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Canadian Family Medicine Clinical Cards 2020

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Abdominal Pain

Common Diagnoses

"Abdominal pain NYD" is the most common diagnosis in all age groups

	Pediatric	Adult	Geriatric
Next most common diagnoses	❑ Colic (Infants) ❑ Constipation (1-4 yrs) ❑ Recurrent Abdo. Pain (4-9 yrs) ❑ IBS (9-12 yrs) ❑ Gastroenteritis	❑ Irritable Bowel Synd. (IBS) ❑ Gastroenteritis ❑ Constipation ❑ Other viral infection ❑ UTI	❑ IBS ❑ Diverticular Dz ❑ Constipation ❑ Gastroenteritis ❑ GI malignancy

Diagnosing Irritable Bowel Syndrome (IBS)

Consider using *Manning Criteria:* 3 or more of the following:

- ❑ pain relief with bowel movement
- ❑ more frequent stools with onset of pain
- ❑ loose stools with onset of pain
- ❑ passage of mucus
- ❑ sensation of incomplete evacuation
- ❑ abdominal distention

AND no red flags or family hx of organic bowel disease. (Likelihood Ratio: 2.9)

If pt doesn't meet the above criteria and IBS is high on DDx, consider the *Kruis method which is based on* sx, sx duration, physician assessment, CBC, ESR, WBC, FOB. (Likelihood Ratio: 8.6).

• 2006 *ROME III criteria* has only fair to modest inter-rater reliability between experts and still needs validation.

Physical Exam/ Investigations: Beyond the Abdomen

❑ vitals ❑ cardiac rhythm ❑ lungs ❑ DRE ❑ Beta HCG

❑ consider testicular or bimanual exam ❑ consider endomysial testing for celiac dz in child with chronic abdo. pain

Red Flags

Finding	Typical Age/Sex	Dx To Think About
HPI		
Weight loss	A, G	GI Malignancy
Pain radiating to back	A, G	Pancreatitis, AAA
Pain central and then RLQ	Any	Appendicitis
Pain radiating to groin	Male	Testicular Torsion, Hernia, Renal Colic
Blood per rectum/melena	Any	GI bleed (PUD, Varices, Diverticulitis), Meckel's, Malignancy in elderly
Current antibiotics/steroids	Any	Can mask peritoneal symptoms
PMHx		
Cardiac hx incl Afib, HTN	G	Ischemic bowel, AAA, MI
Prev abdominal surgery	G	Obstruction
Taking antipsychotics	A, G	Ileus, Obstruction or Toxic Megacolon
Social Hx		
EtOH	A, G	Risk factor for Pancreatitis, Varices
Sexually active	Female	Ectopic Pregnancy, STIs
Physical Exam		
Change in mental status	G	Infection (particularly UTI)
↑RR	P, G	Pneumonia
Shock	Any	Perforated Viscus, GI Hemorrhage, Severe Pancreatitis, MI, Sepsis (N, P)
Severe pain out of keeping with findings	A, E	Ischemic Bowel, Pancreatitis
Restless/writhing	Any	Biliary or Renal Colic, Testicular Torsion
Pulling up legs to chest	N	Volvulus, Intussusception
Lower abdominal tenderness	Female	Ectopic Pregnancy or Other Gyne
LLQ tenderness	A,G	Diverticulitis

A = adult G = geriatric N= neonate P = pediatric

Key References: Panika D, Kirlew M . Top 10 differential diagnoses in family medicine: generalized abdominal pain. *Can Fam Physician.* 2007;53(9):1509. Cayley WE Jr. Irritable Bowel Syndrome. *BMJ.* 2005;330(7492):632. Ford AC, et al. Will the history and physical examination help establish that irritable bowel syndrome is causing this patient's lower gastrointestinal tract symptoms? *JAMA.* 2008;300(15):1793-805. Smucny J, et al. Abdominal Pain. *Essentials of Family Medicine, 5th Edition,* 2008. Chogle A, et al. How reliable are the Rome III criteria for the assessment of functional gastrointestinal disorders in children? *Am J Gastroenterol.* 2010;105(12):2697-701.

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Anxiety Disorders

KEY ELEMENTS ON HISTORY (disorders must cause significant impairment)

Generalized Anxiety Disorder (GAD)	- excessive worry/anxiety about things in real life -fatigue, ↓ concentration, irritability, muscle tension, "on edge", insomnia more days than not for >6 months -if <6 months, diagnosis is "adjustment disorder with anxious mood"
Phobias	- irrational and persistent fear triggered by actual or anticipated exposure to certain situations or objects that are actively avoided - subsets: social anxiety disorder (fear of social situations), agoraphobia (fear of inability to escape), others
Post-traumatic Stress Disorder (PTSD)	- history of severe trauma* in past (rape, abuse, combat, MVCs, etc.) - intense arousal from recurrent flashbacks; nightmares; avoidance of stimuli reminding of incident; attempts to numb emotions - Sx ≥1 month after trauma **severe event beyond normal exp.*
Panic Disorder (PD)	- recurrent short unexpected periods of intense fear or discomfort - sx often short-lived; can peak in 10 min; may be: **somatic** (eg. chest pain, abdo pain), **autonomic** (sweating, palpitations, tachycardia), ***neurologic*** (paresthesias, tremor, dizziness), and/or ***psychiatric*** (feelings of impending doom)
Obsessive Compulsive Disorder (OCD)	- obsessions (intrusive thoughts/images recognized to be self- generated), e.g. fear of contamination - compulsions (repetitive intentional behavior), e.g. hand washing

INITIAL APPROACH TO ANXIETY DISORDERS

1. history & focused physical exam to rule out other causes (e.g. asthma & dyspnea)
2. consider: TSH, CBC, electrolytes, urinalysis, urine drug screen
3. screen for common comorbidities (depression, substance abuse, chronic pain, suicidal ideation) and manage accordingly
4. consider using structured tools to assess severity of anxiety at every visit (e.g. GAD-7 scale)
5. review previous therapies used by pt, as it will guide treatment
6. determine patient expectations for therapy

GENERAL TREATMENT MEASURES (essential for successful treatment)

Patient Education	- anxiety is a normal stress rxn; disorder when excessive/inappropriate - cycle of anxious thoughts, physical sx, and avoidance behaviour prolongs anxiety, and is increased by stress and maladaptive thoughts/habits - provide educational resource for patient (www.anxietycanada.ca)
Lifestyle	- balanced diet, exercise, sleep hygiene, ↓ alcohol/caffeine, ↓ stress - encourage relaxation techniques (meditation, deep breathing, yoga)
Cognitive Behav. Therapy	- goal: to ↓ pt overestimation of risk and exagg. of negative outcome - key: patient must see that these beliefs are rarely, if ever justified - encourage exposure to anxiety provoking situations in a graded fashion - typically requires 6-8 sessions over 8-12 weeks

OPTIONAL ADJUNCTIVE MEDICATIONS

- start at low dose, ↑ slowly (q2-3wk), aim high (large dose needed for anxiety)
- low half life drugs (e.g. paroxetine, venlafaxine) can cause withdrawal if dose missed and if compliance is low

GAD	SSRI, SNRI
Phobia and PD	SSRI, prn anxiolytics
PTSD and OCD	SSRI, TCAs

IF FIRST LINE THERAPY INEFFECTIVE

- assess whether patient able to follow through with therapy requirements
- reconsider diagnosis (substance abuse, bipolar disorder, new stressor, organic cause)
- ensure comorbidities are treated
- add 2nd SSRI/SNRI or TCA
- consider psychiatric consult

Key References: Roy-Byrne P, et al. Brief intervention for anxiety in primary care patients. *J Am Board Fam Med*. 2009;22(2):175-86. Ebell MH. Diagnosis of anxiety disorders in primary care. *Am Fam Physician*. 2008;78(4):501-2. Shearer S, Gordon L. The patient with excessive worry. *Am Fam Physician*. 2006;73(6):1049-56.

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Asthma

Diagnosis

CHILDREN <6 y.o.

3 key elements to diagnosis:

1.Documentation of Airflow Obstruction
Preferred: documented wheezing and/or other signs of obstruction by MD or other health professional.
Alternative: convincing parent/ guardian report of wheezing or other obstructive symptoms.

2. Documentation of Reversibility of Airflow Obstruction
Preferred: documented improvement of wheezing and/or other signs of obstruction by MD or other health professional, in response to SABA +/- steroid.
Alternative 1: convincing parent/guardian report of improvement of obstructive symptoms in response to 3 mo tx with ICS (and PRN SABA)
Alternative 2: convincing parent/guardian report of improvement of obstructive symptoms in response to SABA

3. No Clinical Evidence of Alternative Diagnosis

Clues for Alternative Diagnoses	
chronic nasal discharge	rhinosinusitis (infxs. or allergic)
stridor; loud breathing when crying, eating, supine, resp infxn	upper airway obstruction (infxs, intrinsic, extrinsic)
acute onset cough/wheeze when eating or playing; recurrent pneumonia (same location)	foreign body; aspiration (food, gastric contents)
first wheeze and child < 1y.o.	bronchiolitis
sick contacts, xray with focal findings	pneumonia, atelectasis, TB, pertussis
paroxysms of cough +/- whoop	pertussis
prem. birth, prolonged O_2 +/- vent	bronchopulmonary dysplasia
sx since birth, +ve xray, recurrent pneumonia	congenital pulm. artery malform.; bronchiectasis; cystic fibrosis
neon. resp. distress, chronic daily cough	primary ciliary dyskinesia
cough when supine, eating	GERD
difficulty feeding, cough with/post feeding	eosinophilic esophagitis; swallowing problem +/- aspiration
recurrent, persist. infections	immune disorder
murmur, heart failure, FTT, tachypnea, hepatomegaly	pulm. edema 2° to myocarditis, pericarditis, congen. cardiac dz

6 y.o. - ADULTS

3 ways to diagnose:

1. Reversible Airway Obstruction on Spirometry (Preferred)
↓ FEV_1/FEV (vs. norms) ***and*** ≥ 11% ↑ in FEV_1 after SABA or ICS course

2. Peak Expiratory Flow Variability (Alternative)
≥ 20% improvement in PEF with SABA or ICS course
(or in adults, > 8% variability during the day, or >20% over multiple days)

3. Positive Challenge Test (Alternative)
positive methacholine challenge test, or
positive exercise challenge (> 10% ↓ in FEV_1 following exercise)

Check-Up

1. Assess control: good control if following criteria are met

- ❑ no daytime symptoms
- ❑ normal physical activity
- ❑ no school/work absences
- ❑ FEV_1 or Peak flow > 90% pers. best
- ❑ no nighttime symptoms
- ❑ mild/infrequent exacerbations
- ❑ < 4 doses SABA / wk (not counting 1 dose/day for exercise sx)

2. Observe & assess inhaled drug technique (use mask chamber if < 6 years old)

Routine Management

1. **Develop Asthma Action Plan** with patient; involve asthma educator if available
2. **Address co-morbidities**: rhinitis, GERD, obesity
3. **Environmental control**:
   - ❑ smoking cessation & avoidance
   - ❑ dust/particle exposure reduction
   - ❑ allergy testing & allergen avoidance
4. **Maintenance Drug therapy**: First line: All patients should have PRN short-acting β_2-agonist (eg. salbutamol) **AND** inhaled corticosteroids (ICS)
(ICS starting dose should be customized to patient's initial severity and age)

Typical Age Dose Ranges (years)	DAILY equivalency	Beclo-methasone (Qvar device)	Fluticasone	Budesonide (turbuhaler device)	Ciclesonide (not for <6 years old)
0-6	Ultra low	100ug	100-125ug	100ug	100ug
6-11	Low dose	200ug	200-250ug	200ug	200ug
> 11	Medium	400ug	500ug	400ug	400ug
	High	> 400ug	> 500ug	>400ug	800ug

If insufficient control, consider:
- ❑ ↑ ICS dose
- ❑ adding long-acting β_2-agonist or leukotriene antagonist
- ❑ exploring alternate/comorbid conditions

5. **Exacerbation**:
[A] determine (and resolve if possible) underlying cause(s):
- ❑ tobacco/irritant/allergen exposure
- ❑ respiratory infection
- ❑ medication/administration errors

[B] give oral systemic steroids
Kids: prednisone (or prednisolone) 1-2 mg/kg (up to 50mg/day) x 5 days
or dexamethasone 0.3-0.6 mg/kg x 1-5 days
Adults (and kids > 50kg): prednisone 50mg daily x 5 days

Emergency Management

- O_2 if hypoxic; activate EMS & arrange transportation to ED
- salbutamol by chamber mask (or nebulizer); may require back-to-back dosing
- systemic steroids if initial SaO_2 <96% (children), <94%(adults)
- consider ipratroprium bromide, MgSO4
- **if deteriorating, rule out pneumothorax and upper airway obstruction**
  ↳ **consider IV β_2- agonist, inhalational anaesthetics, intubation**

Key References: Lougheed et al. Canadian Thoracic Society Asthma Management Continuum—2010 Consensus Summary for children six years of age and over, and adults. *Can. Resp. J. 2010*.17(1);15-24

Ducharme FM, Dell SD, Radhakrishnan D, et al. Diagnosis and management of asthma in preschoolers: A Canadian Thoracic Society and Canadian Paediatric Society position paper. *Can Respir J.* 2015;22(3):135-143.

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Asthma Devices

How to Choose

Device Type		Requires ability to hold breath	Inspiratory force required	Has taste	Works well in cold	Works well in humidity	Contains lactose	Requires intact hand dexterity	Children < 6 y.o.
Metered Dose Inhaler (MDI)	MDI + mouthpiece spacer	Yes	+	No	No	Yes	No	No	No
	MDI + Mask + spacer	No	+	No	No	Yes	No	No	Yes
Dry Powdered	Turbuhaler	Yes	+++	No	Yes	No	No	Yes	No
	Diskus	Yes	++	Yes	Yes	No	Yes	No	No

How to Use

Device Type		Instructions	Device Care
Metered Dose Inhaler (MDI)	MDI + mouth-piece spacer	(1) Remove cap and shake (2) Insert MDI into spacer (3) Breathe out and seal lips around mouthpiece (4) Press down and THEN take slow deep breath; hold for 10 sec (5) Brush teeth or gargle/spit water after use	- Clean by soaking in soapy water - Let device air dry after cleaning - Replace cap on plastic sleeve to store device
	MDI + mask spacer	(1) Remove cap and shake (2) Insert MDI into spacer (3) Put mask against face (do not cover eyes) (4) Press down and take 6 normal breaths (use mouth to inhale)	
	MDI alone**	(1) Remove cap and shake (2) Breathe out and seal lips around mouthpiece (3) Press down as you breathe in slowly (4) Hold breath for 10 sec then breathe out slowly (5) Brush teeth or gargle/spit water after use	
	**(not recommended except for 3M device)		
Dry Powder	Turbu haler	(1) Twist open and turn and click once (2) Breathe out fully and put turbuhaler in mouth (do not blow into device) (3) Deep breath in and hold for 10 sec - do NOT shake device	- Clean with dry cloth - Store at ambient temperatures - Keep device dry
	Diskus	(1) Push open and slide and click (2) Breathe out fully and put diskus in mouth (do not blow into device) (3) Deep breath in and hold for 10 seconds - do NOT shake device	

Key References: Lougheed MD, et al. Canadian Thoracic Society Asthma Management Continuum—2010 Consensus Summary for children six years of age and over, and adults. *Can Resp J.* 2010;17(1), 2010 15-24. Becker A, et al. Summary of Recommendations from Canadian Pediatric Asthma Consensus Guidelines, 2003. *CMAJ.* 2005;173(6 Suppl).

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Chest Pain - ER Care

Vitals requiring emergent care & transfer to ER

- Airway obstruction
- O2 sats <92%
- Systolic BP<90mmHg
- RR <10 or > 29
- Pulse <50 or >120
- GCS <12

Symptoms (Danger signs in red)

Diagnosis / Symptom	MI	Ischemia	PE	Pneumothorax	Arrythmia	Aortic Dissection	Pneumonia	Myopathy	COPD/Asthma[1]	Pericarditis	Myocarditis	Costochondritis
Fatigue	In women or the elderly, treat as a surrogate symptom of chest pain											
Abrupt onset	×		×	×	×	×						
Crescendo symptoms	×[2]							×[3]	×[4]			
Constant pain	×		×			×[5]	×					
Dyspnea	×[6]		×	×	×[6]		×					
Pain < 30 s.	Not a concern unless has DM (neuropathy can mask signs/symptoms)											
With exercise		×			×			×	×			×
Pleuritic pain			×	×						×[7]		
Cocaine use	×				×	×					×	
Anxiety/panic	Can be secondary to the Dx or the cause of the chest pain itself											

[1] Especially relevant in children. [2]Impending MI. [3] Worsening myopathy. [4] Worsening COPD or asthma. [5]Radiating to back is classic. [6]Dyspnea due to 2° heart failure. [7]With pleural inflammation

MYO. INFARCT

Inv: Serial ECGs, troponin, imaging

Tx: ASA, oxygen, nitro, morphine, ß-blocker, heparin, consider PCI. For STEMI: thrombolysis/PCI.

CARD. ISCHEMIA

Inv: ECG, troponin

Tx: If crescendo or new onset- ASA, oxygen, nitro, anticoag; if known and stable, ensure ASA; see ischemia card.

ARRYTHMIA

Inv: ECG, echo, rhythm strip, electrophysiology studies.

Tx: Dependent on rhythm; look for underlying cause.

MYOCARDITIS

Inv: CXR, ECG, bloodwork (CBC, ESR, troponin), echo.

Tx: Supportive care, anticoag, restrict physical activity, look for underlying cause

PNEUMOTHORAX

Inv: CXR (inc. expir.)

Tx: Heimlich valve; chest tube if 1° PTX with sx and/or >20% collapse.

COSTOCHONDRITIS

Inv: Diagnosis of exclusion.

Tx: Acetaminophen or NSAIDs

AORTIC DISSECTION

Inv: CXR, ECG, TEE/CT/MRI.

Tx: Urgent surgical consultation & control BP.

PE: WELLS CRITERIA	*Points*
Clinical signs/sx of DVT	3
Other dx less likely than PE	3
Heart rate > 100/minute	1.5
Immob. or surgery in past 4 wks	1.5
Previous DVT or PE	1.5
Hemoptysis	1
Malignancy	1

Total points: >6 points = high risk; 2 to 6 points = mod. risk; <2 points = low risk

Inv: Very low risk: Patient <50 y.o., Wells scores = 0, oxygen sat >94%, and no hormone use → do not invest. for PE. Low/Moderate Risk: ELISA D-Dimer → If -ve, no PE. If +, proceed as for high risk.

High risk: CXR → If -, VQ scan or CT arteriography. → If VQ or CT -, no PE. If CXR or VQ or CT +, treat. If nondiagnostic or still high suspicion, additional testing required.

Tx: Anticoagulation

PERICARDITIS

Inv: ECG. If low BP: TEE or CT or MRI. Pericardiocentesis (for dx or tx).

Tx: ASA. 2nd line: NSAIDs or glucocorticoid (prednisone).

Key References: Laird C, Driscoll P, Wardrope J. The ABC of community emergency care: chest pain. *Emerg Med J*. 2004; 21(2):226-32. Tapson V. Acute Pulmonary Embolism. *NEJM*. 2008;358:1037-52. Lee T, Goldman L. Evaluation of the patient with acute chest pain, *NEJM*. 2000;342:1187-95. Kline JA, Mitchell AM, Kabrhel C, Richman PB, Courtney DM. Clinical criteria to prevent unnecessary diagnostic testing in emergency department patients with suspected pulmonary embolism. *J Thromb Haemost*.2004;2(8):1247-55.

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Chest X-Ray Interpretation

Community CXR Indications:
- Symptomatic pts with cardiac or respiratory symptoms
- Following up known pulmonary diseases
- Evaluating malignancies (staging, determining extent of spread)

1. Decide if the CXR quality is suitable for interpretation:

ID, Date
❑ Make sure you have the right CXR.
❑ Know when the X-ray was taken, to compare sequential CXRs for the pt.

Imaging technique: AP or PA?
- Assume PA unless told otherwise.
- PA: clavicles usually more V-shaped.
- AP: clavicles usually more horizontal.
- In babies, AP view is common.
- Only assess heart size on PA view *(AP projection artificially magnifies heart)*.

Rotation/Centering
- CXR is centered when spinous processes are midway between clavicular ends.
- If not centered, normal anatomy can be misinterpreted (i.e. tracheal shifts).

Adequate inspiration? *Count Ribs!*
- Good = 8-10 posterior ribs visible above diaphragm (Remember: ribs 1+2 overlap).
- Inadequate inspiration can be misinterpreted (i.e. as interstitial lung disease).

Adequate exposure?
- Exposure adequate when intervertebral discs can be just barely seen through the cardiac shadow *(can adjust digitally)*.
- Under-exposure creates abnormal whiteness on CXR; over-exposure (x-ray darkening) may hide pathologies.

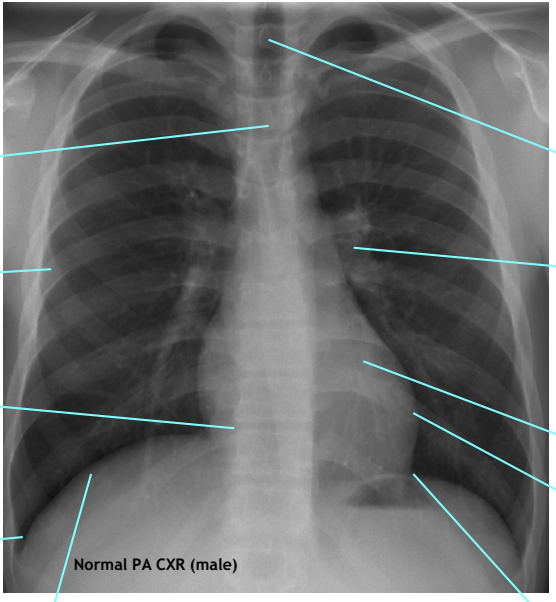
Costo-phrenic angles
- Blunted = pleural effusion >200-400mL.
- Wide = flat diaphragm; suggests air trapping due to obstructive lung diseases.

Hemi-Diaphragms (Right and Left)
- If flat: COPD, asthma exacerbation, foreign body
- **Air under R hemidiaphragm: perforated viscous**
- Blurred edge of diaphragm: lower lobe airspace disease
- Hemi-diaphragm height: normally R > L (liver underneath)
- If one side abnormally higher: volume loss (atelectasis)

2. Analyze Frontal (PA/AP) CXR:

Bones *(inspect while counting ribs)*: Inspect for **fractures, lesions (lucencies or densities in the bone)**, or rib notching (small grooves along the edges of the ribs, suggestive of aortic coarctation).

Symmetry: are findings similar on both left and right sides?
Pleura: Assess for any pleural lines (suggestive of pneumothorax), masses, thickening, or calcification.


Normal PA CXR (male)

Lung fields - Assess:
❑ Degree of whiteness
❑ Equivalency between right and left sides
❑ Opacifications/Infiltrates
❑ Presence of Kerley A/B lines
❑ Lung apices (above clavicles).
❑ Vasculature (size, position, and whether vascular markings run to the lung periphery)

If infiltrates present, note pattern:
- Lobar, cloud-like densities with air-bronchograms: alveolar/air-space disease (aka consolidation); suggests pus (i.e. pneumonia), blood, water, cells, or protein within alveoli.
- Net-like, reticular: suggests interstitial lung diseases (upper-lobe predominant: inhalational lung injuries; lower-lobe predominant: aspiration, asbestosis, sarcoidosis, etc).

Trachea:
- Find air column, check for tracheal deviation (**tension pneumothorax** or pleural effusion).
- If a patient is intubated, the endotracheal tube tip should ideally be 4cm above the carina.

Hilum:
- Contains 1) pulmonary arteries/veins, 2) main-stem bronchi, 3) lymph nodes.
- Enlarged? (if hilum contour is straight or convex instead of concave, hilum is enlarged).
- Hilum Shifted? Asymmetrical?
- **Unilateral hilar enlargement: 95% malignant**

Heart:
- Size (normal cardiothoracic ratio <0.5 on PA film), shape, and location within mediastinum.

Cardiac Shadows (Right and Left):
- R cardiac shadow = R atrium.
- L cardiac shadow (top to bottom) = aortic arch, L pulmonary artery, L ventricle.
- Assess contour, shape, size, and location.
- White blurring of any cardiac border suggests airspace disease of upper or middle lung lobes.

Cardio-phrenic angles
- Blunted = tumor masses (**lymphoma**, other mediastinal tumors), pericardial fat, pericardial cysts, cardiophrenic space varices, diaphragmatic hernia.

Key References: Raoof S, et al. Interpretation of plain chest roentgenogram. *Chest*. 2012;141(2):545-58. Pineda V, et al. Lesions of the cardiophrenic space: findings at cross-sectional imaging. *RadioGraphics*. 2007;27(1):19-32

Kivrak AS, et al. Differential diagnosis of dumbbell lesions associated with spinal neural foraminal widening: imaging features. *Eur J Radiol*. 2009;71(1):29-41

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Chest X-Ray Interpretation

3. Analyze lateral CXR projection:

Retrosternal Clear Space:
- If opacified, consider "4 Ts" *(in order of commonality in adults)*: 1) Thymoma, 2) Terrible lymphoma, 3) Teratoma, 4) Thyroid tumor

Hilum:
- Look for changes (enlargement, shifts, asymmetries) in pulmonary vessels, main-stem bronchi, and lymph nodes.
- Extra opacification around pulmonary vessels and bronchi = hilar lymphadenopathy.

Spinal column:
- Assess vertebral bodies for densities and abnormal shapes or compressions.
- Assess intervertebral disc spaces: if not well-defined, may indicate discitis.
- Assess neural foramina (holes between vertebral processes). If enlarged: likely tumor or cyst. If narrowed: likely bony enlargement impinging on spinal nerves.

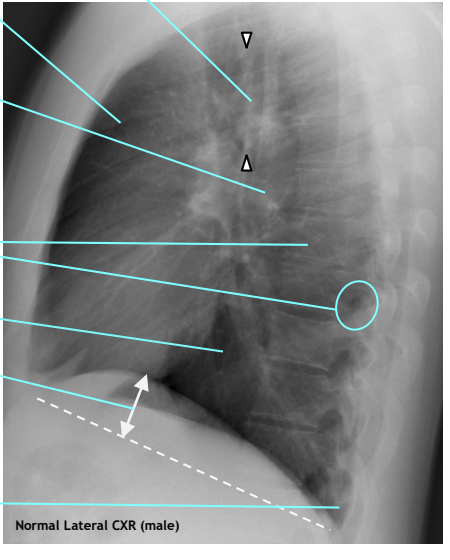
Clear space posterior to heart:
- If opacified: consolidation, atelectasis, enlarged vessels, masses, or hiatus hernias.

Diaphragm:
- Flat if height above anterior-posterior costophrenic angle "line" is <2.7cm.
- Flat diaphragm = lung hyperinflation due to airway obstruction (asthma, COPD).

Costo-phrenic angles
- Small pleural effusions best picked up with lateral projection (most commonly due to congestive heart failure).

Mediastinum:
- Note posterior para-tracheal tissue line between the anterior trachea & the posterior esophagus (between white arrowheads): if <3mm, can rule out lymphadenopathy.

The retro-cardiac space is blocked from view in the frontal projection. Lateral projections can visualize this hidden anatomy, and is also a better reflection of total lung volume.



Normal Lateral CXR (male)

4. Important notes to keep in mind:

- Findings that require immediate attention:

- Tracheal Shift: may indicate a **tension pneumothorax** on the side opposite to the tracheal shift. If suspected on Hx/exam, don't do CXR; immediately decompress.
- Free air under R hemi-diaphragm: **bowel perforation,** urgent surgery consult needed. (Note that air under L hemi-diaphragm is usually the gastric bubble)
- Massive cavitations & infiltrates: especially in upper lobes, in the context of cough & fever: suspect **active tuberculosis,** isolate patient and work up to establish diagnosis.
- Complete white-out of lung fields: **severe pulmonary edema,** stabilize and transport for definitive ER/ICU care.

- Most common CXR false-negatives (real findings that were not detected):
- Airspace disease (i.e. consolidation)
- Apical and retro-cardiac densities
- Solitary pulmonary nodules
- Mediastinal widening
- Cardiomegaly, changes in heart contour

- Ask for previous CXRs to track CXR changes, especially to monitor solitary pulmonary nodules for any changes.

- Lower lung lobes can normally appear to be opacified by both breast and fatty tissue.

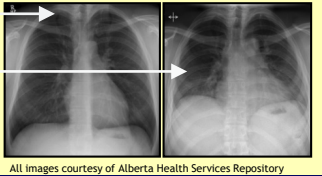
Other CXR Types / Views:

- An AP frontal CXR is done for pts who can't stand (i.e. quite ill, babies), and when a portable CXR is needed. Note that the AP view 1) magnifies the heart and 2) may shrink apparent lung volume.

