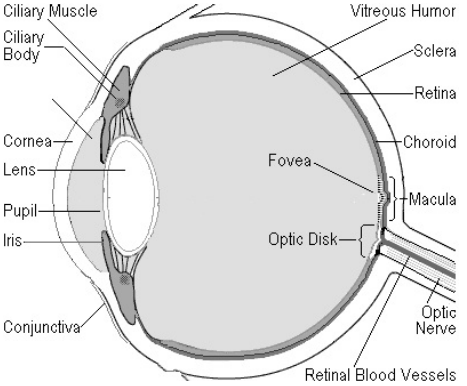


Ophthalmologic





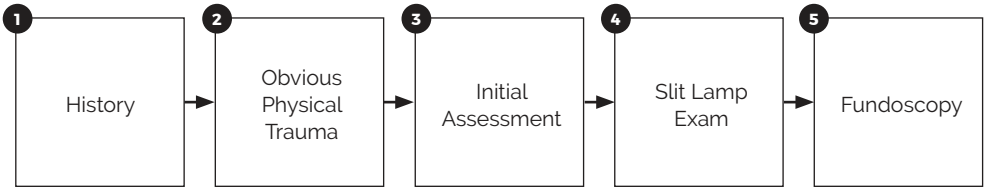
Cross Section of the Eye & Acronyms



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 & Accommodation
RAPD	Relative Afferent pupillary defect
SLE	Slit Lamp Exam
VA	Visual Acuity

Approach to an Eye Exam



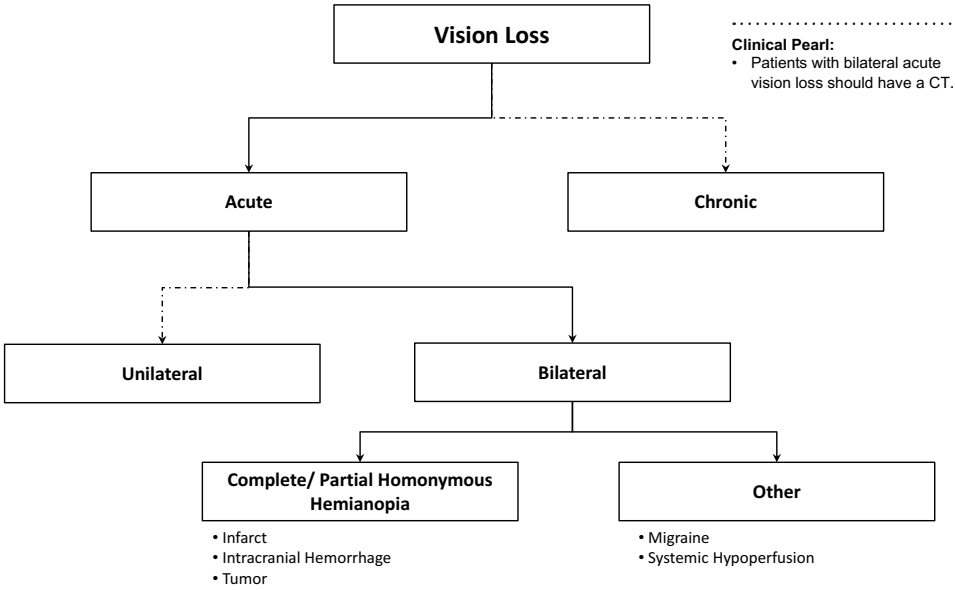
3. Initial Assessment
   - A. Visual Acuity
   - B. Pupils
     - a. Light Reflex, Accommodation, RAPD
   - C. Ocular Movements (CN 3, 4, 6)
   - D. Visual Fields by Confrontation

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

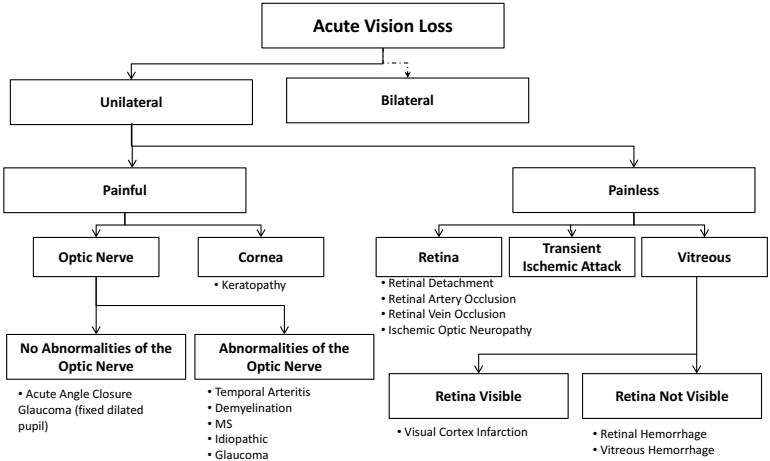
Acute Vision Loss

Bilateral



Acute Vision Loss

Unilateral

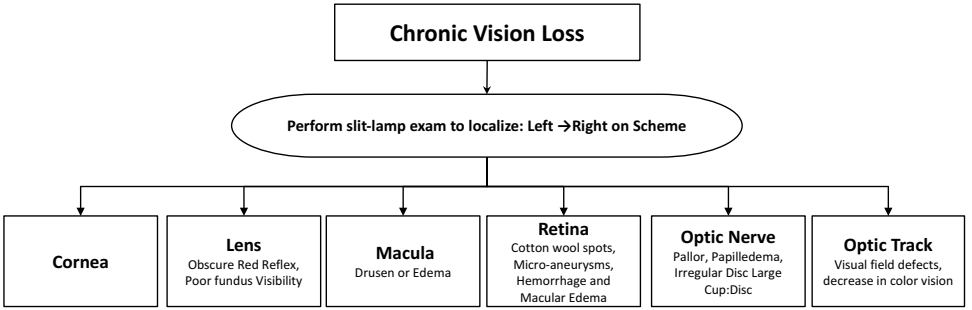


Clinical Pearls:

- 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

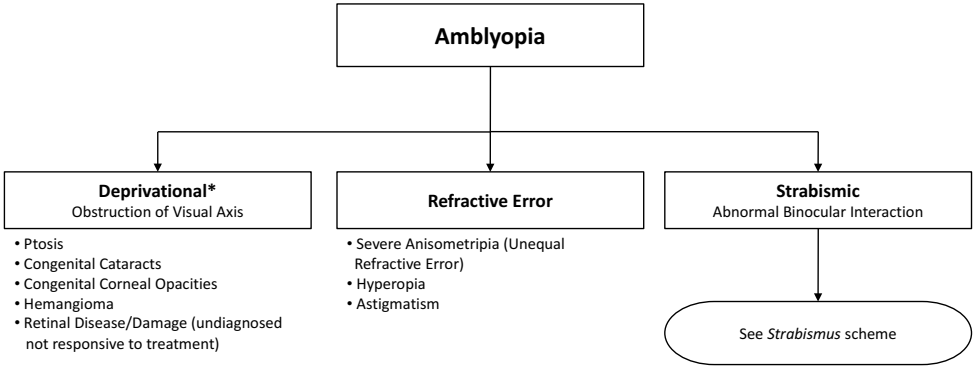
Anatomic



Clinical Pearls:

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

Amblyopia

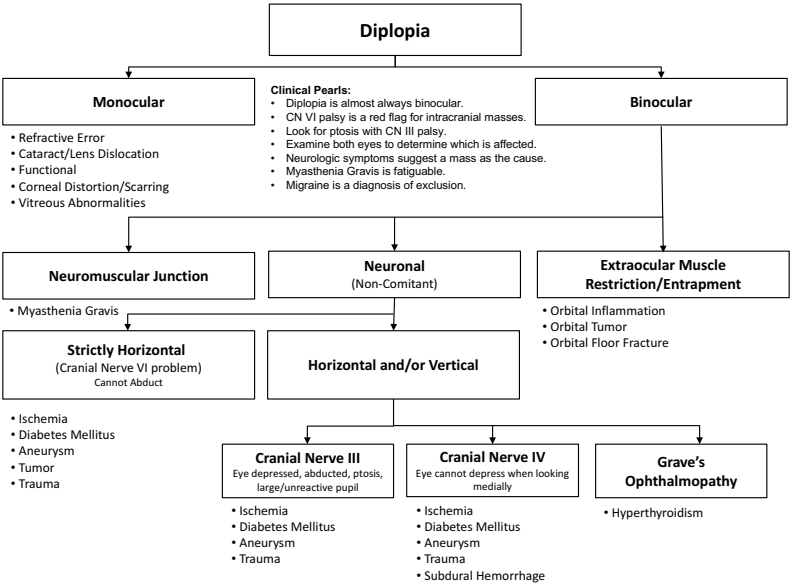


Clinical Pearl:

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

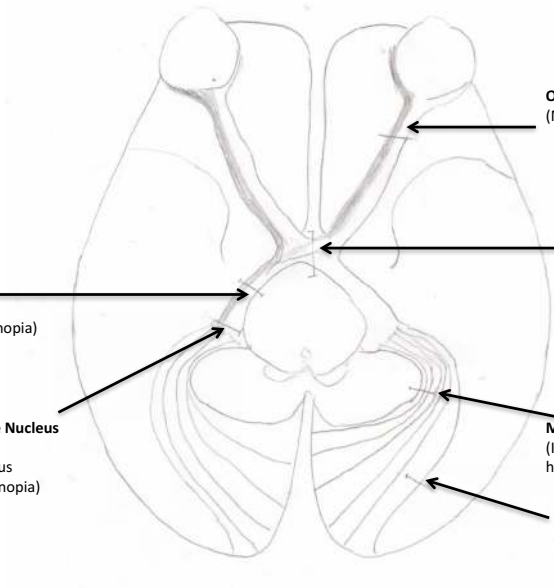
* Can cause permanent visual impairment if not treated urgently in infancy

Diplopia


Diplopia
Monocular
• Refractive Error
• Cataract/Lens Dislocation
• Functional
• Corneal Distortion/Scarring
• Vitreous Abnormalities
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.
Binocular
Neuromuscular Junction
• Myasthenia Gravis
Neuronal
(Non-Comitant)
Extraocular Muscle Restriction/Entrapment
• Orbital Inflammation
• Orbital Tumor
• Orbital Floor Fracture
Strictly Horizontal
(Cranial Nerve VI problem)
Cannot Abduct
• Ischemia
• Diabetes Mellitus
• Aneurysm
• Tumor
• Trauma
Horizontal and/or Vertical
Cranial Nerve III
Eye depressed, abducted, ptosis, large/unreactive pupil
• Ischemia
• Diabetes Mellitus
• Aneurysm
• Trauma
Cranial Nerve IV
Eye cannot depress when looking medially
• Ischemia
• Diabetes Mellitus
• Aneurysm
• Trauma
• Subdural Hemorrhage
Grave's Ophthalmopathy
• Hyperthyroidism

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)

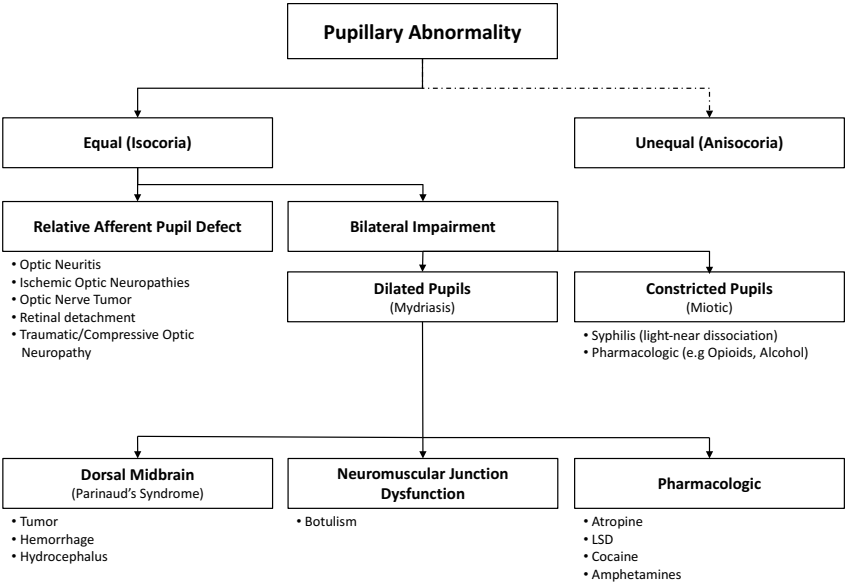
Lateral Geniculate Nucleus Lesion
(Right homonymous horizontal sectroanopia)

Meyer's Loop Lesion
(Incongruous superior homonymous quadrantanopia)

Right Parietal Lobe Lesion
(Inferior homonymous hemianopia)

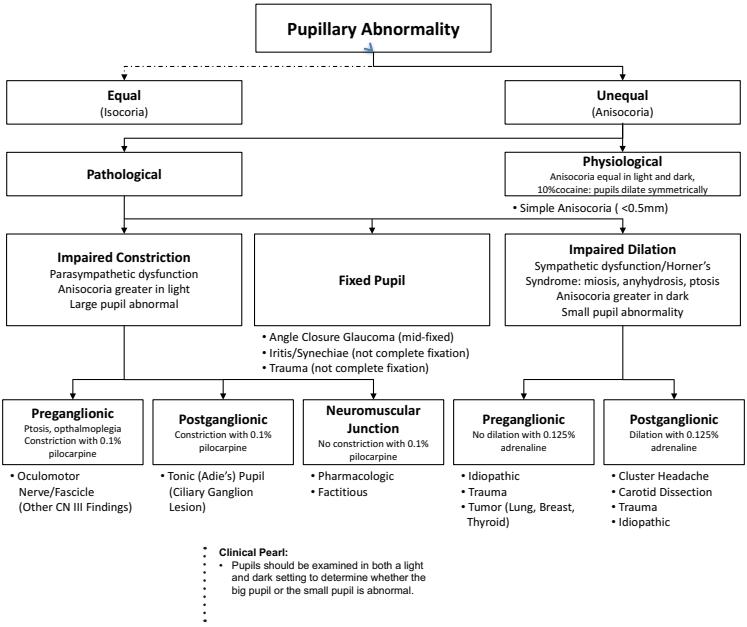
Pupillary Abnormalities

Isocoria



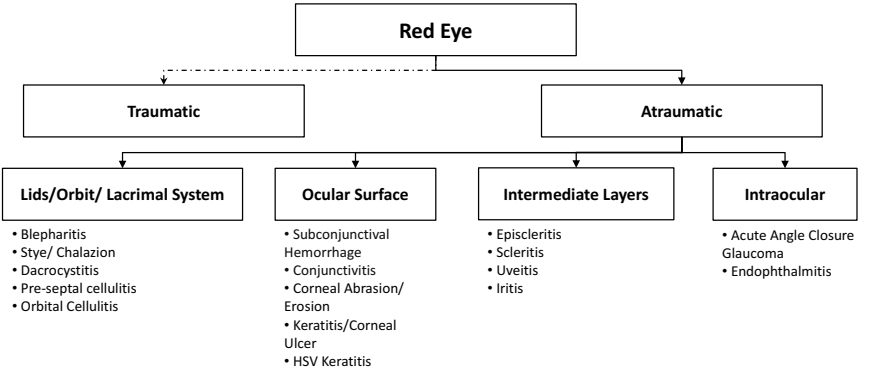
Pupillary Abnormalities

Anisocoria



Red Eye

Atraumatic

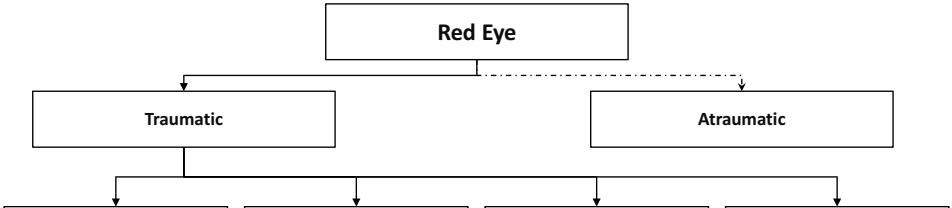


Clinical Pearl:

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

Red Eye

Traumatic



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

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

** Urgent lateral canthotomy

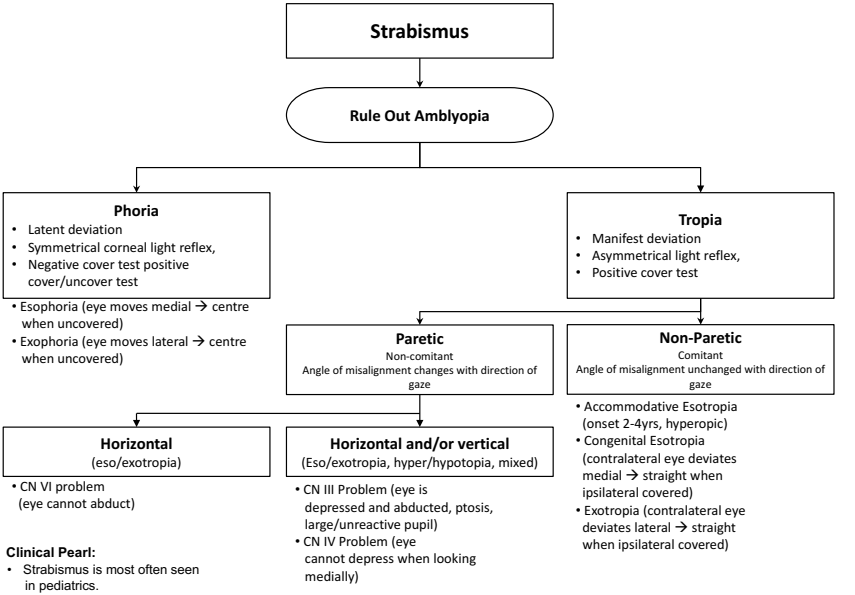
- Lids: Swelling, Laceration
- Conjunctiva: Subconjunctival hemorrhage
- Cornea: Abrasion
- Iris: Laceration, iritis, iridodialysis
- Pupil: Traumatic mydriasis
- Lens: Cataract, dislocation
- Vitreous hemorrhage
- Retina: Tear, hemorrhage, choroidal rupture
- Glaucoma
- Optic Neuropathy

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.

Strabismus

Ocular Misalignment

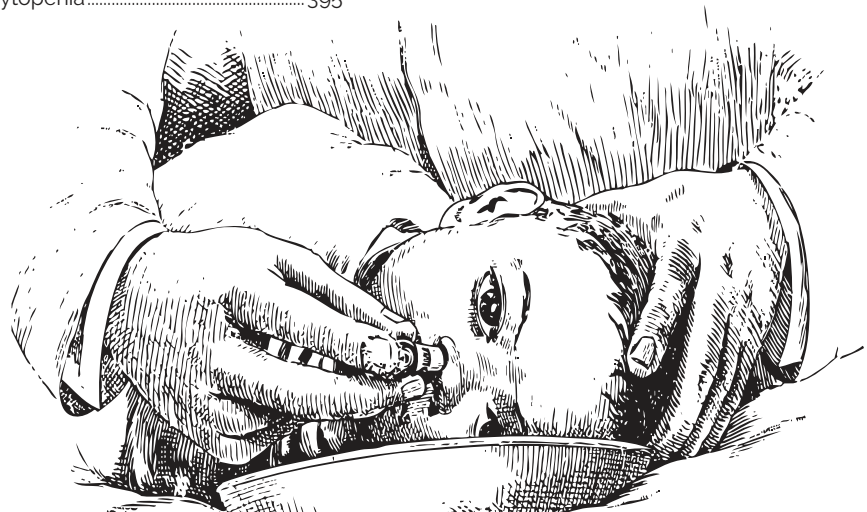


Clinical Pearl:

- Strabismus is most often seen in pediatrics.

