# Primary Care Clinical Guide

www.aubmc.org

American University of Beirut
Department of Family Medicine

1902 AUBMC
AMERICAN UNIVERSITY of BEIRUT MEDICAL CENTER
المركز الطبي في الجامعة الأميركية في بيروت

Our lives are dedicated to yours

# Primary Care Clinical Guide

**English Version**
**2011**

**American University of Beirut**
**Department of Family Medicine**

**http://www.aub.edu.lb/~webfamed/**

# Contributors

**Editors:** **Ghassan Hamadeh, MD, CPE -** Professor & Chair
**Jumana Antoun, MD** – Instructor
Department of Family Medicine, American University of Beirut

**Contributing authors (by alphabetical order):**

| | Chapters | Academic affiliation |
|---|---|---|
| Alaa Abul-Hosn | Bronchiolitis, Croup, Tuberculosis | Resident |
| Jumana Antoun | Diabetes Mellitus, Heart failure, Hypertension | Instructor |
| Khalil Ashkar | Back pain, Breast nodule, Depression, Thyroid nodule | Associate faculty |
| Hiba Bzeih | Back pain, Breast nodule, Depression, Thyroid nodule | Resident |
| Dima Dandachi | Dyspepsia, Peptic ulcer, Periodic health examination, Sinusitis | Resident |
| Pascale Karam | Burns, Diarrhea in children, Fever under 3 years | Assistant Professor Pediatrics |
| Beatrice Khater | Dysmenorrhea, Red eye | Associate faculty |
| Najla Lakkis | Asthma, Panic disorder, Pneumonia, Incontinence | Associate faculty |
| Nisrine Makarem | Back pain, Breast nodule, Depression, Thyroid nodule | Resident |
| Umayya Musharrafieh | Bronchiolitis, Croup, Tuberculosis | Associate Professor |
| Fadila Naji | Contraception, Menopause & Osteoporosis, Prenatal care, Vaginal discharge | Resident |
| Diana Rahme | Acne | Associate faculty |
| Jibrael Razzouk | Bronchitis, Dysuria, Headache, Hematuria, Pharyngitis | Associate faculty |
| Maya Romani | Dyslipidemia, Obesity, Otitis Media, Vaccines | Chief Resident |
| Bassem Saab | Dyspepsia, Peptic ulcer, Periodic health examination, Sinusitis | Professor |
| Durriyah Sinno | Childhood exanthems, Well child | Assistant Professor Pediatrics |
| Zeinab Toufaili | Abdominal pain, Constipation, URI | Resident |
| Jinan Usta | Contraception, Menopause & Osteoporosis, Prenatal care, Vaginal discharge | Assistant Professor |

# Introduction

This is the second edition of the Primary Care Guidelines for Lebanon. The first edition was published in 2000 through a large collaborative effort among the Lebanese Society of Family Medicine, the Departments of Family Medicine at the American University of Beirut and Universite St. Joseph, the Ministry of Public Health and the Lebanese Order of Physicians. The "Guidelines" were a success among generalists in Lebanon and mostly with students and residents.

Since 2000, we attempted rallying past authors and reviewers and it was only with the enthusiasm of Family Medicine residents that we were able to complete this edition.

Praise to those residents who worked hard to distill information in an easily readable document that could provide the readers with critical ambulatory care information just in time while caring for their patients. Praise also to our clinicians and faculty who reviewed the documents with the residents and particularly to Dr. Jumana Antoun who tediously cleaned the manuscript to unify its style.

I hope you will find this handbook useful. The editors and writers have made every effort to avoid errors or outdated information. However, medicine is an ever changing topic, so we encourage you to verify information provided before you apply it to your patients and to kindly inform us of any errors in printing or content.

March 2011

Ghassan Hamadeh, MD, CPE
Associate Dean for Ambulatory Programs
Professor and Chair, Family Medicine
Faculty of Medicine
American University of Beirut
famed@aub.edu.lb
http://www.aub.edu.lb/~webfamed/

# Table of contents

# Abdominal pain evaluation

Zeinab Toufaili

## Differential diagnosis

1. **Upper abdominal pain**
    - Biliary disease
    - Acute pancreatitis
    - Dyspepsia/peptic ulcer disease
    - Pneumonia
    - Myocardial infarction
    - Splenic abscess or infarction
2. **Lower abdominal pain**
    - Appendicitis
    - Diverticular disease
    - Kidney stones
    - Bladder distention
    - Pelvic pain
    - Irritable bowel syndrome
3. **Diffuse abdominal pain**
    - Mesenteric ischemia and infarction
    - Rupture aneurysm
    - Peritonitis
    - Intestinal obstruction
    - Irritable bowel syndrome
4. **Abdominal pain in women**
    - Pelvic inflammatory disease
    - Adnexal pathology
    - Endometriosis
    - Ectopic pregnancy
    - Endometritis
    - Leiomyomas
5. **Abdominal pain in children and adolescents**
    1. ***Acute***
        - Appendicitis
        - Trauma
        - Intussusception
        - Malrotation with midgut volvulus
        - Incarcerated inguinal hernia
        - Necrotizing enterocolitis
        - Ruptured ovarian cyst
        - Foreign body ingestion
        - Urinary tract infection

2. ***Chronic***
    - Lactose intolerance
    - Giardiasis
    - Constipation
    - Psychological

## History

1. Pain description (temporal character, quality, severity, radiation, alleviating and exacerbating factors)
2. Associated symptoms of fever, nausea and vomiting, urinary symptoms, diarrhea
3. Gynecologic and sexual history

## Physical examination

1. General: blood pressure; temperature; pulse
2. Check level of distress
3. Signs suggestive of peritonitis
    a. Unwilling to change position
    b. Pain upon hip and knee flexion
    c. Shallow breathing
4. Abdominal examination
5. Pelvic examination
6. Rectal examination

## Specific signs

| Sign | Description | Clinical condition |
|---|---|---|
| Murphy's | Cessation of inspiration during right upper quadrant examination | Cholecystitis |
| McBurney's | Tenderness located midway between the anterior superior iliac spine and umbilicus | Appendicitis |
| Obturator | Pain with flexed right hip rotation | |
| Psoas | Pain when raising a straight leg against resistance | |
| Cullen's | Periumbilical bluish discoloration | Retroperitoneal hemorrhage<br>Pancreatic hemorrhage<br>Abdominal Aortic Aneurysm |
| Grey Turner's | Bluish discoloration of the flanks | |
| Kehr's sign | Severe left shoulder pain | Splenic rupture<br>Ectopic pregnancy rupture |

## Laboratory tests

1. Every acute abdominal pain should have a complete blood count (CBC) and urinalysis
2. Additional tests should be tailored to the clinical presentation of the patient

## Imaging Tests

Imaging tests are not always needed, yet sometimes maybe of prime importance:

a. Plain X-rays: chest (whenever pneumonia is suspected) and abdomen (in which pneumoperitonium, gas-fluid levels, fecalith, gallstones, urinary stones, ascites and obliteration of the psoas shadows are suspected).
   The yield of plain films is 10%.
b. Ultrasound vs. CT scan

| ***Location of pain*** | ***Imaging*** |
|---|---|
| Right upper quadrant | Ultrasonography |
| Left upper quadrant | CT |
| Right lower quadrant | CT with IV contrast media |
| Left lower quadrant | CT with oral and IV contrast media |
| Suprapubic | Ultrasonography |
| *CT =computed tomography; IV = intravenous.* | |

## Pearls

1. Use low threshold for admitting elderly for observation
   a. Elderly might not show fever; have delay in leukocytosis
2. Specific warning signs:
   a. Low back pain in the elderly: abdominal aortic aneurysm
   b. Atrial fibrillation and abdominal pain: mesenteric ischemia
3. Most commonly missed surgical diagnoses
   a. Appendicitis
   b. Small bowel obstruction

## Management

1. Do not delay adequate analgesia
2. Surgery consultation indications:
   a. Severe or progressive abdominal pain
   b. Bile stained vomitus
   c. Abdominal guarding or rigidity
   d. Abdominal rebound tenderness
   e. Abdominal distention and increased tympanicity
   f. Significant traumatic injury to abdomen
   g. Abdominal pain of unclear etiology
   h. Intra-abdominal fluid accumulation

## Summary of common causes of acute abdominal pain

| Condition | Onset | Location | Character | Diagnostics | Treatment |
|---|---|---|---|---|---|
| Appendicitis | Gradual | Periumbilical early; RLQ late | Diffuse early; localized late | CBC, Ultrasound, CT | Appendectomy |
| Cholecystitis | Rapid | RUQ | Localized | CBC, LFTs, Bilirubin | IV fluid; antibiotics, bowel rest, cholecystectomy |
| Pancreatitis | Rapid | Epigastric, back | Localized | CBC, amylase; lipase | IV fluid; antibiotics, bowel rest |
| Diverticulitis | Gradual | LLQ | Localized | CBC, CT | Bowel rest and antibiotics |
| Perforated peptic ulcer | Sudden | Epigastric | Localized early, diffuse late | CBC, plain X-ray, CT | Immediate surgery |
| Small bowel obstruction | Gradual | Periumbilical | Diffuse | CBC, plain X-ray, CT | Bowel rest, IV fluids, NG decompression, close observation for need of surgery |
| Mesenteric ischemia/infarction | Sudden | Periumbilical | Diffuse | CBC, CT angiography | Surgery |
| Ruptured abdominal aortic aneurysm | Sudden | Abdominal, back, flank | Diffuse | Hypotension, pulsatile mass and abdominal pain | Emergency surgery |
| Pelvic inflammatory disease | Gradual | Either LLQ, pelvic | Localized | CBC, pelvic exam | Antibiotics |

CBC: complete blood count, CT: computed tomography, IV: intravenous, NG: nasogastric tube, RLQ: right lower quadrant, RUQ: right upper quadrant, LLQ: left lower quadrant

## References


1. Goroll AH, Mulley AG, eds. *Primary care medicine office evaluation and management of the adult patient*. 6th ed. Philadelphia: Wolters Kluwer/Lippincott Williams & Wilkins; 2009.
2. Feldman M, Friedman LS, Brandt LJ. Acute abdominal pain. In: *Sleisenger & Fordtran's Gastrointestinal and liver disease: pathophysiology, diagnosis, management*. 8th ed. Philadelphia: Saunders; 2006.
3. Cartwright SL, Knudson MP. Evaluation of acute abdominal pain in adults. *Am Fam Physician.* 2008;77(7):971-978.

# Acne

Diane Rahme

## Definition and epidemiology

Acne vulgaris is a chronic inflammatory disorder of the pilosebaceous follicles. It results from obstruction of follicles by excessive amounts of keratinaceous material and sebum, and the production of chemical mediators leading to inflammation by the skin resident anaerobe (Propionebacterium acnes).