- Expiratory View is done to accentuate:
- Air trapping: localize area of obstruction
- Pneumothorax
- *Do not confuse expiratory views for pulmonary vasculature congestion, restrictive lung disease, or pneumonia.*

- Right: Normal PA CXR

- Far Right: same patient, expiratory CXR



All images courtesy of Alberta Health Services Repository

Key References (continued from previous card): Petinaux B, et al. Accuracy of radiographic readings in the emergency department. *Am J Emerg Med*. 2011;29(1):18-25. Gatt ME, et al. Chest radiographs in the emergency department: is the radiologist really necessary? *Postgrad Med J*. 2003;79(930):214-7

Klein EJ, et al. Discordant radiograph interpretation between emergency physicians and radiologists in a pediatric emergency department. *Pediatr Emerg Care*. 1999; 15(4):245-8. Kuritzky L *et al*. Interpretation of chest roentgenograms by primary care physicians. *South Med J*. 1987 Nov; 80(11):1347-51.

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Conjunctivitis

APPROACH

- Always document bilateral visual acuity for any eye complaint (see video at youtube.com/watch?v=kMwy06mAV5U).
- Viral and allergic etiologies are much more common than bacterial.
  - Viral likely if profuse tearing and no discharge; usually bilateral, pre-auricular adenopathy very common. Often associated with URTI.
    - unilateral red eye + vesicles on eyelid or tip of nose suggests HSV or Zoster.
  - Allergic likely if severe itching, gritty-feeling, stringy mucoid discharge; typically seasonal, associated with other allergic symptoms; always bilateral.
- Bacterial etiology more likely if constant, crusty discharge causing lid sticking throughout day; may have blurred vision that clears with blinking.
  - Hyperacute infection: rapidly progressive (<24hrs), copious d/c (accumulates after being wiped away), thick, and yellow-green **Possible gonococcal STI

⚠ Red Eye RED FLAGS	Possible Diagnoses (should actively rule out)
Sudden decreased acuity	acute angle-closure glaucoma, corneal abrasion/ulcer
Photophobia	corneal abrasion/ulcer, uveitis, iritis, keratitis, scleritis
Headache/N/V	acute angle-closure glaucoma, scleritis, pre-existing glaucoma (often meds not being used correctly)
Lid-swelling, erythema	VZV/HSV, pre-septal or orbital cellulitis, blephartis, dacrocystitis, stye (hordeolum), chalazion
Trauma	retrobulbar hematoma, foreign body, hyphema
Chemical exposure	caustic injury (copious irrigation and check pH)
Ciliary flush**	acute angle-closure glaucoma, uveitis
Foreign body sensation	keratitis, corn. abrasion/ulcer, foreign body, blepharitis

** In simple conjunctivitis, there is a pale ring around the cornea (i.e. "peri-limbic sparing"); with flush, this area IS inflamed and may even appear as a red ring.

TREATMENT for Clinically Confirmed Conjunctivitis

Viral	- Usual etiology is Adenovirus: self-limited but extremely contagious (1wk from symptom onset); frequent hand hygiene, no school/daycare - Cold compresses, artificial tears, topical antihistamines for symptoms - Urgent ophth. assessment if HSV or Zoster is suspected (i.e. vesicles); start valacyclovir; assess eye with fluorescein (will not harm eye)
Allergic	- Cold compresses, artificial tears for symptoms; if chronic, can trial antihistamine or mast-cell inhibitor drops (e.g. Olopatadine 0.1%) - Oral antihistamines recommended only if other allergy symptoms
Bacterial	- **Adults:** usual etiologies are *S. aureus*, *H. influenzae*, *S. pneumoniae* - Moxifloxacin (G+/-) or Tobramycin (G-) 0.3% QID x 7-10d (drops) - **Peds:** usual etiologies are *H. influenzae*, *S. pneumoniae*, *Moraxella* - Ciprofloxacin (G+/-) or Erythromycin (G+) 0.5% QID x 7-10d (oint.) - Warm compresses PRN for lid hygiene, ++ artificial tears for sx relief - Oral antibiotics and eye patches are not recommended - Don't use steroids or antibx/steroids - may worsen missed viral dz
	Customized mgmt. and urgent ophth./ID assessment required if any of: ❑ Newborn <5 d (likely *Chlamydia*) ❑ Hyperacute presentation (suggests *Gonorrhea* or *Chlamydia*) ❑ No improvement after 48 hrs of topical ophthalmic antibiotics ❑ No improvement after 5-7 d of oral antivirals and suspected HSV/VZV

Key References: American Academy of Ophthalmology Cornea/External Disease Panel. (2013). Preferred Practice Pattern Guidelines. Conjunctivitis. San Francisco, CA. *American Academy of Ophthalmology*. Azari AA, Barney NP. Conjunctivitis: A Systematic Review of Diagnosis and Treatment. *JAMA*. 2013;310(16):1721-9. Frings A, Geerling G, Schargus M. Red Eye: A Guide for Non-specialists. *Dtsch Ärztebl Int*. 2017;114(17):302-12.

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Gastroenteritis

APPROACH

- Defined as the passage of ≥3 unformed stools in 24 hrs plus an enteric symptom (nausea +/- vomiting, abdominal pain/cramping, flatulence, tenesmus, +/- fever) for <7 d (pediatric) or <14 d (adult).
- Viral etiology is most common (Rotavirus in children, Norovirus in adults).
- Non-bloody diarrhea (viral, bacterial toxin-mediated, *Giardia*) typically resolves within 48hrs without antibiotic treatment.
- Bloody diarrhea is often a sign of invasive pathogens (Enterohemorrhagic *E. coli*, *Shigella dysenteriae*, *Salmonella* species, *Campylobacter jejeuni*, *Yersinia enterocolitica*, *Vibrio parahaemolyticus)* or the parasite *Entamoeba histolytica* and requires additional workup (see red flags).
- Approach to gastroenteritis is based upon:
  1. Assessing dehydration
  2. Maintaining nutrition
  3. Managing symptoms
  4. Identifying red flags that require specific management, and
  5. Notifying public health (if required)

⚠ Serious conditions may mimic gastroenteritis; consider alternate dx if patient is **vomiting exclusively** (e.g. GI obstruction, inborn error in metabolism in infants) or if **peritoneal signs** (e.g. surgical causes of acute abdomen).

1. Assess Degree of Dehydration

Severity	Presentation	Management
None	Alert, normal urine output	- Continue hydration +/- ORT (see below) - Regular diet
Mild	Decreased urine output, decreased thirst	- Replace ongoing losses (10mL/kg for every episode of diarrhea or vomiting)
Moderate	Sunken eyes, decreased turgor (skin "tenting" recoils <2sec), dry mucous membranes	- ORT (see below) - Defer solids - Replace ongoing losses
Severe	Signs of moderate dehydration with rapid breathing, rapid thready pulse, lethargy or coma, decreased turgor (recoil >2sec)	- 0.9% NaCl 20mL/kg IV bolus as fast as possible, repeated up to 3x - Glucose, lytes - Intake/output measurement - Commence ORT once resuscitated

Oral rehydration therapy (ORT):

- **Pediatric:** ORT preferred
  - Target: 20mL/kg/ hr in the first hour, followed by 10mL/kg/hr (mild) or 15-20mL/kg/hr (moderate) over the next 6-8 hrs.
  - Commercial electrolyte solutions (e.g. Pedialyte) and oral rehydration packets are preferred; however, 1L sports drinks with ½ tsp salt added can be used. Avoid carbonated drinks, juices, and water.
  - Start with small volumes and increase, using a spoon or dropper for infants, and small sips or a syringe for children (NG before IV in child who refuses fluids).
  - Administer q5mins, if vomiting occurs, wait 10 min and resume.
  - Assess q4hrs; patients unable to maintain hydration may require hospitalization
- **Adults:** mildly dehydrated adults can keep up with fluid losses using water, broths, and sports drinks; more significant dehydration should be treated using commercial electrolyte solutions as above.

2. Maintain Nutrition

- Breastfeeding should continue unrestricted.
- If regular diet is held, aim to resume within 6hrs of initiating ORT.
- Start with simple starches (rice, saltine crackers), low-fat yogurt, fruits (bananas, apple sauce), steamed low-fibre vegetables (potatoes, yams), and steamed lean meats (chicken).
- Progress to full diet, as tolerated, within 24-48hrs.

3. Manage Symptoms

- Ondansetron: if severe vomiting in patient >6mos, may trial 0.15 mg/kg (max 8mg) PO once. ORT should be initiated 15-30mins after administration.
- Loperamide: can be considered for diarrhea in children >2y and adults if no fever or blood in stool, do not use >48hrs.
- Bismuth subsalicylate: for adults with abdominal pain and diarrhea (contraindicated if patient taking fluoroquinolones); warn patients that stools may appear black with this medication.
  - Avoid in children with "flu-like illness" or fever as risk for Reye's Syndrome
- Probiotics: some evidence for use in adults with *C. difficile*.

⚠ 4. Identify RED FLAGS	Management
- Fever (>72hrs) or grossly bloody diarrhea - Severe abdominal pain - Exposure to suspicious foods (undercooked meat, unrefrigerated food, unpasteurized dairy)	- Stool culture and sensitivity
- Hospitalized (presently or in last 6 mo) - Recent antibiotic use - Profuse diarrhea (>6 diarrheal episodes/d) - Immunocompromised (chemotherapy, HIV) - Age >65 with comorbidities (heart/renal failure, ↓ mobility)	- Stool culture and sensitivity - *C. difficile* toxins A and B
- Exposure to untreated water - Foreign travel (last 6 mo) - HIV +ve patient - Diarrhea >1 wk	- Stool culture and sensitivity - Stool ova and parasite
- Diarrhea changes to bloody within 3 days of illness onset - Decreased urine output, or dark urine - Consumption of undercooked beef (suggests Enterohemorrhagic *E. coli*) - Purpura on physical exam	- No antibiotics, evaluate for HUS: ❑ Renal injury (elevated Cr or ↓ urine output) ❑ Thrombocytopenia (platelets <150) ❑ Microangiopathic hemolytic anemia (Hbg <100)

- In patients presenting with all of [fever (>72 hrs) AND bloody AND profuse diarrhea (>6 diarrheal episodes/d) AND duration >1 wk], consider empiric ciprofloxacin or azithromycin, or ceftriaxone if hospitalized.
- Absolute indications for antimicrobial therapy: infection with *S. typhi*, *Shigella*, *C. difficile*, *E. histolytica*; treat prior to test results if suspicion is very high.

5. Notify Public Health

- Campylobacter, Cholera, *C. difficile*, *Giardia*, *Listeria (only invasive forms)*, *Norwalk (only outbreaks)*, *Salmonella*; check provincial requirements.

Key References: Churgay CA, Aftab Z. Gastroenteritis in children: Part I. Diagnosis. *Am Fam Physician*. 2012;85(11):1059-62. Riddle MS, Dupont HL, Connor BA. ACG Clinical Guideline: Diagnosis, Treatment, and Prevention of Acute Diarrheal Infections in Adults. *Am J Gastroenterol*. 2016;111(5):602-22.

Churgay CA, Aftab Z. Gastroenteritis in children: Part II. Prevention and management. *Am Fam Physician*. 2012;85(11):1066-70. Leung A, Prince T, Canadian Paediatric Society, Nutrition and Gastroenterology Committee. Oral rehydration therapy and early refeeding in the management of childhood gastroenteritis. *Paedi Child Health*. 2006;11(8):527-31.

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Otitis Media

APPROACH

- Use the largest speculum that fits in the ear; erythema of tympanic membrane (TM) alone is non-specific (common during fever or in crying child)
- Usually starts as viral; either resolves spont. or becomes secondary bacterial infxn. (*S. pneumoniae*, *H. influenzae*, *M. catarrhalis*, occasionally GAS, *S. aureus*)
- Appropriate clinical diagnosis and treatment relies on understanding established definitions in research and clinical practice guidelines:
  - **Acute Otitis Media (AOM):** an infection of the middle ear, which includes purulent fluid. Also referred to as "ear infection". Diagnosis requires:
    - ❑ Effusion (i.e. air-fluid level, bulging TM, or decreased mobility) AND
    - ❑ Inflammation (i.e. otalgia not caused by otitis externa, tugging at ears, or parental suspicion) AND
    - ❑ Acute onset
  - **Middle Ear Effusion (MEE):** presence of fluid in the inner ear without signs of symptoms of acute ear infection. 90% of children have MEE before school age, (mean of 4 episodes/year). Largely undetected as it is asymptomatic and resolves spontaneously. Also referred to as "otitis media with effusion (OME)", "ear fluid", and "serous", "secretory", or "nonsuppurative otitis media".
    - up to 40% of children have MEE up to one month post-AOM

⚠ If mastoiditis (pain/swelling behind the ear), vertigo, or facial paralysis present, urgent referral to ENT +/- ID consult.

TREATMENT for Clinically Confirmed Otitis Media

- No treatment required for MEE, but perform hearing test if effusion persists ≥3mo, or sooner if hearing loss, developmental delay, or craniofacial abnormality (e.g. Down syndrome, cleft palate)
- AOM can often be managed with supportive care (analgesia, antipyretics); no role for decongestants or antihistamines (unless allergies suspected)
  - empiric antibiotic treatment should be initiated as below:

Treat all high-risk children: ❑ <6 mo ❑ Craniofacial abN, Downs ❑ Underlying hearing impairment, cochlear implant ❑ CVS/resp dz, immunocomp.	- Amoxicillin 45mg/kg/d PO div BID-TID + Amoxicillin-clavulanate (7:1) 45mg/kg/d PO div BID-TID x 10d - **Penicillin allergy:** Ceftriaxone 50mg/kg IM/IV daily x 3d

Treat >6 mo if any of:
❑ Ruptured TM*
❑ Bilateral AOM in child ≤23mo*
❑ High fever (>39°C)
❑ Unwell for ≥48hrs
❑ Severely ill (irritable, poor feeding/sleeping)
❑ Adult
	- **Pediatric:** Amoxicillin 45mg/kg/d PO div TID or 90mg/kg/d PO div BID x 5d (if<2y or daycare or recent antibiotic exposure in last 3 mths)
	  - **Non-severe penicillin allergy:** Cefuroxime-axetil 30mg/kg/d PO div BID x 5d
	* **Treat x 10d if:** ruptured TM or child <2 y.o. or recurrent AOM
	- **Adults:** Amoxicillin 1g PO TID x 5d
	  - **Penicillin allergy:** Doxycycline 200mg PO once, then 100mg PO BID x 5d

IMPORTANT: Alternative anti-bx required if no improvement after 48-72hrs.

Otherwise, hold off on antibiotics and reassess for effusion in 24-48hrs if:
- ❑ Worsening symptoms
- ❑ Caregiver preference
- ❑ Concerns about the caregiver's ability to judge if child needs reassessment

Key References: Le Saux N, Robinson JL, Canadian Paediatric Society, Infectious Diseases and Immunization Committee. Management of acute otitis media in children six months of age and older. *Paediatr Child Health*. 2016;21(1):39-50. Rosenfeld RM, Shin JJ, Schwartz SR, et al. Clinical practice guidelines otitis media with effusion (update). *Otolaryngol Head Neck Surg*. 2016;154(1 Suppl):S1-S41.

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Sinusitis

APPROACH

- Distinct from rhinitis (inflammation of the mucous membranes of the nose), which is common with upper respiratory infections
- Presents with purulent nasal drainage accompanied by nasal obstruction, facial pain/pressure/fullness, or both
  - fever, cough, fatigue, maxillary toothache, facial swelling, ear pressure, and decreased/absent sense of smell are not consistently present
- Viral etiology is most common by far (98% of cases); but bacterial likely if any of:
  - ❑ Failure of symptoms to improve after 10 days, OR
  - ❑ Worsening of symptoms within 5-7 days after initial improvement, OR
  - ❑ In pediatric patients, high fever (>39˚C) for ≥3 consecutive days and [purulent nasal discharge or facial pain]
- Examine nostrils to assess for (1) mucopurulent discharge, (2) signs of co-existent allergic sinusitis (edema, polyps), and (3) foreign bodies (esp. in children and cognitively impaired)

⚠ RED FLAGS	Possible Diagnoses*
Black necrotic tissue or black discharge	mucormycosis (fungal infection)
Altered mental status, abnormal neurological exam, meningeal signs	meningitis, intracranial abscess, cavernous sinus thrombosis
Decreased visual acuity, orbital edema/erythema	orbital cellulitis

TREATMENT of Clinically Confirmed Sinusitis

- Most resolve spontaneously and can be managed with supportive care (analgesia, antipyretics, nasal irrigation with saline solution)
  - reduce modifiable risk factors (tobacco exposure, scents/allergens)
  - maintain good hand hygiene
- Antihistamines and systemic corticosteroids not recommended; intranasal corticosteroids and brief use of decongestants may aid symptoms
- NP cultures not recommended; imaging only for chronic sinusitis or acute compl.
- If presentation suggests persistent bacterial etiology, initiate antibx (see below)

Acute sinusitis
❑ ≤4 wks, ≤3x yearly
	- Usual etiologies are *S. pneumo*, *H. influenzae*, *M. catarrhalis* (*S. aureus*, GAS, anaerobes occasionally)
	- **Adults:** Amoxicillin 0.5-1g PO TID x 5-7d
	  - **Penicillin allergy:** Doxycycline 200mg PO once, then 100mg PO BID x 5-7d
	- **Pediatric:** Amoxicillin 45mg/kg/d PO div TID or 90mg/kg/d PO div BID x 5d
	  - **Penicillin allergy:** regimens vary by severity and age
	* Alternative regimen required if immunocompromised or treatment refractory

Chronic sinusitis
❑ >12 wks
	- Anaerobes more common
	- **Adults:** Amoxicillin-clavulanate 875mg PO BID x 3 wks
	  - **Penicillin allergy:** Clindamycin 300mg PO QID x 3 wks
	- **Pediatric:** Amoxicillin 45mg/kg/d PO div BID-TID +/- Amoxicillin-clavulanate (7:1) 45mg/kg/d PO div BID-TID x 10d
	  - **Penicillin allergy:** regimens vary by severity and age
	* Consider ENT referral to r/o allergy, structural abnormality, or immunodeficiency

Recurrent sinusitis ❑ ≥4x yearly	

Key References: Rosenfeld RM, Piccirillo JF, Chandrasekhar SS, et al. Clinical practice guideline (update): adult sinusitis. *Otolaryngol Head Neck Surg*. 2015;152(2 Suppl):S1-S39. Desrosiers M, Evans G a, Keith PK, Wright ED, Kaplan A, Bouchard J, et al. Canadian clinical practice guidelines for acute and chronic rhinosinusitis. *Allergy Asthma Clin Immunol*. 2011;7(1)2.

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Sore Throat

APPROACH

- Viral etiology is most common (causing 80-90% of infectious pharyngitis in adults and 50-70% in children), particularly if multiple symptoms (e.g. cough, conjunctivitis, rhinorrhea, hoarseness, fever, malaise, or myalgia)
- If bacterial, Group A Streptococcus (GAS) is most common etiology → perform rapid antigen detection testing (RADT) or throat swab for GAS culture if patient scores at least 2 with the following criteria (1 point each):
  - ❑ Tonsil swelling or exudate
  - ❑ Tender/swollen anterior cervical lymph nodes
  - ❑ Fever (>38°C)
  - ❑ Cough absent
  - ❑ Age 3-14 years (if age ≥45, subtract 1 point)

⚠ RED FLAGS	Possible Diagnoses (must be ruled out)
Drooling	epiglottitis, retropharyngeal or peritonsillar abscess
Suspicion of foreign body	foreign body
Muffled "hot potato" voice	epiglottitis
Acutely unwell/toxic	epiglottitis, retropharyngeal abscess, Diphtheria, sublingual abscess (Ludwig's angina), infectious thrombophlebitis in the internal jugular vein (Lemierre's syndrome)
Throat pain out of proportion to findings	epiglottitis, peritonsillar abscess
Unilaterally enlarged tonsil or uvular deviation	peritonsillar abscess
Unvacc. with thick grey/ white membrane on back of throat	Diphtheria
Oral lesions	Coxsackie virus (hand, foot, and mouth disease), Herpes, PFAPA Syndrome (periodic fever with aphthous stomatitis, pharyngitis and adenitis"), Stevens-Johnson syndrome, Behcet's syndrome, Kawasaki Disease
Adenopathy and splenomegaly	EBV (infectious mononucleosis)

TREATMENT for Infectious Pharyngitis

- Most Infectious pharyngitis can be managed with analgesia and antipyretics alone
- Delaying antibiotics until throat culture results are back is reasonable, since:
  - GAS is typically self-limited (8-10 d)
  - Delaying antibiotic treatment may prevent relapse
  - Antibiotic initiation ≤9 d after illness onset prevents Rheumatic fever (i.e. there is enough time to wait for culture results and still be effective)

Treat for GAS if:	
❑ +ve RADT ❑ +ve throat culture	- **Adults:** Penicillin VK 600mg PO BID or 300mg PO TID x 10d - **Pediatric:** Penicillin VK 40mg/kg/d PO div BID x 10d - **Penicillin allergy:** can use Cephalexin (penicillin non-anaphylaxis), Clindamycin, Azithromycin, or Clarithromycin

If no improvement with antibiotics after 72 hrs, assess for:
- Antibiotic non-compliance
- Concurrent viral infection in GAS carrier (20% of children are carriers)
- Suppurative complications (sinusitis, retropharyngeal or peritonsillar abscess)

Key References: Shulman ST, Bisno AL, Clegg HW, et al. Clinical practice guideline for the diagnosis and management of group A streptococcal pharyngitis: 2012 update by the Infectious Diseases Society of America. *Clin Infect Dis.* 2012;55(10)1279-82. ESCMID Sore Throat Guideline Group Pelucchi C, Grigoryan L, Galeone C, et al. Guideline for the management of acute sore throat. Clin Microbiol Infect. 2012;Suppl 1:1-28.

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Urinary Tract Infection (UTI)

APPROACH

- **Acute uncomplicated UTI:** when normal peri-urethral flora are replaced by pathogenic bacteria, which ascend and cause inflammation of the bladder (cystitis). Likely diagnosis if ≥2 of:
  - ❑ Dysuria (pain or burning sensation while voiding)
  - ❑ Frequency (frequent, small urine volumes; sensation of incomplete emptying)
  - ❑ Urgency (persistent urge to void; fear of incontinence if can't void immed.)
  - ** *Children may also present with new daytime incontinence or abdominal pain*
- **Complicated UTI:** symptoms of uncomplicated UTI in patients with any of:
  - ❑ Biological male
  - ❑ Pregnant
  - ❑ Structural abnormality
  - ❑ Recent instrumentation
  - ❑ Post-void residual >100cc
  - ❑ Obstruction (stone or tumor)
  - ❑ Renal insufficiency or transplantation
  - ❑ Presence of indwelling catheter or stent
  - ❑ Neurological disease (e.g. MS)
- **Pyelonephritis:** bacterial infection above the bladder to the ureters and kidneys; pts with fever (>38˚C), chills, flank pain, CVA tenderness, and nausea +/- vomiting

Diagnosis requires confirmation at least by urinalysis (dipstick or microscopy); C&S depending on patient age and UTI type (see treatment). **General rules:**
- Collect urine samples for culture and sensitivity prior to initiating antibiotics.
- Decant a small volume from collection container for dipstick analysis rather than dipping unsterile dipstick directly into specimen (risk for contamination).
- Reassess culture and sensitivity results and modify therapy.
- Cloudy/foul-swelling urine is not a reliable indicator of UTI.

⚠ RED FLAGS and special circumstances	Management
Pruritus, discharge, sexually active	Pelvic exam, investigations for STIs
♂ with perineal pain, recurrent or treatment-refractory UTI	Rule out prostatitis, infected stone/stent, perinephric abscess
Males with frequency alone, or nocturia, difficulty initiating/maintaining stream, incomplete voiding	Rule out benign prostatic hyperplasia (BPH)
Infant <2mos, immunocompromised, hemodynamically unstable, fever (>38˚C)	Rule out bacterial sepsis → blood culture
MRSA or MSSA +ve urine culture	r/o bacteremia, perinephric abscess

Notes on urine specimen collection

- **Patients who can follow instructions:** midstream collection is preferred:
  - Wash hands with soap + water, cleanse the urethral area (♀: separate labia and cleanse front-to-back; ♂: retract foreskin, if present, for duration of collection), start void into toilet, then without stopping, collect urine in container
- **Adult patients unable to follow instructions** (e.g. cognitively impaired, physically unable): in/out catheter is most reliable; suprapubic aspiration is an alternative
- **Pediatric patients:** collection presents many challenges, depending on age.
  - **Toilet-trained and cooperative:** midstream collection is preferred. Try giving the child something to drink, this may stimulate the urge to void. Parents can ask little girls to sit backward on the toilet seat to separate the labia.
  - **Not toilet trained:** a urine collection bag, which adheres to the skin surrounding the urethral area, is least invasive → -ve dipstick rules out UTI, but +ve is inconclusive and would require in/out catheter or suprapubic aspiration for culture and sensitivity. A clean catch sample is an alternative; instruct caregiver to wipe, leave diaper off, hold child up, catch eventual stream (takes a while).

TREATMENT

Asymptomatic bacteriuria: +ve urinalysis or culture in a patient without UTI symptoms; usually diagnosed in patient populations prone to asymptomatic bacteriuria (e.g. elderly or catheterized patients) for whom specimen collection was not indicated (i.e. no UTI localizing symptoms).
- Only treat if pregnant or pending genitourinary procedure.

Uncomplicated UTI	- **Send specimen for culture and sensitivity prior to initiating treatment, if any of:** ❑ <2 UTI symptoms (see acute UTI check boxes on prev. page) ❑ Quinolone/Cephalosporin use (≤6 mo) ❑ Known previous UTI caused by atypical pathogen ❑ Foreign travel (≤6 mo) ❑ Hospitalized or frequent health facility visits - **Treat empirically for *E. coli* if ≥2 of:** ❑ ≥2 UTI symptoms OR ❑ Pyuria (>trace on dipstick) OR ❑ Nitrites (>trace on dipstick) - ***Culture and sensitivity not required*** - Usual pathogens: *E. coli* (75-95%) and *S. saprophyticus* (5-15%) - Nitrofurantoin 100mg PO BID x 5d
Complicated UTI	- Always **collect** urine culture prior to treatment → increased risk of failing empiric therapy as pathogens are variable, more resistant, and difficult to predict: *E. coli* (50%), enteric gram-negatives (*Klebsiella* species, *Proteus* species), enterococci, *Pseudomonas*, yeast - **Cystitis, systemically well:** Cefixime 400mg PO daily x 10d (least resistance; Amoxicillin-clavulanate, Ciprofloxacin, and TMP/SMX are second line as frequent resistance is observed) - **Pyelonephritis or systemically unwell:** alternative regimen req.

Pediatric	- Always **collect** urine culture prior to treatment
	- Usual pathogens if healthy with no previous antibiotic: *E. coli*, enteric gram-negatives (*Klebsiella* species, *Proteus* species); *S. saprophyticus* common in adolescent ♀
	- **Infants (<1mo):** hospitalization and aggressive IV antibiotics
	- **Infants (>1mo) and children with non-toxic febrile UTI (usually pyelonephritis) with no underlying structural abnormality:**
	  - Cefixime 8mg/kg/day PO x 10d OR
	  - Ceftriaxone 50mg/kg IV q24h x 10d
	- **Older child with no fever and presumed cystitis:** Cefixime 8mg/kg/day PO x 2d

→ Does this child need imaging?

- Sometimes indicated to confirm that the child had pyelonephritis and identify whether severe vesicoureteral reflux (VUR) or structural anomalies exist.
- Perform renal and bladder ultrasound only if any of:
  - ❑ Hemodynamically unstable
  - ❑ Elevated serum creatinine level at any time
  - ❑ Poor urine flow
  - ❑ Bladder or abdo mass present
  - ❑ Not improving clinically within 24 hr
  - ❑ Persistent fever after 48 hr of starting appropriate antibiotics
  - ❑ <2 y.o. with first febrile UTI

Key References: Dason S, Dason JT, Kapoor A. Guidelines for the diagnosis and management of recurrent urinary tract infection in women. *Can Urol Assoc J.* 2011;5(5):316-22. Mazzulli T. Diagnosis and management of simple and complicated urinary tract infections (UTIs). *Can J Urol.* 2012;19 Suppl 1:42-8.

Robinson JL, Finlay JC, Lang, ME, Bortolussi R, Canadian Paediatric Society, Community Paediatrics Committee, Infectious Diseases and Immunization Committee, Community Paediatrics Committee. Urinary tract infection in infants and children: Diagnosis and management. *Paediatr Child Health.* 2014;19(6):315-9.

Burles K
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Sexually Transmitted Infections

When working up any patient for STI, it is important to identify other STIs through serologic and other appropriate testing.