Pediatric

Pediatric



Historical Editors

Dr. Andrei Harabor
Dr. Henry Mandin
Dr. Ian Mitchell
Dr. Jean Mah
Dr. Katherine Smart
Dr. Kelly Millar
Dr. Leanna McKenzie
Dr. Marielena Dibartolo
Dr. Mary Ann Thomas
Dr. Pamela Veale
Dr. Susan Bannister
Dr. Sylvain Coderre
Anuradha Surendra
Beata Komierowski
Carmen Fong
Carly Hagel
Christopher Skappak
Cody Flexhaug
Debanjana Das
Gilbert Yuen
Jaskaran Singh
Rebekah Jobling
Shahbaz Syed

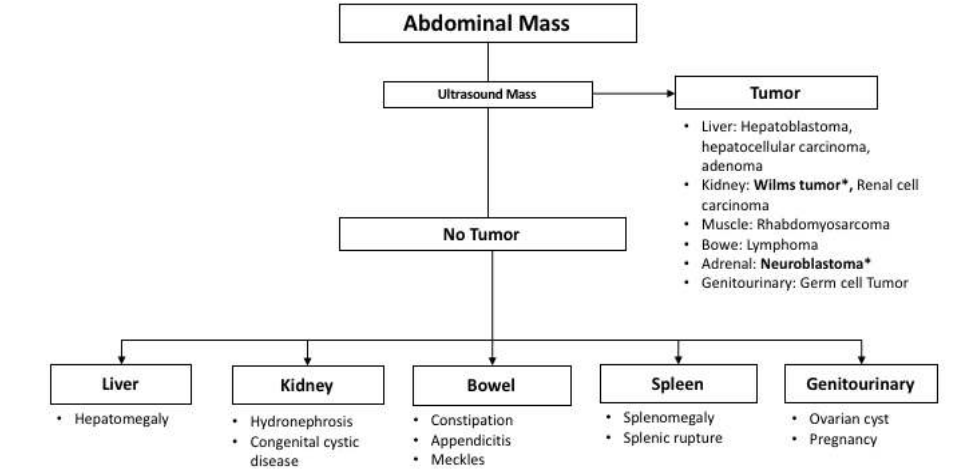
Student Editors

Elbert Jeffrey Manalo
David Cook

Faculty Editor

Dr. Theresa Wu

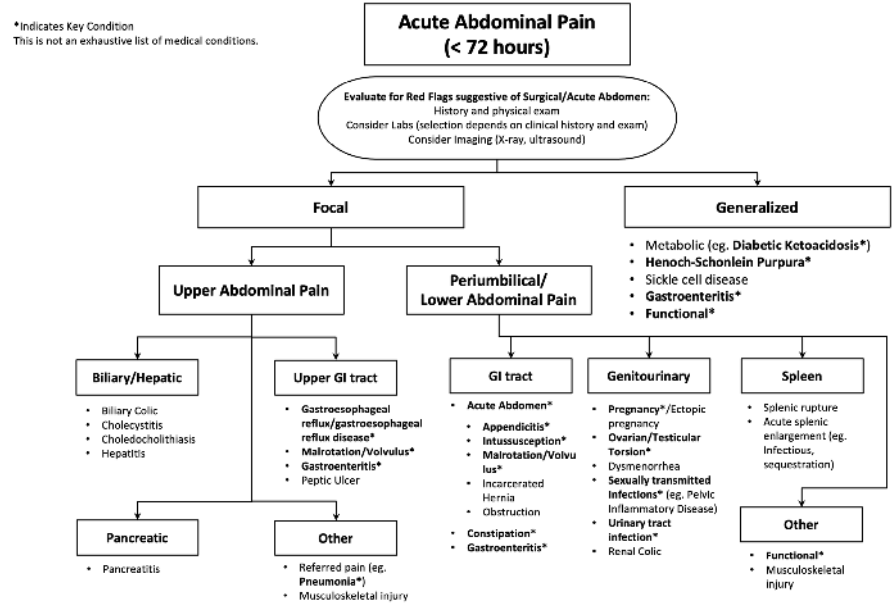
Abdominal Mass



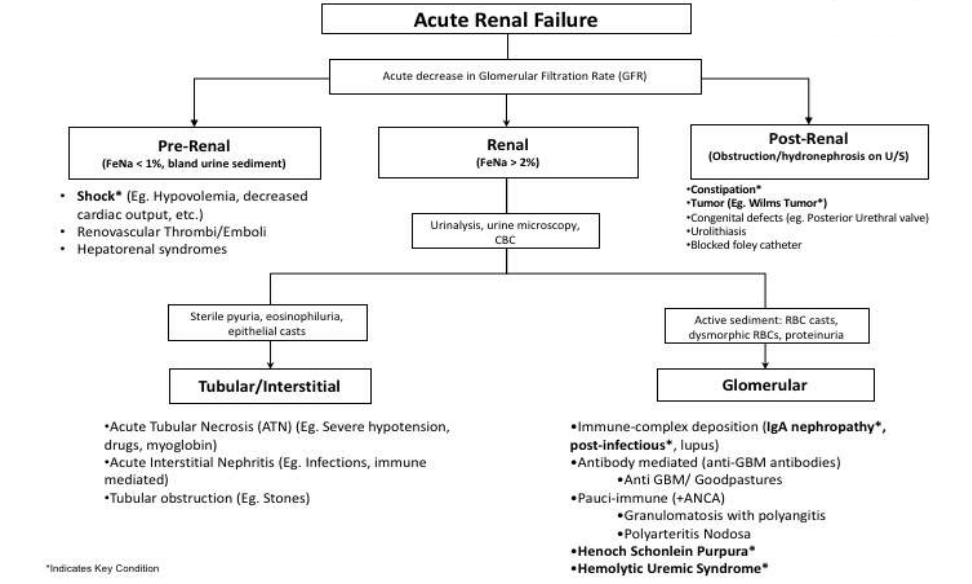
*Indicates Key Condition

This is not an exhaustive list of medical conditions.

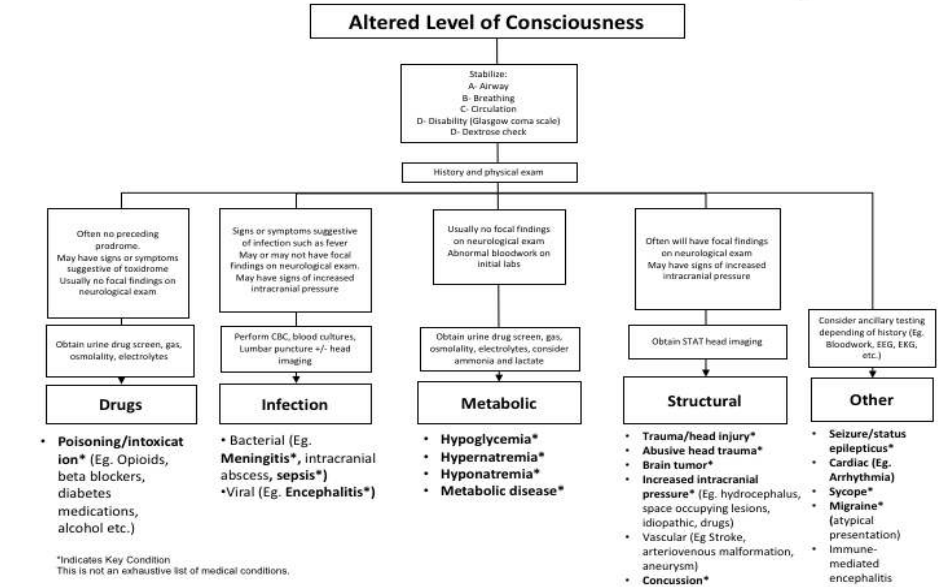
Acute Abdominal Pain



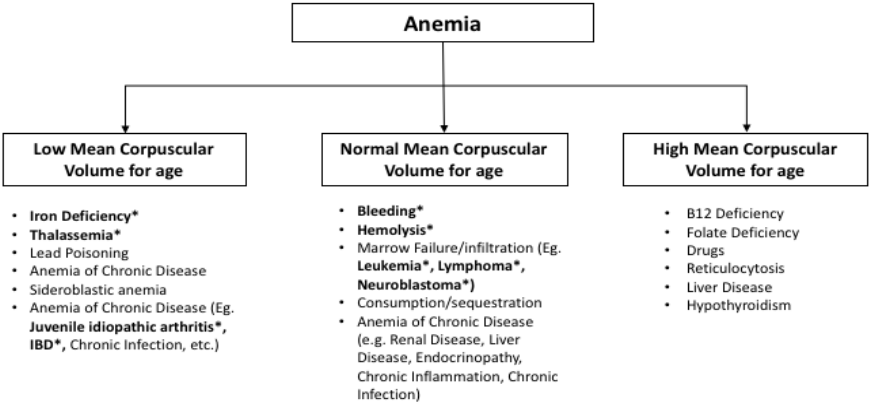
Acute Renal Failure



Altered Level Of Consciousness



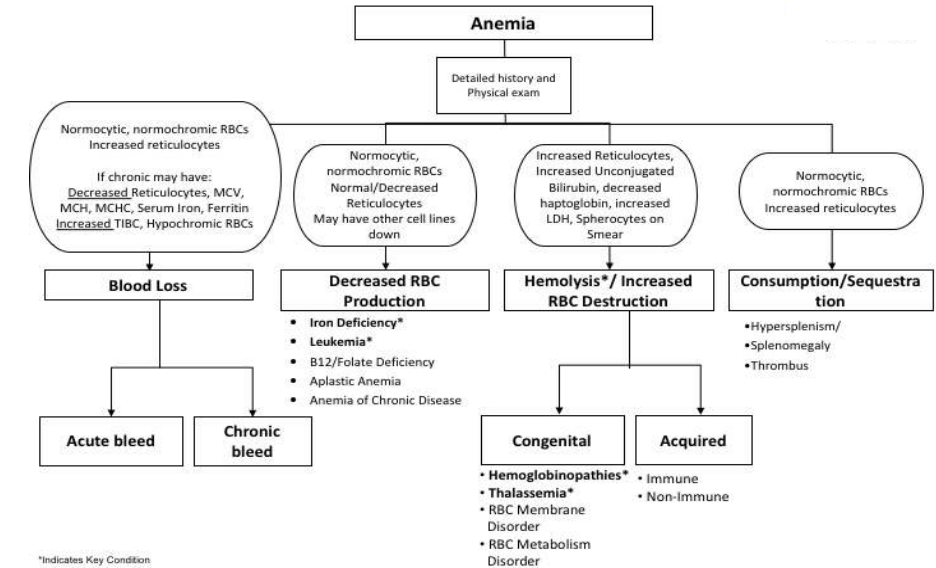
Anemia By MCV



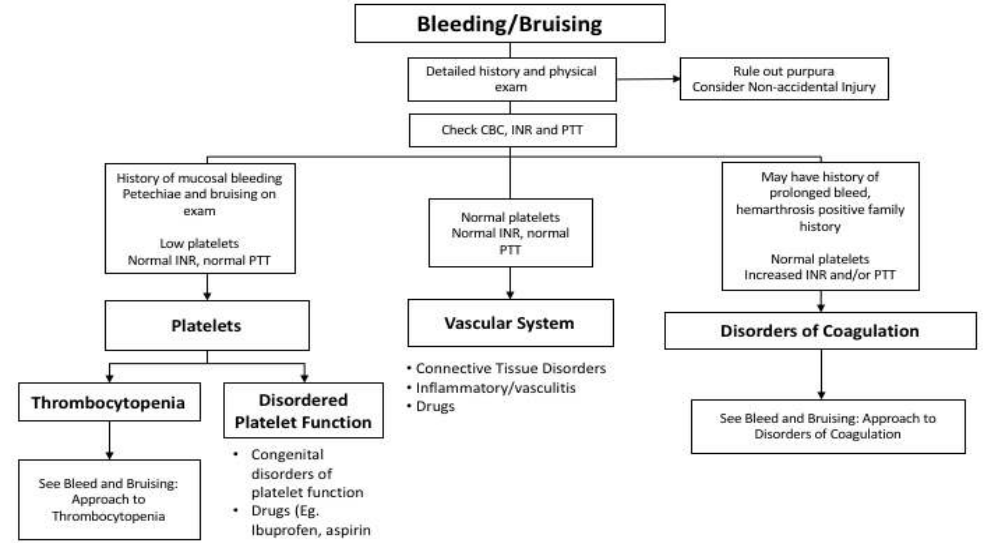
*Indicates Key Condition

This is not an exhaustive list of medical conditions.

Anemia By Mechanism

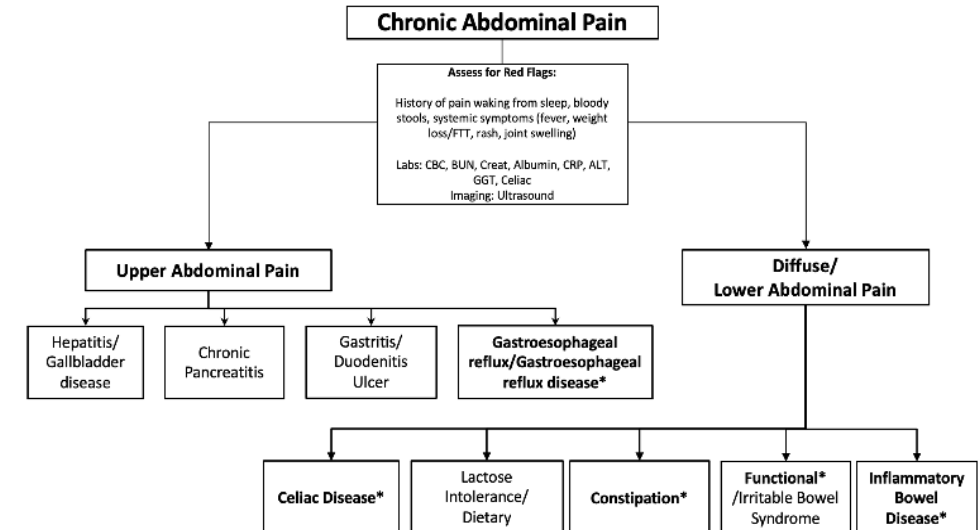


Bleeding / Bruising



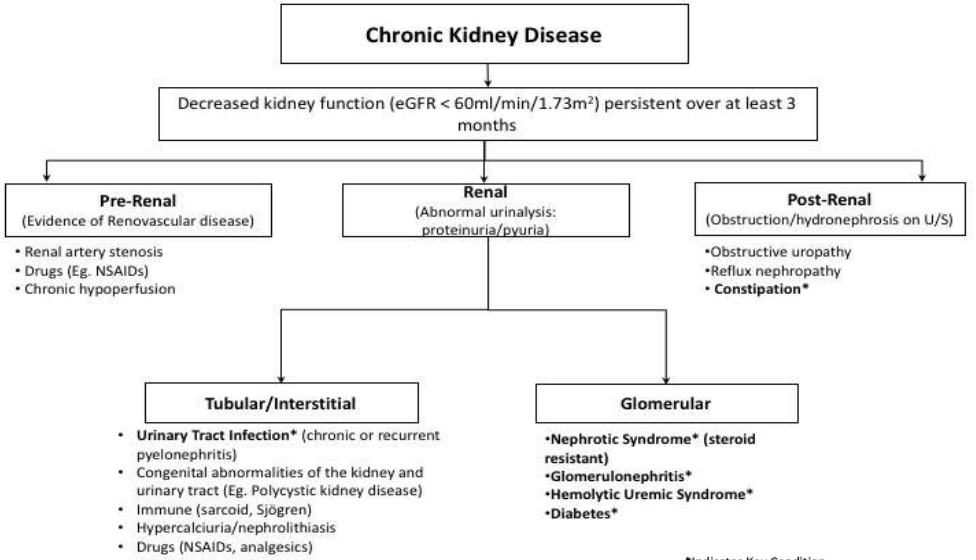
*Indicates Key Condition
This is not an exhaustive list of medical conditions.

Chronic Abdominal Pain



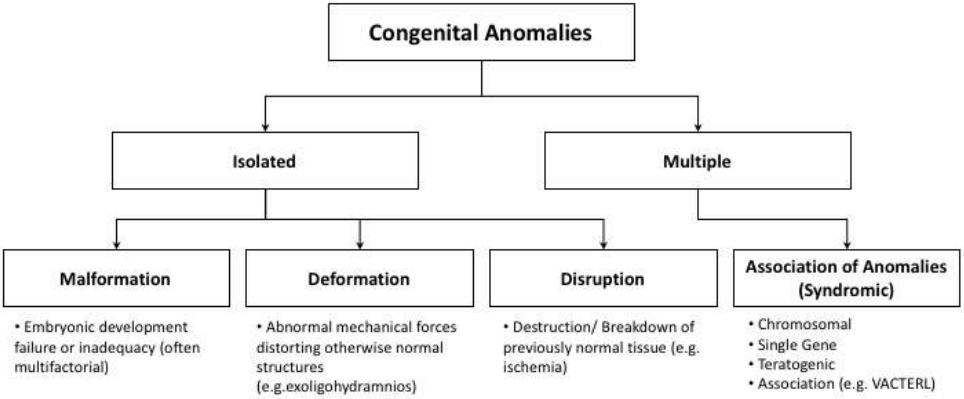
*Indicates Key Condition
This is not an exhaustive list of medical conditions.

Chronic Kidney Disease



*Indicates Key Condition
This is not an exhaustive list of medical conditions.

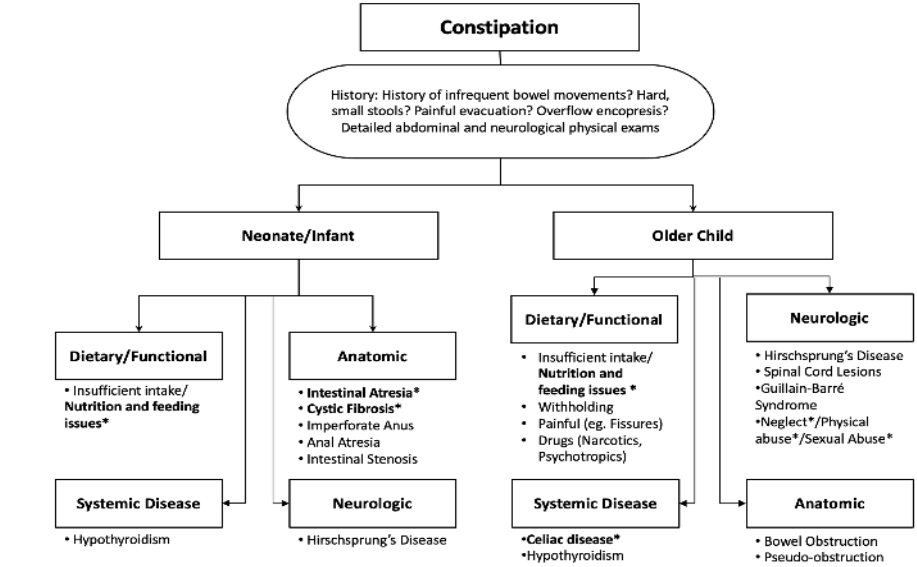
Congenital Anomalies



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

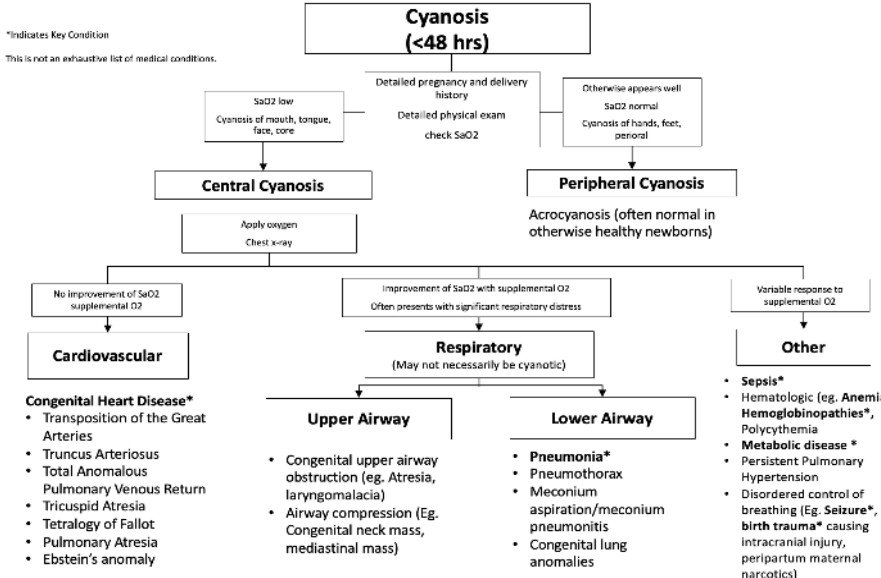
Constipation

(Pediatric)

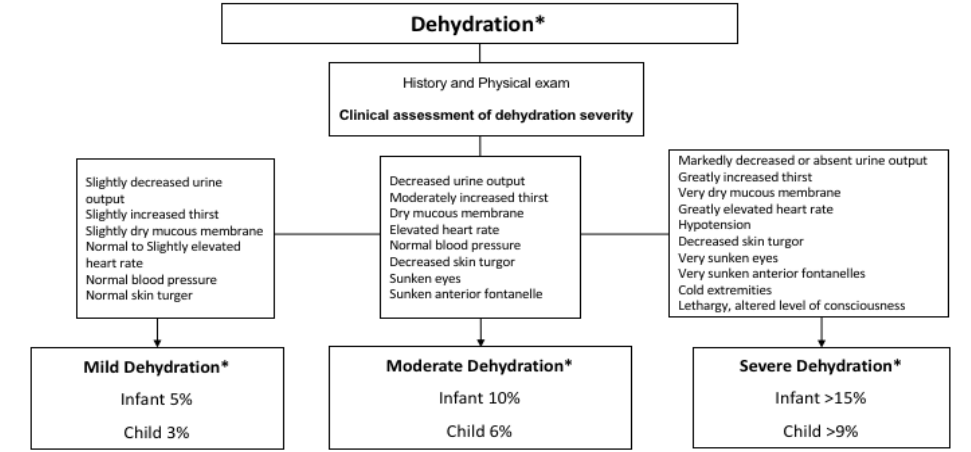


*Indicates Key Condition
This is not an exhaustive list of medical conditions.