## Classification

1. Acne is classified according to the predominant lesions into:
    a. Stage 1: Comedonal Acne
    b. Stage 2: Papular Acne
    c. Stage 3: Pustular Acne
    d. Stage 4: Nodulo-cystic Acne
2. Acne is also classified according to the severity into:
    a. Mild: small papules and comedones, no nodules
    b. Moderate: papules predominate, with few nodules and rare cysts
    c. Severe: nodules and cysts predominate

## History

1. Initial visit:
    a. Duration of the condition, location, relationship to seasonal variation and stress. A family history of acne should be established
    b. Other skin diseases, drug allergies, general health, intake of any medications and previously used acne therapies
    c. Menstrual history, use of oral contraception, pregnancy status, use of cosmetics
    d. Abnormal hair growth and voice changes, temporal balding
2. Follow up:
    a. Ask about response to treatment, compliance with therapy and side effects of medications

## Physical examination

1. Initial visit:

Describe the number, location (face, upper chest, back, and other sites) and morphology of lesions as follows:

    a. Closed comedone or whitehead: whitish, slightly palpable pinhead sized 1-3 mm in diameter
    b. Open comedone or blackhead: flat or slightly raised, brownish or black measuring up to 5 mm in diameter
    c. Papules: red, may be tender, elevated lesions as large as 5 mm in diameter
    d. Pustules: superficial papules containing pus
    e. Nodules: solid, inflammatory lesions that exceed 5 mm in diameter deep in the dermis
    f. Cysts: large suppurated nodules
    g. Scars: sequelae of inflammation, may appear as atrophic or hypertrophic
2. Follow-up:
    Number and location of lesions

## Diagnosis

1. **Acne rosacea:** occurs in middle-age, gradual onset, exacerbated by cold temperature, hot or spicy food and stress, not associated with plugged sebaceous follicle or comedone formation, and most common complaint is skin redness and/or flushing

2. **Gram-negative folliculitis:** papules and superficial pustules are present, associated with long-term antibiotics use
3. No tests are indicated unless Isotretinon is used, then the following tests are necessary:
   a. Serum pregnancy test one week before starting course
   b. Complete blood count before starting course Lipid profile and liver function tests before starting course, at two weeks then monthly until response to medication is established
4. In females with severe acne and virilizing symptoms and/or irregular menses, diagnostic tests include free testosterone, androstenedione, DHEAS, FSH, and LH

## Management

The treatment goal is to prevent new lesions and scarring, improve the physical appearance, and preserve the psychosocial well-being.

### Mild Acne

1. Start with Tretinoin (Retin-A) 0.025% cream or 0.01% gel at night for two weeks
   Side effects: dryness, scaling, erythema, burning, irritation, photosensitivity
2. Add either Benzoyl peroxide 5%, 10% (Oxy 5, Oxy 10) in the morning
   Side effects: erythema, peeling, contact dermatitis, dryness
3. Or topical antibiotics such as erythromycin, or clindamycin twice daily
   Side effects: local irritation, stains cloths
4. Or both

### Moderate Acne

1. Add to the above regimen any of the following oral antibiotics:
   a. Doxycycline 50 to100 mg bid on empty stomach
   b. Erythromycin 250 to500 mg bid
   c. Minocycline 50 mg qd or bid
2. Response needs 6 to 8 weeks. Should be continued until resolution of inflammation
3. Consider adding an oral contraceptive containing 0.035 mg of ethinyl estradiol combined with the triphasic regimen of norgestimate in women with no known contraindication to oral contraceptive therapy

### Severe Acne

Same as for moderate plus/or any of the following:
1. Isotretinoin 0.5-2 mg/kg/day divided in 2 doses for 15 to 20 weeks
2. Refer for intralesional injection of Triamcinolone
3. Refer for surgical comedone removal

## Therapeutic options

### Topical agents

Used in mild to moderate acne – first line treatment

#### *Comedolytic agents (Benzoyl peroxide)*

1. 2%, 5% and 10% concentration
2. Liquid and cream forms are less irritating, gel is better for oily skin
3. Apply to clean dry skin, twice a day or only at bedtime

#### *Antibiotics*

1. Clindamycin (1% lotion or gel): applied twice daily
2. Erythromycin (2% gel): applied twice daily
3. Azeleic Acid (Azelex, Fostex), 20% cream: apply bid, less irritating than others
4. Tretinoin, (Retin-A)
   a. Especially good for open and closed comedones
   b. Apply daily
   c. Start with lowest strength available and increase dose every 2 to 3 weeks if necessary
   d. May be combined as benzoyl peroxide in AM, Retin A in PM

**Systemic agents**

Used in moderate and severe acne

***Antibiotics***

1. Tetracycline: 250 mg PO QID or 500 BID
2. Erythromycin: 250 mg QID, may not work with pustular acne
3. Minocycline: 50 mg BID or 100 mg daily, may cause dizziness or color changes
4. Trimethoprim/Sulfamethoxazole: used for refractory cases

***Retinoids***

Isotretinoin (Accutane®)

1. Synthetic vitamin A derivative for severe acne
2. Dramatic clearing with prolonged periods of remission in severe acne
3. Reduction of sebum, anti-inflammatory, and corrects altered keratinization
4. Side effects: dry skin and mucous membranes, decreased night vision, hair loss, liver function abnormalities, hyperlipidemia, vertebral hyperostosis
5. Major teratogen - full contraception is absolutely required, no effects on sperm
6. Serum beta HCG must be done to rule out pregnancy before prescribing
7. Informed consent required and adequate contraception must be used

***Hormonal therapy***

Anti-androgens (e.g. oral contraceptives with spironolactone)

## When to refer

1. Severe acne
2. No response to treatment
3. Complications and correction of scarring
4. Use of isotretinoin

## Patient education

**Prevention**

No evidence of any specific measure to prevent acne exists. However, it is believed that environmental factors such as humidity, excessive sweating or scrubbing, use of harsh soaps, some cosmetics and medications may cause or make acne worse.

**Treatment and compliance**

1. Explain causes and pathogenesis of acne
2. Explain purpose of treatment: control rather than cure
3. Give "general care measures" instructions:
   a. Limit face washing to twice daily
   b. Do not pick face or squeeze comedones
   c. Avoid make-up, but if necessary, use only water-based ones and wash them off in the evening
4. Instruct about proper use of topical agents:
   a. More is not better
   b. Apply agent 20 min. after gently washing and thoroughly drying the face, and 30 min. before going to bed
5. Explain possible side effects
6. Give oral and written instructions
7. Emphasize that improvement may not be noticed before 4-8 weeks

8. Answer questions and correct myths:
   a. Acne is not a sign of poor hygiene
   b. Acne is not an infection
   c. Diet does not affect acne
   d. Sunlight may affect acne
   e. Take the opportunity to talk with adolescents about other health issues: sex, smoking, drug and alcohol abuse, accidents and violence

## References


1. Feldman S, Careccia RE, Barham K, Hancox J. Diagnosis and treatment of acne. *Am Fam Physician.* 2004;69(9):2123-30,2135-6.
2. Strauss JS, Krowchuk DP, Leyden JJ, et al; American Academy of dermatology/ American Academy of Dermatology Association. Guidelines of care for acne vulgaris management. *J Am Acad Dermatol*. 2007;56(4):651-63.

# Asthma

Najla Lakkis

## Definition and epidemiology

1. Bronchial asthma is a chronic inflammatory disorder characterized by variable and usually reversible airway obstruction related to airway hypersensitivity.
2. Prevalence of asthma is estimated at 10-12 % of the population with only about 6% actually labeled asthmatics and up to 80% of those are being under treated.
3. Around 20 % of identified asthmatics have fairly severe disease, 40% moderate, 20 % mild and 20% variable severity.

## Pathophysiology

Asthma is characterized by:

1. Recurrent episodes of wheezing, breathlessness, chest tightness, and cough
2. Reversible airflow obstruction, either spontaneously or with treatment
3. Airway smooth muscle bronchoconstriction
4. Airway edema and inflammation (eosinophilic)
5. Bronchial hyperresponsiveness to a variety of triggering stimuli
6. Airway remodeling

## History

History taking in asthma aims at:

1. Confirming diagnosis
    a. Look for symptoms or key indicators such as episodic chronic dyspnea, cough, wheezing, and chest tightness that worsens at night or in the early morning.
    b. Look for triggers that may be allergens (e.g. dust mites, molds, cockroaches, animals with fur or hair, or pollen) or non-allergic precipitants (e.g. exercise, cold air, common cold, stress, gastroesophageal reflux, second-hand smoke, and drugs like Aspirin, NSAIDs, Beta-Blocker, Morphine).
2. Identifying severity of illness
    a. Pattern of symptoms: perennial/ seasonal, episodic/ continual, diurnal/ nocturnal
    b. Severity, frequency, and duration of symptoms: number of symptom episodes per week, change in activity associated with symptoms, hospitalization and emergency room visits.
3. Assessing the patient and family's familiarity and coping skills about the disease.
    a. Knowledge and compliance (previous treatment and response; side effect from treatment; difficulties in compliance with treatment; handling of attacks; family or emotional problems).

## Physical examination

1. Upper respiratory tract: increased nasal secretion, mucosal swelling, and/or nasal polyp
2. Chest and heart: prolonged expiration and diffuse wheezes throughout both lung fields, and sometimes hyper expansion of the thorax, and signs of respiratory distress
3. Skin: color, clubbing/fingers, atopic dermatitis/eczema

## Differential diagnosis

**("Not all that wheezes is asthma…")**

1. Mechanical airway obstruction or structural airway abnormalities (e.g. tumor)
2. Laryngeal or vocal cord dysfunction (e.g. due to gastroesophageal reflux disease or postnasal drip)
3. Chronic obstructive pulmonary disease; congestive heart failure; vasculitis (consider in older patients with new diagnosis of "asthma")

4. Other pulmonary causes: pulmonary embolism; bronchiectasis; aspiration; sarcoidosis; interstitial lung disease; pulmonary infiltration with eosinophilia
5. Cough secondary to drugs (e.g. ACE inhibitors)
6. Conversion disorder

## Diagnosis

To establish a diagnosis of asthma, the clinician should determine that:
1. Episodic symptoms of airflow obstruction or airway hyperresponsiveness are present.
2. Airflow obstruction is at least partially reversible.
3. Alternative diagnoses are excluded.
4. Spirometry to demonstrate obstruction and assess reversibility in every patient > 5 years of age.

## Evaluation

1. Spirometry (FEV1, FVC, FEV1/FVC) is recommended before and after the administration of a short-acting bronchodilator in every patient > 5 years of age at the time of initial diagnosis. Significant reversibility is indicated by an increase of more than 12% and 200 ml in FEV1 after inhaling a short-acting bronchodilator.
2. Pulse oximetry and peak expiratory flow (PEF) measurement help establish the severity of an exacerbation and document treatment response.
3. ABG measurements should be obtained in patients with marked respiratory distress or signs and symptoms of impending respiratory failure.
4. Additional pulmonary function studies (if suspicion of COPD, emphysema, restrictive defect, vocal cord dysfunction, or possible central airway obstruction). e.g. DLCO is normal or elevated in asthma and usually reduced in COPD, particularly in patients with emphysema
5. Chest X-Rays may help exclude some causes of asthma or alternative diagnosis such as pneumonia or pneumothorax or heart failure.
6. Allergy testing and measurement of allergen specific IgE (RAST) if history suggestive of allergic triggers. Elevated blood eosinophils (>400cells/microL) and non-specific IgE (>150IU) are suggestive but not diagnostic of allergic asthma as they can be elevated in other conditions.
7. Sinus x-rays or CT scan if suspicion of sinusitis
8. GERD evaluation
9. Sputum evaluation for eosinophils is rarely done

## Management

1. Identify and control precipitating or trigger factors because they may be targets for avoidance therapy.
2. Identify and control co-morbidities that may aggravate asthma: smoking; obesity; allergic rhinitis; sinusitis; GERD; COPD (e.g. chronic bronchitis or emphysema); CHF; drug sensitivities (Beta Blockers; Aspirin; NSAIDs); psychiatric illness.
3. Assess the patient's knowledge and skills for self-management.
4. Classify asthma severity and manage accordingly (refer to tables)
5. Educate patient about asthma, avoidance of triggers, severity, and home management.
6. Assess and manage psychosocial factors including a history or symptoms of anxiety or depression, attitudes toward asthma and asthma therapy, adherence to therapy, and social support.