GENITAL ULCERS (consider non-infxs cause, e.g. autoimmune, fixed-drug eruption)

	Presentation	Investigations	Treatment
Herpes (HSV-1, -2)	- Grouped vesicles that rupture and become shallow/painful ulcers - Inguinal lymphadenopathy - Fever, malaise, pharyngitis	- Scrape multiple ulcers/vesicles for PCR/culture	- HSV primary infection is a much rarer presentation than recurrent infection - Treatment varies; see guidelines for primary/recurrent/ suppressive management
Syphilis (notifiable disease)	- +ve serology found screening high-risk populations - Secondary stage rash (systemic illness + copper macular rash → symmetric papules including palms/soles) -Painless well-demarcated ulcer (chancre) that resolves	Options: - PCR for *T. pallidum* - Serologic tests for syphilis as per local lab (each lab has a different algorithm, much variation across Canada)	- Benzathine Penicillin G 2.4MU IM once **(if pregnant, administer a 2nd dose 1wk apart)** - Same regimen for HIV +ve patients - Test and treat all sexual contacts - Late neurosyphilis requires alternative treatment (consult ID)
Chancroid	- Painful; necrotizing/ purulent ulcers - Inguinal lymphadenopathy	- Gram stain lesion - *H. ducreyi* PCR/culture	- Single dose of Azithromycin 1g PO or Ciprofloxacin 500mg PO or Ceftriaxone 250mg IM
Lymphogran. venereum	- Painless genital/rectal papule/ulcer (resolves) - Inguinal/femoral lymphadenopathy - Urethritis or prostatitis	- NAAT**/culture for *C. trachomatis*; if +ve perform serovar testing	- Doxycycline 100mg PO BID x 21d - Treat sexual contacts (from within 60d) x 7d
Granuloma inguinale	- *K. granulomatis* - Painless anogenital papules/ulcers - Highly vascular, bleed easily on contact	- Difficult to culture - Consult microbiologist	- Azithromycin 1g PO q1wk for at least 1wk until lesions clear - Treatment halts progression, but often relapse in 6-18m

GENITAL GROWTHS

	Presentation	Diagnosis	Treatment
Warts	- Soft, smooth or lobular anogenital papules or plaques (cauliform common color and appearance vary) - Painless +/- pruritis	- Clinical - Can consider biopsy if unclear	- May increase in # and size or spontaneously regress, typically resolve in 4 m - Cryotherapy (liquid nitrogen) - Topical Imiquimod or Podophyllotoxin
Molluscm Contagiosum	- Small, raised, pink, or flesh-colored with central dimple or pit - Anywhere, incl. genitals	- Clinical - Can consider skin scraping/ biopsy if unclear	- Self-limited, but may take months to resolve - Cryotherapy and curettage - Lim. efficacy with topical tx

** NAAT: Nucleic acid amplification test

VULVOVAGINITIS

	Presentation	Investigations	Treatment
Bacterial Vaginosis	- Thin whitish-grey d/c - Organic amine vaginal odor	- Clue cells on microscopy - Vaginal fluid pH >4.5 - Fishy odor with addition of potassium hydroxide	- Metronidazole 500mg PO BID x 7d (avoid EtOH until 24hrs post-treatment) - Treat asymptomatic patients if any of: ❑ Pregnant with history of previous preterm delivery ❑ Prior to IUD insertion, gynecologic surgery or genitourinary procedure ❑ Prior to therapeutic abortion
Candidiasis	- White, cottage-cheese d/c - Inflamed vulva - Pruritus - Dysuria	- pH 4-4.5 - Yeast hyphae visible on wet mount, Gram stain and PAP	- **Non-pregnant:** Fluconazole 150mg PO once or intravaginal -azole cream/tablet x 1-3d - **Pregnant:** any intravaginal -azole cream x 7d (Fluconazole PO contraindicated) - **Balanitis (♂):** Topical -azole cream x 7d
Trich.	- Yellow frothy d/c - Odor, pruritus, dysuria	- NAAT** - Flagellated motile organisms on wet mount	- Metronidazole 2g PO once (avoid EtOH until 24hrs post-treatment) - Treat sexual partners

GONORRHEA AND CHLAMYDIA (notifiable disease)

Presentation	Investigations	Treatment
- Asymptomatic or as cervicitis/urethritis - ♀: vaginal pruritus, mucopurulent d/c, dysuria, +/- abdominal pain, +/- dyspareunia - ♂: dysuria, +/- pruritus or d/c at urethral meatus - 40% of patients with *N. gonorrhoeae* also have *C. trachomatis* co-infection	- Culture (endocervical or urethral swab) - NAAT** (first catch urine or endocervical, vaginal or urethral swab)	- **Gonorrhea:** [Cefixime 800mg PO or Ceftriaxone 250mg IM once] + [Chlamydia treatment] - Alternative regimen for pharyngeal infection - **Chlamydia:** - **♂ or non-pregnant ♀:** Azithromycin 1g PO once or Doxycycline 100mg PO BID x 7d - **Pregnant:** Amoxicillin 500mg PO TID x 7d (Azithromycin if compliance can't be assured) - Treat recent partners (last 60d) - No intercourse until 7d post-tx

PUBIC LICE AND SCABIES

Presentation	Treatment
- **Lice:** small insects on any part of body with hair, itchy all of the time, nits on hair shaft - **Scabies:** mites that dig under skin, head and neck-sparing, more itchy at night, red papules/crusts, curvy red burrow lines; pruritus may persist after eradication	- **Lice:** Permethrin 1% cream rinse applied for 10mins, then rinse, repeat q3-7d - **Scabies:** Permethrin 5% cream applied from neck down (including fingernails) overnight, rinse in AM, repeat q7d - Wash all clothes and bedding in hot water (>50°C) or place in plastic bag for 7d - Treat all household contacts and recent partners (last month)

Key References: Public Health Agency of Canada. (2017). Canadian Guideline on Sexually Transmitted Infections. Retrieved from www.canada.ca/en/public-health/services/infectious-diseases/sexual-health-sexually-transmitted-infections/canadian-guidelines/sexually-transmitted-infections.html#toc.

Centers for Disease Control and Prevention. (2015). 2015 Sexually Transmitted Diseases Treatment Guidelines. Retrieved from www.cdc.gov/std/tg2015/default.htm.

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Comprehensive Family History

Core Family History

Relevant health information from three generations including:
- grandparents, aunts, uncles, half-siblings, nieces and nephews
- cousins and great-grandparents, if available.

Key Elements[1,2]:

Personal Information:
- ❑ Names
- ❑ Ages
- ❑ Current health status
- ❑ If deceased: age and cause of death
- ❑ Ethnicity

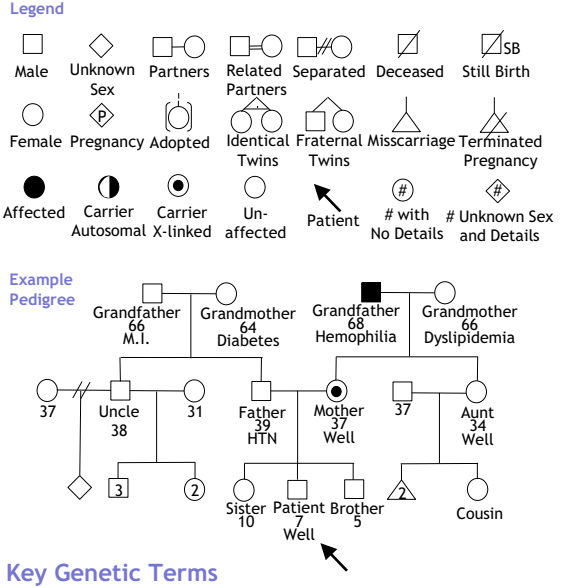
Issues to explore:
- ❑ early onset of illness
- ❑ pregnancy Issues
- ❑ infertility
- ❑ miscarriages or still birth
- ❑ birth defects
- ❑ known familial diseases or conditions
  e.g. Cystic Fibrosis, Huntington Dz, familial ALS, Sickle Cell Dz)
- ❑ known nonmedical conditions
- ❑ consanguinity:

"Is there any chance that any of the couples in your family may be blood relatives?"

Red Flags

		FamHx significant for:	Dx To Think About:
General		two or more congenital anomalies +/- dev. delay or intellectual disability	genetic syndrome
		multiple affected siblings or individuals in multiple generations	suggests genetic etiology
		multiple child deaths, still born, miscarriages	
		extreme presentation of common conditions or pathology	
Specific	Hereditary Cancers	early onset, colorectal cancer in multiple generations, usually in each generation	Familial Adenomatous Polyposis or Hereditary Non-Polyposis Colorectal Ca
		early onset, >1 primary melanoma in patient, >1 family member with melanoma	Familial Melanoma
		early onset, >1 primary breast ca in patient, >1 family members with breast ca, breast ca + ovarian ca, breast ca in males	Hereditary Breast and Ovarian Ca
		≥2 endocrine neoplasias	Multiple Endocrine Neoplasia
	Blood	recurrent, unusual, or early onset VTE	Factor V Leiden
		significant bleeding history or sequelae	Hemophilia
		anemia	Sickle Cell Dz or Thalassemia
	Other	early onset (<65yrs) dementia	Early Onset Alzheimer Disease
		syncope, sudden cardiac death in family member, unexplained drowning, single car MVC	Heritable Arrhythmia/Cardiomyopathy

Constructing a Pedigree



Key Genetic Terms

Pattern	Features
Genotype	An individual's genetic makeup.
Phenotype	An individual's observed characteristics; based on genetics and environment.
Autosomal Dominant	Typically affects each generation. 50% likelihood of being affected.
Autosomal Recessive	Typically skips generations. 25% chance of being affected, 50% chance of being a carrier.
X-Linked Dominant	Females more likely affected. No affected sons of an affected male.
X-Linked Recessive	Males more likely affected. Can have affected males in each generation.
Mitochondrial	Affects males and females equally. Only passed on by mothers.
Expressivity	The phenotypic variability of a genetic disease.
Penetrance	The proportion of patients with a mutation that have a disease phenotype.

Key References: Genetic Alliance. (2010). Understanding Genetics: A District of Columbia Guide for Patients and Health Professionals. Washington, DC. *District of Columbia Department of Health*. Tarini B, McInerney J. Family history in primary care pediatrics. *Pediatrics*. 2013;132(Suppl3): S203-S210. Whelan AJ, et al. Genetic red flags: clues to thinking genetically in primary care practice. *Prim Care*. 2004;31(3):497-508.

GenetiKit. (n.d.) Family History Tool. Retrieved from www.mountsinai.on.ca/care/family-medicine-genetics-program/resources/FamilyHistoryTool.pdf. Genetics Home Reference. (2019). What are reduced penetrance and variable expressivity. Retrieved from https://ghr.nlm.nih.gov/primer/inheritance/penetranceexpressivity.

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Contraception

Myths	Reality
Combined OCP causes cancer	OCP use protects against ovarian and endometrial cancer. It does not cause breast cancer.
Menstruating is healthy and necessary	Continuous OCP use is safe and decreases risk of unplanned pregnancy.
Nulliparous women, teens and those with multiple partners should not use IUDs	Both copper and LNG-IUC are safe and effective choices. Consider emphasis on barrier method (such as condom) use in addition, for STI protection.

Management Plan:

Patient Context	Guidance
<6 weeks post-partum or breast feeding	Recommend non-estrogen methods: IUD (copper, LNG-IUC*), DMPA*, or progesterone-only ("mini") pill. - Avoid combined OCP, patch and Nuvaring. - Note: Estrogen-based methods can be used after 6 weeks postpartum.
Women > 35 y.o. who smoke	
PMHx of VTE, MI, Stroke, Migraines, HTN, hypercholesterolemia, or DM with complications	
Obesity	
Acne	Combined OCP, especially with low androgen effect. With severe acne, try OCP with cyproterone acetate.
Decreased Bone Mineral Density	Avoid DMPA**
Breast Cancer (Active), HIV	Copper IUD
Current PID or active mucopurulent cervicitis	Contraindication to IUD and LNG-IUC*.OK to use following treatment and resolution.

* LNG-IUC = levornogestrel releasing intrauterine contraceptive (Mirena)
** DMPA = depo-medroxyprogesterone acetate

Troubleshooting: Missed Combined Hormonal Contraception

Miss 1 Day: Resume method immediately + back-up (see below).
Miss 2 Days: (instruct how to reach a health care expert to discuss[1]; website below).
Week 1, 2, or continuous use: Resume method immediately and use back-up method (below).If using OCP: Take 2 pills immediately & 2 tomorrow.
Week 3: Start new pack immediately and use back-up method (below).
Back-Up: Condoms and spermicide, or other (see website below).

Emergency Contraception After Unprotected Intercourse

Within First 5 Days: ↑ efficacy with earlier intervention
Emergency Contraceptive Pill ("Plan B" or "Norlevo") 2 tabs LNG 0.75mg ASAP. This method has fewer GI side effects; 85% effective to prevent ovulation.
Yuzpe Method (100ug EE & 0.5mg LNG PO q12h x 2 doses) - Can prescribe any combined OCP in equivalent dose. Suggest anti-emetics.
Within First 7 Days:
Copper IUD (nearly 100% effective, and provides ongoing contraception)

Visit **www.sexualityandu.ca** for outstanding patient and physician contraception education resources.

Key References: Black A, Francoeur D, Rowe T, Collins J, Miller D, Brown T, et al. SOGC clinical practice guidelines: Canadian contraception consensus. *J Obstet Gynaecol Can.* 2004;26(3):219-96. Medical eligibility criteria for contraceptive use. 4th edition. *WHO*; 2010. Available at http://www.who.int/reproductivehealth/publications/family_planning/9789241563888/en/

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COPD

Diagnosis:

CONDUCT post bronchodilator spirometry if: Smokers >40yo with dyspnea, cough or frequent RTIs

DIAGNOSIS confirmed if: FEV_1 <80% of the predicted normal value, and FEV_1/FVC <0.70

Assess Severity:

	CTS Classification	MRC scale	Classification by lung fxn
Mild	Dyspnea when walking quickly on level or slight hill	MRC 2	$FEV_1 \geq 80\%$ predicted, $FEV_1/FVC<0.70$
Mod	Dyspnea after a few min on flat, or forced to stop~100 m	MRC 3-4	$50\% \leq FEV_1 < 80\%$ predicted, $FEV_1/FVC<0.7$
Severe	Dyspnea with dressing, unable to leave house, or the presence of chronic resp failure or signs of right heart failure.	MRC 5	$30\% \leq FEV_1 < 50\%$ predicted, $FEV_1/FVC<0.7$. $FEV_1<30\%$ predicted classified as Very Severe.

Management of Stable COPD:

All Patients

① smoking cessation
② exercise & education
③ Influenza vaccine (annually)
④ pneumococcal vaccine - repeat every 5-10 years
⑤ bronchodilators

⑥ Pulmonary rehabilitation if dyspneic with limited exercise ability, despite good Rx.
⑦ Home O_2 if $PaO2 \leq 55$ mmHg, or PaO2<60mmHg with bilateral ankle edema, cor pulmonale, or hematocrit of >56%.
⑧ Surgical treatment in some patient populations

Bronchodilator Pharmacotherapy

	Mild	Mod /Severe with <1 AECOPD/yr	Mod /Severe with ≥1 AECOPD/yr
1st Line	SABD prn	SABD prn + LAMA or LABA	SABD prn + LAMA + ICS/LABA
2nd Line	SABD prn + LAMA or LABA	SABD prn + LAMA + LABA	SABD prn + LAMA + ICS/LABA + theophylline
3rd Line		SABD prn + LAMA + LABA/ICS	

SABD=short acting bronchodilators incl. beta agonists and muscarinic antagonists. LAAC = long acting anti-cholinergic (a.k.a. Long acting anti-muscarinic antagonist (LAMA). LABA= long acting beta agonist. ICS= inhaled corticosteroids.

Acute Exacerbations:

- Definition: Sustained worsening of one or more of **dyspnea, cough**, or **sputum production**, leading to change in Rx.
- ≥50% of AECOPD are infectious. Other causes: CHF, allergens, irritants, PE.
- **Indication for hospital admission**:
  Severe symptoms/signs, considerable comorbidities, inadequate home support. (May require ICU transfer & BiPAP or invasive ventilation. **Hard to wean off.)*
- **Principles of Management**:
  ① Assess ABCs, consider O_2 therapy if risk of hypoxia
  ② Give increased dose of SABA+SAMA
  ③ Oral or parenteral corticosteroids
  ④ Antibiotics for more severe purulent AECOPD

When to engage in end-of-life discussions:

- FEV_1<30% predicted, inspiratory capacity <80% predicted
- MRC grades 4-5 (see severity box above)
- Poor nutritional status (BMI<19kg/m^2)
- Presence of pulm htn
- Recurrent severe AECOPD requiring hospitalizations

Key References: O'Donnell DE, et al. Canadian Thoracic Society recommendations for management of COPD Guidelines-2008 Update -highlights for primary care. *Can Respir J.* 2008;15(Suppl A):1A-8A. Guideline for The Management of AECOPD. *Towards Optimized Practice 2006*:1-8. Evensen AE, et al. Management of COPD exacerbations. *Am Fam Physician*. 2010; 81(5)607-13.

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Cough

Acute Cough (<3 weeks)

Red Flag/Cue	Possible Cause	Notes
Febrile	Influenza	No signs of consolidation.
	Bacterial Pneumonia	↑HR, ↑RR, signs of consolidation. Can persist and become chronic.
Whooping cough, cough-emesis	Pertussis	Can be acute, subacute, or chronic cough.
Hx of asthma, COPD, CHF	Exacerbations of pre-existing disease	Can be acute, subacute, or chronic cough.
Allergy symptoms	Allergic rhinitis	Often associated with asthma.
New onset in young children	Foreign body	Bronchoscopy to investigate + extract.
Facial pressure/pain	Sinusitis	Differentiate between viral and bacterial.
Rhinitis, no red flags	Acute bronchitis	Causes: most commonly viral URTI.

CURB65 -Points predicts the mortality in community acquired pneumonia.

Confusion	1
BUN >7 mmol/l	1
Respiratory rate ≥30	1
SBP <90 mmHg, DBP ≤60 mmHg	1
Age ≥65	1

0-1 pts- treat as an outpatient
2-3 pts- consider a short hospital stay or watch very closely as outpatient
4-5- needs hospitalization, consider ICU

Subacute (3-8 weeks) and Chronic cough (>8 weeks)

- If a patient has a chronic cough with no obvious cause such as ACE inhibitor use, GERD, or post nasal drip, get a CXR to rule out more sinister pathology.
- Children <15 y.o. with chronic cough should undergo CXR + spirometry at min.
- Many chronic coughs are a combination of multiple etiologies.

Red Flag/Cue	Possible Cause	Notes
Cough persisting after URTI	Post-infectious	Causes: viral infection, pertussis, bacterial sinusitis. Most common cause of subacute.
ACE inhibitor use	ACE inhibitor	Non productive cough. Can start 1 wk - 6 months after therapy started.
Throat clearing, nasal discharge, tickle in throat	Post-nasal drip	Associated with rhinitis, sinusitis, GERD, disorders of swallowing, allergies. Most common cause in nonsmoking adults.
Episodic wheezing, SOB	Asthma and/or Chronic bronchitis/ COPD	**Asthma**: 2nd most common cause in nonsmoking adults. Variable airflow obstruction reversible with bronchodilators.
Smoker, sputum production		**Chronic bronchitis**: Most common cause in smokers. Cough for 3 mo in 2 successive yrs, in absence of other causes. Most also have COPD.
Prolonged expiratory phase		**COPD**: has a spectrum of manifestations including chronic bronchitis and emphysema.
Heartburn, regurg	GERD	3rd most common cause in nonsmoking adults.
Large volumes of sputum	Bronchiectasis	Accumulation of excessive secretions. Cough with ≥30 mL of purulent sputum in 24 hrs.
Hemoptysis, weight loss	Bronchogenic carcinoma	Red flags: new or changed cough in long term smoker, constitutional symptoms
	TB	Fever, in area with ↑ prevalence, HIV+, health care worker, crowded housing, alcoholic.
CXR: Bilateral hilar adenopathy	Sarcoidosis	Systemic disease, can get cutaneous symptoms, fatigue, joint pain. R/o lung Ca.

Key References: Benich JJ, 3rd, Carek PJ. Evaluation of the patient with chronic cough. *A Fam Physician* 2011 Oct 15; 84(8) 887-92. Madison JM, Irwin RS. Cough: A worldwide problem. *Otolarynogol Clin North Am*. 2010;43(1):1-13. Ponka D, Kirlew M. Top 10 differential diagnoses in family medicine: Cough. *Can Fam Physician* 2007;53(4):690-1. Ebell MH, et al. Outpatient vs Inpatient Treatment of Community Acquired Pneumonia. *Fam Prac Manag*. 2006;13(4)41-4.

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Depression

Diagnosis: DSM-V Criteria

≥5 of the following symptoms nearly every day for **>2 wks**, causing sig.distress or impairment in social, occupational, or other area(s) of functioning

≥ 1 of	depressed mood, anhedonia
other sx	psychomotor slowing, ↓ concentration, feeling worthless/guilty, insomnia/hypersomnia, ↓ energy, recurrent thoughts of death or suicide, weight/appetite change

PHQ-9 to aid with Diagnosis and Monitoring

For each item below, answer "Over the last 2 weeks, how often have you been bothered by <the item>" with 'Not at all' = 0, 'Several days' = 1, 'More than half of days' = 2, and 'Nearly every day' = 3 points.
1. Little interest or pleasure in doing things
2. Feeling down, depressed, or hopeless
3. Trouble falling or staying asleep, or sleeping too much
4. Feeling tired or having little energy
5. Poor appetite or overeating
6. Feeling bad about yourself, or that you are a failure or have let yourself or your family down
7. Trouble concentrating on things, such as reading the newspaper or watching television
8. Moving or speaking so slowly that other people could have noticed? Or the opposite — being so fidgety or restless that you have been moving around a lot more than usual
9. Thoughts that you would be better off dead or of hurting yourself in some way

Scoring

5-9: supportive care, help patient develop resilience
10-14: mod. dep: treatment plan, counseling, follow-up, possib. meds
15-19: mod/severe: active tx with pharmacotherapy and/or psychotx
20-27: severe: immed. meds, likely psychotx; consider inpt. care

Management Plan:

- Investigations: consider TSH and possibly CBC, ferritin, B12, folate.
- Lifestyle: daily exercise/activity, balanced diet, sleep hygiene.
  - Moderate to intense resistance and aerobic exercise has best effect.
- Psychotherapy, cognitive behavioural, or interpersonal therapy.
- Positive Action/Crisis Management Plan: for suicidal risk and intimate partner violence (IPV); if IPV present, then must assess children's safety, follow up, and notify authorities as required.
- Antidepressant Medications: if required, consult table to the right; in general, start low, ↑ over first few wks; usual 5-6 (at most 8) wks to full effect; 40% may respond to 1st med; most get ≥ 1 side-effect.

Secondary Depression

Personal/Social:	alcohol use, intimate partner violence (IPV), stressful life events, social isolation, cocaine/amphetamine use
Medical Conditions:	hypothyroidism, adrenal insufficiency, MI, stroke, diabetes, Parkinsons, MS, schizophrenia, chronic pain or disease/conditions
Medication Induced:	glucocorticoids, interferons, anti-neoplastics, OTC sympathomimetics, older anti-HTN rs, cimetidine, hormonal therapies

Context-Based Medication Guidance

	Context	Guidance
Prominent Symptoms	not sleeping enough	mirtazapine or duloxetine; avoid bupropion, sertraline
	sleeping too much	bupropion, venlafaxine or vortioxetine; avoid mirtazapine or duloxetine
	↑ appetite, ↑ weight	bupropion, venlafaxine, sertraline, fluoxetine
	↓ appetite, ↓ weight	mirtazapine or paroxetine
	sexual dysfunction	bupropion or mirtazapine; avoid SSRIs
	nausea / GI symptoms	mirtazapine; avoid sertraline, duloxetine, venlafaxine
	psychotic features	quetiapine, or co-treatment with antidepressant and antipsychotic
	prominent cog. sx	vortioxetine; avoid paroxetine
	suicidal / self-harm	Avoid TCAs
Co-Morbid Conditions	depression in bipolar disorder	lithium, quetiapine, lurasidone; avoid TCAs, venlafaxine and antidepressant monotherapy
	features of OCD	fluvoxamine
	gen. anxiety or panic	venlafaxine, paroxetine, citalopram
	pain syndrome	duloxetine, possibly venlafaxine; avoid paroxetine and fluoxetine (strong 2D6 inhib.)
	compromised liver function	desvenlafaxine or venlafaxine; avoid paroxetine or fluoxetine
	requires warfarin	venlafaxine or desvenlafaxine; avoid citalopram and escitalopram
Stage of Life	adolescent	CBT alone or in combination with fluoxetine
	pregnancy	CBT or Interpersonal Psychotherapy or citalopram/escitalopram
	mild post-partum depression (PPD)	CBT or Interpersonal Psychotherapy
	severe PPD	citalopram, escitalopram, sertraline
	peri-menopause	desvenlafaxine or venlafaxine
	late-life depression	mirtazapine or duloxetine

Related Depressive Syndromes & Specific Scenarios

- Postpartum-Depression: must look for it; requires a comprehensive approach
- Anxiety: often comorbid with depression; may be difficult to sort out
- Dysthymia: less severe, longer duration, more treatment-resistant
- Bipolar: prior periods of ↑ mood, ↑ energy, ↓ need/desire to sleep, grandiosity
- Adjustment Disorder: linked to event, may evolve to major depressive episode

Key References: Depression: Management of depression in primary and secondary care - NICE guidance. *www.nice.org.uk/guidance*. 2009. Goodwin GM, et al. Evidence-based guidelines for treating bipolar disorder: revised second edition--recommendations from the British Association for Psychopharmacology. *J Psychopharmacol*. 2009;23(4):346-88.

DSM 5, 5th Edition, *American Psychiatric Association*. 2013. AHRQ. Choosing Antidepressants for Adults: Clinician's Guide. 2007; Canadian Psychiatric Association Clinical Practice Guidelines for the Treatment of Depressive Disorders, *Can J Psych*. 2001;46(Suppl 1). Kroenke K, Spitzer RL, Williams JB. The PHQ-9: Validity of a brief depression severity measure. *J Gen Intern Med*. 2001;16(9):606-13.

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Dizziness

➢If there is clinical suspicion of an active cerebrovascular event, call EMS.

ASK: "Does it feel like either the room is spinning or that you are spinning?" and/or "Is it triggered or worsened by turning your head or rolling over in bed?"

► YES = VERTIGO

➢ If patient has focal neurological signs, pure vertical nystagmus, or risk factors for cerebrovascular disease, suspect a serious central cause. Consider MRI head.

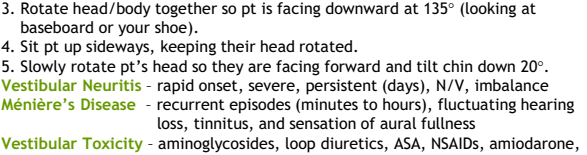
Ask about: onset, duration, nausea, vomiting, hearing loss, tinnitus, headache, aural fullness, imbalance, rash, facial paralysis, ear pain, medications

BENIGN PAROXYSMAL POSITIONAL VERTIGO (most common)

-brief, recurrent episodes (seconds to minutes), +/- nausea and vomiting

Dx: Dix-Hallpike manoeuvre: Rotate pt's head 45° to one side, lay pt supine with neck sl. extended → +ve on that side if vertigo and nystagmus elicited; if not, repeat with pt's head rotated to other side

Tx: Epley manoeuvre:



<Pause at each position until any nystagmus approaches termination (~20s)>

Stand at head of table, hands on pt. Reassure that nausea/vertigo is expected.

1. Lay pt supine with head over end of table. Rotate head 45° to affected side.
2. Slowly rotate pt's head to looking up and then 45° to opposite side.
3. Rotate head/body together so pt is facing downward at 135° (looking at baseboard or your shoe).
4. Sit pt up sideways, keeping their head rotated.
5. Slowly rotate pt's head so they are facing forward and tilt chin down 20°.

Vestibular Neuritis - rapid onset, severe, persistent (days), N/V, imbalance

Ménière's Disease - recurrent episodes (minutes to hours), fluctuating hearing loss, tinnitus, and sensation of aural fullness

Vestibular Toxicity - aminoglycosides, loop diuretics, ASA, NSAIDs, amiodarone, quinine, cisplatin

► NO = OTHER FORM OF DIZZINESS

Presyncopal Dizziness - "feels like nearly fainting or blacking out"

Initial Investigations: Hx, P/E (incl. orthostatic BP measurements), ECG

Precipitated by exertion? Palpitations/chest pain? Known structural heart dz? FmHx of sudden death? Abnormal ECG (if pt stable, fax ECG for urgent interpretation and advice)? → Yes to any. Suspect cardiac etiology. Refer to Emerg investigation, Dx, and Tx.

↓No.

Orthostatic hypotension present on P/E? → Yes. Investigate underlying etiology. New meds or alcohol? Consider CBC and electrolytes.

↘ No. Likely vasovagal/situational etiology. If recurrent episodes or pt is at risk of injury, consider referral for tilt test (+/- carotid sinus massage if >40 yo)

Disequilibrium Dizziness - "unsteadiness while walking"

Often multifactorial, common in elderly, ↑ risk of falls. Complete neuro and MSK exams to rule out peripheral neuropathy, Parkinsonism, MSK d/o, CVA, etc.

Nonspecific Dizziness - "woozy", "giddy", "light-headed"

DDx: hypoglycemic (glucose), thyroid disease (TSH), pregnancy (β-HCG), meds, psychiatric disorders, alcohol/drugs, menstruation, previous head trauma

Key References: Epley J. The canalith repositioning procedure: for treatment of benign paroxysmal positional vertigo. *Otolaryngol Head Neck Surg.* 1992;107(3):399-404. Labuguen RH. Initial evaluation of vertigo. *Am Fam Physician* 2006;73(2):244-51. Brignole M, et al. Guidelines on management (diagnosis and treatment) of syncope - update 2004. Executive summary. *Eur Heart J.* 2004;25(22):2054-72.