Cyanosis in the Newborn

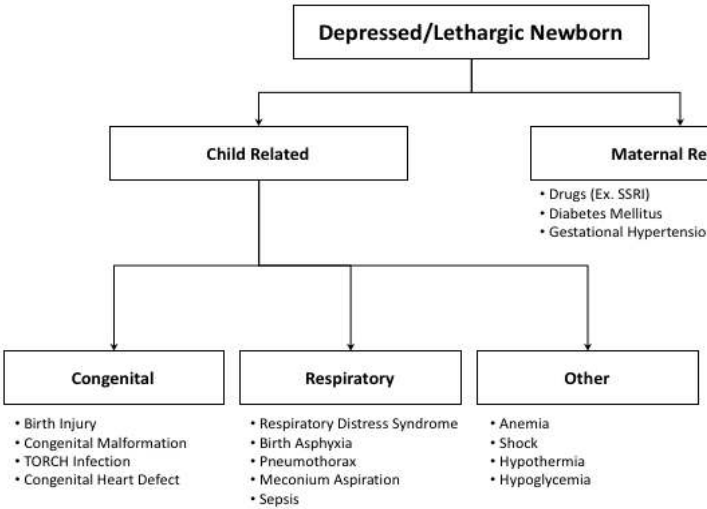


Dehydration

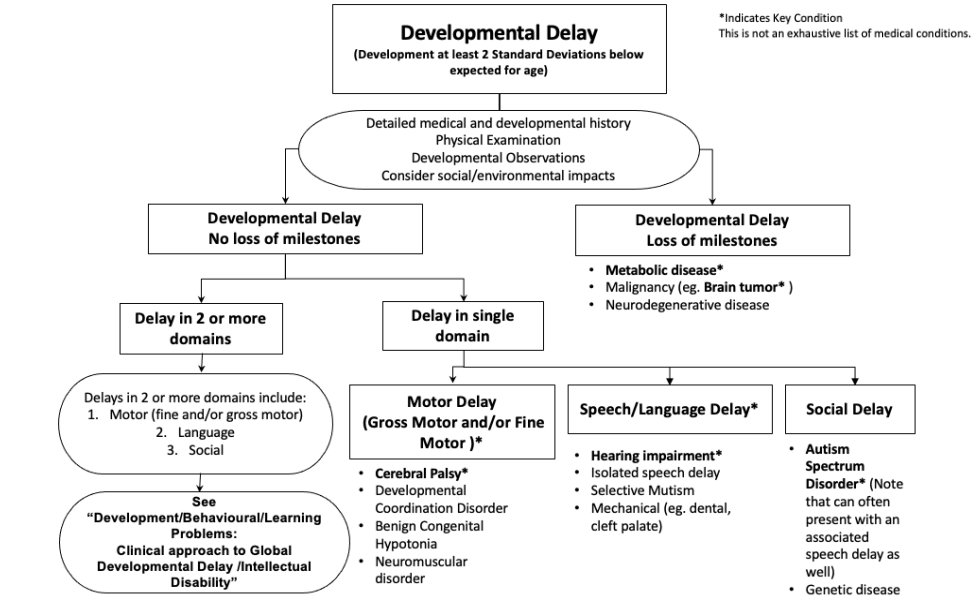


*Indicates Key Condition
This is not an exhaustive list of medical conditions.

Depressed / Lethargic Newborn

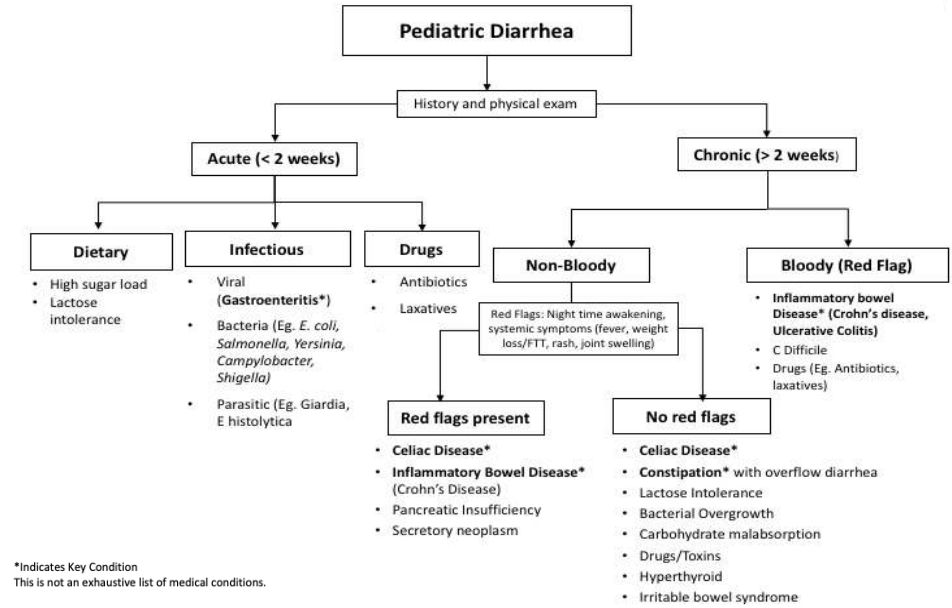


Developmental Delay



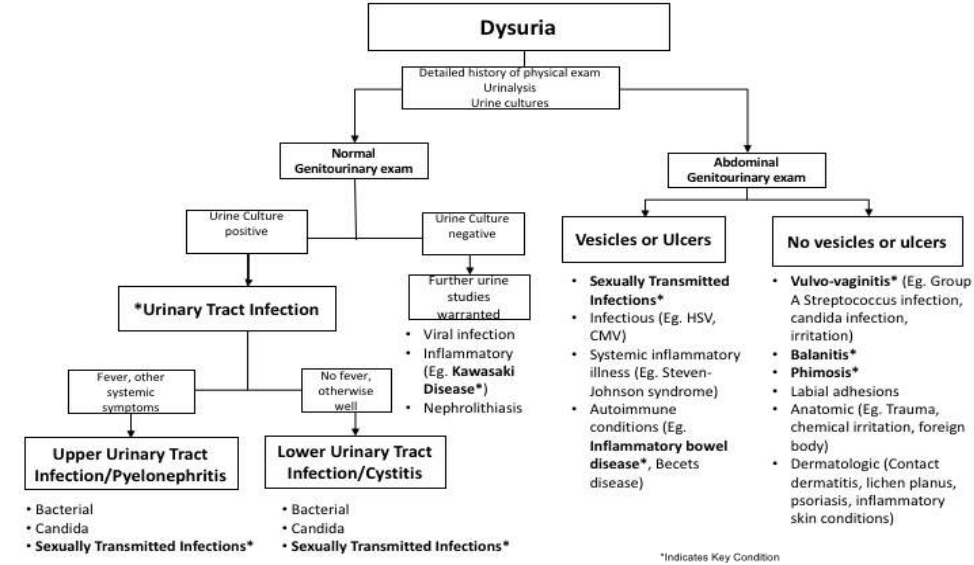
Diarrhea

(Pediatric)

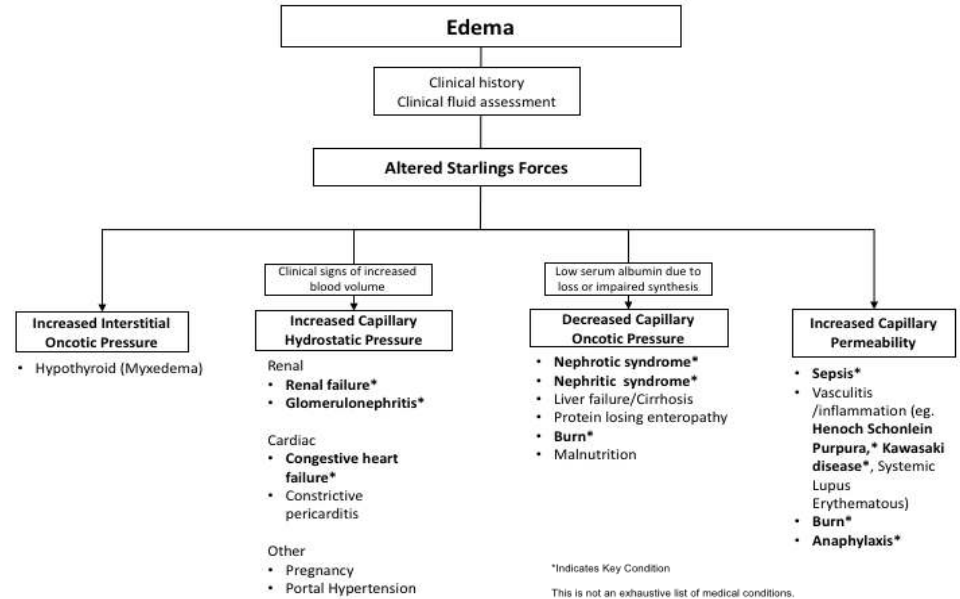


*Indicates Key Condition
This is not an exhaustive list of medical conditions.

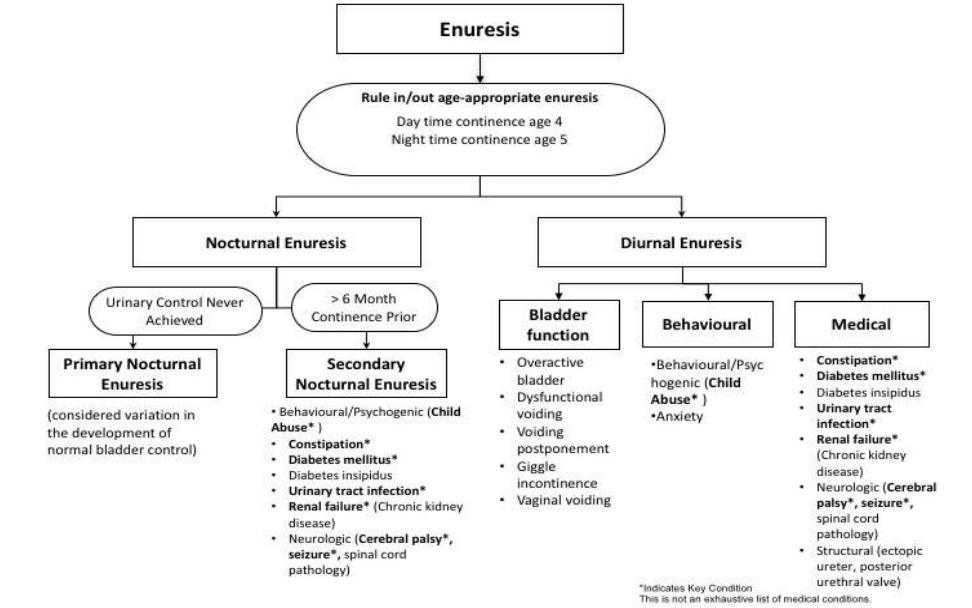
Dysuria


Dysuria
Detailed history of physical exam
Urinalysis
Urine cultures
Normal Genitourinary exam
Abdominal Genitourinary exam
Urine Culture positive
Urine Culture negative
*Urinary Tract Infection
Further urine studies warranted
• Viral infection
• Inflammatory (Eg. Kawasaki Disease*)
• Nephrolithiasis
Fever, other systemic symptoms
No fever, otherwise well
Upper Urinary Tract Infection/Pyelonephritis
Lower Urinary Tract Infection/Cystitis
• Bacterial
• Candida
• Sexually Transmitted Infections*
• Bacterial
• Candida
• Sexually Transmitted Infections*
Vesicles or Ulcers
• Sexually Transmitted Infections*
• Infectious (Eg. HSV, CMV)
• Systemic inflammatory illness (Eg. Steven-Johnson syndrome)
• Autoimmune conditions (Eg. Inflammatory bowel disease*, Becets disease)
No vesicles or ulcers
• Vulvo-vaginitis* (Eg. Group A Streptococcus infection, candida infection, irritation)
• Balanitis*
• Phimosis*
• Labial adhesions
• Anatomic (Eg. Trauma, chemical irritation, foreign body)
• Dermatologic (Contact dermatitis, lichen planus, psoriasis, inflammatory skin conditions)
*Indicates Key Condition
This is not an exhaustive list of medical conditions.

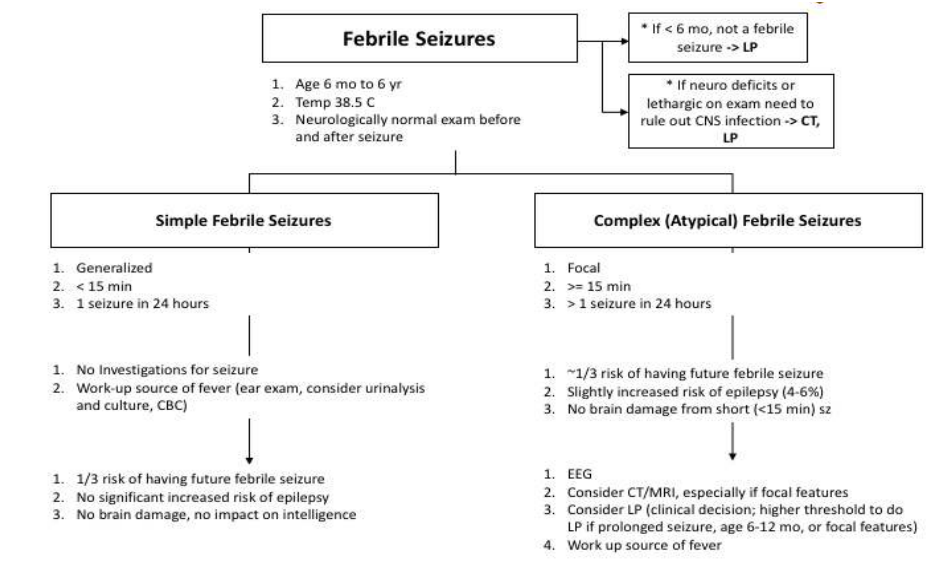
Edema



Enuresis

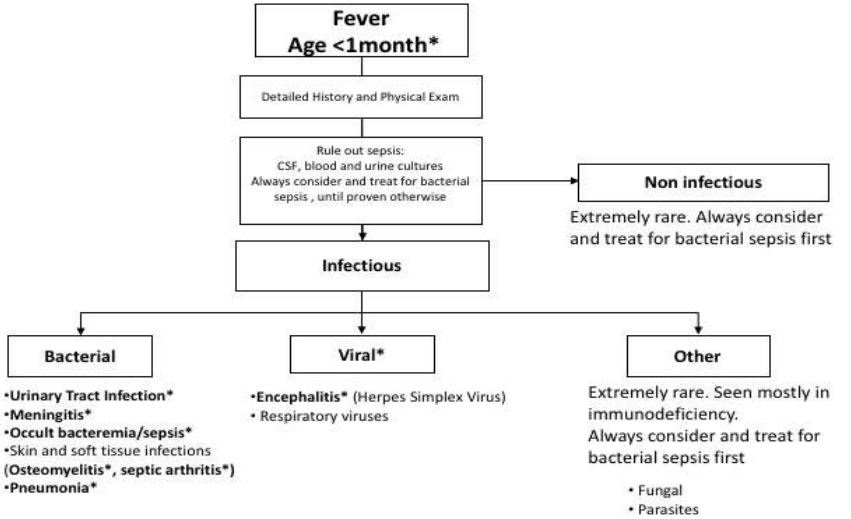

Enuresis
Rule in/out age-appropriate enuresis
Day time continence age 4
Night time continence age 5
Nocturnal Enuresis
Diurnal Enuresis
Urinary Control Never Achieved
> 6 Month Continence Prior
Primary Nocturnal Enuresis
(considered variation in the development of normal bladder control)
Secondary Nocturnal Enuresis
• Behavioural/Psychogenic (Child Abuse*)
• Constipation*
• Diabetes mellitus*
• Diabetes insipidus
• Urinary tract infection*
• Renal failure* (Chronic kidney disease)
• Neurologic (Cerebral palsy*, seizure*, spinal cord pathology)
Bladder function
• Overactive bladder
• Dysfunctional voiding
• Voiding postponement
• Giggle incontinence
• Vaginal voiding
Behavioural
•Behavioural/Psychogenic (Child Abuse*)
•Anxiety
Medical
• Constipation*
• Diabetes mellitus*
• Diabetes insipidus
• Urinary tract infection*
• Renal failure* (Chronic kidney disease)
• Neurologic (Cerebral palsy*, seizure*, spinal cord pathology)
• Structural (ectopic ureter, posterior urethral valve)
*Indicates Key Condition
This is not an exhaustive list of medical conditions.

Febrile Seizures

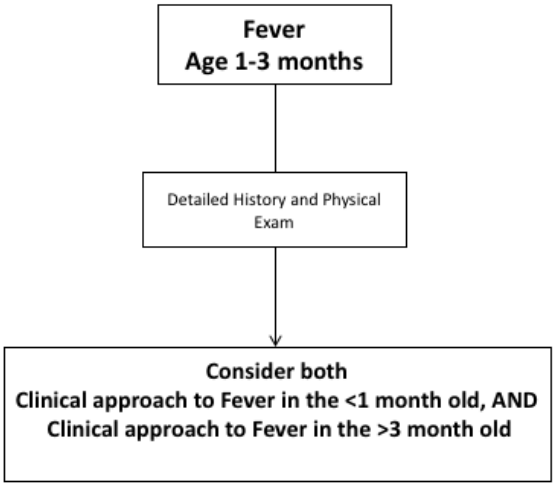


*Indicates Key Condition
This is not an exhaustive list of medical conditions.

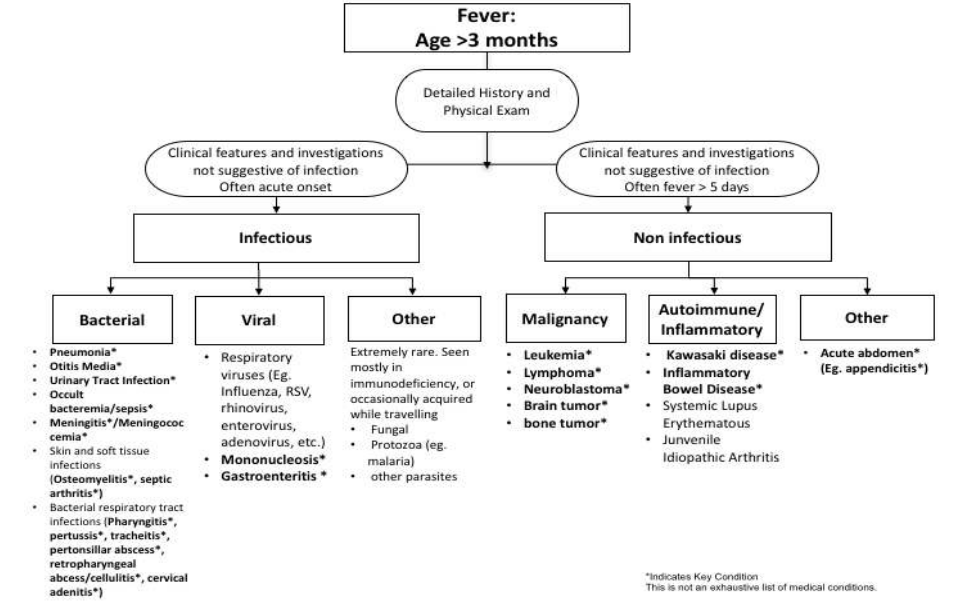
Fever (Age <1 Month)



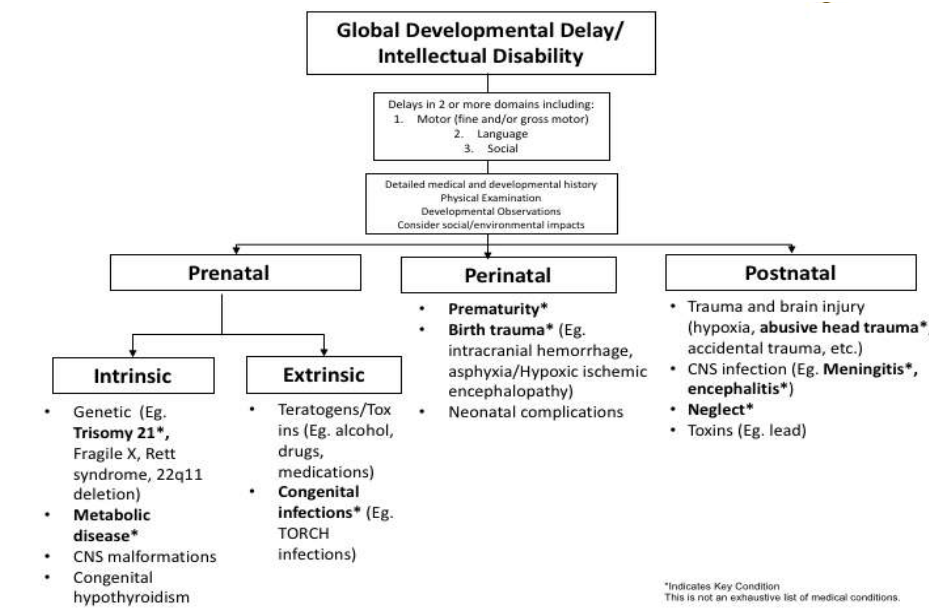
Fever (Age 1-3 Months)



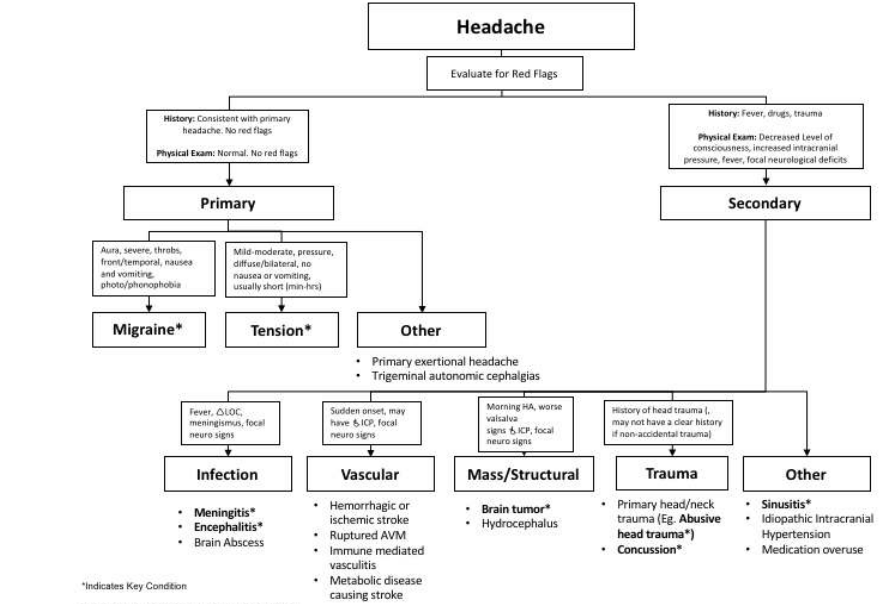
Fever (Age >3 Months)