**Asthma Severity Classification**

| | | Intermittent | Persistent | | |
|---|---|---|---|---|---|
| | | | **Mild** | **Moderate** | **Severe** |
| Symptoms | | ≤ 2 days / week | >2 days/week, Not daily | Daily | Throughout the day |
| Nighttime awakenings | Age≥5years | ≤ 2 days / month | 3-4 times/month | >1time/week, not nightly | Often 7 times/week |
| | Age:0-4years | 0 | ≤ 2 days/week | 3-4 times/month | >1 time/week |
| Short Acting β2 agonist use for quick relief of symptoms | | ≤ 2 days / week | >2 days/week, Not daily | Daily | Several times per day |
| Interference with normal activities | | None | Minor | Some | Extreme |
| Lung Function *(N/A if Age<4 years)* | | Normal $FEV_1$ between exacerbations | | | |
| Normal FEV1/FVC: 8-19 yr: 85% 20-39 yr: 80% 40-59 yr: 75% 60-80 yr: 70% | | $FEV_1$ > 80% predicted | $FEV_1$ >80% predicted | $FEV_1$>60% &<80% predicted | $FEV_1$<60% predicted |
| | | $FEV_1$/FVC: normal | $FEV_1$/FVC: normal | $FEV_1$/FVC reduced 5% | $FEV_1$/FVC reduced > 5% |
| Key: FEV1, forced expiratory volume in 1 second; FVC, forced vital capacity | | | | | |

**Stepwise Approach for managing asthma in youths and adults**

(NHLBI Guidelines)

| Intermittent Asthma | Persistent Asthma: Daily medication<br>Consult with asthma specialist if step4 care or higher is required.<br>Consider consultation at step 3 | | | | |
|---|---|---|---|---|---|
| Use SABA as needed for all patients | | | | | |
| **Step 1**<br>Preferred:<br>SABA PRN | **Step 2**<br>Preferred:<br>Low-dose ICS<br><br>Alternative:<br>LTRA or<br>Cromolyn or<br>Nedocromil or<br>Theophylline | **Step 3**<br>Preferred:<br>Low-dose ICS<br>+LABA<br>or<br>Medium-dose ICS<br><br>Alternative:<br>Low-dose ICS<br>+LTRA or<br>Theophylline or<br>Zileuton<br>*(N.B. Zileuton if age > 11years)* | **Step 4**<br>Preferred:<br>Medium-dose ICS<br>+LABA<br><br>Alternative:<br>Medium-dose ICS<br>+LTRA or<br>Theophylline or<br>Zileuton<br>*(N.B. Zileuton if age > 11years)* | **Step 5**<br>Preferred:<br>High-dose ICS<br>+LABA<br>AND<br>Consider<br>Omalizumab for<br>patients >11 years<br>who have allergies<br><br>Alternative if age < 12 years:<br>High-dose ICS<br>+LTRA or<br>Theophylline | **Step 6**<br>Preferred:<br>High-dose ICS<br>+LABA<br>+Oral<br>Corticosteroids<br>AND<br>Consider<br>Omalizumab for<br>patients >11 years<br>who have allergies<br><br>Alternative if age < 12 years:<br>High-dose ICS<br>+LTRA or<br>Theophylline<br>+Oral<br>Corticosteroid |

Key **Alphabetical order is used when more than one treatment option is listed within either preferred or alternative therapy.** ICS inhaled corticosteroid; LABA long acting inhaled beta2-agonist; LTRA leukotriene receptor antagonist; SABA inhaled short-acting beta2-agonist.

Modified from National Heart, Lung, and Blood Institute National Asthma Education and Prevention Program Highlights of the Expert Panel Report 3; Guidelines for the Diagnosis and Management of Asthma.

## Usual Dosages For Asthma Medications

### 1. Quick relief medications

| Family | Generic (*Trade*) & Form (Lebanon) | Usage |
|---|---|---|
| Short-Acting $\beta_2$- agonists (SABA) | MDI<br>Albuterol or Salbutamol<br>(*Ventolin; Butalin; Butovent)*<br>100 mcg/puff,<br><br>Nebulizer solution<br>Albuterol or Salbutamol (*Ventolin*)<br>5 mg/ml (0.5%) | For all Ages<br>2 puffs 5 minutes before exercise<br>2 puffs every 4–6 hours, as needed for symptoms<br><br>Age > 4 years<br>1.25–5 mg in 3 cc of saline q 4–8 hours, as needed<br>Age 0-4 years<br>0.63–2.5 mg in 3 cc of saline q 4–6 hours, as needed |
| Anticholinergics | MDI<br>Ipratropium (*Atrovent N; Atem*)<br>20 mcg/puff<br>Nebulizer solution<br>Ipratropium (*Atrovent*)<br>0.25 mg/ml (0.025%)<br><br>Capsule, inhalation<br>Tiotropium bromide *(Spiriva)*<br>18 mcg/capsule | Age 0-4 years Not applicable<br>Age > 4 years 2puffs q 6 hours<br><br>Age 0-4 years Not applicable<br>Age > 4 years 0.25 mg q 6 hours<br><br>Adults :18mcg once daily |
| SABA+ Anticholinergics | MDI *(Combivent)*<br>18 mcg Ipratropium<br>+90 mcg Albuterol/puff<br><br>Nebulizer solution *(Combivent)*<br>0.5 mg/3 ml Ipratropium<br>+2.5 mg/3ml Albuterol/puff | Age 0-4 years Not applicable<br>Age > 4 years 2–3 puffs q 6 hours<br><br>Age 0-4 years Not applicable<br>Age > 4 years 3ml q 4-6 hours |

## 2. Inhaled Corticosteroids

| **Generic name and form** (*Trade name*) | **Age (years)** | **Low Daily Dose** | **Moderate Daily Dose** | **High Daily Dose** |
|---|---|---|---|---|
| **Beclomethasone HFA** *(Clenil Forte 250mcg/puff)* | 0-4<br>5-11<br>>11 | NA<br>80–160 mcg<br>80–240 mcg | NA<br>>160–320 mcg<br>>240–480 mcg | NA<br>>320 mcg<br>>480 mcg |
| **Budesonide DPI** *(Pulmicort 200 mcg/puff)* *(Sonidar 200 mcg/puff)* | 0-4<br>5-11<br>>11 | NA<br>180–400 mcg<br>180–600 mcg | NA<br>>400–800 mcg<br>>600–1200 mcg | NA<br>>800 mcg<br>>1200 mcg |
| **Fluticasone** (*Flixotide Inhalation Suspension 50, 125, or 250 mcg/inhalation suspension*) | 0-4<br>5-11<br>>11 | 176 mcg<br>88–176 mcg<br>88–264 mcg | >176–352 mcg<br>>176–352 mcg<br>>264–440 mcg | >352 mcg<br>>352 mcg<br>>440 mcg |
| *(Discus 100, or 250 mcg/inhalation powder)* | 0-4<br>5-11<br>>11 | NA<br>100–200 mcg<br>100–300 mcg | NA<br>>200–400 mcg<br>>300–500 mcg | NA<br>>400 mcg<br>>500 mcg |
| **Mometasone DPI*** 200 mcg/inhalation | 0-4<br>5-11<br>>11 | NA<br>NA<br>200 mcg | NA<br>NA<br>400 mcg | NA<br>NA<br>>400 mcg |

Key DPI, dry power inhaler; HFA, hydrofluoroalkane; ;
NA, not available (either not approved, no data available, or safety and efficacy not established for this age group)

### 3. Long term medications

| Family | Generic & Form | Usage |
|---|---|---|
| **Oral Corticosteroids *for 3-10 days*** | Methylprednisolone<br>*(Medrol 4mg tablets)* | • Age 0-11years 0.25-2mg/kg daily in single morning dose<br>• Age ≥12 years 7.5–60 mg daily in a single morning dose<br>• Short-course "burst" to achieve control |
| | Prednisone tablets<br>*(Cortancyl 5 or 20 mg)*<br>*(Predicor 5,10, 20, or 50 mg)*<br>*(Prednisone 5,10, 20, or 50 mg)* | • Age 0-4 years 1-2mg/kg/day (max 30mg/day) for 3-10 days<br>• Age 5-11years 1-2mg/kg/day (max60mg/day) for 3-10 days<br>• Age ≥12 years 40–60 mg/ day as single or 2 divided doses |
| | Dexamethasone<br>*(Oradexon 0.05 mg/ml)*<br>*(Decadron 0.5 mg/5ml)* | • Age 0-11years 0.15-0.3 mg/kg/d in 3-4 divided doses |
| **Long-Acting $\beta_2$-agonists (LABA)** | Salmeterol (*Serevent*)<br>25 mcg/puff<br>50mcg/discus | • Age 0-4 years NA<br>• Age ≥ 5 years 2 puffs (inhalation suspension) q 12 hours or 1 discus (inhalation powder) q 12 hours |
| | Formoterol<br>(*Foradil* 12 mcg/capsule, inhalation)<br>(Oxis 4.5 or 9mcg/inhalation) | • Age 0-4 years NA<br>• Age ≥ 5years 1 blister (12mcg inhalation powder) q 12 hours |
| **Combined Medications** | Fluticasone & Salmeterol (*Seretide*)<br>100 mcg & 50 mcg/inhalation<br>250 mcg &50 mcg<br>500 mcg & 50 mcg | • Age 0-4 years NA<br>• Age ≥ 5years 1 inhalation q12 hours; dose depends on level of severity or control |
| | Budesonide/Formoterol (*Symbicort*)<br>160mcg & 4.5 mcg/inhalation | • Age 0-4 years NA<br>• Age ≥ 5years 2 puffs q12 hours; dose depends on level of severity or control |
| **Methylxanthines** | Theophylline | • Age 0-1 years Starting dose 10 mg/kg/day;<br>usual maximum0.2 (age in weeks)+5= mg/kg/day<br>• Age >1 to 11 years Starting dose 10 mg/kg/day;<br>usual maximum 16 mg/kg/day<br>• Age ≥12years Starting dose 10 mg/kg/day up to 300 mg maximum;<br>usual maximum 800 mg/day |

## Management of asthma exacerbations

1. Oxygen to relieve hypoxemia in moderate or severe exacerbations. Titrate to achieve $S_aO_2$ >90%.
2. SABA (Albuterol) to relieve airflow obstruction (4-8 puffs q20minutes or nebulizer 2.5-5mg q20minutes (continuous nebulizer if severe).
3. Add Ipratropium in severe cases 4-8 puffs q 20minutes or nebulizer 0.5mg q20minutes x 3 times.
4. Systemic corticosteroids (IV not superior to oral) to decrease airway inflammation in moderate or severe exacerbations or for patients who fail to respond promptly and completely to a SABA.
5. Consideration of adjunct treatments, such as IV Mg sulfate or Heliox (e.g. 2g IV over 20min in adult patients), in severe exacerbations unresponsive to the initial treatments listed above. Notice that
   a. Epinephrine s/c no advantage over inhaled beta-2 agonists.
   b. Antibiotics not needed unless evidence of bacterial infection.
   c. IV Montelucast/Zafirlucast improves FEV1 acutely. Decrease relapse after discharge from emergency department.
6. Monitoring response to therapy with serial measurements of lung function and preventing relapse of the exacerbation or recurrence by providing referral to follow-up asthma care within 1–4 weeks.