Wickenheiser HM
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Exercise Prescriptions

History

- Exercise history (inc. prior success/failures)
- **URGENT cardiac work-up if history of syncope or presyncope during exercise**
- Existing illnesses, injuries & barriers
- Pt. motivation, supports, resources, etc.
- Check medication/supplement use

RPE: Rate of Perceived Exertion

10	Maximum effort; unable to speak
9	Very hard effort; single words only
7-8	Vigorous effort; speak in sentences
4-6	Moderate effort; short conversations
2-3	Light effort; carry conversation
1	Very light effort

Goal-Setting

- Determine long-term goals (e.g. weight loss, ↓ frailty)
- Break goals into achievable 2-4 week short-term goals
- Document plan; pt. to return if any barrier encountered

Key Components of Exercise Planning for All Patients

1. Aerobic Stamina	- If new, start at RPE 4-6, then gradually move up - When done should feel better/great, not exhausted - Add variety to ↓ injury risk and boredom (e.g. games, dance, hikes)
2. Core / Flexibility	- Key to reduce risk of injury from falls and exercising in poor posture - Stretching, yoga, pilates, exercise (Swiss) ball work
3. Strength	- Slow and controlled; always tighten core and keep good posture - Don't strength train same muscle groups 2 days in a row
4. Nutrition	- Ensure protein in every meal; eat breakfast every day - Eat pre- and post- exercise (carbs and protein within 30 minutes) - Drink water (ensure urine maintains a tinge of yellow) - Ensure sufficient caloric intake

Specific Scenarios

Sedentary	- Start with 20 min aerobic, 5-7 days/wk; RPE 4-6. AND 3 sessions x 20 min strength training/wk.
Obesity	- Lower intensity exercise for longer duration - Progress weekly up to 60 min 5-7 times/wk; RPE 7-8. - Try to make sitting active (e.g., sitting on ball, using treadmill, etc.)
Frail, Elderly	- Go at own pace, never give up (gradually increase intensity + freq.) - Focus on strength & muscle-building (e.g., resist. bands, dumbbells) - Balance work (e.g., standing single leg, changing directions) - Range of motion exercises to minimize stiffness
Osteo-porosis	- Incl. weight-bearing exercise and balance work (e.g., single leg stand) - Strengthen back extensors & **avoid** back flexion
Depression	- Any activity will help ↓ low mood, especially if daily; try team sports.
Cardiac Risk	- Start with 10 min of moderate exercise 2-3 times/day - Increase episodes by 5 minutes every week
Lower Back Pain	- Brace core by contracting all muscles around spine - Repeat stabilization exercises (e.g., planks) multiple times per day - Maintain a neutral spine while doing exercises, e.g., side planks - Strive for quality of movement, not quantity; strive for symmetry
Leg Joint Pain	- Exercise bike, swimming, snowshoeing all decrease lower joint strain - Ensure assessment to rule out treatable causes
Asthma	- Ensure asthma is under good control (through inhaled steroids, etc.) - Breath-control exercise (yoga and tai-chi) improve asthma control - Moderate intensity warm up should precede any significant exercise - Spurt activity (e.g., racquet sports) are ideal
Type 2 Diabetes	- Drink ++ fluids during exercise; bring food/glucose tablets - Ensure proper exercise footwear and daily foot inspection
Chronic Dz	- Most are improved with active living/exercise

Key References: Borg GAV. Borg's Perceived Exertion and Pain Scales. *Human Kinetics*. 1998. ACSMs Resource Manual for Guidelines for Exercise Testing and Prescription, 7th Ed. *Lippincott Williams & Wilkins*. 2013. Ehrman JK, et al. Clinical Exercise Physiology, 3rd Ed. *Human Kinetics*, 2013.

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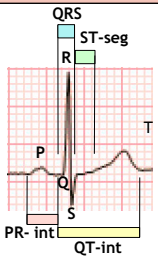
ECG Rhythm Interpretation 1

ECG Waveform	Seg/Int	Meaning	N- dur (s)*
	PR-int	AV node conduction	0.12-0.20
	P-Wave	Atrial depolarization	<0.12
	QRS	Ventricular depolarization	<0.12
	ST-Seg	Ventricular depolarization to repolarization delay	No elevation/ depression
	QT-Int	Ventricular depolarization to repolarization	Male: 0.45 Female: 0.46
	T-Wave	Ventricular repolarization	Upright except aVR and V1

* 1 small square= 1 x 1mm = 0.04 s 1 large square= 0.5 x 0.5cm= 0.2 s X-axis= sec, Y-axis= volts

SINUS ARRYTHMIAS

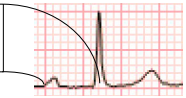
-Physiologically normal and commonly seen in children and young adults
-Originates from the *SA node* so all P-waves look the same but the R-R interval changes with respiration (usually ↑ with inspiration/↓ with expiration)

ATRIOVENTRICULAR (AV) CONDUCTION BLOCKS

First-Degree AV Block

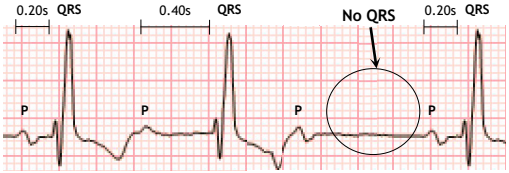
-Delay between atrial and ventricular depolarization
-1:1 P to QRS ratio.

Prolonged PR interval >5 little squares (>0.2s).



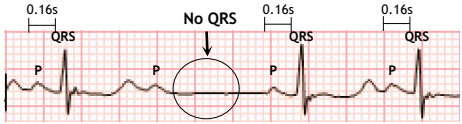
Second-Degree AV Block (Type I)

-Intermittent loss of AV conduction
-Progressive, prolongation of PR intervals resulting in a non-conducted P-wave, after which the cycle resets beginning with the original PR interval



Second-Degree AV Block (Type II)

-Intermittent loss of AV conduction without prior progressive prolongation of PR intervals. If the block persists for >1 beat this is called a high-grade AV block.

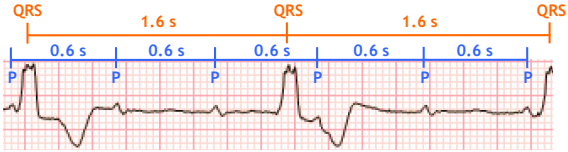


-First-degree and second-degree (Type I) AV blocks are typically benign
-Second degree (Type II) and third degree AV blocks are typically pathological and may require stabilization and EMS activation

Third-Degree AV Block (Complete heart block)

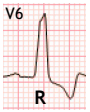
-Complete electrical disconnection between atria and ventricles
-Atrial depolarization is driven by the SA node but ventricular depolarization is driven by a distal escape rhythm (AV junction or ventricles)
-P-waves (normal) and QRS (variable shape/width) have independent rates

-No relationship between P waves and QRS complexes



Bundle Branch Blocks (BBB)

Right BBB
-RSR' (bunny ears) in right chest leads (V1 and V2)
-Widened QRS



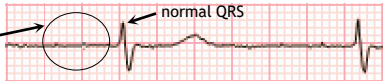
Left BBB
-Broad, notched R in left chest leads (V5 and V6)
-Widened QRS (can merge with T wave)

PREMATURE BEATS AND ESCAPE RHYTHMS

-Premature beats arise from spontaneous discharge of ectopic foci resulting in a beat earlier than expected.
-Escape rhythms are discharges from ectopic foci resulting in a new rate and rhythm in response to a pause or block in the SA node pacemaker ability.
-Premature beats or escape rhythms from: 1) *Atrial foci* show a different looking P-wave with normal QRS, 2) *AV junction foci* usually show no P-wave with normal QRS; occasionally P-waves are observed and represent retrograde atrial activation, and 3) *Ventricular foci* show no P-wave with a large/wide QRS.

AV Junction Rhythm

No P-wave



Premature Atrial Contraction (PAC)

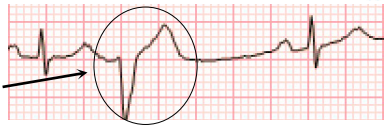
PAC:
Arises earlier than expected

-Majority of PACs are benign but may indicate underlying heart disease

Premature Ventricular Contraction (PVC)

PVC:
Arises earlier than expected

No P-wave and large/wide QRS



Key References: Surawicz, B., Childers, R., Deal B.J. and Gettes, L.S. (2009). AHA/ACCF/HRS recommendations for the standardization and interpretation of the ECG (Part III). *Circulation*. **119**: e235-e240.

Lau, S.H. and Damato, A.N. (1970). Mechanisms of A-V block. *Cardiovasc Clin.* **2**(2): 49-68; Lilly, L.S. (2011) Pathophysiology of heart disease: Fifrh ed.Baltimore, MD: Lippincott Williams & Wilkins.

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ECG Rhythm Interpretation 2

RATE

Method 1: 300 ÷ (# of large squares between 2 beats)
Method 2: Count the # of big boxes between 2 beats using 300-150-100-75-60-50
Method 3:[# of QRS complexes on a standard strip (10 sec)] x 6
Tachycardia is a rate >100 bpm and bradycardia is a rate <60 bpm

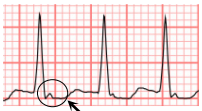
SINUS TACHYCARDIA

-Originates from the SA node
-Regular rhythm with normal P-waves and QRS

TACHYARRYTHMIA

Supraventricular Tachycardia (SVT)

-Paroxysmal (sudden start/end) or persistent tachycardia with a conducting origin from above the ventricles
-Show **narrow** QRS complexes (if no aberrant conduction) and P-wave inversion (if not hidden in QRS or T waves)
-Common mechanisms: 1) Focal (atria or AV junction) and 2) Re-entry circuits (AVNRT, AVRT, atrial flutter)

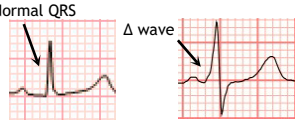


Inverted P-waves

-Re-entry: multiple excitations of the heart with a single impulse through an accessory pathway
-AV node reentrant tachycardia (AVNRT)- re-entry circuit within the AV node
-AV reentrant tachycardia (AVRT)-re-entry circuit between the atria and ventricles

Wolf-Parkinson-White (WPW)

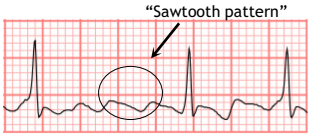
-Concurrent conduction through AV node and accessory pathway (anterograde)
-In sinus: shortened PR interval, shoulder prior to QRS (Δ wave) and wide QRS



Note: absence of Δ wave in normal QRS

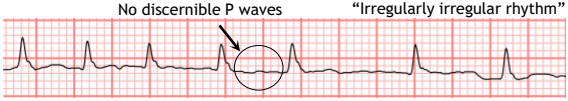
Atrial flutter

-Re-enty circuit confined within the right atrium
-Fixed AV block: fixed atrial: ventricular rate (e.g. 2:1 block)



Atrial Fibrillation (A-Fib)

-Chaotic atrial activity
-Irregular P wave conduction
"Irregularly irregular rhythm"



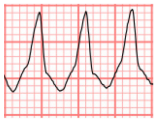
Consult current guidelines for urgent care management

-Tick method: Overlay paper and mark above all QRS's. Then shift the first tick over to the next QRS. If the ticks don't line up, the rhythm is irregular. Repeat.

Ventricular Tachycardia (VT)

-Rapid discharge of >3 PVC's in a row.

Monomorphic VT
-Wide QRS, regular rate, same QRS morphology



Polymorphic VT
-Irregular rate, changing QRS morphology

"waxing and waning" of QRS heights

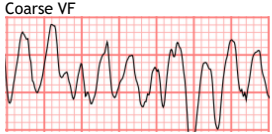
Torsades de pointes
-Polymorphic VT seen in context of a prolonged QT interval.

-Sustained episodes of VT (>30 s) often turn into VF

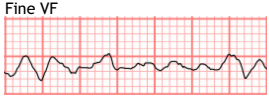
Ventricular fibrillation (VF)

-Chaotic, ventricular activity, no identifiable waveforms, bizarre deflections.

Coarse VF



Fine VF



-All forms of VF are immediately life threatening and require STAT care (follow ACLS guidelines)

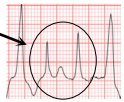
SVT with abberrancy vs VT

-SVT with aberrant conduction (e.g. due to BBB) can look very similar to VT

SVT with Aberrancy	VT
No AV dissociation	AV dissociation
No capture beats	Capture beats*
No fusion beats	Fusion beats

If seen: Pathognomonic

Fusion beats
-SV impulse coincides with V impulse



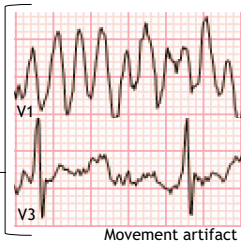
-Wide bizarre QRS complexes (>0.16s), Hx of MI and Hx of CHF are suggestive of VT

*Capture beat: SA node impulse is conducted during AV dissociation (normal P and QRS)

NOISE

-Common artifacts include: other physiological signals, baseline wander, high frequency random noise, power-line interference and movement artifact

In this example, from the same ECG, lead V1 appears to show VT but, as shown in other leads (e.g. V3), this is in fact a movement artifact.



Movement artifact

Key References: Delcretaz, E. (2006) Supraventricular tachycardia. *N Engl J Med.* **354:** 1039-1051; Martis, R.J., Acharya, U.R. and Adeli, H. (2014). Current methods in electrocardiograph characterization. *Comput Biol Med.* **48:** 133-149;
Fisch, C. and Knoebel, S.B. (1970). Junctional Rhythms. *Prog Cardiovasc Dis.* **13(2):** 141-158

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ECG Morphology Interpretation

ST Segment Elevation

⚠ Key is to identify STEMI/AMI

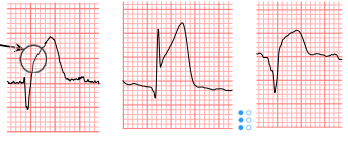
ECG ST Elevation Criteria of Acute Myocardial Ischemia:[1]

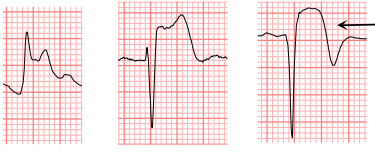
-New ST elevation at J-point in two contiguous leads with cut-points >=0.1mV above the beginning of QRS complex (use PR as baseline; if PR depressed use TP)

-Leads V2-V3: ST elevation >=0.2mV in men>=40 y.o., >=0.25mV in men <40 y.o. or >=0.15mV in women

Examples:

J-point = juncture of QRS and ST segment





"Tombstone" ST-elevation

Clinical cues:

-Convex shape of elevation is most classic ("tombstone")

-Usually localized/regional rather than widespread

-If suspicious for MI, conduct serial ECG analysis with tabs in same place and correlate with clinical picture. Variations in ST or T-wave morphology strongly suggest ACS

If STEMI or ACS, arrange STAT care

Other Causes of ST Segment Elevation:

Acute Pericarditis - Stage I

- Clinical Diagnosis with ECG findings[2]
- **Widespread** ST-segment elevation
- PR segment depression can be present

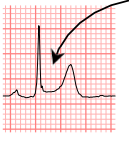
Benign Early Repolarization (BER):

Prominent J-point elevation >=1mm in >=2 contiguous inferior or lateral leads J-point notching/elevation & upward concavity in leads other than V1-V3

Clinical cues:

-Look for historic ECGs with same pattern; no reciprocal depression

-More common in young healthy males; uncommon > 50 y.o.



Concave shape of elevation

"fish hook" pattern Is classic in BER

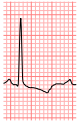
ST Segment Depression

ECG ST Depression Criteria of Acute Myocardial Ischemia:[1]

- New horizontal or down-sloping ST depression >=0.05mV in two contiguous leads

Clinical cues:

- If ST segment depression is present in anterior leads, posterior leads should be recorded to investigate possible posterior MI

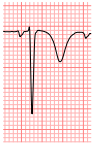


If STEMI or ACS, arrange STAT care

Important T-wave changes

ECG T-wave changes for acute myocardial ischemia:[1]

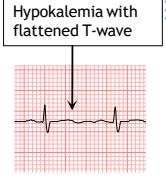
- T-inversion >=0.1mV in two contiguous leads
- T-inversion >=0.1mV with prominent R-wave or R/S ratio >1

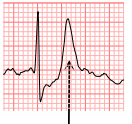


Potassium Abnormalities

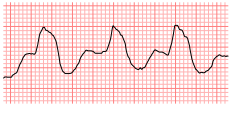
ECG is not the diagnostic test of choice for electrolyte abnormalities, but the below morphologies are noted in potassium abnormality

Hypokalemia with flattened T-wave





Hyperkalemia with peaked T-wave



Sine wave in severe Hyperkalemia, e.g.: >9

Lead Placement

Use guide at right for precordial leads placement

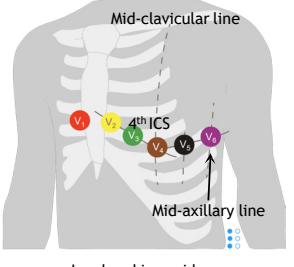
Leads V1-V2 often misplaced in 2nd ICS vs. 4th ICS!

Clues to limb lead inversions:

-P-wave negative in Lead II

-Global negativity in Lead I

-QRS complex upright in aVR



Landmarking guide of Precordial Leads

Key References: . Thygesen K, et al. Third universal definition of myocardial infarction. *J Am Coll Cardiol*. 2012;60(16):1581-98.
2. Adler Y, et al. 2015 ESC Guidelines for the diagnosis and management of pericardial diseases: The Task Force for the Diagnosis and Management of Pericardial Diseases of the European Society of Cardiology (ESC). *Eur Heart J*. 2015;36(4):2921-64.

Katritsis DG, Gersh BJ, Camm AJ. (2013). Clinical Cardiology: Current Practice Guidelines. Oxford, UK. *Oxford Press*.

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Fatigue

Organic causes: patient often cannot complete activities due to ***progressive*** fatigue
Non-organic causes: patient often reports ***constant*** fatigue

RULE OUT

Emergent Causes
- ❑ **hypothyroid crisis/myxedema**
- ❑ **IHD/CHF**
- ❑ **anemia, GI hemorrhage**
- ❑ **psychiatry: suicide risk**

Malignancy Red Flags
- ❑ **unintended weight loss (> 10% in last 6 months)**
- ❑ **night sweats**
- ❑ **fevers/chills**

Differential Diagnosis	Selected Investigations
Medication induced: hypnotics, antidep., anti-HTN, antiemetics, benzodiazepines, muscle relaxants, opioids, beta blockers, antihistamines, chemotherapy	Medication review
Substance-abuse/withdrawal	CAGE questionnaire
Psychiatric/Social: depression, anxiety/ panic, somatization, domestic violence, challenging circumstances/demands	Screen for depression: SIGECAPS, PHQ-9, assess supports & support prioritizing
Sleep disorder: OSA, GERD, sleep movement disorder, insomnia	neck circumference, sleep study, PPI trial
Endocrine/Metabolic: DM, dehydration, hyper/ hypothyroid, adrenal insuff., renal failure, liver dz. (cholestatic), **pregnancy**, hypercalcemia, Vit. B12/folate deficiency	Lytes, Creatinine, glucose, OGTT, TSH, AM cortisol, ALP, bilirubin, INR, albumin, ß-HCG, B12, folate
Hematologic/Neoplastic: occult malig., anemia (may be 2° to menorrhagia)	CBC + differential, ferritin, fecal occult blood
Inflammatory: RA, Connective Tissue Disease, PMR, Giant Cell Arteritis	ESR, RF, ANA, ENA, CRP, C3/C4, CH50, CK
Infectious: TB, hepatitis, mononucleosis, HIV, endocarditis, Lyme dz, West Nile Virus (WNV)	CXR, hep. serology, CBC, monospot, Tcell count, blood culture, echo, IgM and IgG Ab to *B. burgdorferi*, IgM Ab to WNV
CV/Resp: MI (esp. in geriatrics), arrhythmia, CHF, COPD, Asthma	ECG, cardiac enzymes, PFTs, CXR, echo, holter
Nutritional: vegetarian teenagers, elderly with low-nutrient diets	Dietary review, CBC, B12, folate, albumin
Idiopathic (Dx of exclusion): chronic fatigue synd.; idiopathic chronic fatigue, fibromyalgia	

TREATMENT

1. Treat underlying etiology.
2. Encourage healthy sleep hygiene & healthy lifestyle.
   - No food/drink/exercise before bed.
   - Ensure bedroom is sufficiently dark.
   - No TV in bedroom.
   - Go to bed @ same time each night.
   - Rise at same time each day.
   - Exercise daily.
   - Limit caffeine, smoking, alcohol.
   - Use stress mgmt. strategies.

CFS/Idiopathic Chronic Fatigue:
- CBT, graded exercise therapy; may benefit from support group & physiotx.

Key References: Fukuda K, et al. The chronic fatigue syndrome: A comprehensive approach to its definition and study. International Chronic Fatigue Syndrome Study Group. *Ann Internal Med. 1994;* 121(12):953-959. Rosenthal TC, et al. Fatigue: an overview. *American Family Physician.* 2008;78(10)1173-9. Whooley MA, et al. Case finding instruments for depression. Two questions are as good as many. *J Gen Intern Med.* 1997;12(7):439-45.

Chung AB
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Fever

Normal Vital Signs

Age	RR	HR
Newborn	30-60	100-160
6 mos	24-38	110-160
1 yr	22-30	90-150
3 yrs	22-30	80-125
5 yrs	20-24	70-115
10 yrs	16-22	60-100
14 yrs	14-20	60-100
Adult	12-18	60-90

Age	Lower limit Syst. BP (mmHg)
0 - 28 days	60
1 -12 months	70
1 -10 years	70 + (2 x age)
10 yrs - Adult	90

Red Flags and Special Circumstances in Patients with Fever

	Investigations	Management
↑HR ↓BP (as per vitals tables above) -risk of sepsis	Look for source – blood culture, UA/UC*, sputum culture, CSF culture, wound, catheter, line	ABC's, IV fluids, supplemental O2, activate EMS, empiric Antibx
Newborn (0 -3 mo)	CBC,diff, **blood culture**, UA/UC*, **CSF cultures** & gram stain, CXR if resp. symptoms/tachypnea, stool culture if diarrhea	Admission to hospital, empiric parenteral antibx. to cover meningitis
Neutropenia Risk (Chemotx, immune or hematopoetic dz)	Confirm neutropenia, look for source of infection (culture what you can, CXR)	Admission to hospital, empiric parenteral antibx, treat underlying cause
Diarrhea	Stool culture, consider UA/UC*	Based on results
Dysuria	UA/UC	Based on results
Under immunized	Be vigilant for dz's based on missing immunizations	
Tachypnea +/- cough	CXR (to R/O pneumonia)	Antibx if CXR +
Returning Traveler (R/O Malaria)	**Thick/thin blood film for malaria Q12h x 3**, CBC, diff, LFTs, UA/UC*, Blood culture x 2-3, CXR	If any films +ve for malaria; consult ID.
Mental status change, headache, nuchal rigidity	CBC diff, Blood cultures x 2-3, CSF culture, gram stain, opening pressure, cell count	Empiric parenteral antibx based on likely organism for age group and situation
Fever ≥ 3 days	Reassessment to R/O bacterial cause, including UA/UC*	Based on results;reassess in 2 days if fever persists.
Consider Kawasaki's Disease if child and fever for >= 5 days and 4 or more of clinical criteria below (emergent paeds. referral if so); may be "incomplete Kawasaki's" if < 6months old and/or only 3 criteria → will require b/w +/- paeds. referral.) (1) Conjunctivitis (2) Truncal rash (3) Cervical lymphadenopathy (4) Mucosal Δ's (strawberry tongue, diffuse erythema, swelling/fissuring of lips) (5) Extremity Δ's (edema, erythema, desquamation, induration of hands/feet)		
Fever persisting > 3 weeks = FUO (Fever of Unknown Origin)	Expand to include TB, HIV & immune disease, osteomyelitis, abscesses, inflamm. dz., etc.	Based on + findings, refer as required; if no etiology found consider ID consult

*UA/UC = urinalysis & culture

Fever Symptom Management

Antipyretics	Pediatric	Adult
Acetaminophen	15mg/kg/dose PO/PR Q4-6h PRN **DO NOT EXCEED 2.6g/24hrs**	325-650mg PO/PR Q4-6h PRN **DO NOT EXCEED 4g/24hrs**
Ibuprofen	10mg/kg/dose PO Q6-8h PRN **DO NOT EXCEED 40mg/kg/24hrs**	200-400mg PO Q4-6h PRN
ASA	Do not use - Risk of Reye's Syndrome	325-650mg PO Q4-6h PRN
Tepid sponging with water (not alcohol) at 30° C is a useful adjunct.		

Key References: Kleinman ME, et al. Pediatric advanced life support: 2010 American Heart Association Guidelines for Cardiopulmonary Resuscitation and Emergency Cardiovascular Care. *Pediatrics*.2010;126(5):e1400-13. ACEP. Clinical policy for children younger than three years presenting to the emergency department with fever. *Ann Emerg Med*. 2003;42(4):530-45. Canadian recommendations for the prevention and treatment of malaria among international travellers. *Canada Communicable Disease Report June 2009*. Age Appropriate Vital Signs. Retrieved from: - https://www.cc.nih.gov/ccc/pedweb/pedsstaff/age.html

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Headache

Migraine

Symptoms: throbbing, unilateral, photophobia, nausea, debilatating
Dietary Triggers: EtOH,chocolate,cheese,MSG,aspartame,caffeine,nuts,nitrates
Tx: 1. NSAIDs (ibuprofen 200-800 mg or ASA 1000mg q4h)

2. Triptans (almotriptan+others)
3. Ergotamines

} ⚠ with CAD/CVD/SSRI; **DON'T USE** with MAOI

4. Prochlorperazine 5-10mg IM or IV; Metoclopramide 5-10mg IM or IV

Prevention:
1. β-blockers (propanolol 40-240 mg/day, metoprolol 50-200mg/day)
2. Calcium channel blockers (verapamil 240-320mg/day, flunarizine 5-10mg/day)
3. Anticonvulsants (valproic acid 500-1800mg/day, topiramate (25-100mg/day)
4. TCAs (amitriptyline 50-150mg/day)

Cluster

Diagnosis:
- ≥5 episodes lasting 15-180min
- unilateral (orbital/temporal)
- frequency: 8x/d to q2d
- ≥1 ipsilateral sx (autonomic eye, nose or face) or agitation

Acute Tx:
1. 100% O_2 ≥7L/min x 15min
2. Sumatriptan 6mg SC
3. Lidocaine 1mL 4% intranasal
4. Octreotide 100 mcg SC

Preventative Tx:
1. Prednisone 50mg x 5 day, then taper↓10 mg/day [bridging prophylaxis]
2. Verapamil ≥240mg/day, do ECG to watch for ↑PR; takes 2-3 weeks to kick in
↳Alternatives: lithium, methysergide, topiramate, melatonin, ergotamine

Dangerous Headaches: Red Flags

	X=Classic Features	SAH	Infxn	TA	CVT	Dissxn	BIT	Mass	ACG
HISTORY	Recent Trauma→consider CT								
	Sudden Onset (exertion)	X				X			X
	New (<5 or >50yrs)	X		X				X	X
	Worst headache of life	X	X			X			
	Progressive over wks-mnths							X	
	↑pain am/supine/bend over				X		X	X	
	Nausea/Vomiting	X	X		X		X	X	X
	Vision changes			X		X	X	X	X
	Jaw claudication			X					
PHYSICAL	↓Level of Consciousness		X		X			X	
	Fever		X						
	Focal Neuro Findings	X	X		X	X		X	
	Meningismus	X	X						
	Petechial Rash		X						
	Papilledema				X		X	X	
	Eye red, cloudy cornea								X
	Mid fixed dilated pupil								X
	Tender,Ø pulse temp artery			X					

INFXN: infection
SAH: subarachnoid hemorrhage
TA: temp arteritis
CVT: cerebral venous thrombosis
Dissxn: carotid/vert artery **BIT:** Benign Intracranial HTN (pseudotumor)
ACG: Angle Closure Glaucoma

CT (if-ve)→LP

CT (r/o SAH)→LP (culture+PCR) Tx (empiric)

↑ESR &/ or ↑CRP Temporal Artery Bx Tx:steroids

MRA anticoag

Angiography (MR,CT,other)

↑ LP open pressure (+Ø focal neuro+ Imaging N +CSF N) Tx:Diamox,Lasix

CT/MRI

1. Keep supine
2. Drops: timolol & acetazolamide
3. Analgesia
4. Antiemetics
5. Ophtho consult in less than 1hr

Key References: May A, et al. EFNS guidelines on the treatment of cluster headache and other trigeminal-autonomic cephalgias. *European Journal of Neurology*. 2006;13:1066-77. Evers S, et al. EFNS guideline on the drug treatment of migraine - report of an EFNS task force. *European Journal of Neurology*. 2006;13:560-72. Snow, et al. Pharmacologic Management of Acute Attacks of Migraine and Prevention of Migraine Headache. *Annals of Internal Medicine*. 2002;137(10):840-9. *Cephalagia*. 2004, 24(suppl1):9.