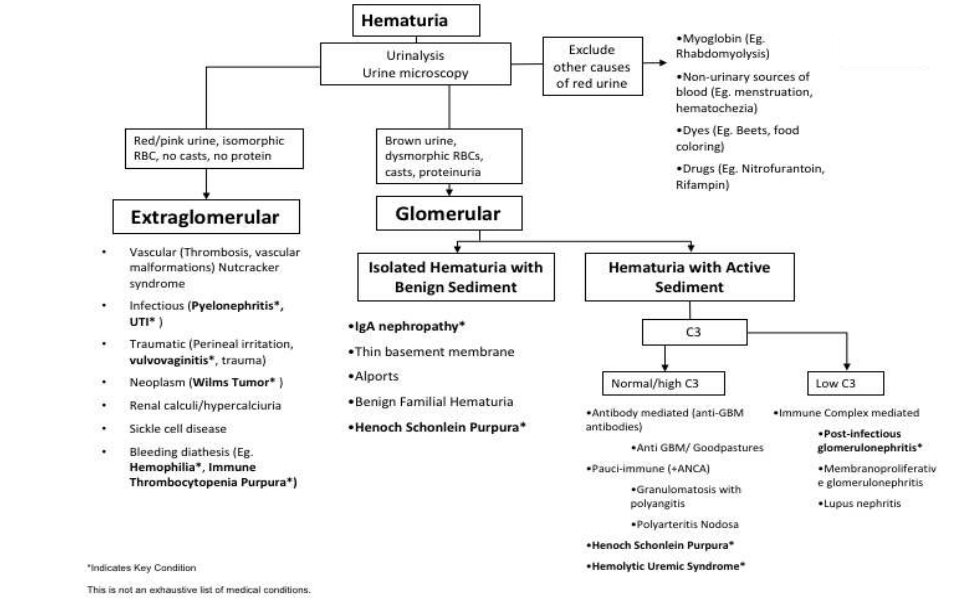
Global Developmental Delay / Intellectual Disability



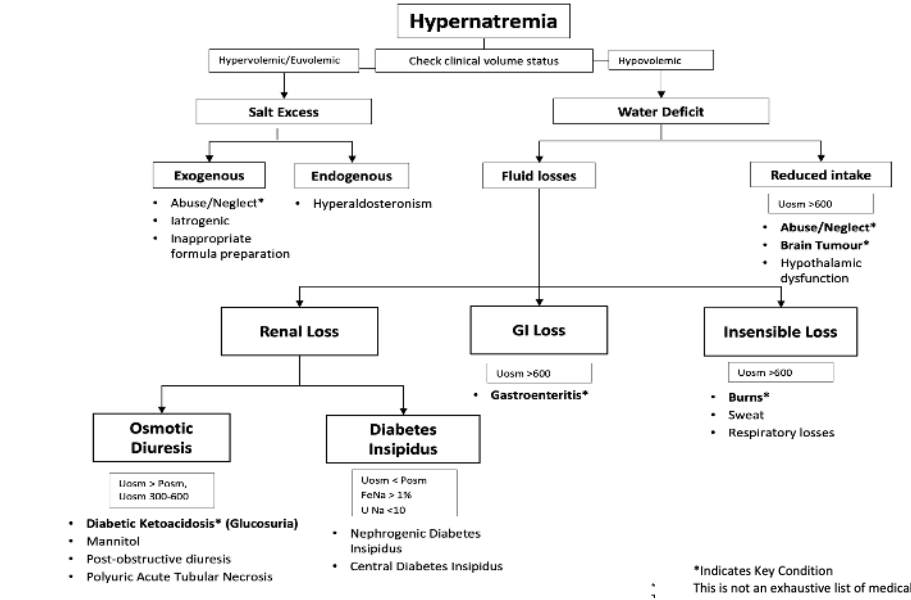
Headache


Headache
Evaluate for Red Flags
History: Consistent with primary headache. No red flags
Physical Exam: Normal. No red flags
History: Fever, drugs, trauma
Physical Exam: Decreased Level of consciousness, increased intracranial pressure, fever, focal neurological deficits
Primary
Secondary
Aura, severe, throbs, front/temporal, nausea and vomiting, photo/phonophobia
Mild-moderate, pressure, diffuse/bilateral, no nausea or vomiting, usually short (min-hrs)
Migraine*
Tension*
Other
• Primary exertional headache
• Trigeminal autonomic cephalgias
Fever, △LOC, meningismus, focal neuro signs
Sudden onset, may have ↑ICP, focal neuro signs
Morning HA, worse valsalva signs ↑ICP, focal neuro signs
History of head trauma (, may not have a clear history if non-accidental trauma)
Infection
Vascular
Mass/Structural
Trauma
Other
• Meningitis*
• Encephalitis*
• Brain Abscess
• Hemorrhagic or ischemic stroke
• Ruptured AVM
• Immune mediated vasculitis
• Metabolic disease causing stroke
• Brain tumor*
• Hydrocephalus
• Primary head/neck trauma (Eg. Abusive head trauma*)
• Concussion*
• Sinusitis*
• Idiopathic Intracranial Hypertension
• Medication overuse
*Indicates Key Condition
This is not an exhaustive list of medical conditions.

Hematuria

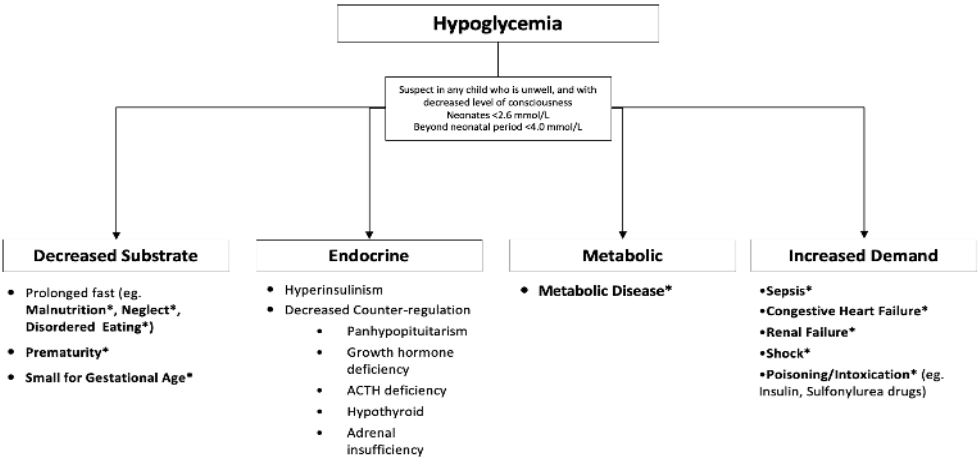


Hypernatremia



*Indicates Key Condition
This is not an exhaustive list of medical conditions.

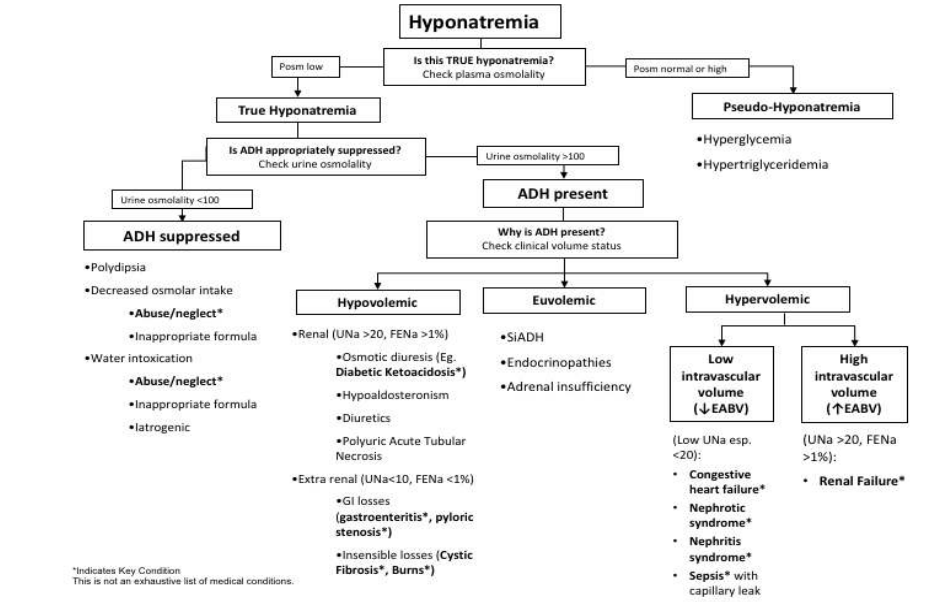
Hypoglycemia



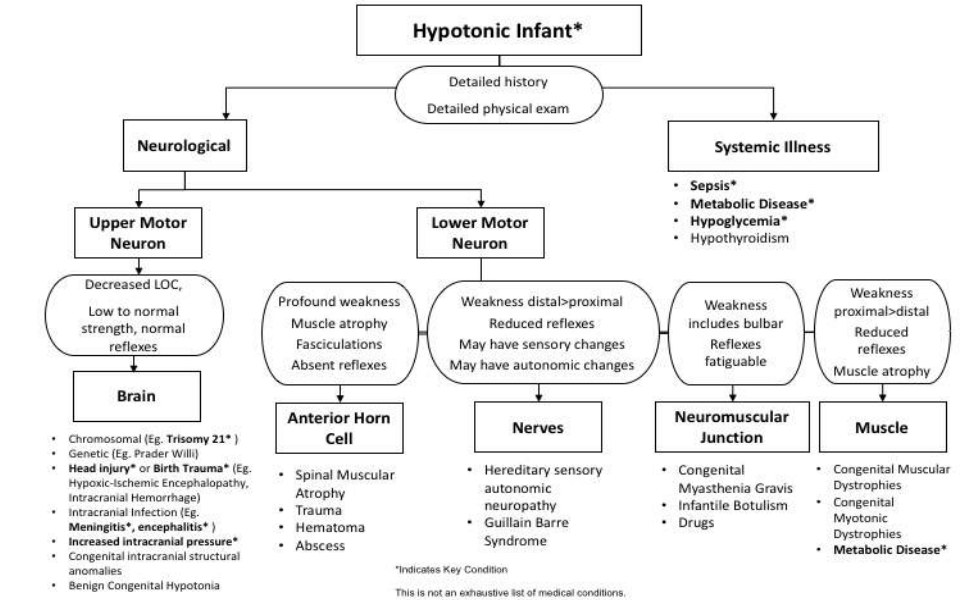
⚠ *Potentially acutely life-threatening presentation*

*Indicates Key Condition
This is not an exhaustive list of medical conditions.

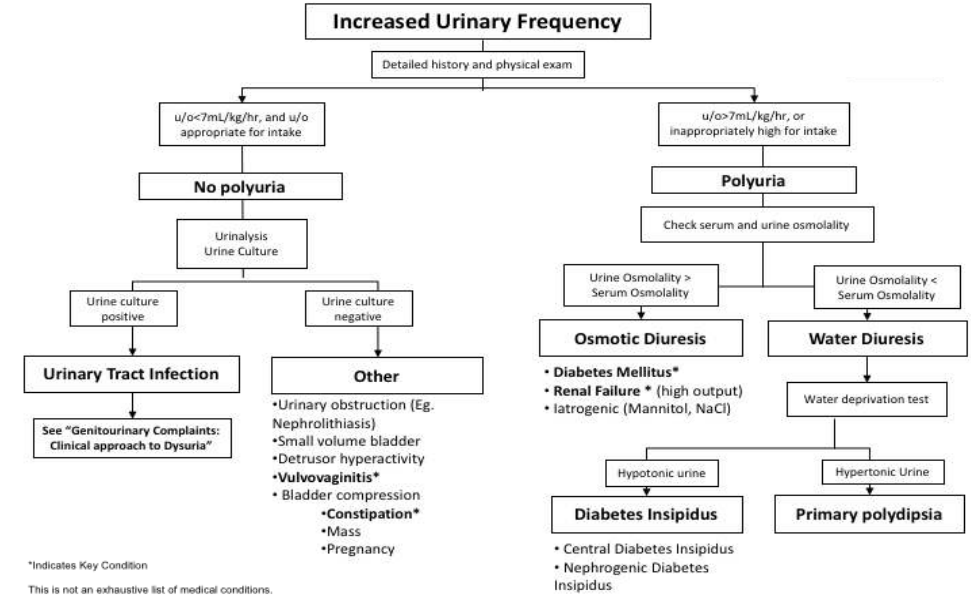
Hyponatremia



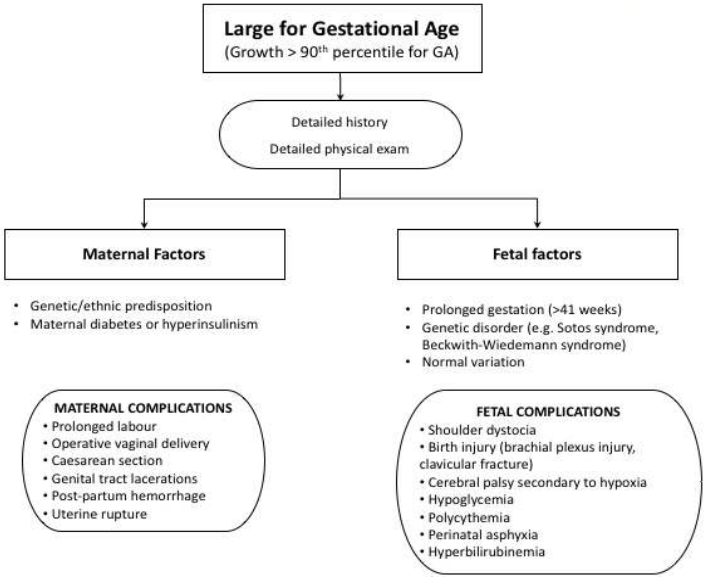
Hypotonic Infant (Floppy Newborn)



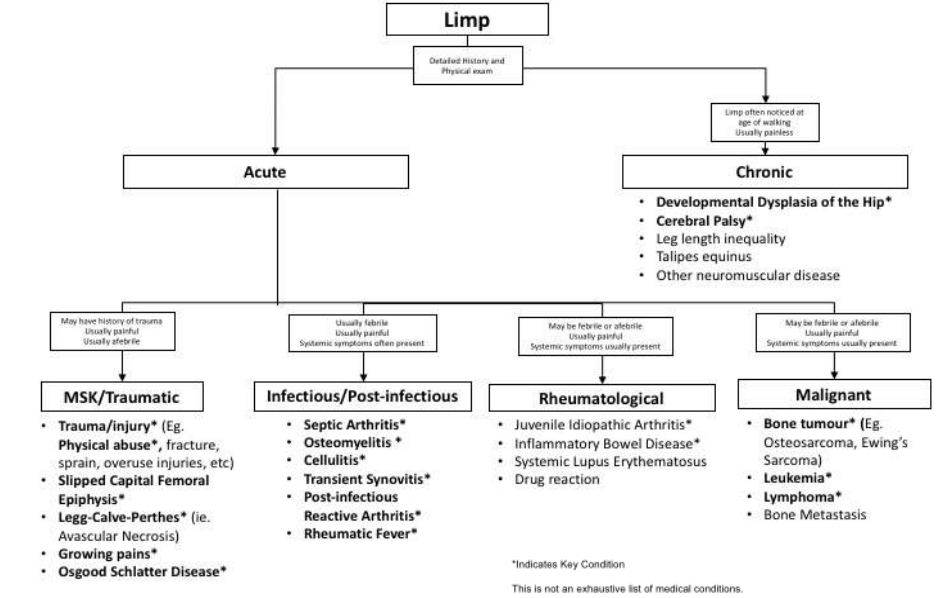
Increased Urinary Frequency



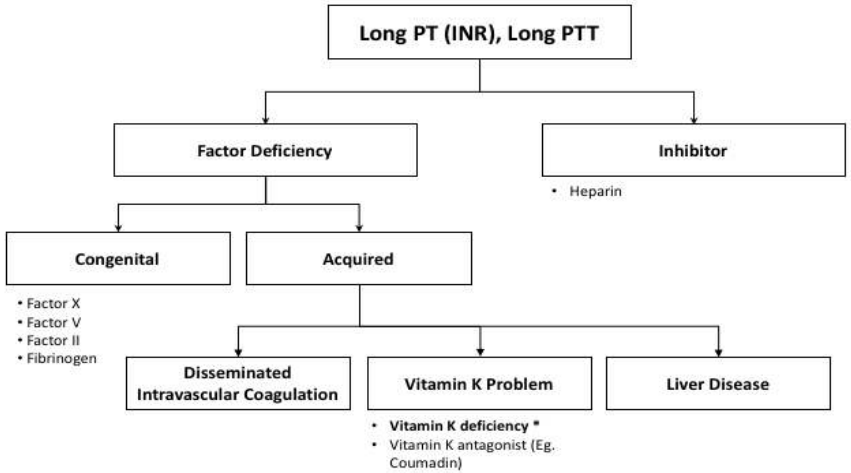
Large for Gestational Age



Limp


Limp
Detailed History and Physical exam
Limp often noticed at age of walking
Usually painless
Acute
Chronic
• Developmental Dysplasia of the Hip*
• Cerebral Palsy*
• Leg length inequality
• Talipes equinus
• Other neuromuscular disease
May have history of trauma
Usually painful
Usually afebrile
Usually febrile
Usually painful
Systemic symptoms often present
May be febrile or afebrile
Usually painful
Systemic symptoms usually present
May be febrile or afebrile
Usually painful
Systemic symptoms usually present
MSK/Traumatic
• Trauma/injury* (Eg. Physical abuse*, fracture, sprain, overuse injuries, etc)
• Slipped Capital Femoral Epiphysis*
• Legg-Calve-Perthes* (ie. Avascular Necrosis)
• Growing pains*
• Osgood Schlatter Disease*
Infectious/Post-infectious
• Septic Arthritis*
• Osteomyelitis *
• Cellulitis*
• Transient Synovitis*
• Post-infectious Reactive Arthritis*
• Rheumatic Fever*
Rheumatological
• Juvenile Idiopathic Arthritis*
• Inflammatory Bowel Disease*
• Systemic Lupus Erythematosus
• Drug reaction
Malignant
• Bone tumour* (Eg. Osteosarcoma, Ewing's Sarcoma)
• Leukemia*
• Lymphoma*
• Bone Metastasis
*Indicates Key Condition
This is not an exhaustive list of medical conditions.

Long PT (INR)**, Long PTT**

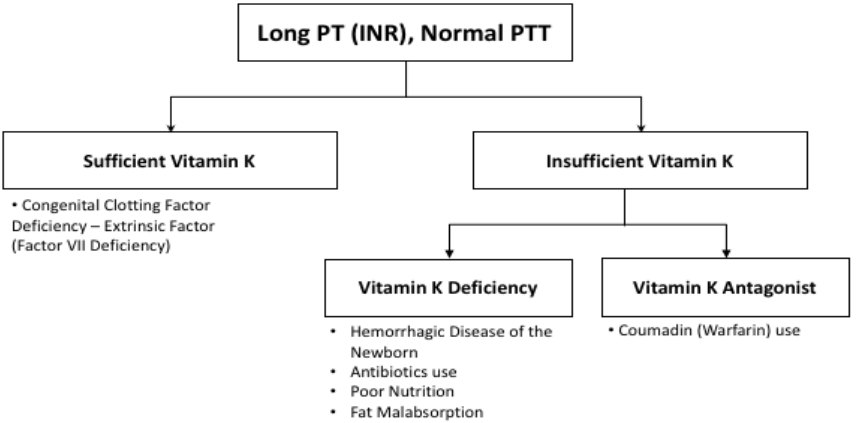


Notes:

- 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)

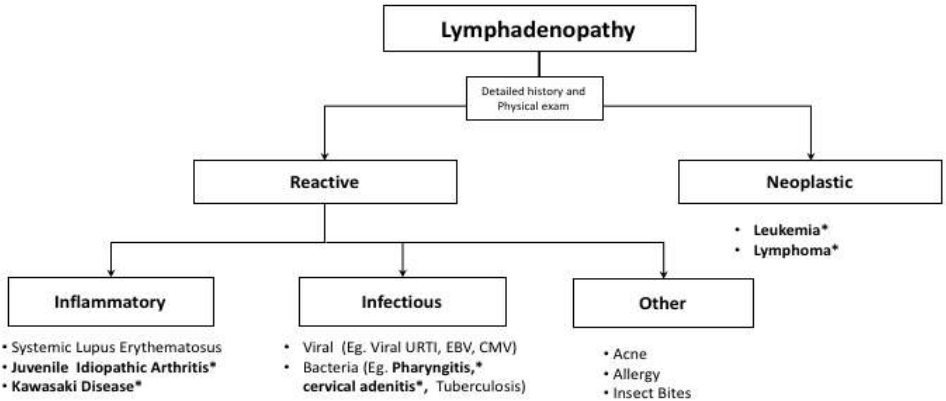
*Indicates Key Condition
This is not an exhaustive list of medical conditions.