## Desired outcomes

1. Prevent chronic or troublesome symptoms (e.g. coughing or breathlessness in the daytime, in the night, or after exertion).
2. Minimize use of short acting beta agonists to ≤2 times/week.
3. Maintain 'near' normal pulmonary function.
4. Maintain normal activity levels.
5. Education for a partnership in asthma care.
6. Control of environmental factors and comorbid conditions that affect asthma.
7. Meet patients' and families' expectations of and satisfaction with asthma care.
8. Prevent recurrent exacerbations and minimize urgent care/ER visits and hospitalizations.
9. Prevent loss of lung function.
10. Provide optimal pharmacotherapy with minimal adverse effects.

## Scheduled routine follow-up care

1. Review medication use
2. Review peak flow records
3. Demonstrate inhaler, spacer and peak flow meter technique
4. Review self-management plan
5. The exact frequency of clinician visits is a matter of clinical judgment.

| Severity | Regular follow- up visit |
|---|---|
| Mild Intermittent | 6- 12 months |
| Mild Persistent | 6 months |
| Moderate Persistent | 3 months |
| Severe Persistent | 1 to 2 months and as often as needed to establish control |

## When to refer

1. Life-threatening exacerbation
2. Poor response to initial management
3. Unclear diagnosis
4. Atypical symptoms suggesting anatomic abnormality or foreign body
5. History suggests occupational factors, environmental inhalant or an ingested substance
6. Initial diagnosis of severe persistent asthma
7. Patient requires continuous oral corticosteroid therapy
8. Patient requires more than two courses of oral corticosteroids in one year
9. Patient requires additional diagnostic testing (e.g. skin allergy tests)

## Patient education

1. Influenza vaccine to be offered to all asthmatics in September and October every year
2. Explain the aims and side effects of treatment
3. Advise stop smoking and /or avoid second-hand smoke
4. Instruct about environmental control
5. Instruct on use of metered-dose inhaler
6. Instruct on use of home peak flow meter
7. Instruct about plan for treatment of an acute wheezing episode including criteria to start any medication and when to call doctor or go to emergency
8. Explain that asthma can be fatal if high-risk factors present
9. Advise regular exercise

| **How to Use a Peak Flow Meter**<br>It is best done upon awakening each morning | **Personal Best Peak Flow Number** |
|---|---|
| 1. Place the indicator at the base of the numbered scale.<br>2. Stand up and take a deep breath.<br>3. Place the meter in your mouth and close your lips around the mouthpiece. Do not put your tongue inside the hole.<br>4. Blow out as hard and fast as you can.<br>5. Write down the number you get.<br>6. Repeat steps 1 through 6 two more times.<br>7. Write down the highest of the three numbers achieved. | Every day for 2 weeks while patient is feeling good without any symptoms<br>Record PEF twice a day mornings and evenings<br>Each time before and after taking inhaled beta2-agonist (if on treatment)<br>"Personal best" is the highest reading achieved during these 2 weeks |

## Management and treatment tips

1. Check compliance with controller medications, particularly if control is poor or treatment is to be increased.
2. Check inhaler technique.
3. Oral treatment should be considered as second line therapy to inhaled treatment.
4. Use the cheapest delivery device the patient can use and comply with effectively.
5. For uncontrolled asthma treat with Prednisolone 30-40mg daily until symptoms settle and PEF normal. Consider using leukotriene modifiers to decrease need for steroids
6. Lifestyle education, establish smoking status, advise smokers to stop, offer education about condition and its management

## References


1. National Asthma Education and Prevention Program. Highlights of the Expert Panel Report 3; Guidelines for the Diagnosis and Management of Asthma. "EPR-3 Full Report 2007". National Heart, Lung, and Blood Institute Web site. http//www.nhlbi.nih.gov/guidelines/asthma/asthgdln.htm. Accessed December 20, 2010.
2. Ducharme FM, Hicks GC. Anti-leukotriene agents compared to inhaled corticosteroids in the management of recurrent and/or chronic asthma in adults and children. *Cochrane Database Syst Rev*. 2002;(3):CD002314.
3. Powell H, Gibson PG. High dose versus low dose inhaled corticosteroid as initial starting dose for asthma in adults and children. *Cochrane Database Syst Rev.* 2004;(2):CD004109.

# Back Pain

Hiba Bzeih, Nisrine Makarem, Khalil Ashkar

## Epidemiology

1. Second most common symptom-related reason for physician's visits
2. Lifetime prevalence estimated to be at least 60 to 70 percent
3. Occurs most often between the ages of 45 and 65

## History

1. Hard physical labor
2. Activity that increases physical stress on the spine
3. Osteoporosis
4. Physical inactivity
5. Symptoms of systemic disease
6. Symptoms of neurologic compromise
7. Presence of social or psychological distress that may contribute to chronic, disabling pain

## Physical examination

1. Gait and Posture
    a. Observe the gait of the patient and check for scoliosis
2. Range of motion
    a. Flexion, extension, lateral flexion and lateral rotation of low back
    b. Pain increased by flexion reflects usually mechanical causes
    c. Pain precipitated by extension is indicative of spinal stenosis
3. Palpation or percussion of the spine
    a. Point tenderness may indicate fracture or infection
    b. Para-spinal tenderness indicates muscle spasm
4. Palpation of the sciatic notch
    a. Tenderness over the sciatic notch with radiation to leg indicates nerve root compression
5. Heel-Toe Walk, Squat and Rise
    a. Inability to walk Heel-Toe, Squat and rise may indicate Cauda - Equina Syndrome or neurologic compromise
6. Straight leg raising
    a. Pain occurring between the angles 30-60 is a provocative sign of nerve root compression. Pressure over the popliteal region when performing the maneuver should worsen the pain (popliteal compression test)
    b. Flexion of the ankle increases the pain
    c. Straight leg raising is positive in 95% of patients with proven disc disease but it can be positive in 80-90% of patients without disc disease. In contrast, crossed straight leg raising is less sensitive but much more specific for disc herniation
7. Findings that should prompt for immediate action/consultation or referral include
    a. Saddle anesthesia
    b. Loss of anal sphincter tone
    c. Major motor weakness in lower extremities
    d. Fever
    e. Vertebral tenderness
    f. Limited spinal range of motion
    g. Neurologic findings persisting beyond one month

## Physical examination findings in nerve root impingements

| Herniation | Nerve root affected | Sensory loss | Motor weakness | Screening examination | Reflex |
|---|---|---|---|---|---|
| **L3-L4 disk** | L4 | Medial foot, anteromedial thigh | Knee extension Quadriceps | Squat and rise | Patellar |
| **L4-L5 disk** | L5 | Dorsal foot, great toe | Dorsiflexion ankle/great toe | Heel walking | None |
| **L5-S1 disk** | S1 | Lateral foot, sole, posterolateral calf | Plantar flexion ankle/toes | Toe walking | Achilles |

Adapted from pocket medicine 3rd edition

## Red flags

1. Age >50 years
2. Fever, chills, recent urinary tract infection or skin infection, wound near spine
3. Significant trauma
4. Unrelenting night pain or pain at rest
5. Progressive motor or sensory deficit
6. Saddle anesthesia, bilateral sciatica or leg weakness, difficulty urinating, fecal incontinence
7. Unexplained weight loss
8. History of cancer
9. Osteoporosis
10. Immunosuppression
11. Chronic oral steroid
12. Intravenous drug use
13. Substance abuse
14. Failure to improve after conservative therapy

## Evaluation

1. In the absence of red flag findings, four to six weeks of conservative care is safe and appropriate.
2. If red flags are present, X-ray imaging is indicated as well as the following:
    a. CBC, ESR
    b. HLA B27 antigen in case of suspected ankylosing spondylitis
    c. Brucella titers
    d. PPD
    e. Serum protein electrophoresis if multiple myeloma is suspected

## Differential diagnosis

| Condition | Signs and symptoms |
|---|---|
| **Mechanical low back pain (97%)** | |
| Lumbar strain or sprain | Diffuse pain in lumbar muscles, some radiation to buttocks |
| Degenerative disk or facet process | Localized lumbar pain |
| Herniated disk | Pain radiating below knee |
| Osteoporotic compression fracture | History of trauma, spinal tenderness |
| Spinal stenosis | Pain better when seated or flexed |
| Spondylolisthesis | Pain with activity and better with rest detected with imaging |
| **Non-mechanical spinal condition** | |
| Neoplasia | Spine tenderness and weight loss |
| Inflammatory arthritis | Morning stiffness improves with exercise |
| Infection | Spine tenderness and constitutional symptoms |
| **Nonspinal visceral disease** | |
| Pelvic organs- prostatitis, PID, endometriosis | Lower abdominal symptoms |
| Renal organs, nephrolithiasis, pyelonephritis | Abdominal symptoms, abnormal urinalysis |
| Aortic aneurysm | Epigastric pain, pulsatile abdominal mass |
| Gastrointestinal system, pancreatitis, PUD, cholecystitis | Epigastric pain, nausea and vomiting |
| Shingles | Unilateral dermatomal pain, distinctive rash |

## Management

Goals of pharmacologic treatment of low back pain

| Acute Low Back Pain | Chronic Low Back Pain |
|---|---|
| Achieve pain control | Optimize pain control |
| Improve or restore range of motion | Improve function |
| Return to normal daily activities | Resume daily activities |
| Minimize adverse drug effects | Minimize adverse drug effects |

**Pharmacologic treatment**

***NSAID's and Acetaminophen***
1st line therapy for pain management

***Opioids***
Second or third line analgesic option for a short period of time. Side effects of opioid include pruritus, constipation, drowsiness and addiction.

***Muscle Relaxants***
Muscle relaxants are most beneficial in the first one or two weeks of treatment. They lead to additional improvement when used with NSAIDs. Side effects include drowsiness and dizziness.

***Corticosteroids***
No studies support the use of oral steroids in acute low back pain. Epidural steroid injection may be helpful in patients with radicular symptoms who do not respond to 2 to 6 weeks of conservative management.

***Antidepressants***
Tricyclics can be used for pain control if there is no contraindication. SSRI are of no proven efficacy. SNRI (duloxetine and venlafaxine) are not evaluated. Clinicians should not forget that LBP can be a manifestation of depression.

***Gabapentin***
Gabapentin is used in LBP with radiculopathy with small and short term benefits.

***Herbal Medicine***
Herbal therapies, such as devil's claw, willow bark, and capsicum, seem to be safe options for acute exacerbations of chronic low back pain, but benefits range from small to moderate.

**Non pharmacologic treatment**

***Bed Rest***
1. No benefit in patients with acute low back pain with or without sciatica
2. Strong evidence that advice to stay active rather than rest in bed results in less time missed from work, improved functional status and less pain.
3. If necessary, it should last no longer than 2 or 3 days.