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Hypertension Assessment

Manual BP

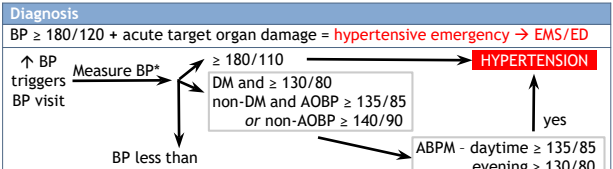
PATIENT: Back, arm supported, empty bladder, seated comfortably with legs uncrossed X 5 min, no talking prior/during measurement.

CUFF: Over bare arm, 3 cm above elbow crease, at level of right atrium, width & length of cuff bladder should be 40% & 80-100% of arm circ.

MEASUREMENT: Inflate 30 mmHg above radial pulse oblit., deflate by 2 mmHg per sec; do 3 times, at least 60 sec apart; discard 1st, take avg. of 2nd + 3rd.

Diagnosis

BP ≥ 180/120 + acute target organ damage = hypertensive emergency → EMS/ED



** Measurements ideally taken by automated BP machines (AOBP)*

Routine laboratory assessment (if dx): Na, K, Cr (or eGFR), FBG, fasting lipid panel, urinalysis (for blood & prot), ECG (for LVH), consider Alb:Creat. ratio.

History and Physical: Red Flags

**Tests to consider*

Secondary Hypertension

GENERAL SIGNS: abrupt or severe onset, or ages <25 or >55.

CONTRIBUTING FACTORS: ↑ salt intake, sedentary, stress.

HYPERTHYROIDISM: palpitations, sweating, tremor, anxiety, freq. bowel movements, weight loss, vision changes, goiter. ***TSH***

AORTIC COARCTATION: interscapular murmur, delayed femoral pulses, asymmetric BP across both arms or leg. ***CXR, CT-Angio***

CUSHINGS: easy bruising, truncal obesity, hyperglycemia, hirsutism, prox. muscle weakness, thin skin, ecchymosis, facial plethora, round face, buffalo hump, striae, depression, anxiety, psychosis. ***24-hr urine cortisol excretion***

PRIMARY HYPERALDOSTERONISM: resistant HTN, signs of↓K+: arrhythmias, muscle weakness, fatigue,↓DTR & bowel sounds. ***Ald:renin ratio***

OSA: snoring, witnessed apneas, daytime drowsiness, AM headache, impaired concentration. ***Sleep study with O2 saturation monitoring.***

RENAL PARENCHYMAL DISEASE: Hx of UTIs/obstructions, hematuria, NSAID abuse, FamHx of polycystic kidney disease, abdominal mass. ***Renal US***

MEDS/HERBS: NSAIDs, OCP, steroids, pseudoephedrine, cocaine.

PHEOCHROMOCYTOMA: episodes of headaches, sweating & ↑HR. ***Plasma Fractionated Metanephrines, 24hr urine for metanephrines***

End Organ Damage

PERIPHERAL ARTERY DISEASE: claudication, asym or delayed femoral pulses, cold extremities and weak/absent pedal pulses; carotid, abdominal, femoral bruits. ***ABI, US Doppler***

HEART FAILURE: exertional SOB, fatigue, PND, orthopnea, S3, murmurs, ↑JVP, displaced apical impulse, basilar crackles, peripheral edema.

CAD: angina **ARRHYTHMIA**: Palpitations, SOB, presyncope, syncope.

LVH: S4, sustained apical impulse. ***ECG, ECHO, Holter Monitor***

STROKE/TIA: on PMHx, abnormal strength, gait, speech, cognition. ***MRI, CT***

HYPERTENSIVE RETINOPATHY: advanced findings include hemorrhages, exudates, papilledema on fundoscopy. ***Ophthalmology referral***

Key References: Pickering TG, et al. Recommendations for blood pressure measurement in humans and experimental animals: part 1: blood pressure measurement in humans: a statement for professionals from the Subcommittee of Professional and Public Education of the American Heart Association Council on High Blood Pressure Research. *Circulation.* 2005;111(5):697-716. Nerenberg KA, et al. Hypertension Canada's 2018 Guidelines for Diagnosis, Risk Assessment, Prevention, and Treatment of Hypertension in Adults and Children. *Can J Cardiol.* 2018;34(5):506-25.

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Hypertension Management

Lifestyle Changes	SBP↓
- Salt restriction to 6 g per day	2-8 mmHg
- Daily EtOH intake < 2 drinks for ♂ and < 1 drink for ♀	2-4 mmHg
- DASH diet: ↑vegetables, fruits and low-fat dairy products	8-14 mmHg
- BMI reduced to 25kg/m2 and waist circumference to <102cm for ♂ and <88 cm for ♀	5-20 mmHg/10kg
- Exercise 30 min of moderate intensity for 5-7 days/week.	4-9 mmHg
- Smoking cessation	

Drug Therapy in Hypertensive Patients with Specific Conditions

CONDITION	GUIDANCE	TARGET
LVH with no sx	ACEi/ARBs, CCB, thiazide-like diuretic	<140/90
Chronic Heart Failure	Aldosterone antagonist, BB, ACEi/ARBs. Tx guided by Sx's (e.g. diuretics for congestion; BB for ↑ HR).	SBP<140
Atrial Fibrillation	BB, non-DHP CCB for high ventricular rate Afib.	
Previous Myocardial Infarction	ACEi/ARBs; MI < 2-3 yr ago: BB. MI > 2-3 yr ago: BB or CCB if concomitant angina, otherwise any BP lowering agent suitable.	SBP<140
Recent Stroke/TIA	ACEi/ARBs, + thiazide-like diuretic; CCB, BB.	SBP<140
Peripheral Artery Disease	CCB, ACEi (As these are shown to delay atherosclerosis once carotid stenosis Dx'd)	<140/90
Diabetes Mellitus	ACEi/ARB. Esp. if proteinuria/microalbuminuria Thiazides or CCB as adjuncts. Cautious BB use as adjunct for coexisting HF, as may↑ insulin resist.	<140/85
Chronic Kidney Disease + Overt Proteinuria	ACEi/ARB (to↓ albuminuria) and non-DHP-CCB. Aldosterone antagonist is contraindicated due to risk of worsening renal fxn and hypokalemia. Must periodically monitor eGFR.	SBP<130
> 50 Years Old AND [CKD, CVD, or Fram. Risk ≥15%)	Choose meds and monitoring based upon disease-specific guidance in this chart.	SBP ≤120 (SPRINT trial)
> 70 Years Old	All BP rx suitable. May relax BP targets if individual is frail or cannot tolerate. Keep DBP > 60.	SBP<120 (SPRINT trial)
> 80 Years Old + Isolated Syst. HTN	Diuretics, CCB. May relax BP targets if individual is frail. Keep DBP > 60.	As above
Black Population	Thiazides, CCBs	<140/90

**BB = Beta-blocker CCB = Calcium Channel blocker DHP = Dihydropyridine*

Principles of Hypertensive Crisis Management

Hypertensive Urgency

1. Often caused by BP therapy discontinuation or anxiety.
2. Confirm absence of acute target organ damage. Patient may complain of headache, anxiety or SOB.
3. BP reduction with short-acting oral agents and observe for 1-6hr.
4. Arrange for follow-up evaluation in < 24hrs.

Hypertensive Emergency:

1. Confirm acute target organ damage, e.g. *Hypertensive encephalopathy, MI, LV failure w/ pulmonary edema, unstable angina, dissecting aortic aneurysm.*
2. Immediate BP reduction (not necessarily to normal) with IV agents.
3. Admit for continuous BP monitoring.

Key References: Nerenberg KA, Zarnke KB, Leung AA, et al. Hypertension Canada's 2018 Guidelines for Diagnosis, Risk Assessment, Prevention,and Treatment of Hypertension in Adults and Children. *Can J Cardiol*. 2018;34(5):506-25. Vidt DG. Emergency room management of hypertensive urgencies and emergencies. *J Clin Hypertens*. 2001;3(3):158-64.

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Ischemic Heart Disease Mgmt.

	Modifiable Risks	IHD RR*
Protective	- Exercise (aerobic, moderate intensity, 3-4x per week)	0.58
	- Mediterranean diet (olive oil, vegetables, grains, nuts, fish)	0.60
	- Light to moderate EtOH (<30g per day)	0.70
Threatening	- Periodontal disease	1.20
	- Elevated childhood BMI	1.22
	- Disturbed, short sleep (<6 hours)	1.55
	- Depression	1.60
	- Smoking (20 cigarettes per day)	1.78
	- Waist circumference: Men > 101.6 cm, Women > 89 cm	2.00

*RR = Relative Risk

Secondary Management of Ischemic Heart Disease

	Therapy	Guidance	RRR
Long - Term Therapy	**Cardiac Rehab**	- Home or hospital-based programs shown to reduce infarction/ cardiovascular mortality at 1 year post MI	28%
	Anti-Hypertensive	- Target BP <140/90 - *See Hypertension card*	10-30%
	ASA	- 75- 162 mg daily (use clopidogrel if intolerant)	10-15%
	ACE-Inhibitor	- Strongest evidence of benefit after MI: -ramipril, perindopril - If intolerant or contraindicated substitute with ARB - Do not combine with ARB - Stop if hyperkalemic or rise in Cr >30% above baseline	20%
	Statin	- Titrate to max dose with: -rosuvastatin, atorvastatin, simvastatin - Titrate to moderate dose if risk for statin assoc. events -monitor for hepatotoxicity (ALT), myopathy (CK) - If intolerant consider substituting with niacin	10-30%
3 mo (life-long if LV dysfxn., HF)	**ß-blocker**	- Strongest evidence of benefit post-MI: -metoprolol, carvedilol, bisoprolol - If intolerant or contraindicated, and experiencing angina, substitute with CCB + long acting nitrates - Start at low dose and titrate upwards	25%

Patient Context	Guidance on Management
- Sev. Hepatic Dz	→ reduce dose of metoprolol, carvedilol, some statins
- CKD / CRF	→ reduce dose of ACE-I, B-blockers, diuretics if GFR <50
- COPD	→ use ultra - cardioselective B-blocker (bisoprolol)
- Hx of PCI + stent	→ add P2Y12 Inhibitor (clopidogrel) for 12 months
- Diabetes	→ ensure good control, lifestyle; *see Type 2 Diabetes card*

⚠ Worsening angina → arrange for urgent/emergent cardiac care

NYHA Classes of Functional Capacity

- I - no limitation of physical activity
- II - ordinary activity results in dyspnea, palpitations, fatigue; relieved by rest
- III - less than ordinary activity results in dyspnea, palpitations; relieved by rest
- IV - physical activity not tolerated; dyspnea, palpitations may be present at rest

Long-term Surveillance Plan Following First Episode of IHD

- ❑ Hx: assess for barriers to therapy, modifiable risks, comorbidities
- ❑ PE: HF, arrhythmia, new/worsened bruit or murmur, abdo aorta status
- ❑ Invest: annual resting ECG, metabolic fitness (lipids, glucose, CBC, renal)
- ❑ Refer: consider cardiac care team (cardiologist, dietician, trainer as required)

Key References: Mancini GB, et al. Canadian Cardiovascular Society guidelines for the diagnosis and management of stable ischemic heart disease. *Can J Cardiol*. 2014;30(8):837-49. McAlister F, et al. Randomised trials of secondary prevention programmes in coronary heart disease: systematic review. *BMJ*. 2001;323(7319):957-62. Neal B, et al. Effects of ACE inhibitors, calcium antagonists, and other blood-pressure-lowering drugs: results of prospectively designed overviews of randomised trials. Blood pressure lowering treatment trialists' collaboration. *Lancet*. 2000;356(9246):1955-64.

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Joint Pain 1: Arthritis

Red Flag: Acute Red Joint - R/O Septic Arthritis

Risk Factors	Presentation	Investigations
Prosthesis, skin infxn, RA, age >80, DM, recent joint surgery or injection, IVDU	**Painful** joint with erythema, swelling, warmth, ↓ROM, ± fever	Clinical suspicion → joint aspiration: WBC + diff, gram stain & culture, blood cultures

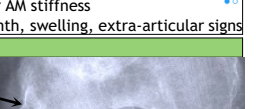
R/O gonococcal infxn - ♀>♂, recent menses, age <40, ± tenosynovitis & dermatitis

Degenerative vs. Inflammatory Arthritis: General Signs & Symptoms

Degenerative	Inflammatory
❑ Pain is relieved by rest	❑ Pain at rest, relieved by motion
❑ <½ hr AM stiffness	❑ >1 hr AM stiffness
❑ Localized, slow onset, progressive pain	❑ warmth, swelling, extra-articular signs

Osteoarthritis

OA Clues	X-ray features of OA
↑age, obesity (knee OA), joint damage, progressive asymmetric pain ± bony deformities	1. Subchondral cysts 2. Joint space narrowing 3. Osteophytes 4. Subchondral sclerosis



Management Principles

Non-pharmacological: Patient education, weight loss, regular low-impact exercise, PT (e.g. flexibility & strength, TENS) & OT (e.g. walking aids).

Medical: Analgesics/NSAIDs (oral &/or topical), corticosteroid injection, topical capsaicin, hyaluronic acid knee injection (controversial); No high quality studies for glucosamine or chondroitin supplements. *If refractory: surgical assessment*.

		Disease	Diagnostic Clues	Investigations & MGMT
Inflammatory Arthropathies	Seropositive	Rheumatoid Arthritis	Symmetric, >3 joints & in hands, >6 weeks. Rheumatoid nodules (e.g. over extensor surfaces), ±↑RF & x-ray changes. ♀>♂ age ~40-50's.	If suspicion: ESR±CRP, RF, anti-CCP & radiographs. **Early intervention with DMARDs*!**
		Lupus (SLE)	Multi-organ involvement, diverse presentation, ♀>♂. Symmetrical, small & large joints. FHx.	ANA (Anti-nuclear antibody) (if -ve virtually R/O SLE), NSAIDs/analgesics for pain
	Seronegative	Reactive Arthritis	Asymmetric 1-4 joints, lower extremity. Usually GI or GU infection 1-4 weeks before joint pain.	NSAIDs & treat infxn. If resistant: steroids (oral & injection) → DMARDs*.
		Psoriatic Arthritis	FHx &/or presence of psoriasis, DIP involvement, enthesitis, bursitis, nail changes. Asymmetric, 1-4 joints.	Most cases controlled with NSAIDs. May require DMARDs or biologics.
		Anklylosing spondylitis	Low back pain &↓ ROM, ♂>♀, asymmetric, enthesitis, younger age	See low back pain card
		Juvenile Idiopathic Arthritis	<16 years old, ≥1 joint, ≥6 weeks, other causes excluded (e.g. sepsis). Minimal systemic complaints. ♀>♂.	Many subtypes. Exercise, multi-discipl. team, NSAIDs, steroid inject. = 1st line.
Crystal		Gout	**1st MTP**, ankle, knee, ♂ & post-meno ♀. Risks: Diuretic use, renal disease, EtOH. May mimic cellulitis.	Joint aspiration, NSAIDs, intra-articular steroids. ±Colchicine in acute gout.
		Pseudogout	Age >60, knee joint most frequent, may resemble gout	Lifestyle Δ & ± allopurinol in chronic gout.

*Disease Modifying Anti-Rheumatic Drugs (e.g. hydroxychloriquine, methotrexate)

Key References: Aletaha D, et al. 2010 Rheumatoid arthritis classification criteria: an American College of Rheumatology/European League Against Rheumatism collaborative initiative. *Arthritis Rheum.* 2010;62(9):2569-81. Cibere J. Rheumatology: 4. acute monoarthritis. *CMAJ 2000;162(11):1577-83.* Hochberg MC, et al. American College of Rheumatology 2012 recommendations for the use of nonpharmacologic and pharmacologic therapies in osteoarthritis of the hand, hip and knee. *Arthritis Care Res.* 2012;64(4):465-74. Klinkhoff A. Rheumatology: 5. Diagnosis and management of inflammatory polyarthritis. *CMAJ.* 2000;162(13):1833-8. Margaretten ME, et al. Does this adult patient have septic arthritis? *JAMA.* 2007;297(13):1478-88. Shojania K. Rheumatology: 2. What laboratory tests are needed? *CMAJ* 2000;162(8):1157-63. Knee radiograph: AHS Repository.

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Joint Pain 2: Upper Limb

This card is not intended to be used for the assessment of major joint trauma

General MSK HPI	General MSK Physical Exam
Work, activities, expectations	Look, feel, move (or STOP & splint) & special tests
Mechanism of injury, pain Hx	Examine both sides, joint above & below
If applicable: dominant hand	If applicable: gait & alignment
CLIPS: clicking, locking, instability, pain or swelling	Examine for swelling, effusions, erythema, muscle atrophy, deformities, joint line tenderness & scars

The following tables exclude osteoarthritic & rheumatic causes (see Joint Pain 1)

Shoulder Pain

Rotator Cuff Disease: Impingement to Rotator Cuff Tears

HPI	Painful Arc Test	
Pain: worse at night, with overhead activities & movement. Pt may notice weakness. Degen. disease common, may have hx of trauma.	Examiner brings shoulder into full abduction	**(+)** = Pain between 60-120° Suggests impingement

Internal Rotation Lag Test (strength)		External Rotation Lag Test (strength)	
Examiner lifts hand of affected arm off back, pt holds position	**(+)** = Weakness Tests subscapularis	Arm is passively brought into full ER at 90° elbow flexion, patient holds position	**(+)** = Weakness Tests infra + supraspinatus

ER Resistance Test (strength & pain)		Drop Arm Test (Strength)	
Arm in 90° flexion, apply pressure proximal to wrist against ER	**(+)** = Weakness Suggests posterior cuff tear	Patient slowly drops arm from 90° abduction	**(+)** = Immediate drop with pain Tests supraspinatus

***PE tests listed are found to have the best likelihood ratios for detecting RCD*

MGMT

Impingement: NSAIDs, Physio (cuff strengthening), activity modif./slow return, subacromial steroid injxn. No improvement→ Imaging (U/S, MRI).
RC Tear (partial or full): Non-operative 1st line (see impingement), unless acute tear (surg. referral). Operative may be 2nd line in chronic tears.

Other Shoulder Conditions

HPI	Physical Exam	Diagnosis	Management
Gradual, diffuse pain, stiffness	↓Passive & active ROM	Adhesive capsulitis	PT, activity mod. NSAIDs ± steroid injec.
± RCD or labral lesion, ant. pain	Tender to palp. bicipital groove	Biceps tendinopathy	NSAIDs, steroid injection, PT, if refractory:± surgery
Repetitive strain, ± dislocation	Apprehension +ve, laxity	Shoulder instability	PT (stability strength), ± surgery

Elbow Pain

HPI, RFs & Physical Exam	DDx	Management
Lat. or med. pain, Hx of overuse **PE:** Point tender, pain on extens. (lat.) or flexion (med.), ⓃROM	Epicondylitis (Lat. or Med.)	RICE, PT, counter-force brace, steroid injection. If severe & refractory: ± surgery
Hx of friction, trauma, infxn. Post. elbow swelling & Pain, ⓃROM	Olecranon Bursitis	RICE, PT, NSAIDs, steroid injxn, aspiration. Abx ± I&D if septic.

Wrist Pain

HPI, RFs & Physical Exam	Dx	Management
Radial sided pain, overuse, ± trauma **PE:** Finkelstein's test	DeQuervain's Tenosynovitis	Rest, NSAIDs, spica splint, steroid injection
♀>♂, metab. disease, repetitive use, symptoms in med. nerve pattern, weak thumb abduction, ± compression test	Carpal Tunnel Syndrome	Splint, Δ activity, NSAIDs, steroid inject.± NCS, may need surgery
Cyst on wrist ± pain. **PE:** Firm, fixed	Ganglion cyst	Observe ± aspiration

Key References: D'Arcy CA, McGee S. The rational clinical examination. Does this patient have carpal tunnel syndrome? *JAMA*. 2000;283(23):3110-7. Forman TA, Forman SK, Rose NE. A clinical approach to diagnosing wrist pain. *Am Fam Physician* 2005;72(9):1753-8. Hermans J, et al. Does this patient with shoulder pain have rotator cuff disease?: The Rational Clinical Examination systematic review. *JAMA*. 2013;310(8):837-47. Chumbley EM, O'Connor FG, Nirschl RP. Evaluation of overuse elbow injuries. *Am Fam Physician*. 2000;61(3):691-700. Churgay CA. Diagnosis and treatment of biceps tendinitis and tendinosis. *Am Fam Physician*. 2009;80(5):470-6.

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Joint Pain 3: Lower Limb

	Hx Clues	Physical Exam	Top DDx
Hip Pain	Lateral-sided hip pain, esp. when lying on side. ♀>♂	Pain on palpation of greater trochanter	Trochanteric Bursitis
	Activity-related groin & hip pain. Worse with flexion/sitting	Flexion/adduction/IR = pain Decreased ROM	Femoroacetabular impingement
	Children 4-8y; ♂>♀; Insidious onset	±mild limp; ROM - restricted aBduction & IR 1st affected	Legg-Calve-Perthes
	Children <6y	Limp ±refusal to weight bear	Transient Synovitis
	♂>♀ ; 10-17y, ↑BMI	Limp; limited ROM; ±weight bear; ± knee pain	Slipped Capital Femoral Epiphysis

	Hx Clues	Physical Exam	Top DDx
Knee Pain	Acute: plant & twist mechanism of injury Degen.: Older patient	Joint line tenderness; ± effusion; ±locking & clicking (+) McMurray's test; (+) Thessaly test	Acute/ Degenerative Meniscal Tear
	Teens/young adults; runner; ↑ pain with prolonged sitting	Tender patella;(+) patellar friction test;	Patellofemoral syndrome
	Valgus force; ext. rot. injury; pop; abrupt swelling; ♀>♂	(+) Lachman > (+) Anterior drawer; swollen; may also be findings suggestive of MCL or meniscal involvement	ACL tear
	Pain after → during activity (e.g. jumping)	Superior patellar pole tender (quad) Inferior patella pole tender (patellar)	Patellar/quad tendonitis
	Adolescence; worse after activity	Prominence & tenderness of tibial tuberosity; often bilateral	Osgood-Schlatter's
	Acute/cumulative trauma; ++kneeling	Swelling over extensor aspect No pain on passive ROM (± full flexion)	Prepatellar bursitis
	Medial pain; ♀>♂; long distance runners	Severe point tenderness at anserine tendon insertion site	Pes anserine bursitis
	Hx instability; gradual onset	Possible ↑Q-Angle or leg length discrepancy; observed maltracking	Patellar maltracking
	Lateral knee pain; runner/cyclist	Tenderness to palpation over iliotibial band	IT Band Syndrome

	Hx Clues	Physical Exam	Top DDx
Foot Pain	Inferior heel pain; activity with lots of standing; more severe in morning; often recent Δ in activity/footwear	Tender along plantar fascia insertion (bottom medial side of heel)	Plantar fasciitis
	Heel pain in physically active individuals; more severe in morning	Pain, tenderness and swelling at tendon site	Achilles tendonitis

General Management Principles

① Rest ② Ice ③ Activity modification ④ PT/strength building/stretching
⑤ Analgesics/NSAIDs (if indicated) ⑥ Steroid injection (if refractory & indicated)
⑦ Aspirate & assess fluid when suspicious for septic joint/bursa ⑧ X-ray may be warranted - especially in child with limp ⑨ Surgery - depends on situation

Key References: Solomon DH, et al. The rational clinical examination. Does this patient have a torn meniscus or ligament of the knee? Value of the physical examination. *JAMA*. 2001; 286(13):1610-20. Taunton JE, Wilkinson M. Rheumatology: 14. Diagnosis and management of anterior knee pain. *CMAJ*. 2001;164(11):1595-601. Malleson PN, Beauchamp RD. Rheumatology: 16. Diagnosing musculoskeletal pain in children. *CMAJ*. 2001; 165(2):183-8. Madden CC. Netter's Sports Medicine. (2010). Philadelphia: *Saunders/Elsevier*.

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Approach to Limb Injury

Assessment

- ❑ Check ABCs, screen for other injuries & rule out other trauma
- ❑ Assess for RED flags with PE & Hx (screen for non-accidental injury in Peds)

RED FLAGS	Management
Open Fracture	❑Early antibiotics & control bleeding ❑Neurovascular & soft tissue assessment (see below if abnormal) ❑Dress wound & immobilize with splint ❑Prompt surgical consult
Neurovascular Compromise	❑Urgent reduction needed (before x-ray) ❑Document full neurovascular assessment BEFORE reduction ❑Obtain consent; analgesia if time ❑Repeat neurovascular assessment AFTER to determine success ❑Immobilize with splint, x-ray & discuss with consultant
Signs of Compartment Syndrome (CS)	❑Document presence of CS signs (pain out of proportion/with passive stretch/muscle contraction; swollen compartment; paresthesias; weakness/paralysis; pallor; pulseless) ❑Limb AT level of heart & remove constricting items ❑Urgent surgical consult

❑Determine need for x-ray (min. 2 views AP & lateral). Knee, ankle & foot may not need films if meeting Ottawa decision rules.

Fracture Present

Describe X-RAY: **Anatomy, # Pattern** (transverse, oblique, spiral, comminuted, segmental, avulsion); **Articular Involvement** (Ortho referral); **Apex Angulation** (medial or lateral; angle of distal in relation to proximal); **Rotation** (internal or external); **Distracted or Impacted; Shortening, Apposition** (% fragments touching); & **mm Displacement.**

Consult resources for unique # reduction & mgmt: (e.g. Dynamed, orthobullets.com etc.)

Immobilize. Splint (accommodate swelling) x 2-3d → Cast after splint. Goals:↓pain, ↓soft tissue damage, protect neurovascular state; when cast comes off

Fracture Absent

Tendon/ligament injury: completely torn (refer). May be injury to cartilage.

Acute Rx: **R**est, **I**ce, **C**ompression, **E**levation

Dislocation → consult resources for unique reduction & immobilization

Physiotherapy referral & provide guidance to regain strength & ROM.

	NERVE	MOTOR	SENSORY
Upper Limb	Axillary	aBduct shoulder	lateral upper arm
	Musculocutaneous	elbow flexion	lateral forearm
	Radial	wrist extension	lateral lower arm; dorsal forearm; Lateral 3 & ½ digits (dorsal)
	Median	oppose thumb & little finger	lateral 3 & ½ digits (volar)
	Ulnar	aBduct fingers	medial 1 & ½ digits (volar & dorsal)
Lower Limb	Femoral	knee extension	anterior thigh, medial leg, ankle & foot
	Deep fibular	foot dorsiflexion & inversion; toe extension	1st dorsal web space foot
	Superficial fibular	foot eversion	dorsal areas of foot & toes
	Tibial	knee flexion; foot plantar flexion; toe flexion	posteriolateral lower leg; lateral side of ankle, foot; sole of foot

Key References: Eiff MP, Hatch R. (2012).Fracture Management for Primary Care. Philadelphia, PA. *Saunders/Elsevier*. Cross WW, III, Swiontkowski MF. Treatment principles in the management of open fractures. *Indian J Orthop*. 2008;42(4):377-86. Vogl W, Drake RL, Mitchell AWM, Gray H. (2010). Gray's Anatomy for Students. Philadelphia, PA. *Churchill Livingstone/Elsevier*. Styf J, Wiger P. Abnormally increased intramuscular pressure in human legs: comparison of two experimental models. *J Trauma*. 1998;45(1):133-39.

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Low Back Pain

97% of non-specific back pain is mechanical back pain (70% lumbar strain, 10% degenerative changes of discs/facets)
→ resolves without intervention in 4 wks

Movement	Myotome
Hip flexion	L1 / L2
Knee extension	L3 / L4
Ankle dorsi flexion	L4/L5
Ankle plantar flexion	S1

Red Flag	Possible Cause	Management
Hx of Ca + new back pain; Unexplained weight loss; Duration > 6wks; Age >70	Cancer	MRI (if high suspicion) CBC, ESR, CRP
Long use of corticosteroids; Unexplained fever; IV drug use	Infection	MRI (if high suspicion) CBC, ESR, CRP
Bladder/bowel dysfunction Saddle numbness	Cauda Equina Syndrome	**Immediately refer to spinal surgeon**
Age >70yrs Significant trauma Minor trauma >50yrs Prolonged use of corticosteroids Osteoporosis	Vertebral Fracture	Plain Xray - Anteriorposterior and lateral views
Morning stiffness Improves with exercise Younger age	Undiff. Spondyloarthritis or Ankylosing Spondylitis	Plain Xray - Anteroposterior view HLA-B27 testing
Focal neurological deficit Duration > 6 wks Hx of trauma	Nerve root entrapment - many causes including herniated disc, spinal stenosis, spondylolithesis	MRI or CT

PHYSICAL EXAM CLUES			
Test	**Description of test**	**Test is + if**	**Dx to think about**
Straight leg raise	Lift leg with straight knee	Pain reproduced	Sciatica, nerve root entrapment
FABER	Flex, abduct, externally rotate knee	SI joint pain	Osteoarthritis
Thomas	Hand under lumbar spine, flex opposite knee, observe angle between femur and table	Angle > 0	Flexed hip contracture
Romberg	Patient stands feet together, arms outstretched at 90º, eyes closed	Loss of balance	Pathology of dorsal columns or vestibular system
Schober	March 5cm below and 10cm above L5, patient bends forward, measure distance between marks	Distance increase <5cm	Muscle tightness, ankolyosing spondyitis, scoliosis

Key References: Bradley WG, et al. Low back pain. AJNR Am J Neuroradiol. 2007;28(5):990-2. Chelsom J. Solberg CO. Vertebral osteomyelitis at a Norwegian university hospital 1987-97: clinical features, laboratory findings and outcome. *Scand J Infect Dis.* 1998;30(2):147-51. Chou R, et al. (2010). Diagnosis and treatment of low back pain: a joint clinical practice guideline from the American College of Physicians and the American Pain Society. *Retrieved from www.acponline.org/clinical-information/ guidelines.* Jarvik J, Deyo RA. Diagnostic evaluation of low back pain with emphasis on imaging. *Ann Intern Med.* 2002;137(7):586-97. Rudwaleit M, et al. How to diagnose axial spondyloarthritis early. *Ann Rheum Dis.* 2004;63(5):535-43.