Long PT (INR)**, Normal PTT**



*Indicates Key Condition
This is not an exhaustive list of medical conditions.

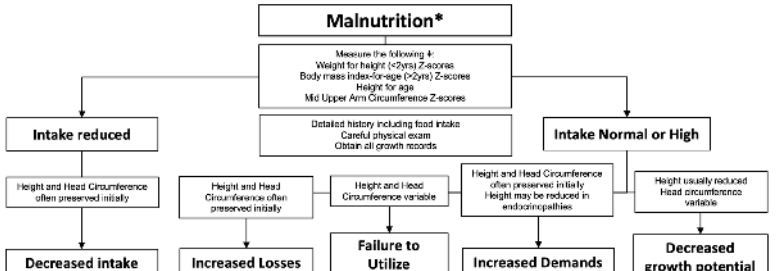
Lymphadenopathy



*Indicates Key Condition

This is not an exhaustive list of medical conditions.

Malnutrition



÷ DEFINITION FOR MALNUTRITION: ONE DATA POINT (AAP, Academy Dietetics and Nutrition)

Primary Indicator	Moderate Malnutrition	Severe Malnutrition
Weight for length <2 yrs. BMI (>2 yrs.)	-2 to -2.9	≤ -3
Height for age		≤ -3
MUAC	-2 to -2.9	≤ -3

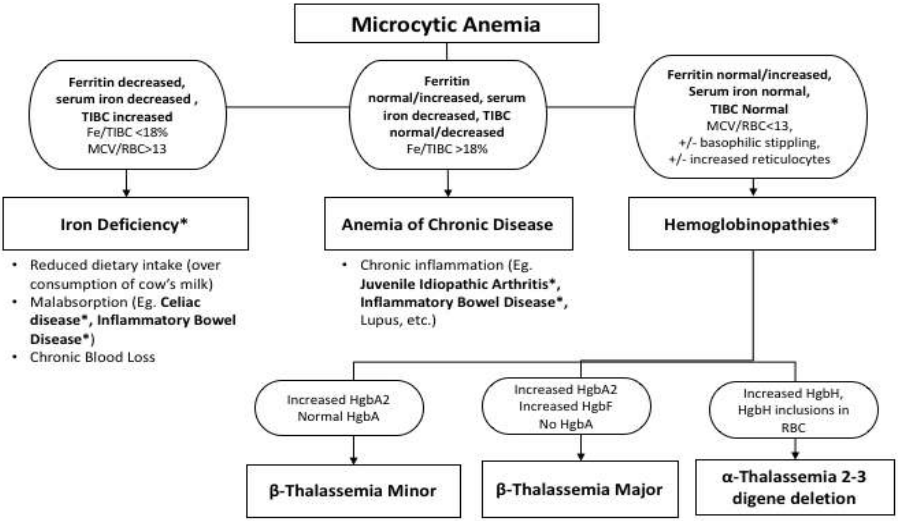
÷ DEFINITION FOR MALNUTRITION: TWO OR MORE DATA POINTS (AAP, Academy Dietetics and Nutrition)

Primary Indicator	Moderate Malnutrition	Severe Malnutrition
Weight gain velocity (<2 yrs.)	<50% of the norm	<25% of the norm
Weight loss (>2 yrs.)	7.5% BW	>10% BW
Decline in weight for length/BMI	↓ 2 z score	↓ 3 z scores

*Indicates Key Condition

This is not an exhaustive list of medical conditions.

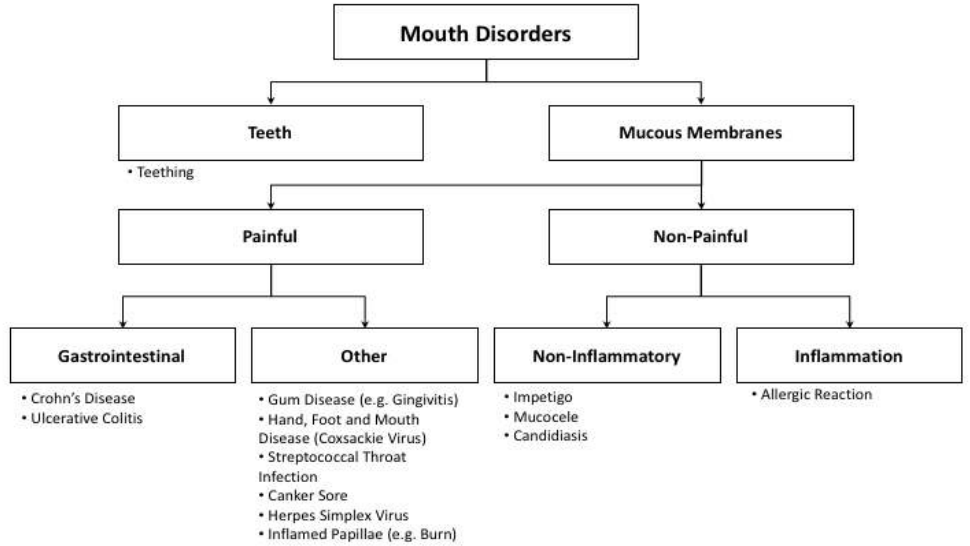
Microcytic Anemia



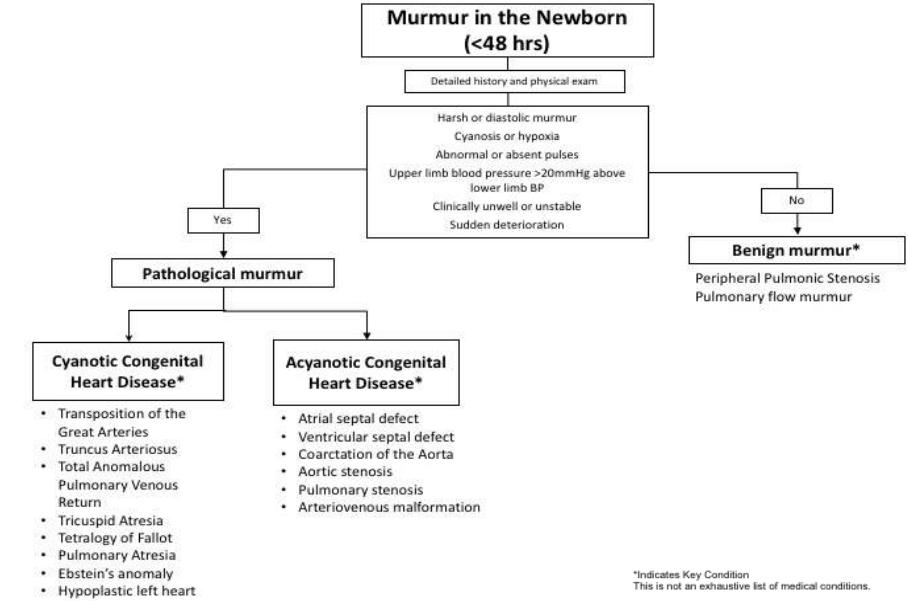
*Indicates Key Condition

This is not an exhaustive list of medical conditions.

Mouth Disorders (Pediatric)

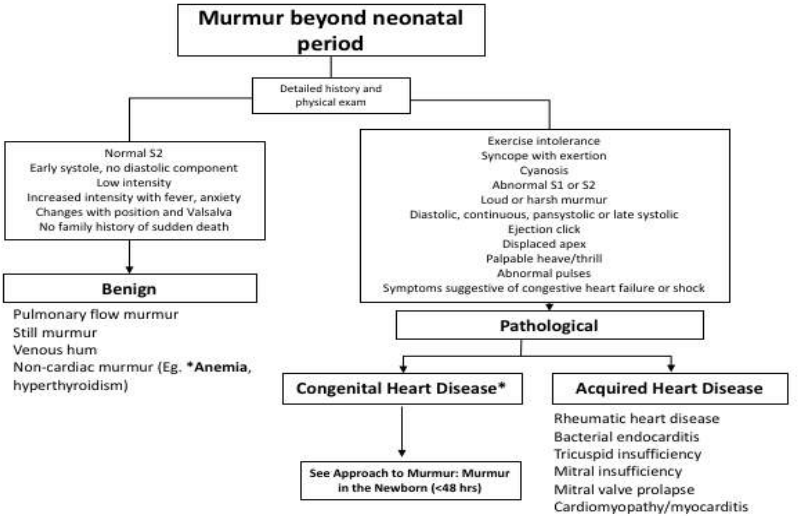


Murmur In The Newborn (<48 Hours)



*Indicates Key Condition
This is not an exhaustive list of medical conditions.

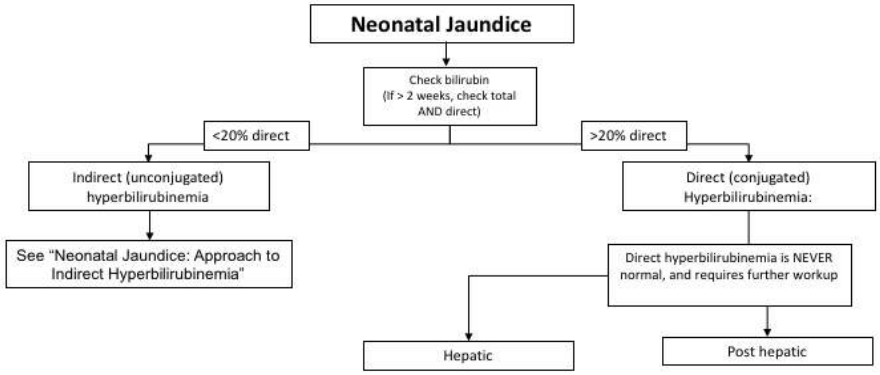
Murmur In The Newborn Beyond Neonatal Period



*Indicates Key Condition
This is not an exhaustive list of medical conditions.

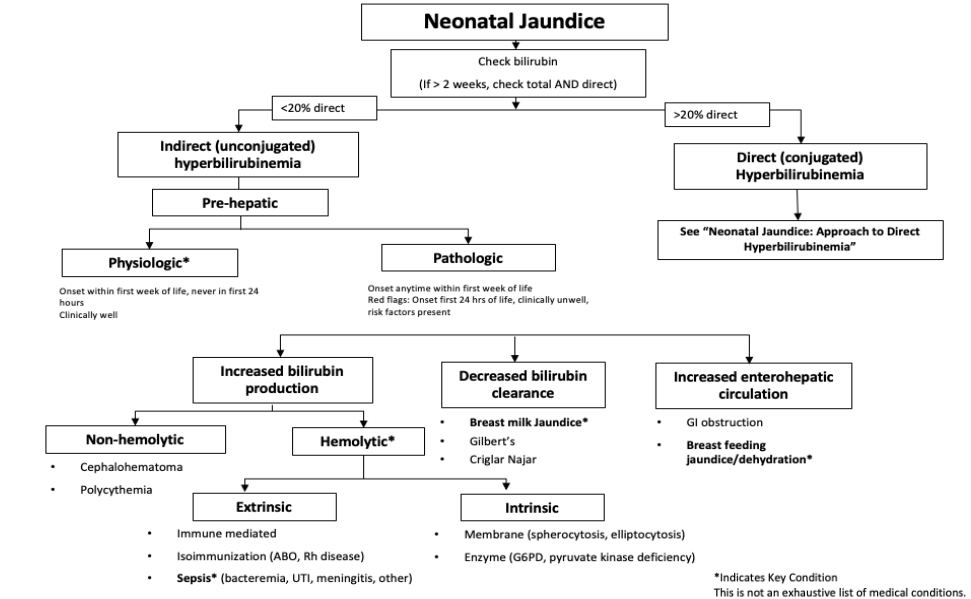
Neonatal Jaundice

Approach To Direct Hyperbilirubinemia



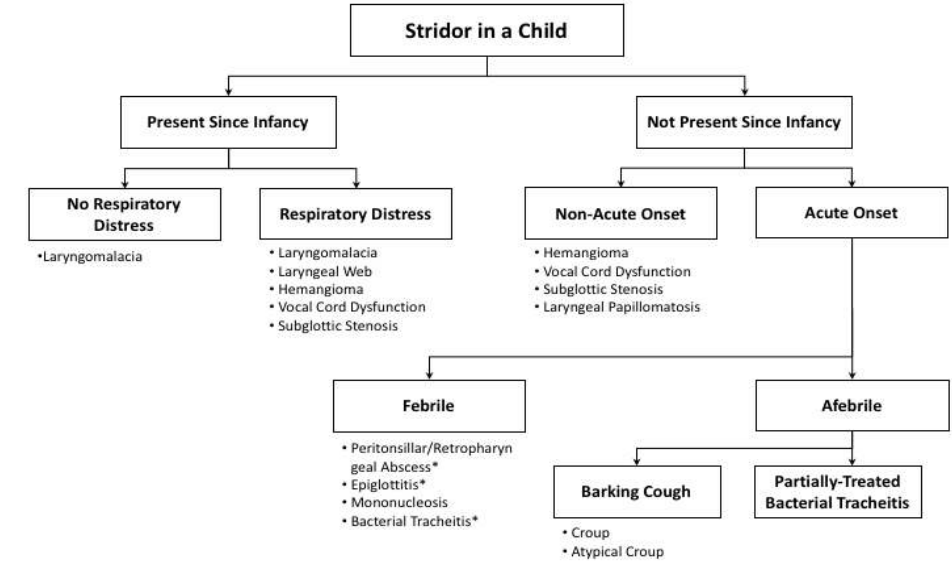
Neonatal Jaundice

Approach To Indirect Hyperbilirubinemia



Noisy Breathing

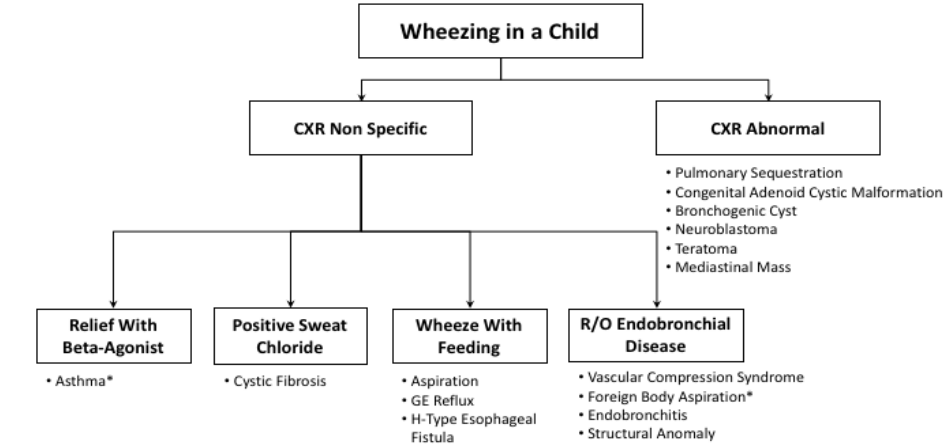
Pediatric Stridor



** Denotes acutely life-threatening causes*

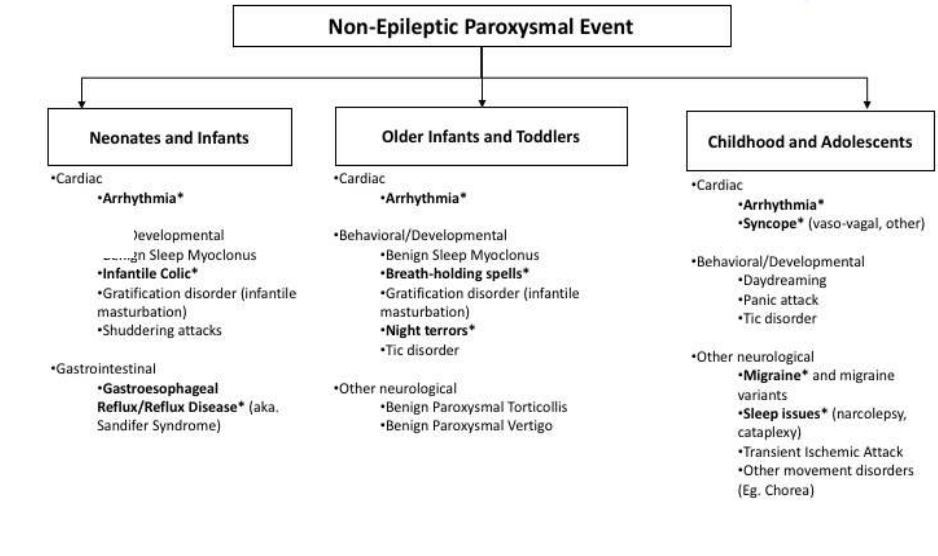
Noisy Breathing

Pediatric Wheezing



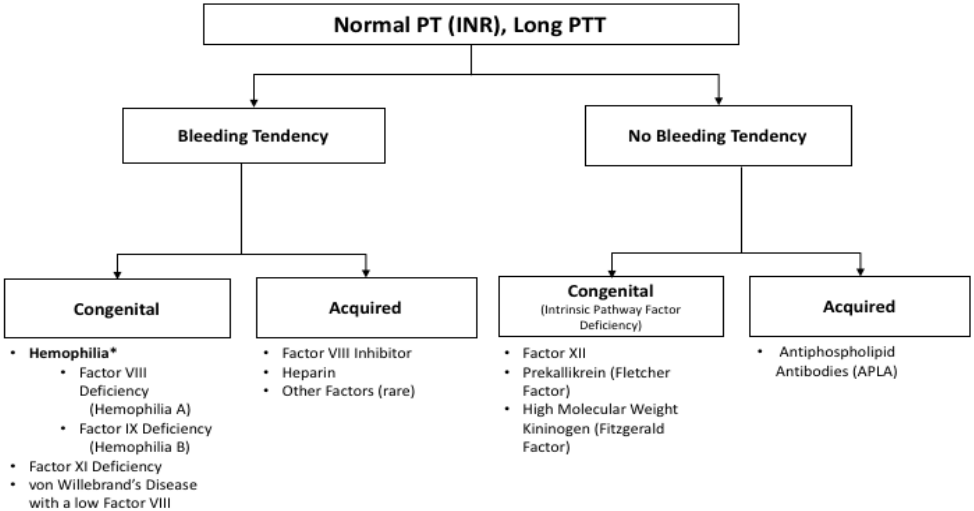
** Denotes acutely life-threatening causes*

Non-Epileptic Paroxysmal Event



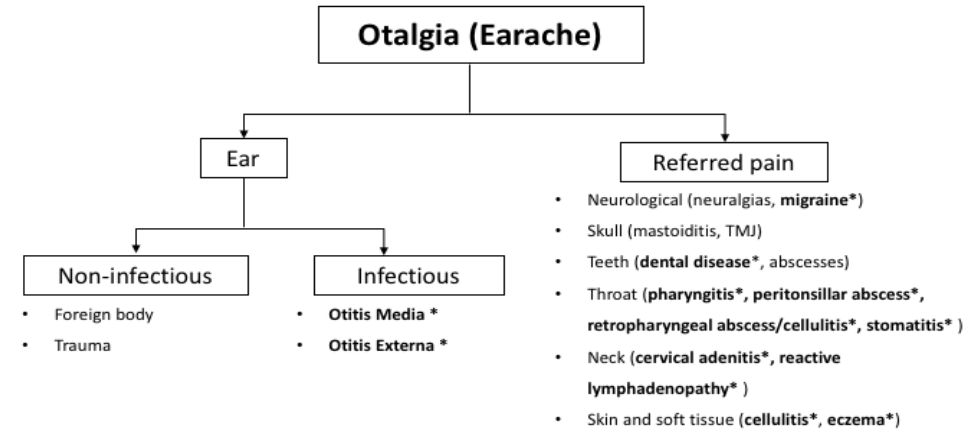
*Indicates Key Condition
This is not an exhaustive list of medical conditions.

Normal PT (INR)**, Long PTT**



*Indicates Key Condition
This is not an exhaustive list of medical conditions.

Otalgia (Earache)

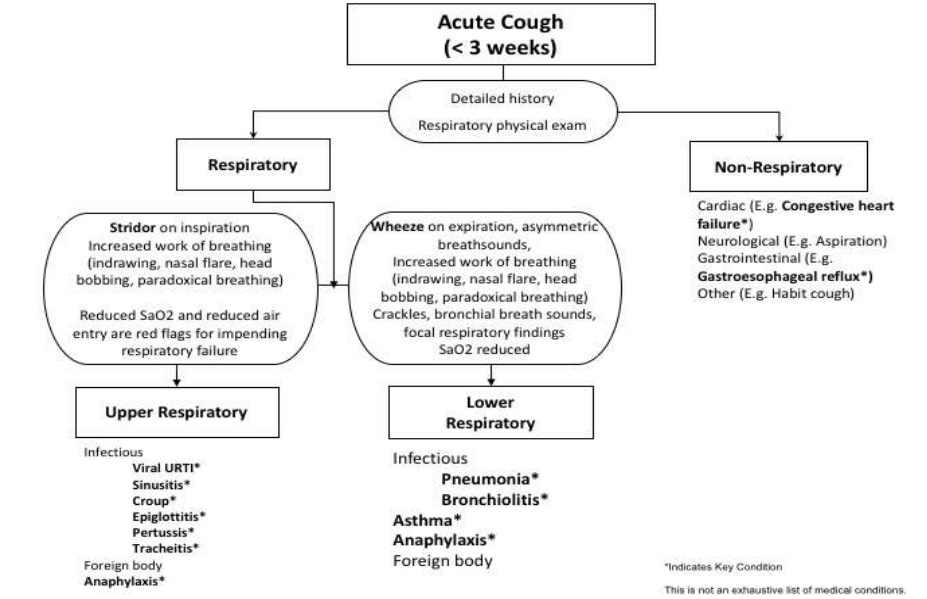


*Indicates Key Condition

This is not an exhaustive list of medical conditions.