***Patient Education***
1. Limited benefit
2. Recommendations should include staying active but avoiding heavy lifting, bending, twisting, and prolonged sitting.
3. Modification of work duties may be required; however, patients should be encouraged to return to work at light duty rather than wait for complete resolution of the pain.

***Exercise Therapy***
There was no improvement with exercise in short-, intermediate-, or long-term outcomes of pain relief or function.

***Massage***
Insufficient evidence. Considered safe and may be preferred by some patients.

***Acupuncture***
Limited evidence

***Heat or Ice***
Minimal evidence for use of cold therapy.
Heat therapy is helpful in reducing pain and increasing function in patients with acute LBP

***Manipulation***
Better than placebo yet does not confer long-term benefits for acute LBP

***Physical Therapy***
No apparent benefits on long term follow up.

## Prevention

The USPSTF concluded that there is insufficient evidence to recommend for or against the routine use of exercise interventions to prevent back pain.
The European guidelines recommend exercise to prevent work absence and the occurrence or prolongation of further back pain episodes.
Neither of the above guidelines recommends the use of lumbar supports or back belts for prevention of low back pain. There is strong evidence that lumbar supports do not prevent low back pain.

## When to refer

1. Refer for physical therapy and exercise instruction
2. Refer to orthopedist when a neurologic deficit is detected or spinal stenosis suspected or in cases of severe or recurrent pain.

## References


1. Burton AK, Balague F, Cardon G, et al. Chapter 2. European guidelines for prevention in low back pain: November 2004. *Eur Spine J*. 2006;15(suppl 2):S136-S168.
2. Chou R, Qaseem A, Snow V, et al. Diagnosis and treatment of low back pain: a joint clinical practice guideline from the American College of Physicians and the American Pain Society. *Ann Intern Med*. 2007; 147:478-491.

# Breast Nodule

Hiba Bzeih, Khalil Ashkar, Nisrine Makarem

## Epidemiology

1. Discovered either by the patient or by the doctor during clinical breast examination
2. Evaluation requires a vigilant and systematic approach to ensure early diagnosis and treatment of cancers and appropriate attention and care of benign lesions
3. Most masses are benign
4. Breast cancer is the most common cancer and the second leading cause of cancer deaths in women
5. Nearly one third of women diagnosed with breast cancer between 1996 and 2000 were younger than 50
6. 75% of women with breast cancer have no identifiable risk factors

## History

1. Often asymptomatic
2. If symptomatic: ask about duration, the relationship of symptoms to menstrual cycles, the characteristics of the breast pain, skin changes, new nipple inversion, the color and frequency of any nipple discharge
3. Risk factors for breast cancer
    a. Age 50 or older
    b. Benign breast disease, especially cystic disease, proliferative types of hyperplasia, and atypical hyperplasia
    c. Exposure to ionizing radiation
    d. First childbirth after age 35
    e. Early menarche and late menopause
    f. Higher socioeconomic status
    g. Personal history of breast cancer
    h. History of breast cancer in a first-degree relative
    i. Hormone therapy
    j. Null parity
    k. Obesity
4. Risk of cancer is increased in case of spontaneous, unilateral or bloody nipple discharge, or if associated with a mass in an elderly woman
5. Bilateral milky discharge is usually due to endocrine problems, central nervous system problems or medication side effects
6. "Classic" characteristics of cancerous lesions include
    a. Single lesion
    b. Hard
    c. Non-movable
    d. Irregular borders
    e. Size $\geq$2 cm

## Principles to be followed in breast examination

1. Patient privacy
2. Examination gowns: patient comfort
3. Examination in supine and standing positions
4. Nodule characteristics: size, location, mobility, and consistency e.g. cystic vs. solid
5. Skin changes or nipple changes
6. Examine axillae for lymph nodes :number and fixation of the lymph nodes

## Diagnostic considerations

### Nipple discharge cytology

Spontaneous, clear, colored, or bloody unilateral nipple discharge from one duct is suspicious and requires investigation

### Ultrasound

Best to tell whether mass is solid or cystic, to further evaluate a mass poorly or partially seen by mammography; not used for screening because of the inconsistent detection of micro calcifications

### Mammogram

Malignant features include: asymmetry, clustered pleomorphic calcification, increasing density or a new mass with irregular borders or spiculations; abnormalities detected even if young with dense breasts

### Breast MRI

Best reserved for diagnostic dilemmas and multifocal disease; significant false positive rate, dramatically increasing the rate of benign biopsies

### Biopsy

1. Breast cysts confirmed with an ultrasound need needle aspiration if symptomatic. Solid masses on ultrasound require biopsy to exclude cancer and provide a histological diagnosis
2. The diagnostic procedure of choice in most instances is core needle biopsy rather than surgical biopsy
3. Fine needle aspiration (FNA) - useful for cystic lesions. If the lesion is drained with full resolution and the fluid is not cloudy or bloody, no further intervention is needed
4. FNA not done for solid lesions, as there is not enough tissue for definitive diagnosis
5. FNA + physical + mammographic examination (the so-called triple test) is highly accurate for diagnosis of breast cancer when all three modalities indicate malignancy and for a benign lesion when all three are negative

## When to refer

Immediately if suspect malignancy or if unable to do FNA when indicated as above

## Patient education

Encourage mammography screening every 12-33 months
This significantly reduces mortality from breast cancer especially in ages 50-69, evidence weaker for ages 40-49. Controversy exists about screening after the age of 75

## Indications for genetic testing

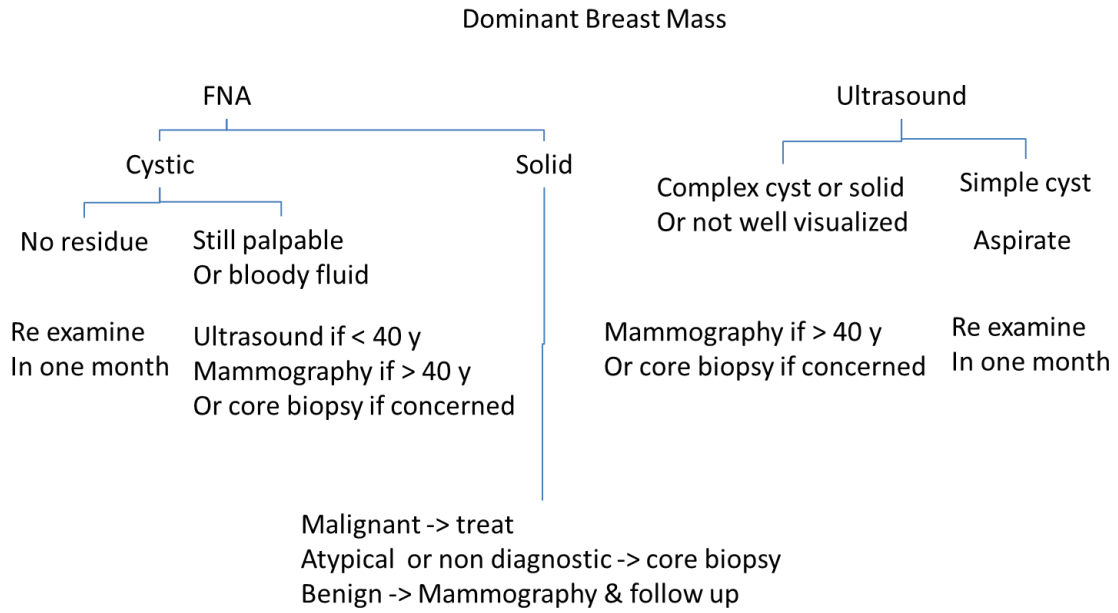
### Testing for BRCA mutations: recommendations from the USPSTF

1. Persons with a family history of breast or ovarian cancer in a relative with a known deleterious *BRCA* mutation
2. Ashkenazi Jewish women if any first-degree relative (or two second-degree relatives on the same side of the family) have breast or ovarian cancer
3. Other women if one of the following risk factors is present:
    a. Two first-degree relatives with breast cancer, one of whom was diagnosed before 50 years of age
    b. At least three first- or second-degree relatives with breast cancer, regardless of age at diagnosis
    c. At least two first- or second-degree relatives with ovarian cancer, regardless of age at diagnosis

d. A combination of breast and ovarian cancers among first- and second-degree relatives
e. A first-degree relative with bilateral breast cancer
f. A first- or second-degree relative with both breast and ovarian cancers, regardless of age at diagnosis

4. A male relative with a history of breast cancer

## Algorithm




Adapted from AAFP 2005;71:1731-1738

## References


1. Klein S. Evaluation of palpable breast masses. *Am Fam Physician*. 2005;71:1731-1738.
2. UpToDate in medicine. Diagnostic evaluation and initial staging work-up of women with suspected breast cancer. *http://www Uptodate.com* [serial online] 2009; Available from: BDR-UpToDate, Inc.

# Bronchiolitis

Alaa Abul-Hosn, Umayya Musharrafieh

## Definition and epidemiology

1. Inflammation and obstruction of small airways and reactive airways
2. Contrasting with asthma, obstruction of the airway in bronchiolitis is a result of plugging of bronchioles with detached epithelium and inflammatory cells. Mucus plugging and constriction of smooth muscle are not prominent
3. Leading cause of hospitalizations in infants and children
4. Predominant age: newborn to 2 years (peak age is 6 months)
5. Predominant sex: male > female
6. Seasonal (winter and spring) and often occurs in epidemics
7. Usual course: insidious; acute; progressive

## Risk factors

1. Smoking
2. Low birth weight
3. Immunodeficiency
4. Formula feeding (not breastfed)
5. Contact with infected person
6. Children in day care environment
7. Heart-lung transplantation patient
8. Adults: exposure to toxic fumes, connective tissue disease

## Etiology

Respiratory syncytial virus (70%)

## Associated conditions

1. Common cold
2. Conjunctivitis
3. Pharyngitis
4. Otitis media
5. Diarrhea

## Diagnosis

Usual course of RSV bronchiolitis is 1–2 days of fever, rhinorrhea, and cough, followed by wheezing, tachypnea, and respiratory distress

## Signs and symptoms

1. Anorexia
2. Cough
3. Cyanosis
4. Apnea
5. Fever
6. Grunting
7. Irritability
8. Noisy breathing (due to rhinorrhea)
9. Vomiting

## Physical examination

1. Tachypnea
2. Rhinorrhea
3. Wheezing
4. Retractions

## Laboratory tests

Arterial $O_2$ saturation by pulse oximetry (<92% significant)

## Imaging tests

Chest radiograph

1. Patchy infiltrates
2. Focal atelectasis- right upper lobe common
3. Air trapping
4. Flattened diaphragm
5. Increased anteroposterior diameter
6. Peribronchial cuffing

## Differential diagnosis

1. Asthma
2. Vascular ring
3. Foreign body
4. Heart failure
5. Bacterial pneumonia
6. Gastroesophageal reflux
7. Aspiration
8. Cystic fibrosis
9. Pertussis
10. Croup

## Treatment

Most patients can be treated at home.