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Major Health History

There is no single "major history" that is appropriate for all patients, as specific features on history, physical exam, and/or observed changes in the patient's condition can all influence the assessment.

Chief Concern

- critical to get enough detail/info so that you can picture the patient experiencing the illness/injury, including what happened just prior
- **clear description** of the problem – what/where/when/evolution
- **events associated** with the problem, including travel, new therapies, activities
- check for presence of **symptoms commonly associated** with the problem
  - ↳ symptoms from the same body system (see system history screen below)
  - ↳ symptoms that indicate serious progression of illness (eg. cognitive deterioration, weakness, inability to cope)
- other health providers seen and/or therapies to date
- patient/family **ideas** about the problem

PMHx

- **diagnosed** conditions (included brief confirmatory evidence as needed; seek detail on severity, eg. hospitalizations, ICU stay)
- any **undiagnosed** conditions that are being worked up and/or affect patient's wellness
- **previous** severe conditions (eg. meningitis, hospitalizations)
- **developmental** history (milestone achievement & conditions)

PSHx

- what, when, where, complications, outcome, further plans
- any reaction to anaesthesia

PREV

- immunization status (core + optionals)
- recent health screening status (eg. lipids, colon cancer screening)

Meds

- current **prescriptions** (confirm doses with patient/family +/- pharmacist)
- current **supplements** (eg. vitamins, herbals)
- **allergies** (** include what the reactions are)

Substance Use

- **tobacco** – type; determine approx. # pack-years of tobacco
- **alcohol** – determine # drink equivalents/wk; CAGE questionnaire as needed (C= need to cut down; A= angry; G= feels guilty; E= drinks eye-openers)
- **other drugs** (marijuana, cocaine, crack, heroin, stimulants, Rx drugs, etc.)
  - ↳ if +ve, consider asking how pt. acquires drugs (eg. sex trade, etc.)

Patient Context

- **family / relationships**
- **job or school**
- **income / resources** (including food/shelter)
- **beliefs / culture**
- **level of functioning**

Fam Hx

- focus on **immediate family** (parents/siblings/children)
  - conditions/events relevant to current illness
  - check for premature cardiovascular disease, cancer

consider pedigree/ genogram

System Symptom Screen

H/N – otalgia, sore throat, voice problems, dental problems
RESP – difficulty/rapid breathing, cough, wheeze, hemoptysis
CVS – chest pain/pressure/heaviness, palpitations, syncope/presyncope
GI – nausea, vomiting, diarrhea, abdominal pain, bleeding, melena
MSK – joint pain, stiffness, swelling
INTEG – rashes, lesions/moles
NEURO – headache, visual changes, weakness, sensory/neural changes
GU – sexual function, micturition [♂ erectile function, testicular masses]
[♀ LMP, menses, pelvic pain, ob hx]

Key reference: Stewart M, Belle Brown J, Weston W, McWhinney IR, McWilliam CL, Freeman TR. (2003). Patient-centred medicine: transforming the clinical method. 2nd Ed. Oxhon, UK. *Radcliffe Medical Press Ltd.*

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Major Physical Exam

When a patient presents with a substantial illness (acute or chronic), it is helpful to conduct a reasonably thorough physical exam to (1) establish baseline physical status, and (2) look for clues/features that point towards underlying diagnosis(es).

There is no single "major physical exam" that is appropriate for all patients, as features on history, specific physical findings, and/or observed changes in the patient's condition can all influence the assessment.

General/Vitals

- one sentence description of how the patient looks and what the patient is doing
  ↳ include any obvious features (e.g. jaundiced, cachectic, colicky) or lack thereof
  ↳ describe changes over any observation period (e.g. when defervesces)
- **HR**, **BP** – note inotropes (if any); record different BPs (e.g. supine vs. standing)
- **RR**, **O2 saturation** – note any oxygen use by patient
- **Temp** – indicate where taken (e.g. axillary, forehead)

Head/Neck

- **nodes**, **thyroid, trachea** (midline or otherwise)
- ears (**TMs**) – record if unable to visualize due to cerumen; if critical to observe (eg. for ear pain or trauma), curette cerumen and then exam TMs
- **eyes** – conjunctiva, fundi, presence of hyphema; consider slit lamp exam

Resp

- **Air Entry (A/E)** – comment on all lung fields
  ↳ note duration ratio of inspiratory phase:expiratory phase
- **adventitia** – describe sounds, location, presence in respiratory cycle

CVS

- **Heart Sounds (H/S)** – comment on S1,S2, presence of S3, S4, murmurs
- **JVP, peripheral pulses, carotid bruits**
- **Presence of abdominal aneurysm**
- **venous insufficiency, edema**

ABD

- **bowel sounds** (eg. present, absent, "tinkling", hyperactive)
- **palpation** (on **light** and **deep** palpation; note any peritoneal signs
- **DRE** (note masses, blood, melena, injury)

GU

- costovertebral angle (**CVA**) thumping – note tenderness
- ♀ – **cervical features** (eg. motion tenderness, open/closed on spec exam)
  adenexal features (eg. fullness, tenderness)
- ♂ – penis, scrotum, testes, inguinal canal

NEURO

- cranial nerves (**CN**) **II - XII**
- **motor, deep tendon reflexes** (triceps, biceps, patellar, achilles)
- **cerebellum** – finger/nose, hand-flipping, heel-shin

MSK / INT

- joint appearance, tenderness, range of motion
- skin appearance (eruptions, injury, hue, etc.)
- palms/soles – emboli, nodes, peeling/sloughing
- nails – clubbing, psoriatic pits, petechiae

MSE

- **affect**, suicidal/homicidal **ideation**
- **orientation** (person, place, time/date)
- **cognition** (quick screen: serial 7's and three item delayed recall)

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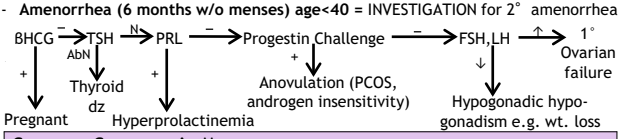
Menopause

Diagnosis of Menopause

- Clinical retrospective diagnosis of 12 months without menses in women above 40. Average age: 52. ***Remember to R/O pregnancy.***
- Perimenopause: Period of hormonal/menstrual variation preceding menopause up to 1st year after last menses. Avg. duration 4-8 years. **Do not d/c contraception**
- **Amenorrhea (6 months w/o menses) age<40** = INVESTIGATION for 2° amenorrhea



Common Concerns in Menopause

Vasomotor Symptoms/ Sleep Disturbances

Sx: Hot flashes, sweating, palpitations, night sweats, insomnia

Management: Treatment based on patient preference

1. **Lifestyle**: Sleep hygiene, exercise, wt loss (if obese), smoking cessation, trigger avoidance (EtOH, hot drinks, warm ambient temp)
2. **Hormonal Replacement Therapy HRT**
   - **Oral**: Conjugated estrogens 0.3mg/d (starting dose)
   - **Transderma**l: 0.5 mcg/day 17 ß-Estradiol patch (starting dose)
   - Add progestin if pt has intact uterus
   - Contraindications to HRT: VTE, CAD, pregnancy, severe liver dz, undiagnosed vaginal bleeding, breast or uterine cancer.
3. **Non-Hormonal Rx:** SSRIs/SNRIs, clonidine, gabapentin, zoplicone

Bleeding

Anovulatory (irregular) bleeding may be expected in perimenopause.
Act on prolonged/heavy/intermenstrual bleed. If ↓BP↑HR: ABCs+activate EMS

Inv: CBC (if prolonged bleeding), **U/S** (for anatomical cause e.g. fibroids, hyperplasia). **Biopsy** if Endometrial CA risk (age>40 , nulliparity, PCOS unopposed estrogen, or BMI>30)

Initial Mgmt:
Non Hormonal (during menses): NSAIDS, Tranexamic acid.
Hormonal: combined OCP, Levonorgestrel-releasing IUD

Urogenital Atrophy

Sx: Vaginal dryness, dyspareunia, dysuria, frequent UTI

DDX: Lichen sclerosis (thin white lesions, intense pruritis, burning → biopsy)

Management: Vaginal Moisturizers e.g. Replens™, lubricants for intercourse. **Vaginal Estrogen** (progestin not required) – Vaginal Tablet (e.g Vagifem™), Cream (e.g. Premarin™), Vaginal Ring (e.g. Estring™)

Bone Health

Assessment: Canadian FRAX score for 10 year hip fracture risk: use FRAX tool to stratify into low (<10%), moderate (10%-20%) or high risk (>20%) (Web search for "FRAX tool", make sure to select Canadian version)

Management: All risk groups: Exercise (wt. bearing, balance and strength), smoking cessation, caffeine reduction, Ca^{2+} >1500mg/day, Vit D >800IU/day. **Low risk:** reassess in 5 years. **Moderate risk:** TL spine x-ray if concerns for vertebral fracture. If fracture or other risk factor, treat as high risk. Otherwise repeat BMD in 1-3 years. **High risk:** Along with general mgmt: 1. Bisphosphonates 2.SERMs 3.HRT if pt has vasomotor Sx

Incontinence

General Management of Incontinence: Wt. loss, physiotherapy (bladder training, pelvic muscle exercises, biofeedback), trigger avoidance (EtOH, caffeine, excessive fluids), absorptive pads.

Stress Incont. (i.e. with ↑pelvic pressure): Consider pessaries, surgery

Urge Incont.(i.e. spontaneous): Consider antimuscarinics, e.g. oxybutinin

Key References: Papaioannou A, et al. 2010 clinical practice guidelines for the diagnosis and management of osteoporosis: summary. *CMAJ.* 2010;182(17):1864-73. Brockie J, et al. EMAS position statement: Menopause for medical students. *Maturitas.* 2014;78(1):67–9. Reid R, et al. Menopause and Osteoporosis Update 2009. *J Obstet Gynaecol Can.* 2009;31(1):51-53.

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Pain Assessment

1. Pain Story
Allow patient to tell their pain story, including traumatic or inciting events.

P – **Palliative, Provocative:** factors that make pain better or worse

Q – **Quality:** description of pain (burning, shooting, tingling, etc.)

R – **Radiation:** locations of pain migration

S – **Severity:** 1-10
Visual Analogue Pain Assessment Scale

T – **Time:** How long has pain been ongoing? Is it constant? Duration?

2. Management History
Interventions to date and outcomes

- Pharmacologic therapies
- Non-pharmacologic therapies
- Substance use

3. Illness Experience

F – How the patient **FEELS** about the pain

I – Patient's **IDEAS** about causes and other factors related to the pain

F – How the patient's **FUNCTION** is affected by the pain

E – patient's **EXPECTATIONS** for care and overall outcomes/goals

4. Physical Examination

- In acute setting, observe patient from a distance (before arriving at bedside) to assess level of distress/stability.
- If pain is secondary to trauma, ensure patient is stable (ABCs) and assess for secondary injuries.
- Conduct a targeted exam relevant to symptom(s).
- Brief examination of mental status (speech, cognition, understanding).

5. Contextual Issues

Mood Disorders & Depression	- Screen for depression in patients with chronic pain. - Avoid opioids if mood disorder is unstable.
Addiction History	- Avoid opioids in patients with current/past addiction (any type). - Use tools (CAGE) to clarify whether substance use is an addiction.
Work Related	- Clarify whether pain was caused by a job-related injury or due to personal risk factors/other illness. - Worker's Compensation assessment must be completed for work-related injuries.
Developmental Disability	- If capacity is insufficient to provide Hx, help develop and/or follow care plan -> connect with caregiver. - High frequency of homelessness and other social RFs.
Homeless	- High incidence of chronic pain, frequent neuropathies. - Pain has often been managed suboptimally.
Multicultural / Minorities	- Use **P**ictorial **R**epresentation of **I**llness and **S**elf **M**easure (**PRISM**) tool to overcome language barriers.
Pregnancy	- Avoid opioids in pregnant patients; opioids should be tapered slowly (to avoid premature labour and spontaneous abortion). - Acetaminophen and NSAIDS (excluding ASA) are not contraindicated but should be used at the lowest therapeutic dose in pregnancy; NSAIDS should be avoided after 32 weeks GA.
Breastfeeding	- Avoid codeine in breastfeeding mothers due to conversion issues.
Palliative Care	- Patients should receive a pain assessment, plan education, rapid onset of multimodal treatment. - Patient should be referred to a pain management specialist if pain improvement is not rapid; see Palliative Care card.
Sex of Patient and Provider	- Males with moderate pain report higher scores to male providers. - Both males and females with extreme pain report higher scores to female providers.

Key References: Busse JW, et al. Guideline for opioid therapy and chronic noncancer pain. *CMAJ*. 2017;189(18):E659-E666. Kassardjian CD, et al. Validating PRISM (Pictorial Representation of Illness and Self Measure) a measure of suffering in chronic non-cancer pain patients. *J Pain*. 2008;9(12):1135-43.

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Pain Management

INITIAL ENCOUNTER
- ❑ History/PE
- ❑ Make working diagnosis(es)

1. PLAN
Develop plan with patient:
- ❑ Discuss options
- ❑ Align Pt + Physician goals
- ❑ Risk reduction

2. DO
- Investigations if necessary
- Consultations as required (medical, interprofessional)
- Non-pharmacologic options
- Pharmacologic Treatment

3. STUDY
Follow-up and gather information:
- ❑ Symptoms, side effects, changes in function.
- ❑ Review any results or patient diaries.

4. ACT
Analyzing information to
- ❑ Determine effectiveness of therapies
- ❑ Reassess diagnosis
- ❑ Identify adverse outcomes

Pediatric Pharmacologic Therapy (refer to scale on Pain Assessment card)

Mild Pain (1-3/10; minimal discomfort)
- **Ibuprofen** PO 10 mg/kg (max 600mg q6-8h prn) **OR** **Acetaminophen** PO 15 mg/kg (max 1000mg q4-6h prn)

Moderate Pain (4-6/10; moderate discomfort)
- **Ibuprofen** PO 10 mg/kg (max 600mg q6-8h prn) **AND** **Acetaminophen** PO 15 mg/kg (max 1000mg q4-6h prn)
- Consider **Oxycodone** PO 0.1-0.2 mg/kg (max 10mg per dose q4-6 h, prn)

Severe Pain (7-10/10; visible distress)
- **Fentanyl** IN 1-2 micrograms/kg (max 100 micrograms per dose) **OR** Morphine IV 0.05-0.1 mg/kg (maximum 10mg) **OR** another safely prescribed opioid as per guidelines.

Adult Pharmacologic Therapy (Common, Non-Opioid)

*Remember to treat any comorbid conditions
*Consider topical agents initially where appropriate (e.g. **Diclofenac Sodium** sol'n 1.5% for joint pain)

- ❑ **Acetaminophen** 325-1000mg PO q4-6h; Max/day = 4000mg
- ❑ **Ibuprofen** 400mg PO q4-6h ; Max/day = 1200mg (acute) 2400mg (chronic);
- ❑ **Naproxen** 250mg PO q6-8h; Max/day = 1250mg on first day, 1000mg thereafter
- ❑ **Ketorolac** 10mg PO q4h; Max/day = 120mg for a maximum of 2 days
- ❑ **Celecoxib** 400mg PO dose on 1st day, then 100-200mg PO daily; Max/day = 400mg
- ❑ **Amitriptyline (for peripheral neuropathic pain)** 10-25 mg PO QHS; Increase by 10-25mg PO daily at weekly intervals as needed. Max/day = 150mg

Special Considerations

Severe Hepatic Impairment	Do not use traditional NSAIDs, Cox-2 Inhibitors, or Acetaminophen
3rd trimester pregnancy, Uncontrolled heart failure, Active GI ulcers/IBD, Severe renal disease	Do not use NSAIDs
CVD Risk	Lowest effective dose of NSAIDs; Naproxen = lowest risk
Elderly, Corticosteroid use	Avoid NSAIDs
NSAIDs in setting of: Long-term use, elderly, prior PUD/GI bleed, *H. Pylori* (+), alcohol users, smokers	USE WITH CAUTION. Consider GI protection (with Misoprostol/Proton Pump Inhibitor) as these populations are at a higher risk of GI complications[3,4]

Key References: National Health Service (NHS) UK. 2019. Plan, Do, Study, Act (PDSA) Cycles and the Model for Improvement. Retrieved from www.improvement.nhs.uk/documents/2142/plan-do-study-act.pdf. Ali S, Drendel A, TREKK Network. (2018). Bottom Line Recommendations: Pain Treatment. Retrieved from www.trekk.ca/system/assets/attachments/222/original/2018-06-28_v1.1_Pain_Treatment_BLR_FINAL.pdf?1530203858. Canadian Pharmacists Association. RxTx. Retrieved from www.myrxtx.ca. Rostom A, Moayyedi P, Hunt R. Canadian Consensus Guidelines on Long-term Nonsteroidal Anti-inflammatory Drug Therapy and the Need for Gastroprotection: Benefits versus Risks. *Alimentary Pharmacology & Therapeutics*. 2009:29(5):481-496.

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Opioid Care Guidance

Questions about pain - "FIFE"

- ❑ *What goals would you like to set in managing your pain?*
- ❑ *What abilities are so critical that you can't imagine living without them?*
- ❑ *What are your biggest worries regarding your health condition in the future?*

Patient Features Indicating Appropriateness of Opioids

- ❑ Pain interfering with daily function/ not adequately responding to non-opioid therapy
- ❑ Clear treatment goals established
- ❑ Patient able to adequately access follow-up
- ❑ Patient meets expectations for provincial prescription drug monitoring program

Opioid Contraindications

- ❑ Life-threatening allergy to opioids
- ❑ Active substance use disorder
- ❑ Elevated suicide risk
- ❑ Concomitant benzodiazepine use

Initial Dosing of Opioids

Consider restricting dose to less than 50 mg morphine equivalents/day. See Palliative Care card for further options/dosing.

Validated Opioid Risk Tool

Mark each box that applies	Female	Male
Family history of substance abuse		
Alcohol	1	3
Illegal drugs	2	3
Rx drugs	4	4
Personal history of substance abuse		
Alcohol	3	3
Illegal drugs	4	4
Rx drugs	5	5
Age between 16-45	1	1
History of preadolescent sexual abuse	3	0
Psychological disease		
ADD, OCD, bipolar, schizophrenia	2	2
Depression	1	1
Scoring totals		

≤ 3 = low risk of future opioid abuse
4-7 = moderate risk of future opioid abuse
≥ 8 = high risk of future opioid abuse

6A's of Monitoring

Analgesia - assess pain, **Affect** - evaluate mood, **Activities** - evaluate ADLs, **Adjunct Rx** - if needed, **Adverse effects** - side effects, **Aberrant behavior** - tolerance, dependence, addiction

Key Definitions

Tolerance: exposure to a drug results in decreased drug effect over time.
Dependence: withdrawal syndrome produced by abrupt cessation of substance
Substance misuse: use of a substance not consistent with legal or medical guidelines.
Addiction: neurobiological disease involving impaired control over use, continued use despite harm, and/or craving.

Choosing Wisely Canada (www.choosingwiselycanada.org)

- ❑ Always assess side effects, work status, and capacity to drive a motor vehicle before prescribing opioids.
- ❑ Do not prescribe opioids as first line treatment for migraine, tendinopathies, or acute/uncomplicated mechanical back pain.
- ❑ Do not use opioids long-term to manage abdominal pain in inflammatory bowel disease (IBD).
- ❑ Do not initiate opioids long-term for chronic pain until there has been a trial of available non-pharmacological treatments and adequate trials of non-opioid medications.

Key References: Webster LR, Webster RM. Predicting Aberrant Behaviors in Opioid-Treated Patients: Preliminary Validation of the Opioid Risk Tool. *Pain Med.* 2005;6(6):432-42. Rosenberg J et al. Opioid Therapy for Chronic Pain: Overview of the 2017 US Department of Veterans Affairs and US Department of Defense Clinical Practice Guideline. *Pain Med.* 2018;19(5):928-941. Busse J et al. Guideline for Opioid Therapy and Chronic Noncancer Pain. *CMAJ.* 2017; 189(18):E659-66. Jackman R, Purvis J, Mallett B. Chronic nonmalignant pain in primary care. *Am Fam Physician.* 2008; 78(10):1155-62. Dowell D, Haegerich T, Chou R. CDC Guideline for Prescribing Opioids for Chronic Pain--United States, 2016. *JAMA.* 2016;315(15):1624-45. American Society of Addiction Medicine. (2001). Definitions Related to the Use of Opioids for the Treatment of Pain. Retrieved from www.asam.org/docs/default-source/public-policy-statements/1opioid-definitions-consensus-2-011.pdf. World Health Organization. (2006). Lexicon of Alcohol and Drug Terms. Retrieved from: http://www.who.int/substance_abuse/terminology/who_lexicon/en/ [Reference list].

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Palliative Care

Goals of Care / Future Directions

- clarify if goal is palliation OR prolongation of life OR balance of both
- make sure patient is able to make goal decisions with clear mind (i.e. not depressed, not confused, not being pressured, not in unremitting pain)

PAIN - is pain relief adequate? If NO, re-assess for reversible cause and start or increase analgesia (see below)

- mild pain -> acetaminophen and/or NSAIDS (particularly in bone pain)
  - avoid NSAIDS in elderly, renal impaired, GI bleed (consider PPI)
- moderate -> weak opioid (codeine or tramadol)
- severe -> strong opioid (morphine, oxycodone, hydromorphone)

Equivalencies	PO	Parenteral	IV : PO	Duration
Morphine	30mg	10mg	3	3-4h
Codeine	200mg	130mg	1.5	3-4h
Oxycodone	15-20 mg	-	-	3-5h
Hydromorphone	7.5mg	1.5mg	5	3-5h
Fentanyl	-	100mcg	-	1-3h

Typical Starting PO doses	
Morphine	5-10mg q4h
Codeine	8-15mg q4h
Oxycodone	2.5-5mg q4h
Hydromorphone	1-2mg q4h
breakthrough dose = 10% of 24hr total q 1h prn	

OPIOID ADVERSE EFFECTS:

- constipation (prevent or treat with PEG 3350 *OR* senna)
- somnolence/sedation (consider switching or add psycho-stimulant)
- nausea (metoclopramide 10mg PO/SC/IV QID PRN)
- neurotoxicity (avoid renal impairment – i.e. good hydration)
- respiratory depression (RARE with careful titration)

ADJUVANT THERAPY:

- bone pain (1st line:NSAIDS; 2nd line:dexamethasone, bisphosphonates)
- neuropathic pain (nortriptyline, gabapentin)

TITRATING OPIOID DOSE UPWARDS (if > 2 doses of breakthrough needed/24h):

- add up previous 24 hour total, and divide by 6 to get new q4h dose
- remember: give 10% of this new 24 hr total as the breakthrough dose

NAUSEA/VOMITING:

- opioid-induced:- metoclopramide (see above)
  - haloperidol 1-5mg PO/SC BID/TID/PRN (watch for EPSE)
- malignant bowel obstruction: haloperidol (as above)
- chemo/radiotherapy induced: ondansetron 4-8mg PO/SC/IV BID/TID

DYSPNEA (awareness of breathing; frequent and often multifactorial):

- treat/optimize treatment for reversible causes (eg. PE, COPD, etc.)
- try air directed across face, sit upright and by open window
- systemic opioids: initiate as for **PAIN**
- O2 nasal prongs: in hypoxic patients (SaO2 < 88% or Pa02 < 55 mmHg)

DELIRIUM:

- control symptoms: haloperidol or methotrimeprazine (more sedating)
- treat the underlying cause (if possible and indicated)
- educate family (disease fluctuations, need for antipsychotics > opioids)

PAIN CRISIS:

- rule out delirium, psycho-spiritual crisis, opioid neurotoxicity
- use appropriate breakthrough dose
- consider emergent breakthrough dosing with fentanyl (NOT by patch)

SPINAL CORD COMPRESSION:

- recognize and treat ASAP to reduce morbidity
- dexamethasone 8-10mg PO/SC/IV STAT if any suspicion, then BID/TID
- urgent radiotherapy and/or neurosurgery referral

Key References: Pereira J. (2008). The Pallium Palliative Pocketbook. Edmonton, AB. *The Pallium Project*. Larkin PJ. The management of constipation in palliative care: clinical practice recommendations. *Palliat Med*. 2008;22(7):796-807. Pereira J, Lawlor P, Vigano A, Dorgan M, Bruera E. Equianalgesic dose ratios for opioids: a critical review and proposals for long-term dosing. *J Pain Symptom Management*. 2001;22(2):672-87.

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Routine Prenatal Care

INITIAL VISIT – CORE ELEMENTS

History & Physical

- ☐ Estimated date of delivery: 1st day of LMP + 7d – 3 mo, adjust for cycle length
- ☐ *Is this pregnancy planned or unplanned?*
- ☐ *Are there any safety concerns? Are there any significant health issues?*
- ☐ BP, maternal weight and height

Investigations

- ☐ Consider U/S for EDD, if uncertain LMP
- ☐ Baseline labs:
  - ABO/Rh and antibody screen
  - Hgb, urine R&M + C&S
  - varicella, rubella, syphilis, Hep B, HIV
  - gonorrhea + chlamydia (swab/urine)
- ☐ Pap test:
  - if (+) hx of abnormal results, do test if not done in past 6-12 mo
  - if (-) hx, do test if last done ≥ 3 yr
- ☐ Consider extra screening for STIs and heritable disorders

Patient Counselling

- ☐ Advise about ongoing prenatal care (visit frequency, routine monitoring)
- ☐ Prenatal multivitamin with:
  - Fe 27-30 mg/day, stop if nausea
- ☐ Dietary Ca 1000-1300 mg/day
- ☐ Vit D supp 2000 IU/day
- ☐ Folate supp, low risk 0.4 mg/day
- ☐ Avoid: tobacco, alcohol, illicit drugs
  - raw: meats/eggs/fish
  - deli meats, unpasteurized products
- ☐ Medication use (motherisk.org)
- ☐ Discuss non-invasive genetic screening, offer if results are desired

FIRST COUPLE OF VISITS – CORE ELEMENTS

Complete History, including:

- ☐ Obstetrical hx (GPTAL)
- ☐ STI hx
- ☐ Depression hx
- ☐ Psychosocial risk factors, e.g. ALPHA form (www.cmaj.ca/content/159/6/677.short)

Complete Exam, including:

- ☐ Breast
- ☐ Uterus, adnexae
- ☐ Thyroid
- ☐ Lower back tattoos: epidural may be contraindicated

Patient Counseling

- ☐ Physiological Δs in pregnancy, including:
  - weight gain (normal prepregnant BMI = 25-35 lbs; overweight = 15-25 lbs; obese = 11-20 lbs)
  - blurry long distance vision (reversible)
  - skin moles darkening (reversible)
- ☐ Diet: well-balanced and varied
- ☐ Work: avoid rotating shift work at ≥ 23 wk
- ☐ Exercise: avoid high impact activity
- ☐ Sex: is generally safe
- ☐ Wear seat belt with lap belt snug across hips
- ☐ Avoid hot tubs and saunas
- ☐ Air travel: avoid at ≥ 36 wk, consult airlines
- ☐ Influenza vaccine, for all women who will be pregnant during flu season

FOLLOW-UP VISITS

FREQUENCY: ≤ 30 wk = q4weeks, 30-36 wk = q2weeks, ≥ 36 wk = weekly

ASK: **"ABCD" = fetal activity, vaginal bleeding, contractions & discharge.**
Any abnormalities → refer to L&D.

MONITOR: - BP, maternal weight, SFH
- Fetal heart auscultation (≥ 9-12 wk)
- Fetal presentation (≥ 30-32 wk)

TEACH: fetal movement counts (≥ 30 wk), if indicated. Count in early evening and in reclined position (not supine).
If < 6 movements in 2 h → NST.

STANDARD INVESTIGATIONS

GA (wks)	Investigations
12-16	Urine R&M + C&S
18-20	U/S for structural assessment
26-28	GDM screen (1h 50g OGCT), HgB, Rh antibodies
28	RhIG for all Rh-ve women
36-37	GBS screen (vaginal & rectal swabs)
41-42	Offer labour induction

ELECTIVE INVESTIGATIONS Offer CVS or amniocentesis, if (+) genetic screening or women at increased risk based on hx

Key References: Kirkham C, Harris S, Grzybowski S. Evidence-based prenatal care: Part I. General prenatal care and counseling issues. *Am Fam Physician.* 2005;71(7):1307-16; Kirkham C, Harris S, Grzybowski S. Evidence-based prenatal care: Part II. Third-trimester care and prevention of infectious diseases. *Am Fam Physician.* 2005;71(8):1555-60.