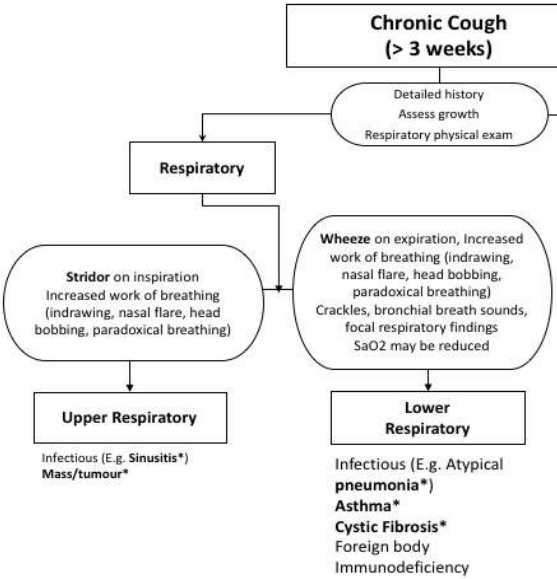
Pediatric Cough

Acute



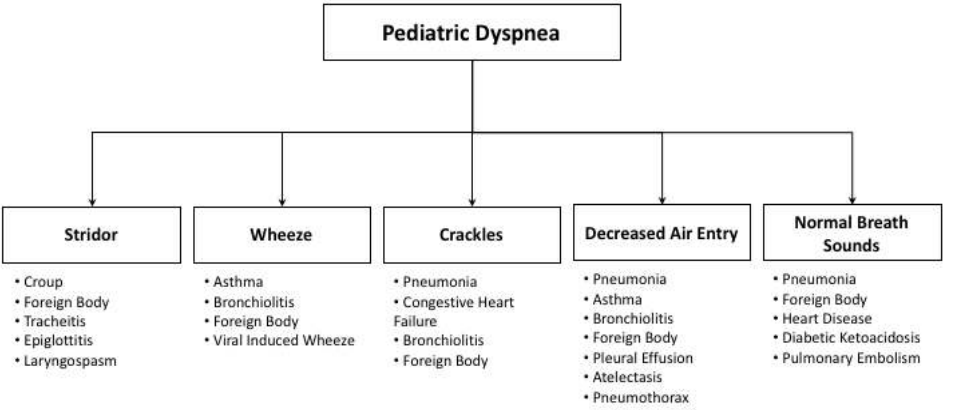
Pediatric Cough

Chronic

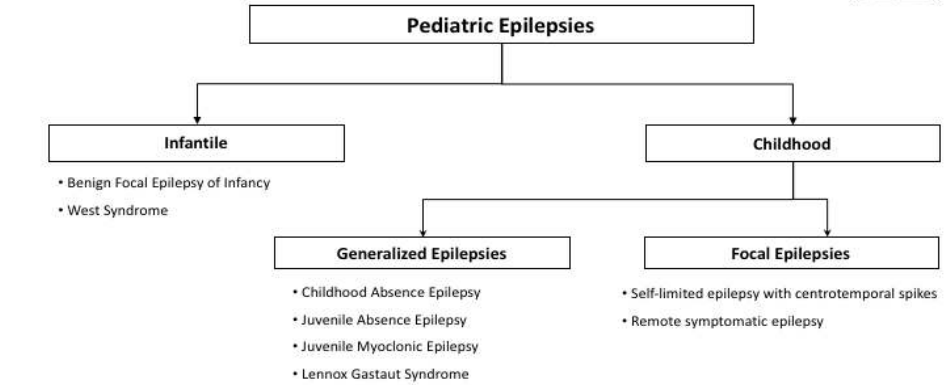


*Indicates Key Condition
This is not an exhaustive list of medical conditions.

Pediatric Dyspnea

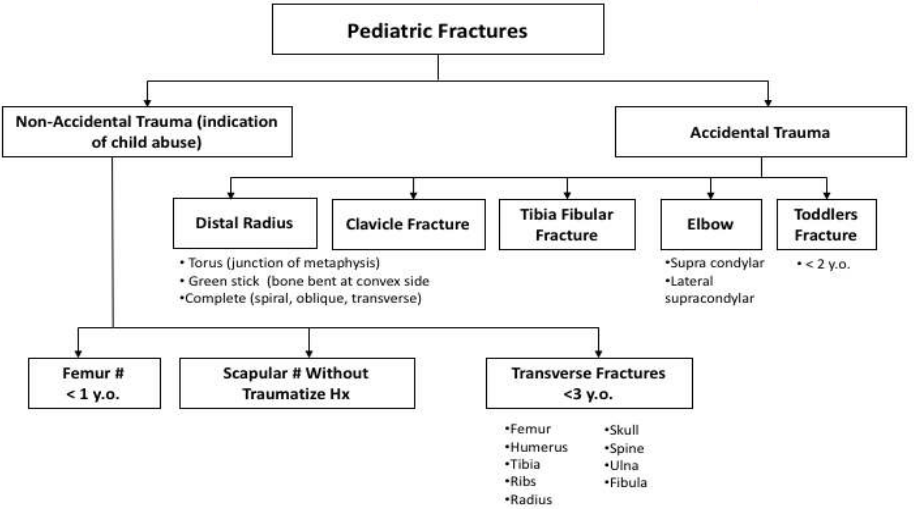


Pediatric Epilepsies



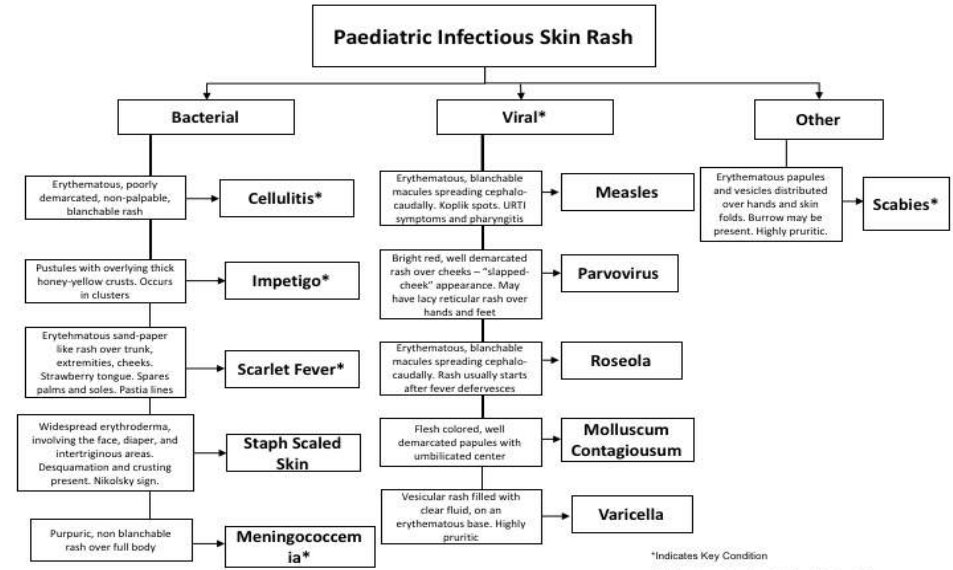
*Indicates Key Condition
This is not an exhaustive list of medical conditions.

Pediatric Fractures

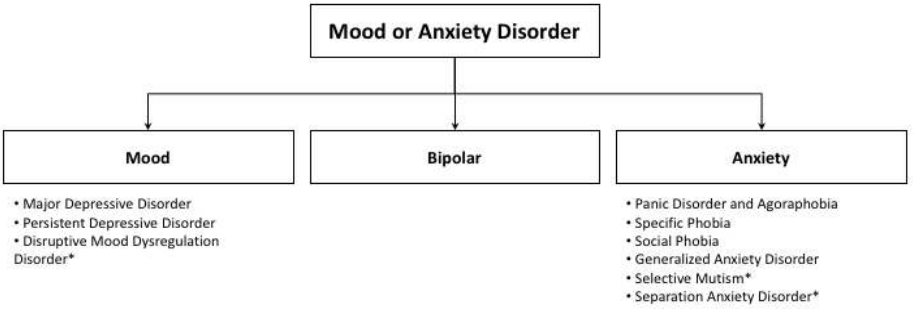


*Indicates Key Condition
This is not an exhaustive list of medical conditions.

Pediatric Infectious Skin Rash

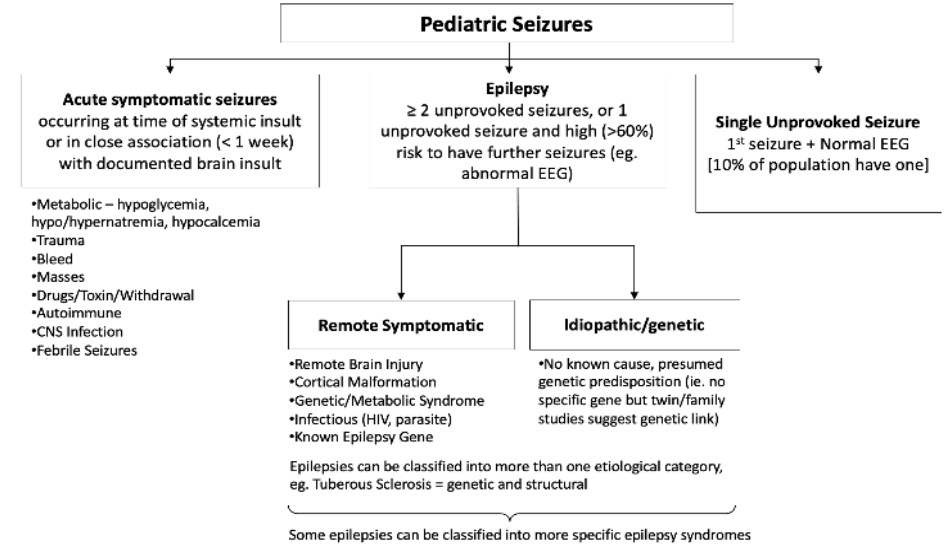


Pediatric Mood And Anxiety Disorders



*More commonly or exclusively found in pediatric populations

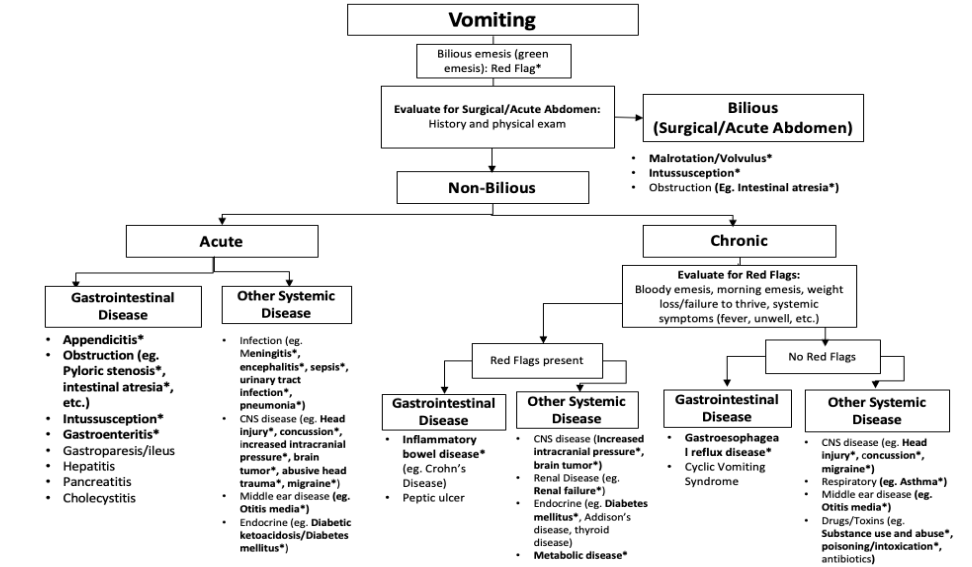
Pediatric Seizures



⚠ *Potentially acutely life-threatening presentation*

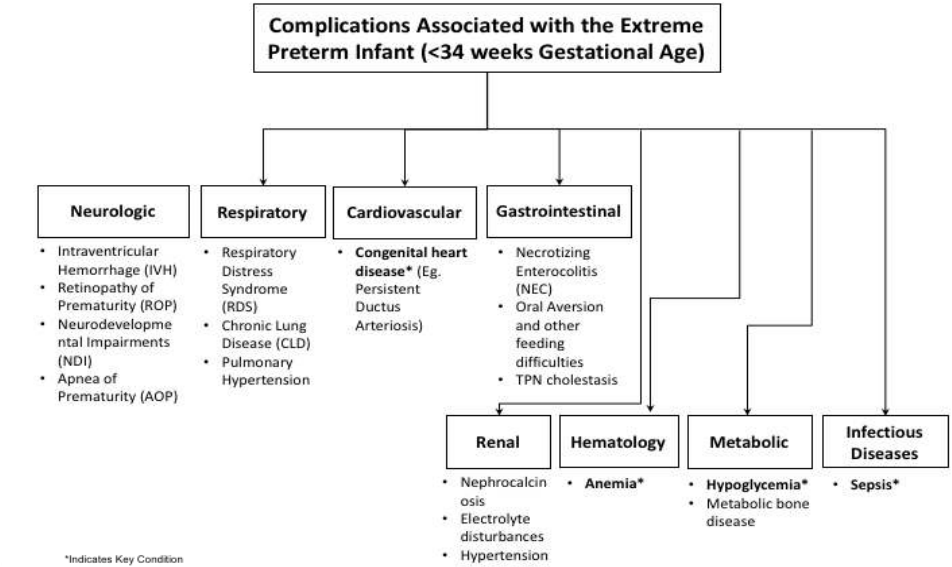
*Indicates Key Condition
This is not an exhaustive list of medical conditions.

Pediatric Vomiting

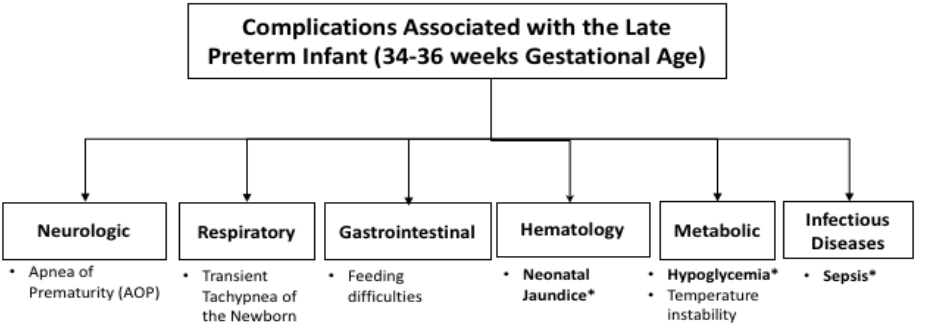


*Indicates Key Condition
This is not an exhaustive list of medical conditions.

Preterm Infant Complications (<34 Weeks)



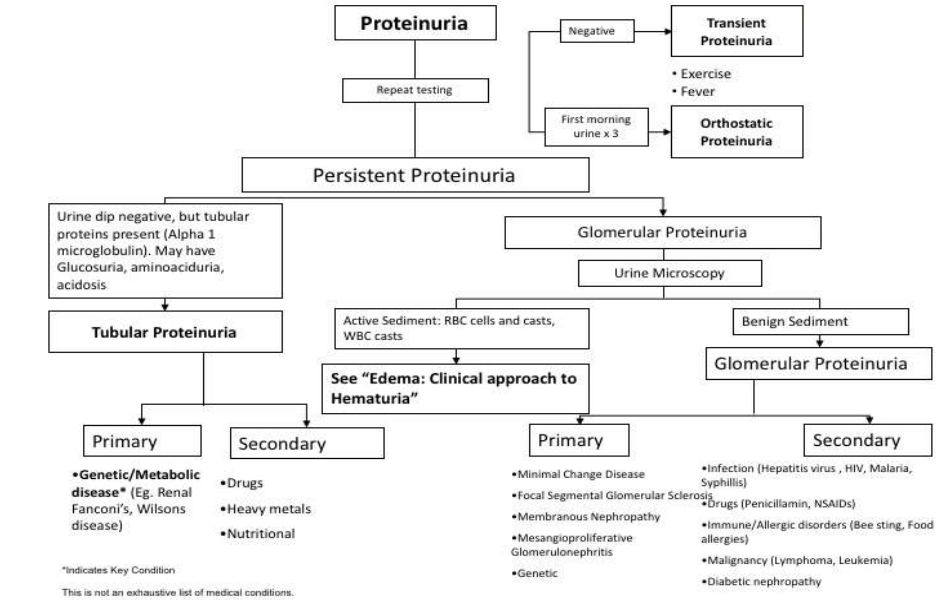
Preterm Infant Complications
(34-36 Weeks)



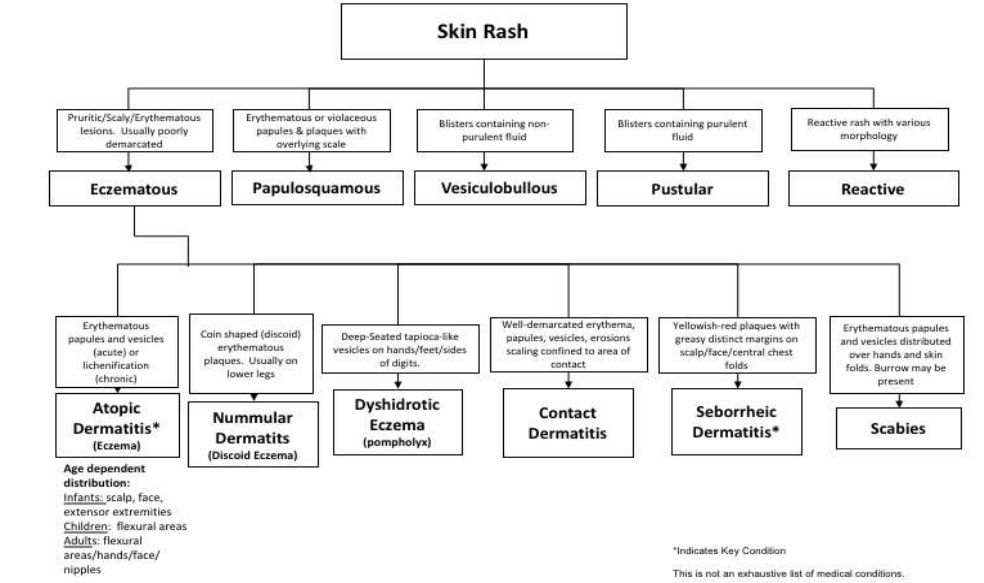
*Indicates Key Condition

This is not an exhaustive list of medical conditions.

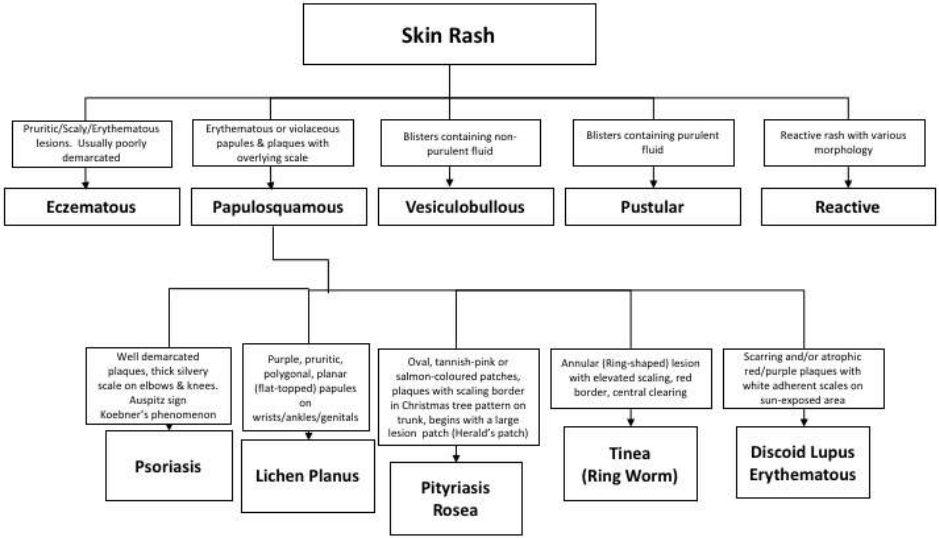
Proteinuria



Rash (Eczematous)



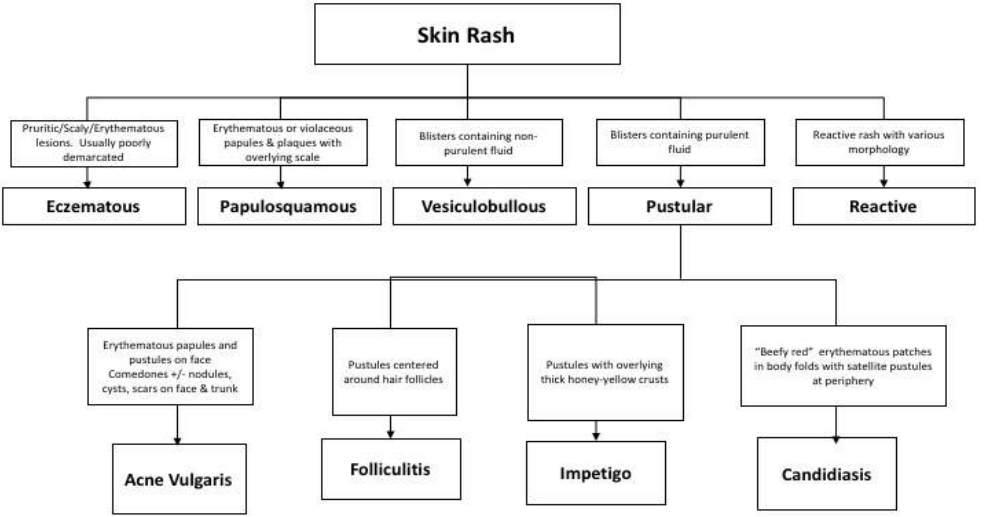
Rash (Papulosquamous)



*Indicates Key Condition

This is not an exhaustive list of medical conditions.