### General measures

1. Most critical phase is the 1st 48-72 hours after onset. Treatment is usually symptomatic.
2. Fluid at maintenance (after correcting for any dehydration); add for respiratory fluid loss.
3. Suctioning of nasopharyngeal secretions
4. Mechanical ventilation in respiratory failure
5. Isolation: contact; hand washing most important
6. Cardio-respiratory monitoring

***Diet***

1. Frequent small feedings of clear liquids
2. If hospitalized, a patient may require intravenous fluids

***Activity***

1. Avoid exposure to crowds, viral illness for 2 months
2. Avoid smoke

### Medications

***First Line***

**Oxygen**

1. Albuterol
   0.03cc/kg (max 0.5 cc) in 3 cc normal saline by aerosol (may be repeated q 1-2 hours) may be effective for acute symptoms; a trial of therapy is reasonable. No benefit noted in several high quality studies

2. 2. L- **Epinephrine** aerosols may also be tried
   0.5ml/kg (1:1000 = 1mg/ml) in 3cc NSS
   (max 2.5ml for < 4yrs , max 5ml for > 4yrs )
3. Corticosteroids
   Oral dexamethasone (1mg/kg loading dose, then 0.6 mg/kg bid. for 5 days) reduced subsequent hospitalization
4. Ribavirin
   a. Controversial (cost, unclear efficacy)
   b. Inhaled antiviral agent active against respiratory syncytial virus
   c. May be indicated in patients with underlying cardiopulmonary disease, young age (<6 weeks), immuno suppressed (AIDS, organ transplant patients)

***Second Line***
Antibiotics only if secondary bacterial infection present (rare)

## Admission criteria

1. Respiratory rate >70/min with respiratory distress or apnea
2. O2 saturation <93% on room air
3. Ill or toxic appearance
4. Underlying heart or respiratory condition
5. Dehydrated or unable to feed
6. Age < 3 months
7. Any history of previous intubation or wheezing
8. Uncertain home care

## Patient education

1. Explain pathogenesis and course of bronchiolitis
2. Recurrent episodes may indicate asthma
3. Avoid smoking around the child
4. Avoid exposure to other children: incubation period 4-6 days

## References


1. King VJ, et al. Pharmacologic treatment of bronchiolitis in infants and children: A systematic review. *Arch Pediatr Adolesc Med*. 2004;158(2):127-137.
2. Patel H, et al. A randomized, controlled trial of the effectiveness of nebulized therapy with epinephrine compared with albuterol and saline in infants hospitalized for acute viral bronchiolitis. *J Ped*. 2002;141(6):818-824.
3. Mull CC, et al. A randomized trial of nebulized epinephrine vs. albuterol in the emergency department of bronchiolitis *Arch Pediatr Adolesc Med*. 2004;158(2):113-118.
4. Schuh S, et al. Efficacy of oral dexamethasone in outpatients with acute bronchiolitis. *J Ped*. 2002;140(1):27-32.
5. Martinon-Torres F, et al. Heliox therapy in infants with acute bronchiolitis. *Pediatrics*. 2002;109(1):68-73.
6. American Academy of Pediatrics (AAP) evidence-based guideline for diagnosis and management of bronchiolitis. *Pediatrics*. 2006;118(4):1774
7. Scottish Intercollegiate Guidelines Network (SIGN) national clinical guideline on bronchiolitis in children. National Guideline Clearinghouse. 2007; Apr 30:10224

# Bronchitis

Jibrael Razzouk

## Definition and epidemiology

1. Acute respiratory infection manifested predominantly by cough, with or without sputum production, lasting less 2-3 weeks
2. Most common pathogens are viruses

## History and physical examination

1. Rule out other causes especially pneumonia
2. The following findings increases the likelihood of pneumonia sufficiently to warrant the need for a chest radiograph:
   a. Heart rate >100 beats/min
   b. Respiratory rate >24 breaths/min
   c. Oral body temperature of >38 degrees C
   d. Chest examination findings of focal consolidation, egophony, or fremitus

## Diagnosis

1. Diagnosis is purely clinical
2. A diagnosis of acute bronchitis should not be made unless there is no clinical or radiographic evidence of pneumonia and the common cold, acute asthma, or an exacerbation of chronic obstructive pulmonary disease (COPD) have been ruled out as the cause of cough
3. Viral cultures, serologic assays, and sputum analyses should not be routinely performed because the responsible organism is rarely identified in clinical practice

## Treatment

1. Routine treatment with antibiotics is not justified and should not be offered. It may be individualized in patients more than 65 years old and those with comorbid diseases
2. Beta2-agonist bronchodilators should not be routinely used to alleviate cough unless patient has history of hyper reactive airways or asthma or he has wheezing
3. Antitussive agents are occasionally useful and can be offered for short-term symptomatic relief of coughing.
4. There is no consistent favorable effect of mucokinetic agents on cough, thus they are not recommended

## Patient education

1. Etiology, transmission & prognosis
2. Pneumococcal & influenza vaccine
3. Stop smoking & increase fluid intake, bed rest
4. Return if no better in 5 days

## References

1. Braman SS. Chronic cough due to acute bronchitis: ACCP evidence-based clinical practice guidelines. *Chest*. 2006 Jan;129(Suppl 1):95S-103S.
2. Worrall G. Acute bronchitis. *Can Fam Physician*. 2008; 54(2):238-239
3. Knutson D, Braun C. Diagnosis and management of acute bronchitis. *Am Fam Physician*. 2002; 65(10):2039-2044.

# Burns

Pascale Karam

## Definition and epidemiology

1. Exposure to temperature extremes, certain chemicals, electricity causing injury to skin tissues and blood vessels, thus resulting in burns
2. Burn wounds can be classified into six groups according to the mechanism of injury.
   a. Scalds: caused by liquid, grease or stream
   b. Contact burns: divided into immersion or spill
   c. Fire divided into flash or flame
   d. Chemical
   e. Electrical
   f. Radiation

## History

1. Age
2. Causative agent
3. Time of exposure
4. Extent of exposure
5. Medical status (trauma, illness, allergic)
6. Time, location (open vs. closed space)
7. Extent of injury
8. Treatment given
9. Tetanus immunization history

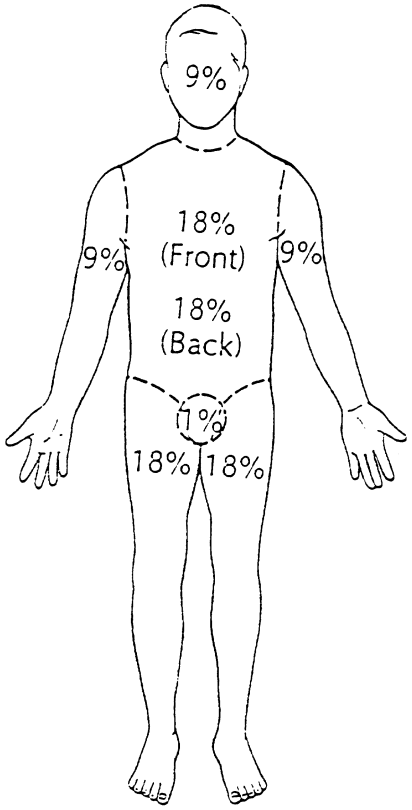
## Physical examination

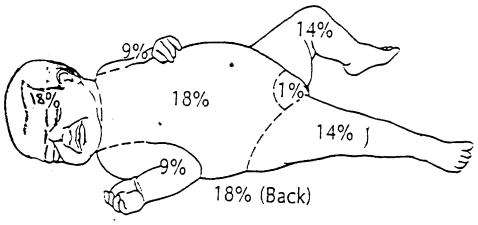
1. Assessment of airway breathing circulation
2. Full physical exam, neurological status
3. Depth and extent of injury
   a. Extent surface area: rule of nines (See figure)
   b. Depth classification: see assessment.
4. CBC, electrolytes, BUN, glucose levels, CPR, arterial blood gazes, chest X-ray, urine analysis, and urine myoglobin as needed

## Diagnosis

Surface area of injury (rule of nines)

The body is divided into anatomic regions that represent 9% or multiple of 9% of the total body surface. The infant's or young child's head represents a larger proportion of the surface area and the lower extremities a lesser proportion than an adult.




## Depth of injury

| | |
|---|---|
| 1st degree | Skin red, dry, warm, sensitive to touch<br>Mild pain + swelling<br>Epidermis affected |
| 2nd degree | Superficial partial thickness<br>Pink, soft, moist, tender<br>Thin walled, filled blisters<br>Epidermis +superficial dermis |
| | Deep partial thickness<br>Mixture of red and blanched white<br>Thick walled blisters (ruptured)<br>Epidermis +reticular dermis |
| 3rd degree | Full thickness<br>White leathery appearance, clotted vessels, black<br>Epidermis and dermis affected |

## Management

### First degree burns

1. Heal naturally over several days
2. Verify tetanus status and give tetanus prophylaxis if needed
3. Wash burn with surgical soap and apply sterile non adherent dressing
4. Use analgesics as necessary
5. Protect from environment with daily clean dressing
6. If signs of infection or no healing in two weeks → refer to specialist

### Second & third degree burns

***Emergency Department management***

1. Assess and monitor airway, breathing and circulation
2. Apply oxygen; intubate if necessary
3. Nasogastric tube and feeding for serious burns
4. If chemical burn, remove soaked clothing and irrigate with water
5. Assess extent and size of burn

***Extremities burn***

1. Assess the status of distal circulation: check for cyanosis, impaired capillary refilling time or progressive paresthesias
2. Escharotomy in case of circulatory compromise

## Hospital admission

Burn patients with the following circumstances require inpatient care:

1. Those between 10 and 50 years of age with partial-thickness burns of greater than 15 percent total body surface area (TBSA) or deep partial-thickness burns or full-thickness burns of greater than 5 percent TBSA
2. Those less than 10 years or greater than 50 years of age with partial-thickness burns greater than 10 percent TBSA or deep partial-thickness burns greater than 3 percent TBSA
3. Any patient with partial-thickness to full-thickness burns of the face, hands, feet, or perineum or burns across major joints or circumferential limb burns
4. Electrical burns
5. Chemical burns
6. Burns with inhalation injury
7. Burns in patients who have underlying medical problems or who are immunocompromised
8. Burns associated with other trauma

## Specialized burn centers needed in case of

1. Major partial-thickness burns with a TBSA of great 25 percent in the 10- to 50-year-old age group or great than 20 percent in children less than 10 years and adults older than 50 years
2. Any full-thickness burn greater than 10 percent TBSA
3. Burns involving the hands, face, feet, or perineum; circumferential limb burns; or burns across major joints
4. Major or moderate burns complicated by fractures or other trauma
5. Electrical burns
6. Burns in infants or the elderly
7. Major or moderate burns in-patients who are poor risk due to underlying conditions
8. Any patient where long-term social or emotional support is needed or where there is going to be a long, difficult rehabilitation and/or recovery period

## Fluid Resuscitation

Insert IV and start lactated Ringers solution according to estimation of requirements

1. First 24 hours post-burn
    a. 2-4 ml of LR/kg body weight/% body surface burned
    b. Infuse 1/2 calculated dose within first 8 hours post-burn; second half over next 16 hours
    c. Adjust IV rate to maintain urine output at 30-50 ml/hr in adults
    d. Make decreasing adjustments of IV rate gradually (10% increments q 1hr)
    e. Use of diuretics makes urine output an invalid measure of circulatory status
2. Second 24 hours post-burn
    a. 5% albumin in LR at 0.5ml/ Kg / % burn (200 cc of salt-poor albumin placed in 800 cc of LR)
    b. D5W (or 1/4 normal saline primarily for children) to yield same hourly infusion rate as first 24 hours
        a. Adjust D5W or the 1/4 NS rate and not the 5% albumin solution in order to maintain urine output at 30-50 ml/hr

## References


1. Schiller WR. Burn management in children. *Pediatr Ann* 1996;25(8):434-438.
2. Papini R. Management of burn injuries of various depths. *BMJ*. 2004 Jul 17;329(7458):158-60.
3. Hudspith J, Rayatt S. First aid and treatment of minor burns. *BMJ*. 2004 Jun 19;328(7454):1487.
4. Jeffery SLA. Current burn wound management. *Trauma*. 2009;11(4):241-8.