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Common Prenatal Problems

NAUSEA AND VOMITING

- begins @ 6 wks, peaks @ 9 wks; 60% resolve by 12 wks, 91% by 20 wks, 5% entire preg
- women with N&V have fewer spont. abortions and stillbirths vs. women without N&V
- hyperemesis gravidarum = most severe form of NV occurs in < 1%

1st line treatment

Start Diclectin (combo of 10 mg doxylamine + 10 mg pyridoxine)
- recommended dose = 4 tabs daily (2 qhs + 1 qam + 1 qafternoon)
- up to 8 tabs daily, adjust prn, delayed action (takes 8 hr to work)

2nd line treatment

Add or switch to a substitute: antihistamines, e.g. dimenhydrinate, diphenhydramine
- for acute or breakthrough NV, use IV and PR formulation

3rd line treatment

If ***dehydrated***:
- **warning signs: wt loss, oliguria**
- hospitalize with IV fluid replacement, multivitamin IV, antiemetic IV

If ***well-hydrated***, add or switch to a substitute (in order of fetal safety):
- phenothiazines, e.g. chlorpromazine; metoclopromide; ondansetron

4th line treatment

Corticosteroids, e.g. methylprednisolone, consider only in refractory cases
- avoid corticosteroids at ≤ 10 wks because of higher risk of oral clefting

Consider other causes or exacerbating factors, test:
- electrolytes, Cr, Bun, liver function, TSH, drug levels, U/S and *H. pylori* testing

Notes

Diet and lifestyle Δs, including:
- eat what appeals, avoid triggers, smaller frequent meals, rest plenty
- stop prenatal multivitamin with Fe (Fe causes gastric irritation/ N&V)

Adjuvant treatment can be added at any time, including:
- ginger supp (in any form, maximum dose = < 1 g per day)
- pyridoxine, acupressure, acupuncture

HEARTBURN AND ACID REFLUX

1st line	Antacids (avoid Mg triscilicate and bicarbonate-containing antacids)
2nd line	- H2 antagonists, e.g. ranitidine - PPIs, e.g. omeprazole, pantoprazole
AVOID	Pepto Bismol because of salicylate absorption
Notes	Lifestyle modifications, including: eat smaller and more frequent meals, avoid eating near bedtime, elevate head of bed

URINARY TRACT INFECTION

-treat asympt. bacteriuria; if not, ↑ risk of cystitis, pyelonephritis & preterm labour

1st line	Penicillins, cephalosporins, fluoroquinolones, nitrofurantoin, phenazopyridine
AVOID	- nitrofurantoin ≥ 38 wks → hemolytic anemia in fetus or newborn - TMP-SMX in first trimester → neural tube defects - TMP-SMX ≥ 32 wks → increased kernicterus in newborn - tetracycline / doxycycline → deposition on bones and teeth
Notes	Prophylactic treatment (if desired): vit C 500 mg daily, cranberry juice

HEADACHE

- **warning signs of severe preeclampsia:** sudden onset in 3rd trimester with vision changes, RUQ pain, facial edema +/- ↑ BP
- treatment: increase sleep & fluid intake, acetaminophen
- **avoid** NSAIDS → teratogenic < 12 wks, ↓ amniotic fluid ≥ 12 wks

LOW BACK PAIN

treatment:
- back exercises
- chiropractic
- physiotherapy

Key References: Arsenault M, and Lane CA. The Management of Nausea and Vomiting in Pregnancy. *SOGC Clinical Practice Guidelines Number 102*. 2002; Law R, Maltepe C, Bozzo P, Einarson A. Treatment of Heartburn and Acid Reflux Associated with Nausea and Vomiting During Pregnancy. *Can Fam Physician*. 2010;56(2):143-4. Lee M, Bozzo P, Einarson A, Koren G. Urinary Tract Infections in Pregnancy. *Can Fam Physician*. 2008;54(6):853-4.

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HTN in Pregnancy

HYPERTENSIVE DISORDERS

Terminology	Definition
Hypertension in pregnancy	>139 systolic or >89 diastolic
Severe hypertension	>159 systolic or >109 diastolic
Proteinuria (suspect if dipstick >1)	0.3 g/d on 24 hr urine protein OR 0.03 g/mmol urine protein/creatinine
Preeclampsia	Hypertension with proteinuria OR adverse conditions OR severe complications (see below)
Severe Preeclampsia	Preeclampsia with severe complications (see below)
HELLP	**H**emolysis, **E**levated **L**iver **E**nzymes, **L**ow **P**latelets
Eclampsia	Hypertension with seizures

ADVERSE CONDITIONS AND SEVERE COMPLICATIONS

System	Adverse Conditions	Severe Complications (Deliver!)
CNS	headache/visual symptoms	GCS <13, stroke, seizure, blindness
Cardio/ Resp	chest pain/dyspnea/O2 <97%	MI, O2 <90%, inotropes, pulm. edema, severe HTN >12h on 3 agents
Haem	elevated WBC, INR, PTT low platelets	platelets <50 x 10^9/L transfusion of any blood product
Renal	elevated creatinine elevated uric acid	AKI/ARF (new onset Creat. >150 μmol) new indication for dialysis
Hepatic	N/V, RUQ or epigastric pain; elevated AST, ALT, LDH, Bili, low albumin	INR >2 (no DIC or warfarin), hepatic hematoma or rupture
Feto-placental	AbN FHR, IUGR, Oligo; absent/ reversed end-diastolic flow	abruption with compromise, stillbirth, reverse ductus venous A wave

HYPERTENSIVE DISORDERS TREATMENT

☐ Consider delivery if term ☐ Consider obstetrical consult, especially if preterm

Disorder	Treatment		Caution
Hypertension, targets: - No comorbidities 130-155/80-105 - Comorbidities <140/<90	labetalol	100-400 mg PO bid-tid	Max 1200 mg/d
	nifedipine XL	20-60 mg PO OD	Max 120 mg/d
	methyldopa	250-500 mg PO bid-qid	Max 2 g/d
Severe Hypertension - target: <160/110	labetalol	20 mg IV bolus then 60 – 120 mg/h	Max 300 mg Risk: neonatal bradycardia CI: asthma or heart failure
	nifedipine	5 - 10 mg PO q30min	CI: pre-exist DM
	hydralazine	5 mg IV bolus then 0.5 – 10 mg/h IV	Max 20 mg Risk: maternal hypotension
HELLP	platelet transfusion if <20 x10^9/L OR <50 x 10^9/L for Caesarean OR excess bleed, plt dysfunction, coagulopathy		
Seizures (prophylaxis or treatment)	magnesium sulphate	4 g IV bolus then 1 g/h	Risk: loss of patellar reflexes, resp depression
Magnesium Sulphate Toxicity	calcium gluconate	10% 10 cc IV over 3 min	

Key References: Magee L, Pels A, Helewa M, Ray E, von Dadelszen P, Canadian Hypertensive Disorders of Pregnancy Working Group. Diagnosis, evaluation, and management of the hypertensive disorders of pregnancy: executive summary. *J Obst Gynaecol Can.* 2014;36(5):416-41. SOGC Content Review Committee. (2011). ALARM Course Syllabus, 18th Ed. *SOGC.*

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Major Problems >20 wks

BLEEDING

History	Management
☐ Amount, color, timing ☐ Trauma ☐ Urinary sx, constipation, hemorrhoids ☐ Painful - ?abruption ☐ Painless - ?friable cervix, ?previa	If heavy bleed: ❑ cross-match, CBC ❑ Rule out placenta previa (u/s) ❑ Spec exam to locate source ❑ Rh immune globulin for Rh-ve mothers

FLUID DISCHARGE

History	Management
☐ Amount ☐ Color ☐ Gush ☐ Continuous leak	Avoid digital exam unless in labour Sterile spec exam for: a) pooling in posterior fornix b) fluid from os on cough c) nitrazine blue (false +ves: blood, infections, alkaline urine, semen) d) ferning If ROM confirmed: GBS prophylaxis

TRAUMA

History	
☐ Mechanism: MVC, Fall, Abdo Impact ☐ Timing ☐ Bleeding ☐ Pain	
Continuous FHR Monitoring	
>1 contraction/15 min OR bleeding OR uterine pain	24 hr
None of the above	4 hr

CONTRACTIONS

History	Management
Term Labour: regular, increasing freq and intensity, stopping to breath through **Preterm Labour:** back pain change, discharge change, tocometer pattern Are contractions palpable?	If active labour, admit If not, consider reassess in 2 hr (multip) vs d/c with return precautions (nullip) Analgesia for maternal exhaustion Preterm: consider fetal fibronectin **before** digital exam

REDUCED FETAL MOVEMENT

If <6 distinct movements in 2 hours do NST

NST Results	Management
Abnormal	BPP ASAP Deliver at term
Normal but risk factors (HTN, DM, SGA, oligo) OR suspicion of IUGR/oligo	BPP within 24 hr
Normal but movements not felt in triage	Daily NST Induce at term

CORD PROLAPSE

Signs & Symptoms
Sudden FHR decel with ROM Cord visualized/palpated in vagina
Management - CALL FOR HELP
☐ Elevate presenting part with hand ☐ Knee-chest or Trendelenberg ☐ Do **NOT** replace cord ☐ If cord outside vagina, cover with warm saline soaked cloth ☐ Urgent Caesarean section

GENERAL SYMPTOMS

Symptom	Conditions to Consider
Abdominal Pain	Labour, preeclampsia, abruption, Chorioamnioitis, GERD, round ligament pain
Fever	Chorioamnioitis
Headache	Preeclampsia
Short of Breath	Preeclampsia, PE

CHORIOAMNIOITIS

Symptoms	Treatment - DELIVER		
Fever, abdominal pain, foul smelling vaginal discharge (often prolonged ROM)	Clindamycin Gentamicin	600 mg 5-7 mg/kg	IV q8hr and IV q24hr
	Give both until afebrile for 48-72 hr post partum		

Key References: Liston R, Sawchuck D, Young D. Fetal Health Surveillance: Antepartum and Intrapartum Consensus Guideline. *J Obstet Gynaecol Can.* 2007;29(9) Supplement 4:S1. SOGC Content Review Committee. (2011). ALARM Course Syllabus, 18th Edition. *SOGC.*

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Obstetric Assessment

COMMON APPROACH

Triage Note Template	Common Considerations
☐ ID: age, G#P#, Due Date ☐ Presenting problem: 2-3 words ☐ OBHx: GBS, Rh, HTN, GDM, serology, Last U/S (placenta location, size, BPD) Other U/S, significant events ☐ POBHx: Dates, GA, C/S, complications ☐ Ask re: blood fluids contractions FMC ☐ Vitals: BP, Temp, HR	☐ Avoid continuous electronic monitor if low-risk in labour. ☐ Consider possible placenta previa before pelvic exam. If no u/s, ask if mother is aware of any problems. ☐ Assess fetal position if possible. ☐ Always consider a broad differential including non-obstetrical diagnoses.

STAGES OF LABOUR

Stage	Phase	Description	Dystocia
1	Latent	To 3-4 cm (nullip) or 4-5 cm (multip)	
	Active	To full dilatation	>4 hr of <0.5cm/h dilatation
2	Passive	Full dilatation, no pushing	
	Active	Full dilatation, pushing, until birth	>1 hr with no descent
3		Until delivery of placenta	
4		To one hour post-partum	

BISHOP SCORE FOR CERVICAL ASSESSMENT

Factor	0 points	1 point	2 points
Dilatation	0 cm	1 – 2 cm	3 – 4 cm
Effacement OR Length	0 – 30 % >3 cm	40 – 50 % 1 – 3 cm	60 – 70 % < 1 cm
Consistency	Firm	Medium	Soft
Position	Posterior	Mid	Anterior
Station	Ischial Spines – 3 cm	Spines – 2 cm	Spines – 1 cm
If Bishop Score <7, ripening required before induction			

FETAL ASSESSMENT

Normal Non-Stress Test (NST)	
Duration	20 – 40 minutes
Baseline	110 – 160 bpm
Variability	6 – 25 bpm
Accelerations	>32 wk: 2 x 15 bpm x 15 s <32 wk: 2 x 10 bpm x 10 s
Decelerations	None or Occasional Variable <30 s

Bio-physical Profile (BPP) (Over 30 min, 2 points each)
2 x 2 cm pocket of amniotic fluid
Breathing movements lasting >30 s
3 Body or limb movements
1 Extension/flexion of limb or trunk OR open/close of hand
NST normal (include if <8/8 on above)

Management based on BPP		
2 x 2 cm pocket of amniotic fluid	BPP = 6	Repeat BPP in 24 hr
	BPP < 6	Term: deliver
No 2 x 2 cm pocket of amniotic fluid	Any BPP	Pre-term: refer to specialist

GROUP B STREP (GBS)

Prophylaxis Indications
<37 wk without GBS negative swab (usually done 35 – 37 wk)
GBS positive swab
GBS unknown and >18 hr ROM
GBS bacteriuria in this pregnancy
GBS infection in previous baby

Treatment	
Penicillin G	5000000 units IV then 2500000 units IV q4h
If penicillin allergy	Cefazolin: 2 g IV then 1 g IV q8h
If allergy with **anaphalaxis**	Clindamycin, erythromycin, or vancomycin (check sensitivity)

Key References: Liston R, Sawchuck D, Young D. Fetal Health Surveillance: Antepartum and Intrapartum Consensus Guideline. *J Obstet Gynaecol Can.* 2007;29(9 Supplement 4):S3-S6. Money D, et al.. The Prevention of Early-Onset Neonatal Group B Streptococcal Disease. *J Obstet Gynaecol Can.* 2004;26(9):826-40. Leduc D, Biringer A, Lee L, Dy J. Induction of Labour. *J Obstet Gynaecol Can.* 2013;35(9):840-857. SOGC Content Review Committee. (2011). ALARM Course Syllabus , 18th Edition. *SOGC*.

Rourke et al

Rourke Baby Record

The 2020 Rourke Baby Record materials in this edition were designed and written in accordance with earlier versions of RBR materials in previous editions of this book. We wish to acknowledge the substantial contributions made by Drs. Lyn Power and Sonya Englert to the design and content of RBR materials in these previous editions.

Overview

The Rourke Baby Record (RBR) is an evidence-based system endorsed by CFPC, CPS, and DC for well-baby and well-child visits from 1 week to 5 years of age. It includes Guides I to V:

- Guide I – Age 0-1 months
- Guide II – Age 2-6 months
- Guide III – Age 9-15 months
- Guide IV – Age 18 months –5 years
- Guide V – Immunization chart

It also includes 4 Resources pages that summarize current evidence:

- Resources 1: Growth, nutrition, injury prevention, environmental health, other
- Resources 2: Family, behavior, development, physical exam, investigation/screening
- Resources 3: Immunizations
- Resources 4: Development & parenting resources, referrals table

Note: Strength of recommendation is based on literature review using the classification: **Good** (**bold type**); *Fair* (*italic type*); Inconclusive evidence/ consensus (plain type).

Key Content

Each child should have the following info recorded on the RBR:

• Pregnancy	• Past Problems	• Name	• Gestational age
• Birth remarks	• Risk factors	• DOB	• Birth wt, length, and HC
• Apgar	• Family Hx	• M/F	• Discharge wt

Domains of Well-baby/Well-child care:

- **Growth**: Use WHO growth charts. Used corrected age until 24-36 mo of page for infants <37 weeks gestation
- **Nutrition**: See RBR Resources 1
- **Education and Advice:** Repeat discussion of items is based on perceived risk or need
- **Physical Exam:** An appropriate, age-specific exam is recommended at each visit.
- **Development**: Tasks are set after the time of typical milestone acquisition. Absence of any item suggests consideration for further assessment of development. NB-correct for age if < 37 weeks gestation
- **Investigations/Immunizations:** Discuss immunization benefits and pain reduction strategies.

Additional Online Resources

For health care professionals:

- News items
- Download RBR and WHO Growth Charts for Canada
- Interactive RBR: Provides the evidence and resources for RBR items
- Parent resources: Parent info sheets and link to parent web portal
- Evidence summary by topic
- Revisions from earlier RBR editions
- Literature review for RBR items, annotated with level of evidence
- Publications

For parents:

- Parent info sheets for specific ages corresponding to RBR items
- Links to reliable parent resources, by topic or by age, and with a search function

Given the constantly evolving nature of evidence and changing recommendations, the Rourke Baby Record is meant to be used as a guide only.

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0 - 1 Month

≤ 1 week visit	2 week visit-optional	1 month visit
Use WHO growth charts **Length, wt, HC**	**Use WHO growth charts** **Length, wt, HC**	**Use WHO growth charts** **Length, wt, HC**
CAREGIVER CONCERNS:		
Record concerns at each visit		
NUTRITION:		
Addressed each visit:	❑ **Exclusively breastfeeding? + Vit D 400 IU/day** ❑ *Formula feeding/preparation* ❑ Stool pattern and urine output	
❑ Formula amount: 150 mL/kg/day	❑ Formula amount: 150 mL/kg/day	❑ Formula amount: 450-750 mL/day
EDUCATION & ADVICE: Repeat discussion based on risk or need		
Injury Prevention: ❑ **Safe sleep (position, room sharing, avoid bed sharing, crib safety)**	❑ **Motorized vehicle safety/car seat** ❑ *Hot water <49 C* ❑ *Pacifier use* ❑ Choking/safe toys	❑*Falls (stairs/change table)* ❑ **Firearm safety** ❑ Smoke/CO detectors
Behaviour & Family Issues: ❑ **Healthy sleep habits** ❑ Parental fatigue/ post partum depression	❑Soothability /responsiveness ❑ **Poverty/food insecurity** ❑ **Night waking** ❑ Crying	❑ Parenting/bonding ❑ Siblings ❑ **High risk infants/ home visit need** ❑ Family conflict/ stress
Environment: ❑ **Second hand smoke/E-cigs/Cannabis** ❑ Sun exposure		
Other Issues: ❑ **No OTC cough/cold meds** ❑ *Temp control/ overdressing*	❑ **Supervised tummy time while awake** ❑ Fever advice/ thermometers	❑ *Complementary/ alternative meds?*

≤ 1 week visit	2 week visit-optional	1 month visit
DEVELOPMENT: Failure to meet an item is a red flag for development		
❑ Sucks well on nipple	❑ Sucks well on nipple ❑ *No parent/caregiver concerns*	❑ *Focuses gaze* ❑ *Startles to loud noise* ❑ *Calms when comforted* ❑ Sucks well on nipple ❑ *No parent/caregiver concerns*
PHYSICAL EXAM:		
❑ Lungs ❑ Femoral pulses ❑ Testicles/genitalia ❑ Patency of anus ❑ Umbilicus ❑ ♂ Urinary stream/ foreskin care ❑ Spine (dimple/sinus)	❑ Lungs ❑ Femoral pulses ❑ Testicles/genitalia ❑ Umbilicus ❑ ♂ Urinary stream/ foreskin care ❑ Spine (dimple/sinus)	❑ Corneal light reflex ❑ ♂ Urinary stream/ foreskin care
Each visit: ❑ **Eyes (red reflex)** ❑ *Hearing screening/ ears* ❑ Lungs ❑ Tongue mobility if breastfeeding problems	❑ *Skin (jaundice/bruising)* ❑ Fontanelles ❑ Femoral pulses ❑ Hips	❑ Heart/abdomen ❑ Neck/torticollis ❑ Muscle tone ❑ Intact palate (inspection/palpation)
PROBLEMS & PLANS/CURRENT & NEW REFERRALS: Record at each visit		
INVESTIGATIONS/IMMUNIZATIONS: Record vaccines, discuss pain reduction		
❑ **Newborn screening** ❑ **Hemoglobinopathy screen (if at risk)** ❑ **Universal hearing screen** ❑ **If HBsAG+ parent/ sibling, Hep B vaccine #1**		❑ **If HBsAG+ parent/ sibling, Hep B vaccine #2**

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2 - 6 Months

2 months visit	4 months visit	6 months visit
Use WHO growth charts Length, wt, HC	**Use WHO growth charts Length, wt, HC**	**Use WHO growth charts Length, wt, HC**
CAREGIVER CONCERNS:		
Record concerns at each visit		
NUTRITION:		
Addressed each visit:	❑ **Breastfeeding? + Vit D 400 IU/day** ❑ *Formula feeding/preparation*	
❑ Formula amount: 600-900 mL/day	❑ Formula amount: 750-1080 mL/day ❑ Discuss future introduction of solids with emphasis on iron containing and allergenic foods	❑ Formula amount: 750-1080 mL/day ❑ **Iron-containing foods** ❑ Allergenic foods ❑ Fruits, veggies, dairy ❑ No honey ❑ Choking/safe foods ❑ Avoid food/liquids high in sugar or salt ❑ No bottles in bed
EDUCATION & ADVICE: Repeat discussion based on risk or need		
Injury Prevention: ❑ **Safe sleep (position, room sharing, no bed sharing, crib safety)** ❑ **Motorized vehicle safety/car seat**	❑ *Hot water <49 C/ bath safety* ❑ *Pacifier use* ❑ Choking/safe toys ❑ Falls	❑ Electric plugs/ cords ❑ **Firearm safety** ❑ Smoke/CO detectors ❑ **Poisons: PCC#**
Behaviour & Family Issues: ❑ Parental fatigue/ post partum depression ❑ **Family healthy active living/ sedentary behaviour/ screen time** ❑ Encourage reading	❑ **Healthy sleep habits** ❑ Soothability /responsiveness ❑ **Night waking** ❑ Crying ❑ Parenting/bonding ❑ Siblings	❑ **Poverty/food insecurity** ❑ **High risk infants/ home visit need** ❑ Family conflict/ stress ❑ *Child care*/return to work

2 months visit	4 months visit	6 months visit
EDUCATION & ADVICE - Continued		
Environment: ❑Second hand smoke/E-cigs/Cannabis ❑Sun exposure ❑Insect repellent/pesticides		
Other Issues: ❑ Teething/**Dental cleaning/fluoride** ❑ **Supervised tummy time while awake**	❑ **No OTC cough/cold meds** ❑ Fever advice/thermometers ❑ *Complementary/ alternative meds?*	❑ *Temp control/overdressing* ❑ *Encourage reading*
DEVELOPMENT: Failure to meet an item is a red flag for development		
❑ *Follows movt with eyes* ❑ *Coos* ❑ *Lifts head while on tummy* ❑ *Comforted/calmed by touching/rocking* ❑ *≥2 sucks before swallowing/breathing* ❑ Smiles responsively ❑ No concerns	❑ *Follows moving toy or person with eyes* ❑ *Responds to people with excitement* ❑ *Holds head steady when sitting* ❑ *Holds an object briefly* ❑ *Laughs/smiles responsively* ❑ *No concerns*	❑ *Turns head toward sounds* ❑ *Makes sounds while you talk to them* ❑ *Vocalizes pleasure & displeasure* ❑ *Rolls from back to side* ❑ *Sits with support* ❑ *Reaches/grasps w both hands equally* ❑ *No persistent closed hands/fists* ❑ *No concerns*
PHYSICAL EXAM:		
❑ Fontanelles ❑ *Skin (jaundice)*	❑ Anterior fontanelle	❑ Anterior fontanelle ❑ **Cover-uncover test** ❑ *Teeth/Caries risk assess.* ❑ No head lag
Each visit: ❑ **Eyes (red reflex)** ❑ **Corneal light reflex** ❑ Bruising	❑ Hips ❑ Neck-torticollis ❑ Muscle tone	❑ *Hearing inquiry/ screening* ❑ Heart/lungs/abdomen
PROBLEMS & PLANS/CURRENT & NEW REFERRALS: Record at each visit		
INVESTIGATIONS/IMMUNIZATIONS: Record vaccines, discuss pain reduction		
6 month visit: ❑ **If HBsAG+ parent/ sibling, Hep B vaccine #3** ❑ *Anemia screening (if at risk)* ❑ *Risk factors for TB?*		

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RBR 9-15 Months

9 months visit-optional	12-13 months visit	15 months visit-optional
Use WHO growth charts Length, wt, HC	**Use WHO growth charts Length, wt, HC**	**Use WHO growth charts Length, wt, HC**

CAREGIVER CONCERNS: Record at each visit

NUTRITION:

Each visit: ❑ **Breastfeeding+Vit D 400 IU/day** ❑ Self feeding ❑ Choking/safe foods ❑ Avoid food/liquids high in sugar or salt ❑ No bottles in bed

❑ *Formula*: 720-960 ml (24-32 oz)/day ❑ Fe-containing food, fruits/veg, allergenic foods ❑ Cow's milk products ❑ No honey ❑ Eats variety of textures ❑ Change bottle to cup	❑ Homo milk 500-750 ml (16-24 oz)/day ❑ Open cup instead of bottle ❑ Vegetarian diet inquiry ❑ Appetite reduced ❑ Eats variety of textures ❑ Eats family foods ❑ Vegetarian diet inquiry	❑ **Breastfeeding+/-Vit D 400 IU/day** ❑ Homo milk 500-750 ml (16-24 oz)/day ❑ Open cup instead of bottle ❑ Vegetarian diet inquiry

EDUCATION & ADVICE: Repeat discussion based on risk or need

Injury Prevention: ❑ *Pacifier use* ❑ **Poisons: PCC#** ❑ **Motorized vehicle safety/car seat**
❑ *Electric plugs/cords* ❑ **Firearm safety** ❑ Choking/safe toys
❑ *Smoke*/CO detectors ❑ *Bath safety*/burns ❑ *Falls/stairs*
❑ **Safe sleep**

Behaviour & Family Issues:	❑ **Night waking**	❑ *Child care*/work
❑ **Healthy sleep habits**	❑ Crying	❑ **Need for home visit**
❑ Parental fatigue/depression	❑ **Parenting**	❑ Family conflict/stress
❑ Soothability/responsiveness	❑ Siblings	❑ **Active living/screen time**
❑ **Poverty or food insecurity**	❑ *Encourage reading*	

Environment: ❑ **2nd hand smoke/**E-cigs/Cannabis ❑ Sun/sunscreen/insect repell. ❑ Pesticide exposure

Other Issues: ❑ Teething/**Dental cleaning/Fluoride/Dentist** ❑ Fever advice
❑**No OTC cough/cold meds** ❑ Complementary/alt. meds ❑ Footwear <<

DEVELOPMENT: Failure to meet an item is a red flag for development

❑ *Looks for hidden object* ❑ *Babbles* ❑ *Responds to diff. people* ❑ *Makes sounds/gestures to get attention* ❑ *Sits without support* ❑ *Stands with support* ❑ *Opposes thumb and fingers to grasp object (finger foods)* ❑ *Plays social games* ❑ *Cries/shouts for atten.* ❑ Uses both hands equally ❑ *No caregiver concerns*	❑ *Responds to own name* ❑ *Understands simple requests* ❑ *1 consonant/vowel combo* ❑ *3 or more words* ❑ *Crawls/bum shuffles* ❑ *Pulls to stand/walks holding on* ❑ *Distress when separated from caregiver* ❑ *Follows gaze to reference object* ❑ *Pincer grasp* ❑ Uses both hands equally ❑ *No caregiver concerns*	❑ *Says 5 or more words* ❑ *Walks sideways holding onto furniture* ❑ *Shows fear of strange people/places* ❑ *Crawls up few stairs* ❑ *Tries to squat to pick up objects* ❑ *No caregiver concerns*

PHYSICAL EXAM: Age specific exam recommended at each visit

Each visit: ❑ *Hearing inquiry/screening*	❑ Hips	❑ Anterior fontanelle
❑ **Corneal light reflex/Cover-uncover test & inquiry**		❑ **Eyes (red reflex)**
❑ **Tonsil size/sleep disordered breathing**		❑ Teeth/Caries risk
❑ Heart/lungs/abdomen		❑ Muscle tone (9-12 mo)

PROBLEMS & PLANS/CURRENT & NEW REFERRALS: Record at each visit

INVESTIGATIONS/IMMUNIZATIONS: Record Vaccines, discuss pain reduction

❑ *Hemoglobin if at risk* ❑ *Blood lead if at risk* ❑ *Anemia screening*
❑ **If HBsAG+ mom, check HBV antibodies and HBsAg at 9 or 12 mo**

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18 Months

18 Months Visit

Use WHO growth charts
Length, wt, HC

CAREGIVER CONCERNS:Record at each visit

NUTRITION:

- ❑ **Breastfeeding =/- Vit D 400 IU/day**
- ❑ Homo milk 500-750ml (16-24oz)/day
- ❑ No bottles
- ❑ Avoid foods/liquids high in sugar or salt
- ❑ *Inquire re vegetarian diet*
- ❑ Independent self feeding

EDUCATION & ADVICE: Repeat discussion based on need or risk

Injury Prevention:

- ❑ Wean from pacifier
- ❑ Bath safety/*burns*
- ❑ Falls
- ❑ **Motorized vehicle safety/car seat**
- ❑ Choking/safe toys
- ❑ Poisons: PCC#

Behaviour & Family Issues:

- ❑ **Healthy sleep habits**
- ❑ Parental fatigue/stress/depression
- ❑ Encourage reading
- ❑ Discipline/Parenting skills programs
- ❑ **Poverty or food insecurity**
- ❑ Socializing opportunities
- ❑ **Family healthy living/sedentary behaviour/screen time**
- ❑ **High-risk children**
- ❑ Parent/child interaction

Environment: ❑ **Second hand smoke/**E-Cigs/Cannabis
❑ *Pesticide exposure* ❑ Sun exposure/sunscreen/insect repellent

Other Issues:
❑ **Dental care/Dentist** ❑ Toilet learning

DEVELOPMENT: Failure to meet an item is a red flag for development

Social/Emotional:

- ❑ *Behaviour usually manageable*
- ❑ *Interested in other children*
- ❑ *Usually easy to soothe*
- ❑ *Comes for comfort when distressed*

Motor Skills:

- ❑ *Walks alone*
- ❑ *Feeds self with spoon with little spilling*

Adaptive Skills:

- ❑ *Removes hat/socks without help*
- ❑ *No caregiver concerns*

Communications Skills:

- ❑ *Points to several different body parts*
- ❑ *Tries to get your attention to show you something*
- ❑ *Turns/responds when name is called*
- ❑ *Points to what he/she wants*
- ❑ *Looks for toy when asked or points in direction*
- ❑ *Imitates speech sounds and gestures*
- ❑ *Says ≥15 words*
- ❑ *Produces 4 consonants*

PHYSICAL EXAM: Age specific exam recommended

- ❑ Hearing inquiry
- ❑ **Corneal light reflex/Cover-uncover test & inquiry**
- ❑ **Red reflex**
- ❑ Tonsil size/sleep issues
- ❑ Anterior fontanelle closed
- ❑ *Teeth/Caries Risk*
- ❑ Heart/lungs/abd.