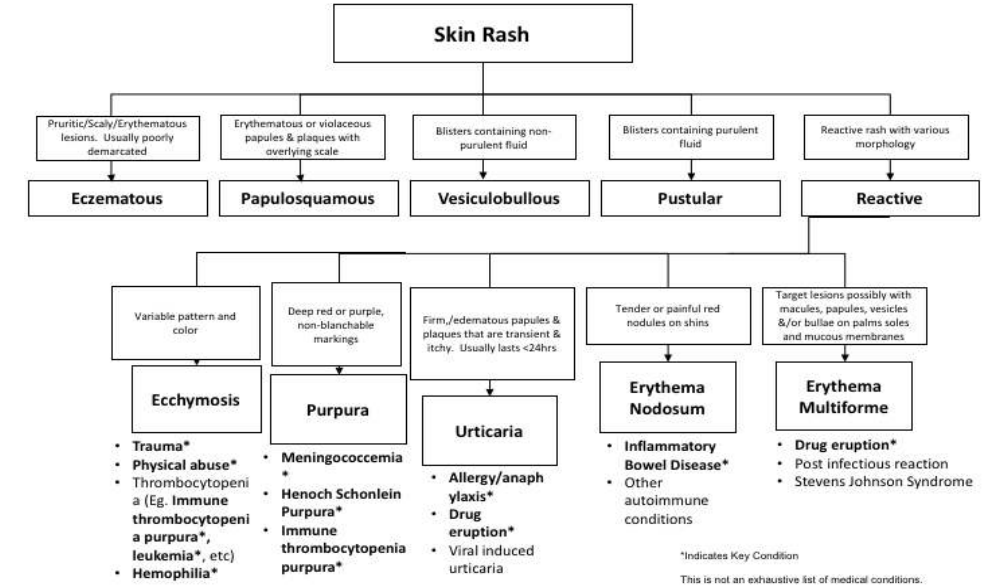
Rash (Pustular)



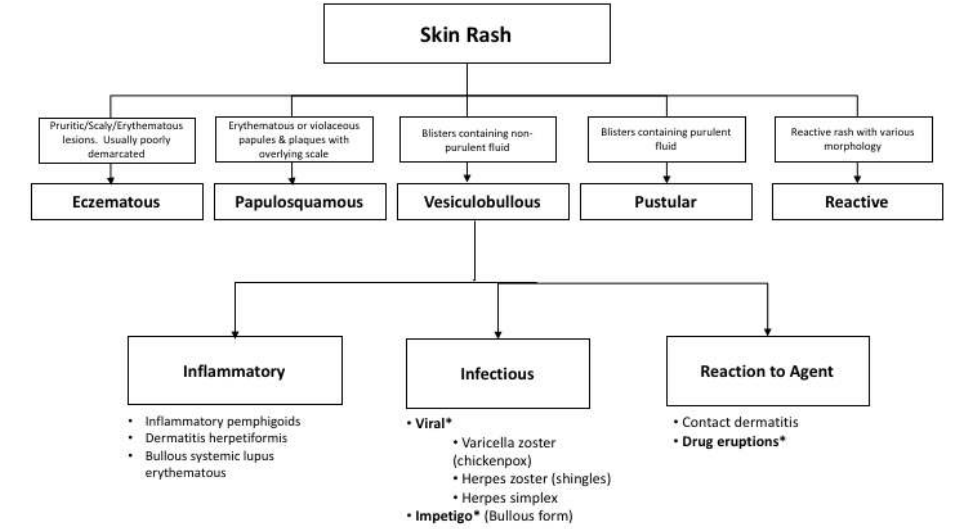
*Indicates Key Condition

This is not an exhaustive list of medical conditions.

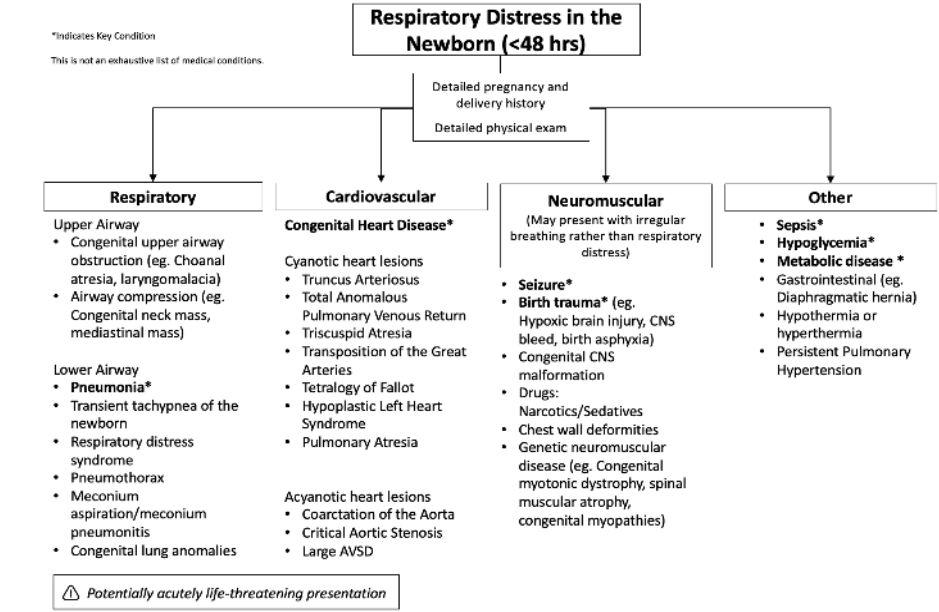
Rash (Reactive)



Rash (Vesiculobullous)

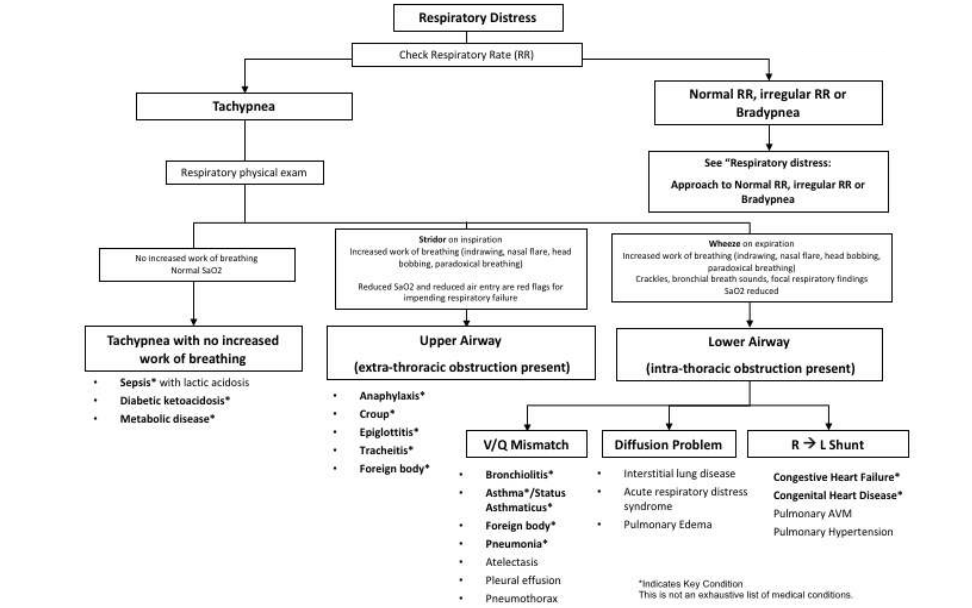


Respiratory Distress In The Newborn

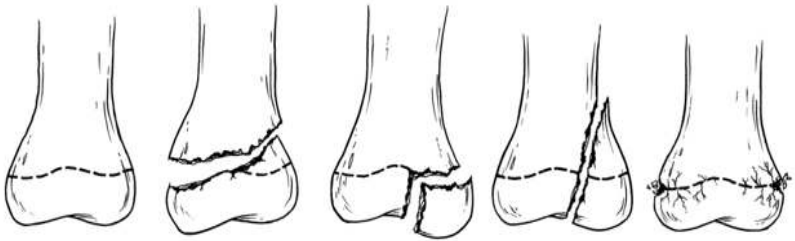


Respiratory Distress In The Newborn

Tachypnea



Salter Harris Physeal Injury Classification

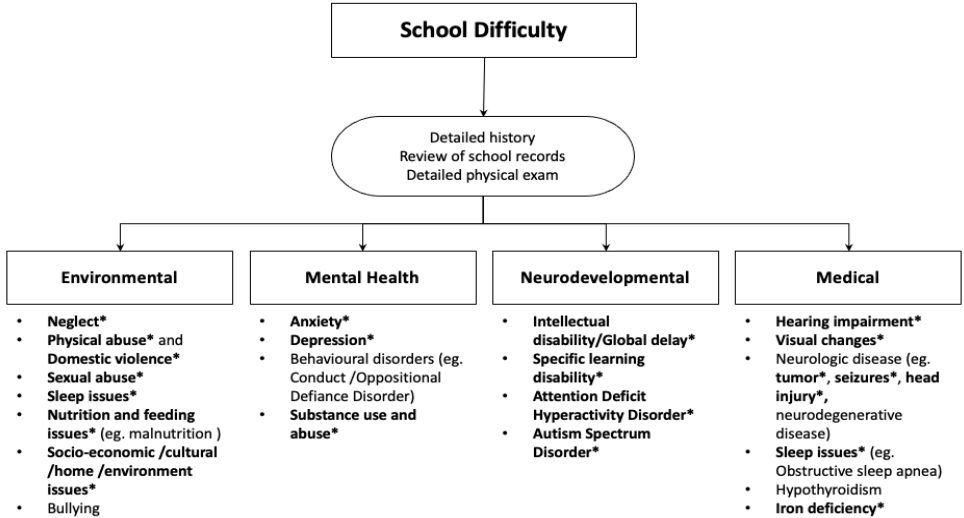


Type	Population	Features
I	Younger Children	Separation through the physis
II	Older Children (75%)	Fracture through a portion of the physis that extends through the metaphyses
III	Older Children (75%)	Fracture line goes below the physis through the epiphysis, and into the joint
IV		Fracture Line through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

S	Straight through
A	Above
L	Lower
T	Through
R	Crush

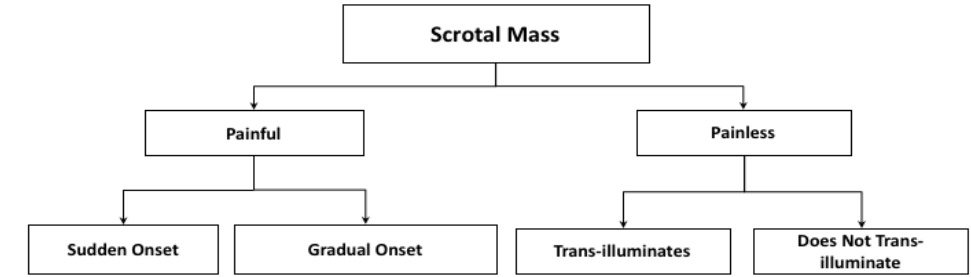
http://www.jaaos.org/content/10/5/345/F1.large.jpg

School Difficulties



*Indicates Key Condition
This is not an exhaustive list of medical conditions.

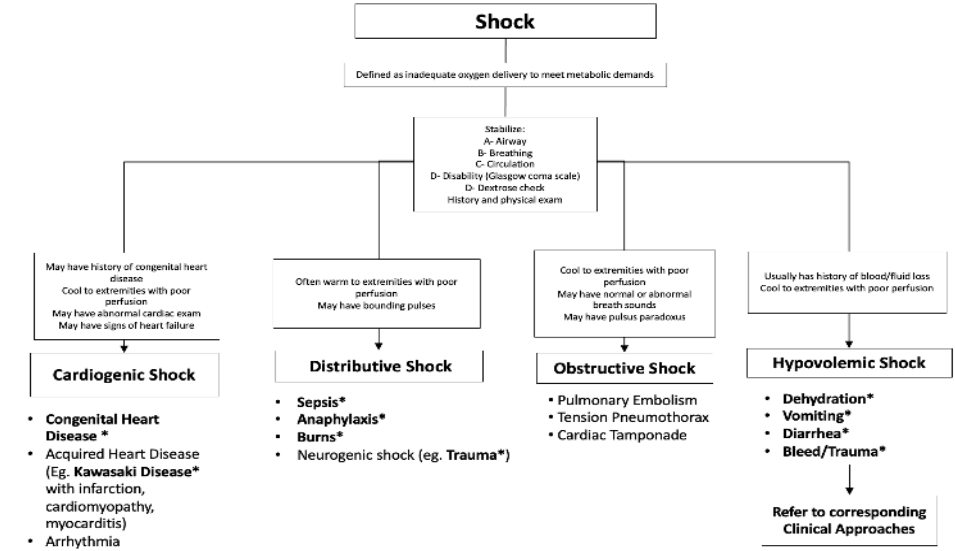
Scrotal Mass



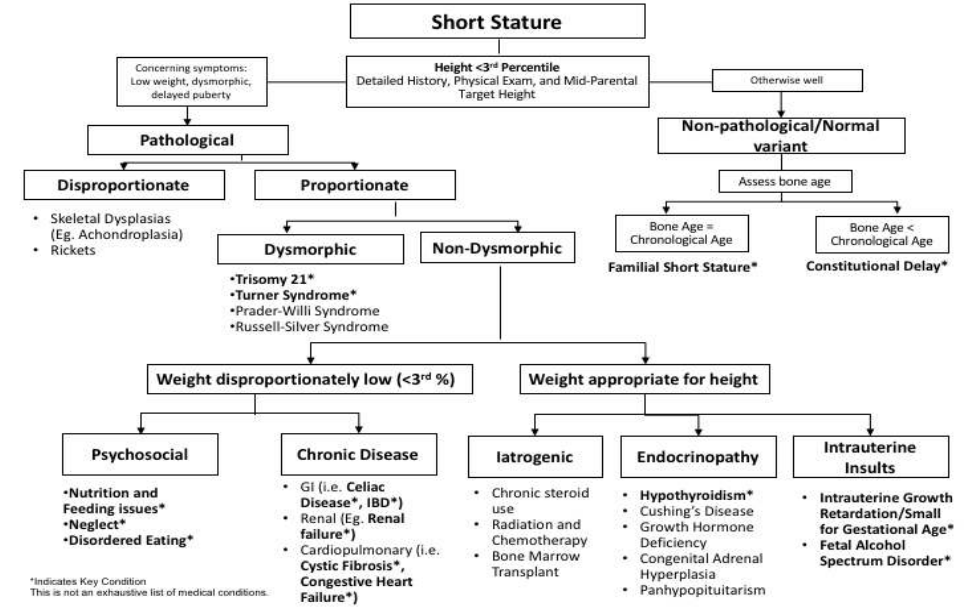
*Indicates Key Condition

This is not an exhaustive list of medical conditions.

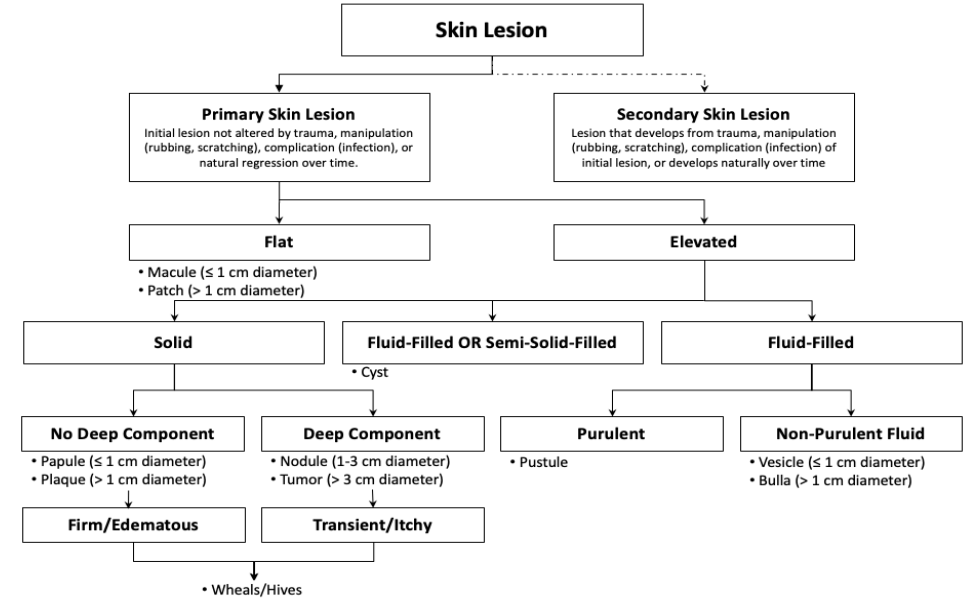
Shock


Shock
Defined as inadequate oxygen delivery to meet metabolic demands
Stabilize:
A- Airway
B- Breathing
C- Circulation
D- Disability (Glasgow coma scale)
D- Dextrose check
History and physical exam
May have history of congenital heart disease
Cool to extremities with poor perfusion
May have abnormal cardiac exam
May have signs of heart failure
Cardiogenic Shock
• Congenital Heart Disease *
• Acquired Heart Disease (Eg. Kawasaki Disease* with infarction, cardiomyopathy, myocarditis)
• Arrhythmia
Often warm to extremities with poor perfusion
May have bounding pulses
Distributive Shock
• Sepsis*
• Anaphylaxis*
• Burns*
• Neurogenic shock (eg. Trauma*)
Cool to extremities with poor perfusion
May have normal or abnormal breath sounds
May have pulsus paradoxus
Obstructive Shock
• Pulmonary Embolism
• Tension Pneumothorax
• Cardiac Tamponade
Usually has history of blood/fluid loss
Cool to extremities with poor perfusion
Hypovolemic Shock
• Dehydration*
• Vomiting*
• Diarrhea*
• Bleed/Trauma*
Refer to corresponding Clinical Approaches
⚠ Potentially acutely life-threatening presentation
*Indicates Key Condition
This is not an exhaustive list of medical conditions.