# Childhood Exanthems

Durriyah Sinno

## Definition

An exanthem is an eruption on the skin associated with a systematic illness. Most are benign self-limited viral diseases

## History

1. Onset of rash
2. Distribution and progress
3. Fever, and onset of rash
4. Duration of fever
5. Prodrome: runny nose, cough
6. Appetite
7. Activity
8. Contact with ill persons
9. Itching

## Objective findings

1. General status
2. Temperature
3. Rash distribution and type
4. ENT exam (mouth)
5. Neurologic exam
6. Lung exam
7. Lymph nodes

## Assessment and plan

| | Measles | Scarlet fever | Chicken pox | Rubella | Roseola | Erythema Infectiosum |
|---|---|---|---|---|---|---|
| Temperature | Starts low grade then peaks and on 5th day rash appears. | High-grade 12-48 hours then drops slowly. | - high-grade 1-2 days<br>- Sometimes no fever with the rash. | Mild fever if any. | Sudden onset high lasting for 3-4 days. | No fever. |
| Rash | 1st day rash is discrete, then behind ears and spread from head to feet over 3 days erythematous, maculo-papular, then confluent. | Rough to touch (sand paper), noticed on groin, axilla, antecubital, area circumoral pallor, flushed cheeks lasts 4-5 days. | Rapid progression form Macules to papules to vesicles to pustules Profuse on trunk sparse distally Pruritic. | Small discrete pink maculo-papular coalescing on trunk fading in 3rd day. | Faint, pink maculo-papular Rash sometimes itchy Resolves in 48 hours. | Sudden rash bright red cheeks (slapped) Then maculo-papular faint pink over trunk, extremities Fades over several days. |
| Other signs and symptoms | - Cough<br>- Conjunctivitis<br>- Coryza<br>- Koplik's spots<br>- Photophobia | - Sore throat<br>- chills<br>- Peeling of skin over next 2 weeks. | Prodrome of rhinorrhea, cough. | - Prodrome: malaise conjunctivitis coryza arthralgias occipital lymph nodes. | Occurs 6 months to 3 years. | |
| Complication | - Otitis media<br>- Pneumonia<br>- Encephalitis | Rheumatic fever. | Pneumonia Encephalitis. | Congenital rubella. | Febrile seizures. | Fetal plastic anemia Miscarriage arthralgia, arthritics. |
| Incubation period | 9-12 days | | 11-21 days | 14-21 days. | 5-15 days. | 4 days-weeks. |
| Infectivity period | | | | | | |
| Management | No treatment Antipyretics Bed rest | Oral penicillin or erythromycin | -Anti-histamine<br>- Local anti-pruritic<br>- Antipyretics | Supportive treatment. | Antipyretic. | |

## References


1. Mancini AJ. Exanthems in childhood: an update. *Pediatr Ann* 1998;27(3):163-170.
2. Frieden IJ. Childhood exanthems. *Curr Opin Pediatr* 1995;7(4):411-414
3. Bialecki C, Feder HM Jr, Grant-Kels JM. The six classic childhood exanthems: a review and update. *J Am Acad Dermatol.* 1989;21(5 Pt 1):891-903.

# Constipation

Zeinab Toufaily

## Definition and epidemiology

Definitions of constipation usually include elements related to alterations in frequency, size, consistency or ease of passage of stools or any change from habit.

**Rome II Criteria for Defining Chronic Functional Constipation in Adults, Infants, and Young Children**

**Adults**

Two or more of the following for at least 12 weeks in the preceding 12 months:

1. Straining in more than 25% of defecations
2. Lumpy or hard stools in more than 25% of defecations
3. Sensation of incomplete evacuation in more than 25% of defecations
4. Sensation of anorectal obstruction or blockade in more than 25% of defecations
5. Manual maneuvers (e.g. digital evacuation, support of the pelvic floor) to facilitate more than 25% of defecations
6. Fewer than three defecations per week
7. Loose stools are not present, and there are insufficient criteria for the diagnosis of irritable bowel syndrome

**Infants and young children**

At least two weeks of the following:

1. Hard, pebble-like stools for the majority of bowel movements, or firm stools two or fewer times per week
2. No evidence of structural, endocrine, or metabolic disease

## Etiology

| | Examples |
|---|---|
| Diet | Insufficient bulk in diet, excessive intake of cow's milk, dehydration |
| Medication | Iron supplements, codeine cough syrup, calcium channel blockers, antacids, anti-cholinergic, anti-convulsants, anti-parkinsonian drugs, Bismuth, diuretics, NSAID's, opiates |
| Painful defecation | Anal fissures, rectal prolapse, atresia or stenosis, hemorrhoids |
| Obstruction | Anal atresia or stenosis in children, colorectal cancer in elderly, hernias, diverticulitis, torsion, adhesions |
| Metabolic | Hypothyroidism, hypercalcemia, renal tubular acidosis |
| Neuropathic | Diabetes mellitus, Hirschsprung's disease, multiple sclerosis |
| Functional | Idiopathic constipation, irritable bowel syndrome |

## History

1. Frequency, consistency and caliber of stools
2. Painful defecation
3. Rectal bleeding
4. Relation to diarrheic episodes
5. Abdominal pain or distention
6. Duration of symptoms
7. Constitutional symptoms: fever, chills, malaise, weight loss, nausea or vomiting
8. Dietary habits: use of fibers/fluid intake
9. Activity level
10. Current medications
11. Psychological status

12. Others: symptoms of diabetes, hypothyroidism, hypercalcemia, pregnancy, scleroderma, cerebro-vascular disease, central nervous system, tumors etc.

## Physical examination

1. Abdominal examination: gross deformities, abdominal tenderness, tympanicity, abdominal masses, increased bowel sounds, hernias
2. Rectal examination: hemorrhoids, fissures, peri-anal abscess, digitally felt rectal tumors, rectal prolapse
3. General examination: signs of systemic diseases such as hypothyroidism, diabetes, malnutrition, parkinsonism, neurologic examination

## Evaluation

### Initial tests

1. Stool for occult blood (3 times): if there is history of rectal bleeding, dark stools or if patient is >50 years of age
2. Complete blood count if anemia of chronic diseases or GI bleeding is suspected
3. TSH if hypothyroidism is suspected
4. Calcium serum level if hyperparathyroidism is suspected
5. Serum creatinine, electrolytes and BUN if uremia is suspected

### Additional tests

Flexible procto-sigmoidoscopy and barium enema or colonoscopy if the patient has:

1. Positive stool occult blood
2. Anemia
3. Above 50 years
4. Rectal bleeding
5. No response to conservative treatment
6. Weight loss and other constitutional symptoms
7. Recent and otherwise unexplainable constipation

## Pearls

1. Must rule out obstruction
2. Rule colon cancer if new complaint in individuals > 50 years
3. In children, the most common cause is functional with no neurologic or anatomic problems

## Management

### Functional constipation

***1. Non-pharmacological treatment***

a. High fiber diet e.g. vegetables and bran
b. Regular exercise e.g. walking
c. High fluid intake
d. Avoiding or altering possible causative agents such as medications

***2. Pharmacological treatment***

a. Bulk agents (natural or artificial fibers)
b. Osmotic laxatives such as non-absorbable sugars e.g. sorbitol and lactulose
c. Magnesium hydroxide (milk of magnesia 15 to 30 ml daily)
d. Stool surfactant agents such as sodium phosphate (Alfa Clyss), rectal enema

**Acute constipation**

Lasting for several days after medical/surgical illness, travel, dietary changes, medications, one can use the following:

1. Cathartic laxatives such as cascara sagrada, bisacodyl (Dulcolax), castor oil
2. Osmotic laxatives such as magnesium sulfate 10 to 30 g and balanced polyethylene glycol 1 to 4 L lavage solution or 1 powder sachet 1 to 4 times daily (Movicol)
3. Enemas such as saline enemas (non-irritating), pure water enema (irritating) and oil retention enema (for impacted stools)

If resistant to pharmacological measures or enemas, use digital disruption of fecal impacted material.

**Constipation due to other causes**

Non-functional constipation: Treat the original medical or surgical cause

**Children**

Corn syrup or Senna syrup can be used

## Medications for treatment of chronic constipation

| **Bulk laxatives (*likely to be beneficial)** | | | |
|---|---|---|---|
| **Ispaghula (psylla seeds) (Mucofalk instant powder) | Powder | 3.25g (mix with 8 oz. liquid) | One to three times daily |
| *Sterculia (Normacol ) | Powder | 7g | One to three times daily |
| *Frangula and Sterculia (Normacol Plus) | Powder | | One to three times daily |
| **Stool Softeners** | | | |
| *Liquid paraffin and Psyllium grain (Parapsyllium) | Powder | | Once to three times daily |
| *Liquid paraffin (Huile de Paraffine) | Liquid | | Once to three times daily |
| **Osmotic laxatives** | | | |
| **Lactulose liquid (Duphalac or Ramlac) | Liquid | 6.7g/10ml | 15 to 60 mL daily |
| ***Macrogol (Forlax) | Sachet | 10g | Once to three times daily |
| **Stimulant laxatives** | | | |
| *Bisacodyl (Dulcolax) | Tablets | 5 mg | 5 to 15 mg daily |
| *Castor oil | Liquid | 60 ml | 15 to 60 mL once daily |
| *Senna (Prunasine) | Tablets | 8.6 mg | 2 or 4 tablets once or twice daily |

*** Beneficial ** Likely to be beneficial * Unknown effectiveness

## Patient education

1. Explain the cause of constipation
2. Explain the prognosis
3. Stress the importance of high fiber and high fluid diet
4. Advise regular exercise
5. Advise regular daily bowel habits after meals
6. Advise against overuse of laxatives

## References


1. Biggs WS, Dery WH. Evaluation and treatment of constipation in infants and children. *Am Fam Physician*. 2006 Feb 1;73(3):469-77.
2. Rasquin-Weber A, Hyman PE, Cucchiara S, et al. Childhood functional gastrointestinal disorders. *Gut.* 1999; 45(Suppl 2):II60-II68.