PROBLEMS & PLANS/CURRENT & NEW REFERRALS: Record at each visit

INVESTIGATIONS/IMMUNIZATIONS: Record vaccines, discuss pain reduction

❑ *Blood lead if at risk* ❑ *Anemia screening (if at risk)*

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2-3 Years

2 - 3 year visit

Use WHO growth charts **Height, wt, HC if prior abN**

CAREGIVER CONCERNS: Record at each visit

NUTRITION:

- ❑ Skim, 1%, 2% milk 500ml (16oz)/day
- ❑ Canada's Food Guide
- ❑ *Gradual transition to lower fat diet*
- ❑ **Breastfeeding=/- Vit D 400 IU/day**
- ❑ Vegetarian diet inquiry
- ❑ Avoid foods/liquids high in sugar or salt

EDUCATION & ADVICE: Repeat discussion based on risk or need

Injury Prevention:
- ❑ Falls
- ❑ **Motorized vehicle safety/car seat**
- ❑ **Bike helmets**
- ❑ **Firearm safety**
- ❑ Matches/burns
- ❑ Poisons/PCC
- ❑ *CO/Smoke detectors*
- ❑ *Water safety*

Behaviour & Family Issues:
- ❑ **Healthy sleep habits**
- ❑ Parental fatigue/depression
- ❑ Encourage reading
- ❑ Socializing opportunities
- ❑ *Discipline/Parenting skills programs*
- ❑ Family conflict/ stress
- ❑ Assess child care/ *preschool needs/school readiness*
- ❑ **Family healthy living/sedentary behavior/screen time**
- ❑ Parent/Child Interaction
- ❑ Siblings
- ❑ **High-risk children**
- ❑ **Poverty/food insecurity**

Environment: ❑ **2nd hand smoke/**E-cigs/Cannabis ❑ *Pesticide exposure*
❑ Sun exposure/sunscreen/insect repellent

Other Issues:
- ❑ **Dental care/ fluoride/Dentist**
- ❑ Toilet learning
- ❑ ***No OCT cough/cold meds***
- ❑ *No pacifiers*
- ❑ *Complementary/ alternative meds?*

DEVELOPMENT: Failure to meet an item is a red flag for development

2 years:
- ❑ *Understands 1&2 step directions*
- ❑ *Walks backwards 2 steps without support*
- ❑ *Puts objects into small container*
- ❑ *Uses toys for pretend play*
- ❑ *Tries to run*
- ❑ *Combines ≥2 words*
- ❑ *Cont. to develop new skills*
- ❑ *No caregiver concerns*

3 years:
- ❑ *Understands 2&3 step directions*
- ❑ *Twists lids off jars or turns knobs*
- ❑ *Plays make-believe games with actions & words*
- ❑ Listens to music or stories for 5mins
- ❑ *Uses sentences with ≥5 words*
- ❑Turns pages one at a time
- ❑ *Shares some of the time*
- ❑ *Walks up stairs using handrail*
- ❑ No caregiver concerns

PHYSICAL EXAM: Age specific exam recommended at each visit

Each visit:
- ❑ *BP if at risk (3+ yrs)*
- ❑ **Visual acuity**
- ❑ Teeth/*Caries Risk*
- ❑ **Red reflex**
- ❑ **Corneal light reflex/Cover-uncover test & inquiry**
- ❑ Tonsil size/sleep-disordered breathing
- ❑ Hearing inquiry
- ❑ Heart/lungs/abdomen

PROBLEMS & PLANS/CURRENT & NEW REFERRALS: Record at each visit

INVESTIGATIONS/IMMUNIZATIONS: Record Vaccines, discuss pain reduction

❑ *Blood lead if at risk* ❑ *Anemia screening (if at risk)*

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4-5 Years

4-5 year visit

Use WHO growth charts **Height, wt**

CAREGIVER CONCERNS: Record concerns

NUTRITION:

- ❑ Skim, 1%, 2% milk 500ml (16oz)/day
- ❑ Canada's Food Guide
- ❑ Vegetarian diet inquiry
- ❑ Avoid food/liquids high in sugar or salt

EDUCATION & ADVICE: Repeat discussion based on risk or need

Injury Prevention:

- ❑ Falls
- ❑ **Motorized vehicle safety/car seat**
- ❑ **Bike helmets**
- ❑ **Firearm safety**
- ❑ Matches/burns
- ❑ CO/*Smoke detectors*
- ❑ Water safety
- ❑ Poisons: PCC#

Behaviour & Family Issues:

- ❑ **Healthy sleep habits**
- ❑ Parental fatigue/depression
- ❑ Encourage reading
- ❑ Socializing opportunities
- ❑ *Discipline/Parenting skills programs*
- ❑ Family conflict/ stress
- ❑ Assess child care/ *preschool needs/ school readiness*
- ❑ **Family healthy living/sedentary behavior/screen time**
- ❑ Parent/child interaction
- ❑ Siblings
- ❑ **High-risk children**
- ❑ **Poverty/food insecurity**

Environment: ❑ **2nd hand smoke/**E-cigs/Cannabis ❑ *Pesticide exposure*
❑ Sun exposure/sunscreen/insect repellent

Other Issues:

- ❑ **Dental care/ fluoride/Dentist**
- ❑ **No OTC cough/cold meds**
- ❑ *No pacifiers*
- ❑ Toilet learning
- ❑ *Complementary/ alternative meds?*

DEVELOPMENT: Failure to meet an item is a red flag for development

4 years:

- ❑ *Asks/answers lots of questions*
- ❑ *Walks up/down stairs alt. feet*
- ❑ *Undoes buttons & zippers*
- ❑ *Tries to comfort someone who is upset*
- ❑ *Understands 3 part directions*
- ❑ *No caregiver concerns*

5 years:

- ❑ *Mostly speaks clearly in adult-like sentences*
- ❑ *Throws and catches a ball*
- ❑ *Hops on 1 foot several times*
- ❑ *Dresses/undresses with little help*
- ❑ *Mostly cooperates with adult requests*
- ❑ *Retells sequences of a story*
- ❑ *Separates easily from caregiver*
- ❑ *Counts out loud/on fingers to answer "how many are there?"*
- ❑ *No caregiver concerns*

PHYSICAL EXAM: Age specific exam recommended at each visit

Each visit:

- ❑ *BP if at risk*
- ❑ **Visual acuity**
- ❑ Teeth/*Caries risk*
- ❑ **Red reflex**
- ❑ **Corneal light reflex/ Cover-uncover test & inquiry**
- ❑ Tonsil size/sleep-disordered breathing
- ❑ Hearing inquiry
- ❑ Heart/lungs/abdomen

PROBLEMS & PLANS/CURRENT & NEW REFERRALS: Record problems/plans

INVESTIGATIONS/IMMUNIZATIONS: Record Vaccines, discuss pain reduction

❑ *Blood lead if at risk* ❑ *Anemia screening (if at risk)*

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Senior Snapshot

1. Baseline Picture of Health (take hx from patient and caregivers)

Domain	Assessment	Red Flags
Cognition	- Years of education - MOCA* (or MMSE*), CAM*	- ?Dementia (MOCA<26 or MMSE <24; ?delirium (+ve CAM)
Current Mood & Affect	- Hx (inc. recent loss/death) - Consider using Geriatric Depression Scale; rule out organic causes	- Inconsistent mood & affect - Depressed mood or anhedonia - Pessimism of one's own health
Meds & Supplements	- Hx, pharmacy/EMR records - BEERS list of possib. harmful meds for seniors (americangeriatrics.org) - side effects/errors/↓clearance	- Benzodiazepines, narcotics, anticholinergics (eg. Gravol) - Daily use of >= 3 drugs; unfilled prescriptions/duplications
Abilities/ Activities of Daily Living/ Physical Status	- ADLs & IADLs, SAFEDRIVE - Continence (screen with DIAPERS*) - Gait & balance: calf size; timed get up & go; WHO Fracture Risk (FRAX) - Vision: prescription lenses; CN exam (II, III, IV, VI) - Hearing: whispering test	- Incontinence OR any ADL prob. - Falls (>=1 per month); Abn Gait/Balance test - Calf circ. (<31 cm), wt Loss, - Signs of neglect/abuse - Inability to hear whispering
Current Supports & Environment	- Dietary/calorie intake - Financial stability & drug coverage - Transportation assistance - Caregiver sustainability	- Neglect or abuse - Failure to Thrive - Caregiver burden/burnout

***MMSE** (Mini-Mental State Examination), **MOCA** (The Montreal Cognitive Assessment; instructions at mocattest.org, **CAM** (Confusion Assessment Method), **ADLs** (personal hygiene/grooming, dressing/undressing, self feeding, functional transfers, bowel/bladder management, ambulation), **DIAPERS** [drugs, infection, atrophic vaginitis, psychological (depression, delirium, dementia), endocrine (hyperglycemia, hypercalcemia), restricted mobility, and stool impaction]

2. Modifiable Risk Factors of Future Health Impairments

Risk	Action	Rationale
Depressed/Pessimistic Mood	Lifestyle changes (balanced diet, exercise); med, counseling and/or psychiatry referral	↑ Risk of mortality & impairs other domains
Polypharmacy	Med reduction/reconciliation; home care referral for med eval; consultation with pharmacist	1 in 25 seniors are at risk for major drug-drug interaction
Impaired Abilities/ ADLs **Abnormal Gait/Balance**	Home care, OT, PT; participation in community programs; dietician; diapers, meds, pelvic floor training/ urology, frequent / scheduled toileting; opto/audiologist yearly assessment, aids & advice from specific foundations Mobility counseling; exercise (resistance & wt bearing) ≥ 2 hours total/wk; home safety assessment	↓Vision = twice the difficulty with ADLs ↓Hearing = ↓communication skills, cognitive decline & social isolation ↓ Mobility = ↑ health related costs, ↑ hospitalizations, ↓ ADLs performance
Low Support/ Resources	OT/specialized assessment; social worker consult; psychologist consult	↓ Barriers = ↓ vulnerability & social deficits

Key References: Fairhall N, Langron C, Sherrington C, Lord SR, Kurrle SE, Lockwood K, et al. Treating frailty--a practical guide. *BMC Med*. 2011;9:83. Abellan van Kan G, Rolland Y, Houles M, Gillette-Guyonnet S, Soto M, Vellas B. The assessment of frailty in older adults. *Clin Geriatr Med*. 2010;26(2):275-86. Andrew MK, Mitnitski AB, Rockwood K. Social vulnerability, frailty & mortality in elderly people. *PLoS One*. 2008;3(5):e2232.

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Sexual Health History

TIPS FOR TAKING A SEXUAL HISTORY

1. Interview in private w pt fully dressed
2. Ask permission to take a sexual history
3. Normalize sexual history as routine care
4. Reaffirm and explain confidentiality
5. Connect sexual hx with medical and social hx
6. Use and explain medical terminology
7. Clarify pt's vocabulary, if vague or slang

Legal reporting obligations:

1. Risk of harm to self or others
2. Reportable diseases (e.g. G&C, syphilis, HBV, HCV, HIV; see provincial guidelines)
3. Suspected child abuse
4. Age of consent in Canada: 16; 14-15 (partner's age within 5 yrs) 12-13 (partner's age within 2 yrs)

CORE SEXUAL HISTORY

STI Risk

1. "In the past 12 months, have your partners been men, women, or both?"
2. "Have you had more than one partner in the last 12 months?"
3. "Do you have oral, vaginal, and/or anal sex?"
4. "Have you ever been tested for/ had a sexually transmitted infection?"
5. "How do you protect yourself from sexually transmitted infections?"
6. "What method do you use for contraception?"

Function

7. "Do you have any intent to have children?"
8. "How satisfied are you with your/your partner's sexual function?"
9. Ask specifically about problems with desire/arousal/orgasm (give examples).
10. Review meds for sexual side effects (e.g. SSRI, ß-blocker, HCTZ, opiates).
11. Women: ObsGyne hx (Pap smear, LNMP, Gravida:Para).

SPECIAL POPULATIONS

Diabetes mellitus	–♂: ED (vascular in T2DM; neuropathic and hypogonadism in T1DM) –♀: Depression, decreased interest, dryness, anorgasmia
CAD, HTN	–ED (1° due to neurovascular dz, 2° due to medications)
Depression/ anxiety	–Decreased interest and arousal (1° effect) –Problems with arousal and climax (2° effect due to medications)
Hx of STI or IV drug use	–STI risk assessment –Screen for other STIs (HBV, HCV, HIV, G&C, syphilis)
Adolescent	–Normalize sexual development and behaviour where appropriate –Ensure opportunity for 1-on-1 discussion (without caregiver) –Counsel on safe sex
Postpartum	–Screen for depression, address complications from pregnancy/delivery –Counsel on contraception (condoms, progestin-only pill)
Older adults	–Screen for ED, dryness/dyspareunia, ↓mobility, depression/anxiety –Review medications for sexual side effects

COMMON SEXUAL COMPLAINTS

Erectile dysfunction (ED)	–Determine organic vs. psychogenic –Clarify onset, situation specific, desire, morning/nocturnal erections –Organic: DM, CAD, HTN, hypogonadism, smoking, alcohol, meds, drugs –Psychogenic: depression, anxiety, stress
Premature ejaculation (PE)	–Determine 1° or 2°, onset, situation or partner specific –Rule out comorbid sexual dysfunction (e.g. ED, decreased desire); if no comorbidities, PE usually not due to organic disease
Dyspareunia (pain during sex, F or M)	–Characterize pain (OPQRSTU, superficial vs. deep, 1° vs 2°) –♀: dryness, atrophy; vulvodynia, vaginitis, vaginismus, PID, endometriosis, fibroids, adnexal pathology, traumatic delivery, GU –♂: dryness, phimosis, balanitis, prostatitis, epididymitis –Hx of sexual assault or trauma
Decreased desire	–Organic: hypoandrogenism, menopause, dyspareunia, medications –Psychogenic: relationship factors, depression, anxiety, trauma

Key References: Kingsberg SA. Taking a sexual history. *Obstet Gynecol Clin N Am*. 2006;33(4):535-47. Nusbaum NRH, Hamilton CD. The proactive sexual health history. *Am Fam Physician*. 2002; 66(9):1705-12. Tideman R, et al. Use of the Delphi sorting technique to establish a core sexual history. *Int J STD AIDS*. 2006;17(3):170-2.

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Skin Conditions 1

NOTE: This is a general guide for routine skin conditions. Many conditions have more serious presentations that may require more intensive care or even hospitalization.

HOW TO DESCRIBE COMMON LESIONS

	<1cm	≥ 1cm
Flat	Macule	Patch
Raised	Papule	Plaque
Solid	Nodule	Tumor
Fluid-filled	Vesicle	Bulla

Criteria for evaluating suspicious skin lesions

Asymmetry
Border irregularity
Color variation
Diameter
Evolving size, shape, surface

Melanoma will have at least one of these

Neoplastic	Basal Cell Carcinoma	Pearly papule/nodule, slow growing, sun-exposed regions
	Squamous Cell Carcinoma	Firm, tender, erythematous/scaly papule/plaque
	Malignant Melanoma	Irregular borders, heterogeneous color, >6mm in diameter

COMMON NOMENCLATURE

Primary Lesions: Directly caused by disease process	
Cyst	Epithelial-lined, semi-solid, fluid-filled
Pustule	Raised, filled with pus
Erosion	Disruption to epidermis, scar
Ulcer	Disruption to dermis, scar
Fissure	Linear cracks in skin
Scar	Normal tissue replaced by fibrosis
Wheal	Transient, compressible, edematous

Secondary Lesions: Injury, modifications of primary	
Scale	Fragments of outer layer of epidermis
Crust	Accumulation of dried exudate
Lichenification	Thickened epidermis
Atrophy	Thinning of skin

LIFE THREATENING SKIN CONDITIONS

Condition	Features	Management
Malignant Melanoma	See ABCD(E) criteria above	Excision
Necrotizing Fasciitis	Erythematous area lacking sharp borders; pain; disproportionate visible lesion	Transfer to ED. Surgical debridement, empiric antibiotics
Stevens-Johnson Syndrome/Toxic Epidermal Necrolysis	Rxn to meds or infections; cutaneous blistering; red patches with dark centre. May have skin detachment.	Remove offending agent; transfer patient to ED; patient may be admitted to ICU/Burn Unit; IVIG; immune suppression
Pemphigus Vulgaris	Flaccid bullae that rupture easily; starts in oral mucosa	Refer to Dermatologist; Immune suppression
Toxic Shock Syndrome	Diffuse severe rash on palms and soles; febrile; hypo-tensive; dehydrated (SHOCK!)	Activate EMS, hospital admission, IV antibiotics

ACNE	Mild	Several comedones and inflammatory lesions	Topical: salycylic acid, benzoyl peroxide, clinda
	Moderate	Multiple comedones and inflammatory lesions	Topical + oral antibiotics (tetracycline family)
	Severe	Widespread comedones and inflammatory lesions, nodulocycstic lesions and scarring	Isotretinoin, High dose oral antibiotics

Key References: Pochi PE, Shalita AR, Strauss JS, Webster SB, Cunliffe WJ, Katz HI, et al. Report of the Consensus Conference on Acne Classification. Washington, D.C., March 24 and 25, 1990. *J Am Acad Dermatol*. 1991;24(3):495-500.
Whited JD, Grichnik JM. Does This Patient Have a Mole or a Melanoma? *JAMA*. 1998;279(9):696-701.

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Skin Conditions 2

INFECTIOUS SKIN CONDITIONS

	Infection	Features	Management
Viral	HSV-1 (cold sore)	Oral & perioral vesicular or erosive lesions (may be HSV2).	Oral antivirals, topical therapy
	HSV-2 (genitals)	Clusters of vesicular or erosive lesions on external genitalia (may be HSV1).	Oral antivirals
	Herpes Zoster	Blistering vesicular lesions, dermatomal distribution & erythema/pain.	Oral antivirals
	Varicella (Chicken Pox)	Generalized vesicular rash. Mild fever, malaise. Be alert for 2° pneumonia (life threatening).	Supportive/comfort measures, oral antivirals
	Warts (HPV)	Firm, rough papule or nodule (may have end-on capillaries).	Topical therapy, cryotherapy
Bacterial	Cellulitis	Inflamed area; red, warm, swollen, tender.	Empiric antibiotics, cephalexin
	Erysipelas	Fiery red, pain, well defined edges.	Penicillin
	Impetigo	Honey-coloured crusted lesions.	Bactroban/oral antibiotics
Parasitic	Scabies	Intense pruritis, superficial linear burrows + inflamm papules in finger webs, wrist/elbows, axilla/groin.	Topical permethrin, Eurax (≤2 mo old), clean clothing and home
	Lice	Pruritic red excoriations, visible nits at hairline and behind ears.	Pyrethroids, clean clothing and home
Fungal	Tinea Corporis, Cruris, Pedis	Scaly pruritic round plaques with red margins.	Topical therapy, azole antifungal, terbinafine
	Onychomycosis/Tinea unguium	Nails: crumbling, dystrophic, yellow, opaque.	Systemic antifungal: terbinafine, itraconazole
	Candidiasis	Red patches with papules/satellite pustules in groin and breast areas.	Azole antifungal or mycostatin. Clean & dry
	Pityriasis versicolor	Hypo/hyperpigmented macules and patches – mostly on trunk.	Topical or oral antifungals (not terbinafine)

DERMATITIS

Infection	Features	Management
Atopic (eczema)	Chronic inflammatory condition	Emollients, topical steroids
Contact	Direct skin exposure to a substance, allergic or irritant	Avoid exposure; protective barriers, topical steroids

COMMON CHILDHOOD EXANTHEMS (Rashes)

Measles	Erythematous maculopapular rash. Starts on face, spreads to trunk, then limbs. Rash 5-7 days post fever/flu-like prodrome.
Scarlet Fever	Fever, rash 1-2 days post symptoms. Erythematous macules and pinpoint papules with sandpaper texture. "Strawberry tongue"
Rubella (German Measles)	Mild lymphadenopathy 1-5 days prior to rash. Pink pinpoint macules and papules.
Erythema Infectiosum (5th Disease)	"Slapped cheek" appearance, lacy body rash. Rash 3-7 days post fever/flu-like prodrome.
Roseola Infantum	Rash presents at resolution of a high fever. Erythematous maculopapular rash in shawl area.

Key References: Rao RD, McWilliams RR, et al. Malignant melanoma in the 21st century, part 1: epidemiology, risk factors, screening, prevention, and diagnosis. *Mayo Clin Proc*. 2007;82(3):364-80. Williams HC. Clinical practice. Atopic dermatitis. *N Eng J Med. 2005;352:2314-24.*

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Substance Addictions

Risk Factors for Chemical Dependency

- ❑ family history of addiction (child or sibling of addict)
- ❑ abuse survivors (physical, emotional, sexual)
- ❑ traumatic event or loss
- ❑ high-risk scenarios (gangs, sex-trade, raves)
- ❑ other addiction (gambling, internet, additional drugs)
- ❑ other psychiatric diagnosis

Psychiatric Disorders & Substance Addiction Neurobiology

- Individuals with **anxiety** are prone to self-medicate with alcohol, heroin, and/or benzodiazepines to lower their elevated levels of norepinephrine
- Individuals with **ADHD** are prone to self-medicate with marijuana, cocaine, and/or tobacco to elevate their lowered levels of dopamine

Stages of Change Timeline

QUIT DATE

	Precontemplation = not ready	Contemplation = < 6 mo	Preparation = < 30 d	Act/Maintain = 6 mo post quit
Potential Patient Concerns	Feeling of no control, lack of readiness, weighing costs versus benefits of behavior		Perceived barriers, experimenting with change	Relapse avoidance, feeling of demoralization
Clinician Role	Reflect with empathy, explore discrepancies between goals and resistance; offer self as future resource	Motivational interviewing techniques; support patient in change and ask about benefits and barriers	Recommend peer support; shift to behavioral strategies to overcome barriers (see below)	Develop plans to handle trigger scenarios for relapse: HALT (Hunger, Anger, Lonely, Tired)

Tobacco Cessation Treatment Options

① Lifestyle – 15 minute bursts of daily moderate activity; balanced diet

① Behavioral – identify and modify triggers associated with tobacco; document strategies along with a start date; plan titration of tobacco use, craving substitution; address any modifiable risk factors listed above

③ Nicotine Replacement Therapy – gum plus inhaler; patch takes 3 days for steady state so add mouth spray (e-cigarettes may increase relapse rate)

④ Medications – Varenicline 0.5mg qD 3d, 0.5mg bid 4d, 1mg bid 11wk
Bupropion SR 150mg qD 3d, 150mg bid 4d, 150mg bid 11wk

- Patients taking olanzapine or clozapine require antipsychotic dosage reductions of 30-40% to reduce risk of toxicity during smoking cessation
- Patients with schizophrenia or substance use disorders have smoking rates 70-80% (versus average rate 16-20% for Canadian adults and youth); expect and empathize with an increase in relapse rate

Educational Resources

Patients: Healthy Living tab at **www.healthycanadians.gc.ca** and 1-866-366-3667

Clinicians: CAN-ADAPTT through **www.nicotinedependenceclinic.com**

Key References: Zimmerman, GL, et al. A 'stages of change' approach to helping patients change behavior. *Am Fam Physician*. 2000.61(5):1409-16; Cohen S, et al. Disease Interrupted: Tobacco Reduction and Cessation- Psychosocial Interventions. (C Els, et al, Ed.). *CAMH*. 2012;CAN-ADAPTT:103-30; Kalman D, et al. Co-morbidity of smoking in patients with psychiatric and substance use disorders. Am J Addict. 2005;14(2):106-23.

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Type 2 Diabetes

Screening & Diagnosis

- screen adults ≥ 40 y.o. q3yr with FPG (fasting plasma glucose) and/or HbA1c
- screen ALL adults (FPG, 2hrOGGT, HbA1c) q1-2yr who have these risk factors: pre-diabetes, 1º family hx, high-risk population, complications associated with diabetes, vascular disease, gest. diabetes/macrosomic infant, HTN, dyslipidemia, obesity, PCOS, meds (corticosteroids, atypical antipsychotics)

T2DM diagnosed if one of:
- FPG ≥ 7.0 mmol/L
- 2hrOGTT ≥ 11.1 mmol/L
- HbA1c ≥ 6.5% (in adults)
- random glucose ≥ 11.1 mmol/L with symptoms (polyuria, polydipsia, weight loss)

***diagnosis must be confirmed with a 2nd test unless patient is metabolically decompensated*

Pre-Diabetes diagnosed if FPG is 6.1–6.9mmol/L, OGTT is 7.8–11.0mmol/L, or A1c is 6.0-6.4%

Surveillance After T2DM Diagnosed

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	** Do all at diagnosis	Ongoing Frequency
Physical Exam	fundoscopy	every 1 – 2 yrs. by optometrist/ophthalmologist
	blood pressure	each visit
	neuropathy screen	annually: check light touch/vibration in big toe
	foot exam	annually: skin changes/deformities/ROM/pedal pulses
Investigations	glucometer use	avoid hypoglycemia; personalize per pt: fasting 4.0-7.0mmol/L; postprandial 5.0-10.0 (8.0 if HbA1c >7.0%)
	HbA1c	every 3 months, goal ≤ 7.0%; (7.1-8.5% if elderly/frail/frequent hypog./short life expectancy)
	fasting lipids	annually (aim for LDL<2.0, or ↓ by at least 50%)
	urine microalbumin + creatinine (eGFR)	annually (every 6 months if chronic kidney disease)
	ECG	every 3-5 yrs unless <40yo AND N lipids/BP/waist/non-smoking; select stress ECG in some patients
Assess Regularly:	smoking cessation, erectile dysfunction, immunizations (flu, *S. pneumo*)	
	mental health (provide coping skills, screen for Dx with questionnaires)	
	self-management of disease (eg. medication compliance)	
	diet; weight control; exercise (patients should do *at least* 150min/wk of aerobic exercise AND 3x/wk of resistance exercise)	

Medication Management

Glucose Control / Insulin Resistance

- if HbA1c ≥ 8.5%, start meds at diagnosis: Metformin + [DPP-4 inhibitor or SGLT2 inhibitor or GLP1 rec. agonist]; **OR** straight to insulin (then taper if possible)
- if HbA1c 7.0-8.5%, trial of 3 months of lifestyle changes, then Metformin
- **target HbA1c: ≤7.0%** within 3mo of tx; if reached, congratulate pt & monitor

Complications & Co-Morbidities

- **hypoglycemia:** educate pt regarding symptoms; ensure pt has carbs on-hand
- **HTN** (i.e. BP > 130/80)**:** ACEi ***OR*** ARB (monitor creatinine; **NEVER** give together), then try DHP CCB, thiazide-like diuretic, ß-blocker or non-DHP CCB in that order
- **dyslipidemia**: tx with statin; add fibrate if Total Cholesterol >10.0
- **albuminuria**: ACEi or ARB if creat. clearance >30, careful/refer if <30; stop if hypo-volemic/severely ill; check creatinine & [K+] in 2wks then re-check periodically
- **painful neuropathy**: antidepressant/TCA/anticonvulsant/nitrate spray; reserve opioid analgesics for rare scenarios given risks of dependence, abuse, s/e, etc.
- **erectile dysfunction**: PDE5 inhibitor if no contraindications (e.g. nitrate use); search for hypogonadism, other causes if not effective

Key Reference: Diabetes Canada. 2018 Clinical Practice Guidelines for the Prevention and Management of Diabetes in Canada. *Can J Diabetes.* 2018;42(Suppl 1):S1-S342.