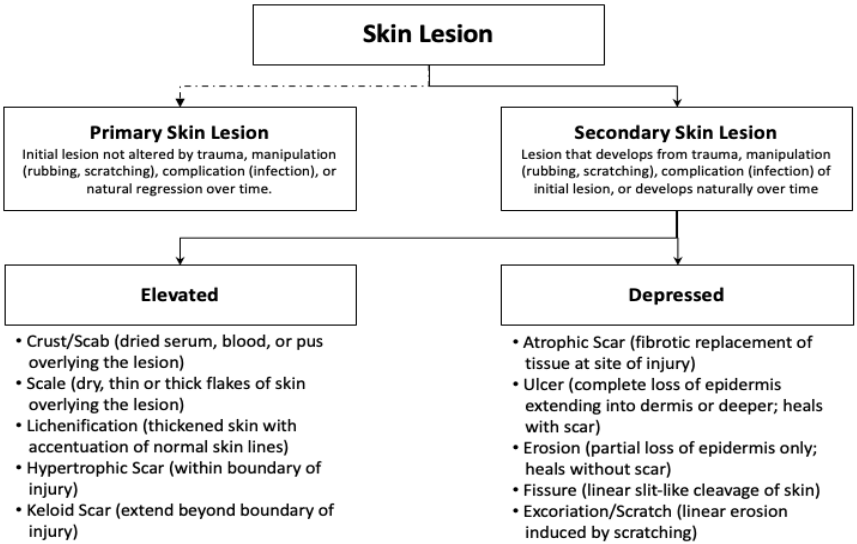
Short Stature



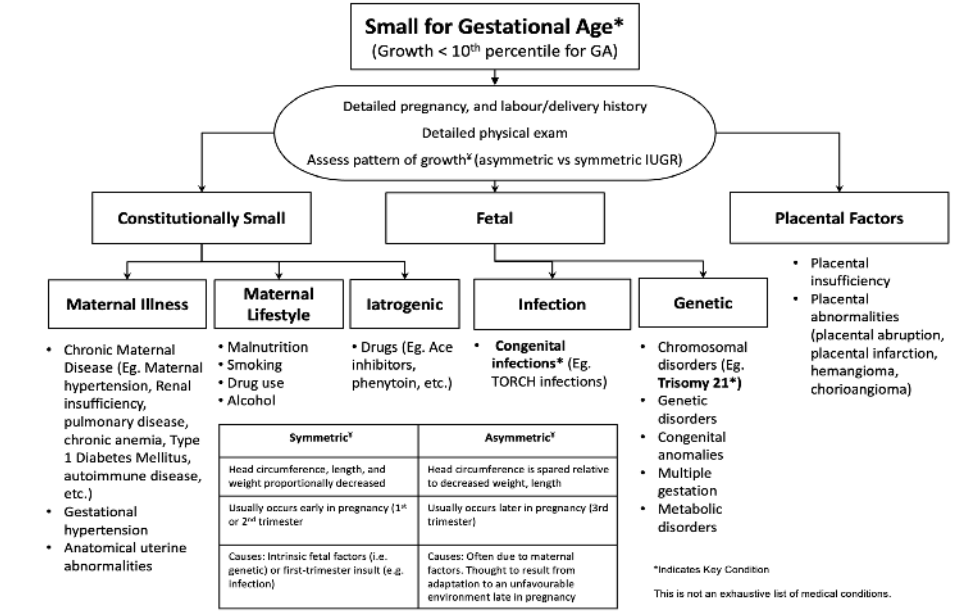
Skin Lesion (Primary Skin)



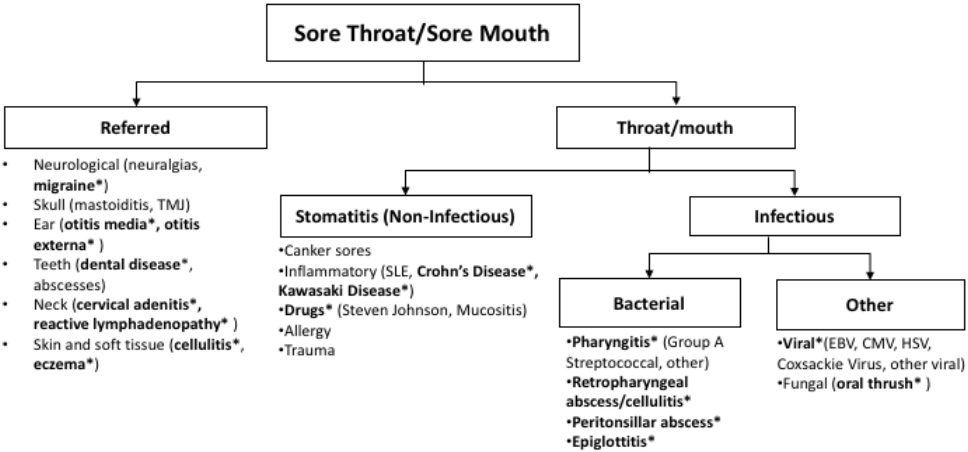
Skin Lesion (Secondary Skin)



Small for Gestational Age



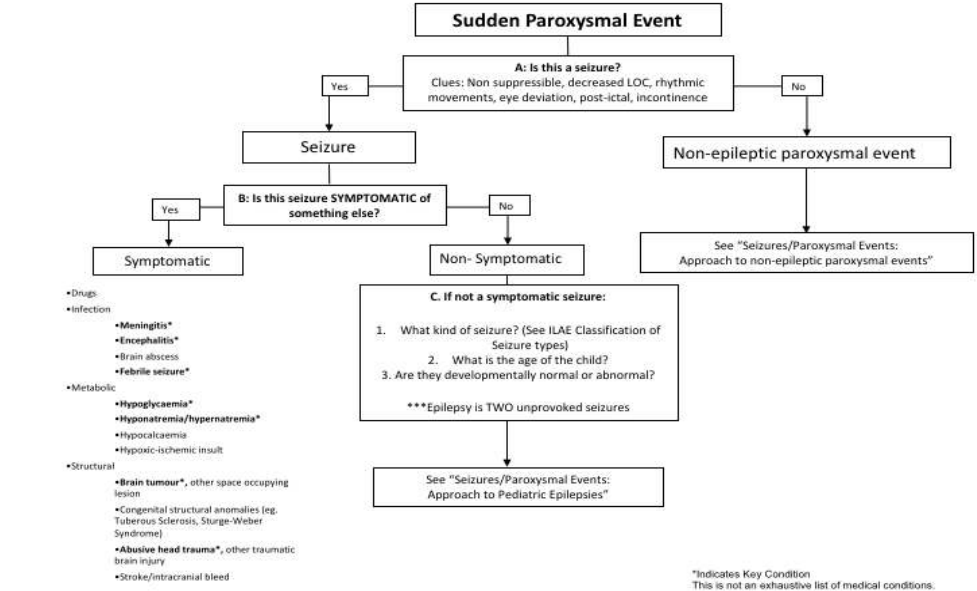
Sore Throat/Sore Mouth



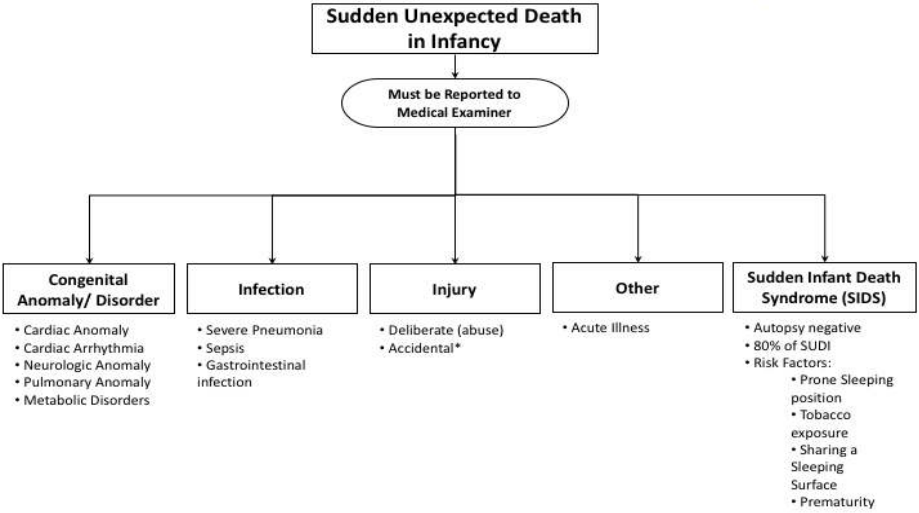
*Indicates Key Condition

This is not an exhaustive list of medical conditions.

Sudden Paroxysmal Event



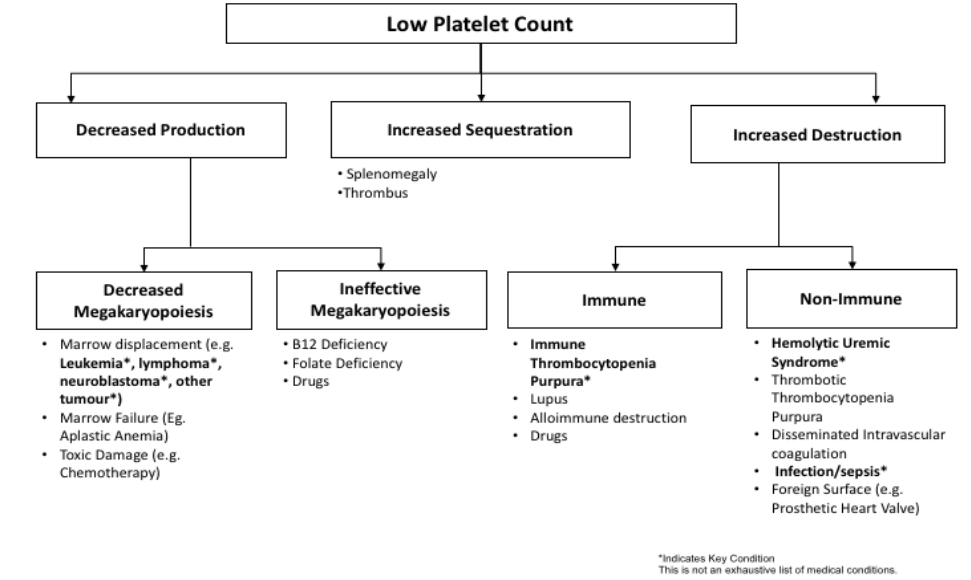
Sudden Unexpected Death In Infancy (SUDI)



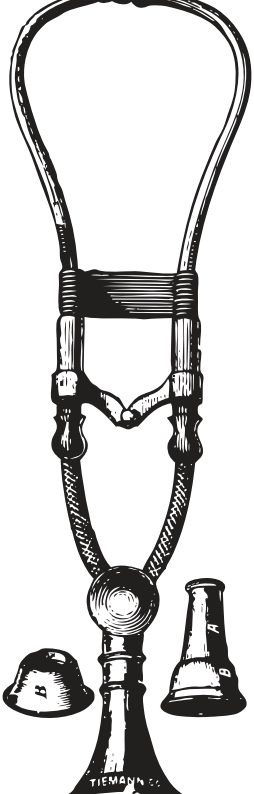
* SUDI with negative investigations and infant found in prone position or in bed with parent may be called either SIDS or injury (new ideas evolving)

*Indicates Key Condition
This is not an exhaustive list of medical conditions.

Thrombocytopenia



General Presentations



Historical Editors

Dr. Heather Baxter

Dr. Harvey Rabin

Dr. Ian Wishart

Brittany Weaver

Geoff Lampard

Harinee Surendra

Kathy Truong

Student Editors

Adrianna Woolsey

Fatima Pirani

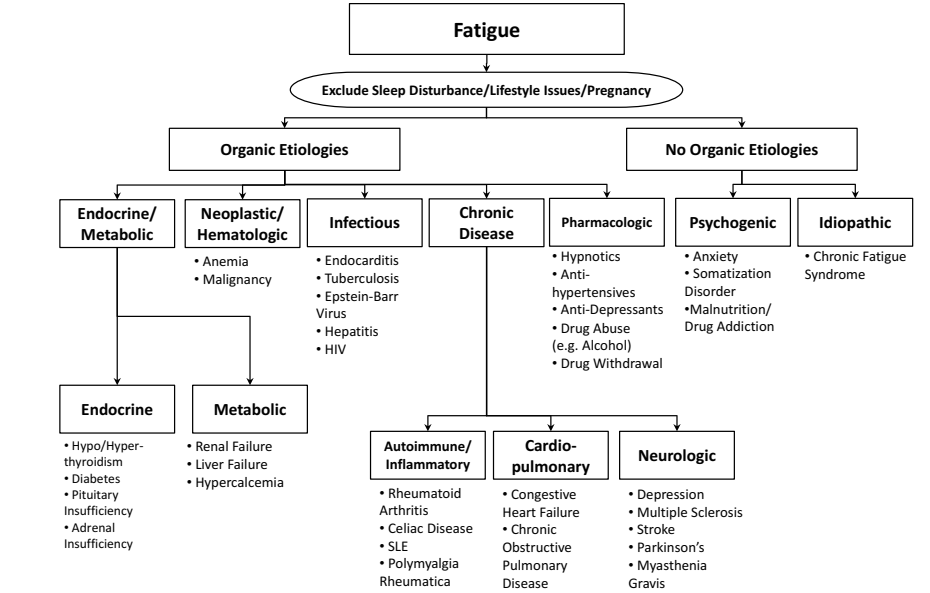
Senior Editor

Dr. Monique Munro

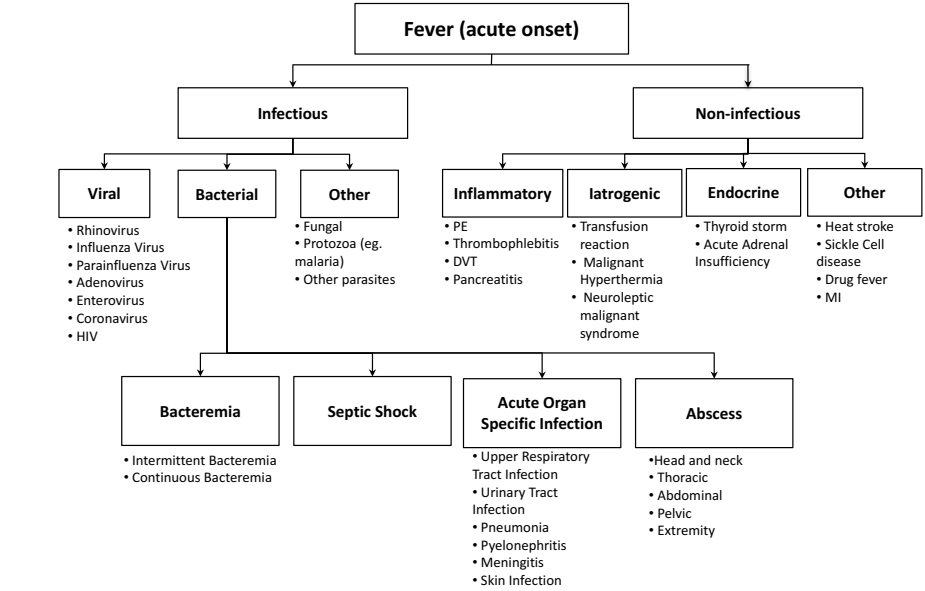
Faculty Editor

Dr. Sylvain Coderre

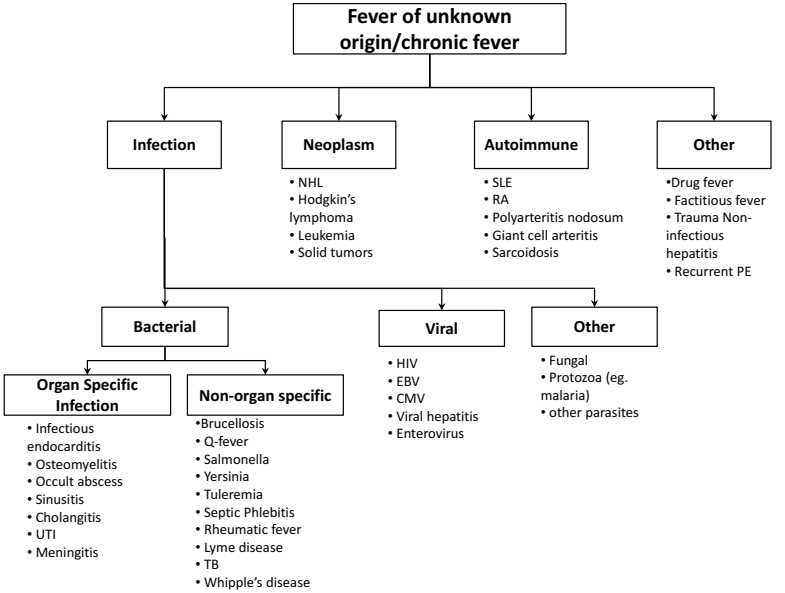
Fatigue


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

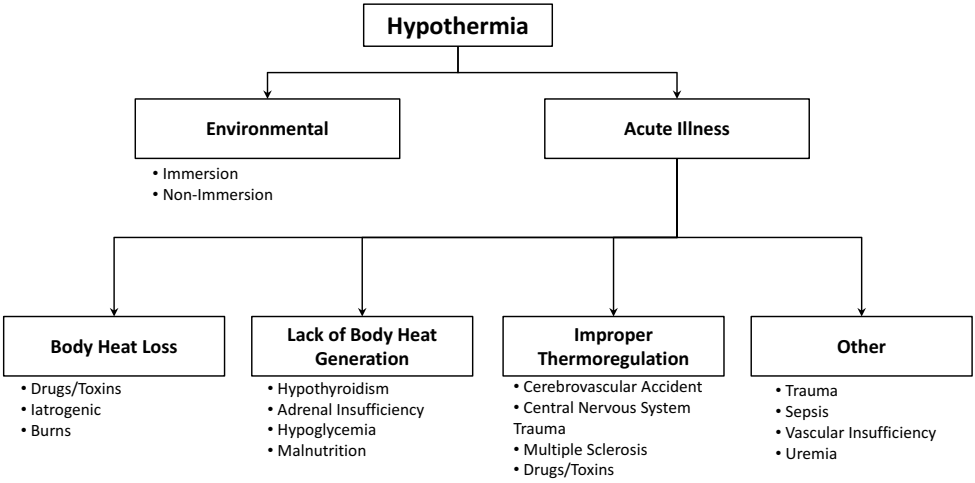
Acute Fever



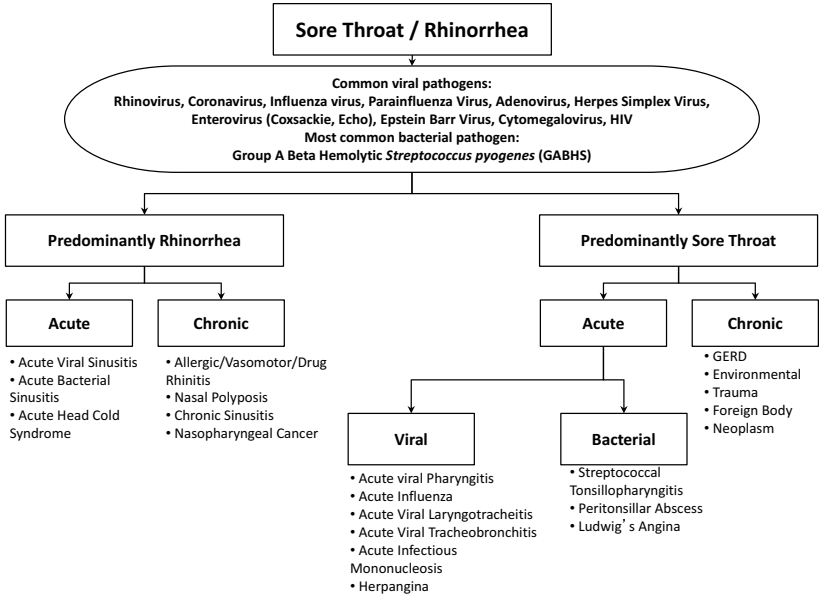
Fever of Unknown Origin / Chronic Fever



Hypothermia



Sore Throat / Rhinorrhea



Historical Executive Student Editors

2019–20	Erin Kelly & Tony Gu
2018–19	Rebecca Phillips, Ainna Preet Randhawa & Vaneet Randhawa
2017–18	Kea Archibold, Sunny Fong & Lucas Streith
2016–17	Joshua Nicholas, Peter Rogers & Scott Belyea
2015–16	Alec Campbell, Jinghui Hu & Taryn Ludwig
2014–15	Jared McCormick & Hai (Carlos) Yu
2013–14	Yang (Steven) Liu & Bryan Glezerson
2012–13	Neha Sarna & Sarah Sy
2011–12	Katrina Kelly & Harinee Surendra
2010–11	Jonathan Dykeman & Kathy Truong
2009–10	Lucas Gursky & Ting Li
2008–09	Linnea Duke & Mustafa Hirji
2007–08	Brett Poulin (Founder of the *Calgary Black Book Project)*

Scheme Creators

Students

M. Abouassaly
A. Aristarkhova
M. Broniewska
P. Chen
M. Chow
R. Cormack
P. Davis
L. Duke
J. Evinu
A. Geist
F. Girgis
A. Hicks
J. Hodges
G. Ibrahim
C. Johannes
D. Joo
S. Kakumanu
S. Khan
L. Kimmet
M. Klassen
J. Lawrence
J. Laxton
K. Leifso
J. McCormick
V. Lekhi
S. Lipkewich
C. Lu
L. Luft
A. Lys
D. McDougall
B. McLane
J. McMann
J. Nadeau
B. Poulin
V. Prajapati
N. Ramji
K. Sahi
R. Schachar
P. Schneider
R. Simms
A. Skinn
U. Unligil
C. Verenka
H. Waymouth
P. Zareba
K. Swicker
V. David

Faculty

K. Burak
D. Burback
K. Busche
S. Casha
M. Clark
S. Coderre
M. Doran
P. Federico
K. Fraser
S. Furtado
N. Hagen
J. Huang
N. Jette
A. Jones
G. Klein
S. Kraft
A. Mahalingham
H. Mandin
J. Mannerfeldt
K. McLaughlin
D. Miller
L. Parsons
D. Patry
A. Peets
G. Pineo
M-C. Poon
H. Rabin
T. Remington
B. Ruether
A. Smithee
O. Suchowersky
P. Veale
B. Walley
L. Welikovitch
R.C. Woodman
L. Zanussi

Missing a credit?

If you are the creator of a scheme currently used in the Blackbook and believe you have not been credited appropriately, please contact us at **blackbk@ucalgary.ca**

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 Faliure
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	Corticotrophic 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
GPA	Granulomatosis with Polyangiitis
GRA	Glucocorticoid
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 Pyelogram
K+	Potassium
KUB	Kidney, Ureter, Bladder
LCIS	Lobular Carcinoma In Situ
LDL	Low Density Lipoprotein
LGA	Large for Gestational Age
LH	Luteinizing Hormone
LLN	Lower Limit of Normal
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 Neoplasma
MI	Myocardian Infarction
MPA	Microscopic Polyangiitis
MPGN	Membranoproliferative Glomerulonephritis
MS	Multiple Sclerosis
MSK	Musculoskeletal
Na+	Sodium
NSAIDs	Non-Steroidal Anti-Inflammatories
OCP	Oral Contraceptive Pill
OSM	Osmolality
PE	Pulmonary Embolism
PID	Pelvic Inflamatory 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, Esphageal Atresia, Renal Anomalies, Limb Anomalies
VSD	Ventricular Septal Defect
VUJ	Vesicoureteral Junction

Notes

Superficially resembling flowcharts, schemes are a way to ease the memorization of differential diagnoses by breaking large lists into sets of smaller, conceptually-intuituve information packets. using the Medical Council of Canada's Clinical Presentation List,

Blackbook 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, *Blackbook* is a joint production of the students and the Cumming School of Medicine at the University of Calgary.