# Contraception counseling

Jinan Usta, Fadila Naji

## Aim

1. Provide adequate counseling regarding the use of appropriate methods to avoid unwanted pregnancy
2. Identify medical and personal factors that impact on contraceptive selection
3. Discuss the available contraceptive choices
4. Delineate contraceptive and non-contraceptive benefits of each method
5. Enhance patient selection of the most appropriate contraceptive method

## History

### Patient's characteristics

Influence the choice of the contraceptive method:

1. Age/ smoking history: avoid OCP if above 35 years & smoker
2. Sexual habits: if she or her partner has multiple partners, avoid intrauterine device (IUD); frequency of intercourse: if low frequency (less than twice weekly), can use barrier method or morning after pill
3. Menstrual history: if irregular cycles, avoid IUD
4. Child bearing potential: fertility returns sooner upon discontinuation of OCP and implants but can take more than 12 months to return after a depomedroxy-progesterone acetate (DMPA) injection
5. Life style: good OCP candidates can take OCP at the same time on daily basis
6. Income
7. Religious beliefs
8. Recent or recurrent PID: avoid IUD
9. Contraindications to OCPs:
    a. Absolute: thromboembolic disease, stroke, atherosclerotic heart disease, liver disease, tumor or other estrogen-dependent malignancy
    b. Relative: severe migraine headaches, uncontrolled HTN, DM, gall bladder disease, undiagnosed vaginal bleeding
10. Endocrine history: acne or hirsutism (better use norgestimate/ethinyl estradiol or cyproterone actetate/ ethinyl estradiol formulation), obesity, hypercholesterolemia (use less androgenic OCPs), hypertriglyceridemia (avoid OCP)
11. Anemia: avoid copper IUD

### Objective Findings

1. Initial assessment: general physical exam and documentation of:
    a. Blood pressure, weight, height
    b. Thyroid exam
    c. Breast exam
    d. Pelvic exam with pap smear
    e. Extremities check for phlebitis or varicosities
2. Annual follow up:
    a. Blood pressure
    b. Breast exam
    c. Pelvic exam

**DO NOT FORGET!**

1. Pap smear annually
2. HIV antibodies if multiple sexual partners

3. Chlamydia antigen and gonococcal culture (when available) if multiple sexual partners or age less than 25 years

## Therapeutic choices

### 1. Combined Oral Contraceptives

1. Types:
   a. Estrogen (Ethinyl estradiol) and a testosterone derived progestin (levonorgestrel, desogestrel, gestodene, norgestimate)
   b. Estrogen (Ethinyl estradiol) and a non testorone progestin molecule (Cyproterone acetate, Drospirenone, Chlormadinone acetate )
2. Starting time: any time during the menstrual cycle provided the possibility of pregnancy is ruled out
3. Onset of contraceptive effect: need 7 days of consecutive use to start
4. Pregnancy rate in the average user: 2%/one year
5. Non contraceptive benefits:
   a. Reduction in: acne, dysmenorrhea, menstrual flow
   b. Regulation of menstrual cycle
   c. Protection against ovarian, endometrial & colorectal cancer
   d. Reduces the risk of PID
6. Post pill effects:
   a. Amenorrhea: rare; less than 1 % have amenorrhea lasting more than 12 months after discontinuing the pill
   b. Spontaneous abortion/congenital anomalies: do not occur more frequently in pregnancies after discontinuance of the pill
7. Pill-intake timing:
   a. Take the pill on the same time each day
   b. If prescribed after an abortion, the pill should be started immediately to prevent ovulation
   c. After a pregnancy, allow 2 weeks before starting, due to the risk of thromboembolism and possible decreased breast milk production
8. Nuisance effects: if experienced, wait for three cycles before switching to another formulation, as the majority of these side effects spontaneously resolve within 3 months
9. Side effect management: if significant side effects occur, switch to different combination as follows, based when appropriate on these relative effects of progestins:

| **Problem** | **Suggested action** |
|---|---|
| Early spotting | Increase estrogen potency |
| Late spotting | Increase progestin potency |
| No withdrawal bleeding | Make sure no pills were missed, perform a pregnancy test, if negative increase progestin potency<br>If that fails to produce withdrawal bleeding, increase estrogen dose |
| Heavy bleeding | Use stronger progestin, if that fails, increase estrogen |
| Nausea | Change time of day pill is taken (better in evening) or have the patient take it with food<br>If fails, decrease progestin potency |
| Cyclic fluid retention | Decrease estrogen potency |
| Oily skin or hirsutism | Decrease androgen potency |
| Hyperpigmentation | Decrease estrogen, stay out of sunlight or use sun block |
| Depression | Decrease estrogen potency or increase progestin |
| Headaches | Lower dose combined pill |
| Hypertension, severe headaches, leg cramps | Progestin only mini pill if no other suitable method |

| Androgenic effect | | Progestational effect | |
|---|---|---|---|
| Norethynodrel | 0 | Norethindrone | 1.0 |
| Ethynodiol diacetate | 1.0 | Norethynodrel | 1.1 |
| Norethindrone | 1.6 | Norethindrone acetate | 2.0 |
| Norethindrone acetate | 2.5 | Ethynodiol diacetate | 15.0 |
| Norgestrel | 17.5 | Norgestrel | 30.0 |
| Levonorgestrel | 15.0 | Levonorgestrel | 60.0 |

**2. Progestin-only options**

1. Most appropriate choice for: lactating women, women with cardiovascular or liver disease, women over age 35 who smoke, or women at increased risk of thromboembolism or developed complication of combined pill
2. Three progestin only products:
   a. Progestin only mini-pill:
      1. One year pregnancy rate in the average user: 2.5%
      2. Women must take their pills at the same time every day
      3. May result in irregular bleeding or amenorrhea
   b. Hormonal subdermal implants
      1. One year pregnancy rate in the average user: 2.5%
      2. Usually inserted into the arm and remain effective for up to 5 years
      3. Irregular bleeding is the most common reason women cite for discontinuation within the first 2 years. Fertility may return as early as 3 days after removal of the implants
   c. Depomedroxyprogesterone acetate injections
      1. One year pregnancy rate in the average user: 0.25%
      2. Involves injecting depomedroxyprogesterone acetate every 12 weeks
      3. Irregular bleeding is very common
      4. Amenorrhea occurs within 6 months to one year in 50% of the users
      5. An average weight gain of 7 Kg over 5 years may occur
      6. Androgenic effects of DMPA injections to be discussed with the patient
      7. Fertility may return within 2 weeks but may require 12 to 22 months after the last injection
      8. Long term use (>5 years) may have a negative effect on bone mineral density particularly among adolescents and young women who did not achieve their peak bone mass

**3. Emergency contraception:**

1. Morning after pill (levonorgestrel 1.5 mg):
   a. Reported pregnancy rates 0.2 to 3 %
   b. Efficacy up to 120 hours after intercourse, may be reduced compared to earlier administration
   c. Risk of pregnancy still exists if unprotected sexual intercourse happened afterwards
   d. Menstrual bleeding after emergency contraception typically occurs within one week of the expected time
   e. A repeat course of emergency contraception can be given, but it is preferable to begin regular use of nonemergency contraception, which can be initiated the day after emergency contraception administration.
2. Intrauterine Device (IUD):
   Can be inserted within 6 days of the intercourse to prevent pregnancy (IUDs are discussed later)

**4. Barrier methods**

Advised in individuals with multiple partners, short term users, postpartum, lactating, coming off pill, perimenopausal, IV drug user or homosexual

Use of any of the listed barriers either alone or in conjunction with other methods of contraception is appropriate to provide high degree of protection against pregnancy:

1. Diaphragm or cervical cap
    a. One year pregnancy rate in the average user: 13-18%
    b. When available, should be inserted up to 6 hours prior to intercourse and must remain in place for 6 hours after the last intercourse
    c. Should not remain in place for more than 24 hours for risk of toxic shock syndrome
2. Condom
    a. One year pregnancy rate in the average user: 10%
3. Both male and female condoms offer some protection from STDs Vaginal spermicide:
    a. One year pregnancy rate in the average user: 18%
    b. Effectiveness reduced if
        a. the patient does not wait long enough for the spermicide to disperse before having intercourse
        b. intercourse is delayed for more than one hour after administration
        c. A repeat dose is not applied before each additional act of intercourse.
4. Sponge when available
    One year pregnancy rate in the average user: 10-20%

**5. Intrauterine device**

One year pregnancy rate in the average user: 5%
Two types IUD available: the copper and the progesterone containing IUDs
Both are T shaped with a mono-filament tail

1. Progesterone IUD:
    a. Better suited for women who have dysmenorrhea
    b. Heavy periods or significant PMS
    c. Often causes breakthrough bleeding and must be removed and replaced every 5 yrs.
2. Copper IUD:
    a. Life span of 10 years
    b. The most cost effective method available
3. The ideal candidate: parous woman, with stable mutually monogamous relationship, and therefore is at minimal risk for STDs or PID. This includes women who have completed their childbearing, cannot or prefer not to use hormonal contraception and want reversible contraception.
4. How is it inserted:
    Inserted during menses when slight cervical dilatation makes insertion easier
5. After IUD insertion:
    a. Few women have several days of bleeding, cramping or backache after insertion
    b. Time and prostaglandin inhibiting drugs lessen these symptoms
    c. During the first few months, spotting between periods can occur and the period itself becomes heavier
    d. The position of the IUD is checked at 1 month follow up visit; major side effects would have subsided then
6. IUD avoided if:
    a. Confirmed or suspected pregnancy
    b. Enlarged uterus or physical uterine abnormalities
    c. Acute episode or history of PID
    d. Postpartum endometritis or infected abortion within past 3 months
    e. Confirmed or suspected uterine or cervical malignancy
    f. Undiagnosed genital bleeding
    g. Untreated acute cervicitis or vaginitis
    h. Patient or partner has multiple sex partners
    i. Diagnosed Wilson’s disease or known allergy to copper (can use progesterone IUD)
    j. Increased susceptibility to infections

**6. Natural family planning**

One year pregnancy rate in the average user: 24%
Requires a significant amount of motivation, and knowledge of when the woman is most fertile

**7. Sterilization**

One year pregnancy rate in the average user: 0.4%
Refer to gynecologist

## Patient education

1. Explain mechanism of action of method used
2. Explain effectiveness
3. Explain side effects and danger signs
4. Instructions on use of chosen method
5. Explain alternative method
6. Advise about safe sex

## References


1. Contraceptive Choices: Helping Your Patients Decide; AAFP CME program; September 1999
2. American College of Obstetricians and Gynecologists (ACOG). The use of hormonal contraception in women with coexisting medical conditions. Washington, DC: American College of Obstetricians and Gynecologists (ACOG); 2006 June. 20 p. (ACOG practice bulletin; no. 73)
3. Hendon E, Zieman M. New Contraceptive Options. *Am Fam Physician*. 2004;69(4)

# Croup (laryngotracheobronchitis)

Alaa Abul-Hosn, Umayya Musharrafieh

## Definition and epidemiology

1. Laryngeal or tracheal obstruction leading to acute harsh barking cough mostly at night, inspiratory stridor, hoarseness. It is usually preceded with upper respiratory tract infection symptoms of mild fever and rhinorrhea
2. Occurs in fall and early winter
3. Occur commonly among children 6 months to 3 years
4. < 5% require hospitalization

## Etiology

Para influenza virus is the responsible pathogen in 75% of all cases of croup

## Diagnosis

1. Diagnosis is mostly clinical.
2. Croup severity (Westly Croup Scale)

| | | |
|---|---|---|
| Inspiratory stridor | None | 0 |
| | Upon agitation | 1 |
| | At rest | 2 |
| Retractions | Mild | 1 |
| | Moderate | 2 |
| | Severe | 3 |
| Air entry | Normal | 0 |
| | Mild decrease | 1 |
| | Marked decrease | 2 |
| Cyanosis | None | 0 |
| | Upon agitation | 4 |
| | At rest | 5 |
| Level of consciousness | Normal | 0 |
| | Depressed | 5 |
| Mild 0-1 Moderate 2-7 Severe>7 | | |

## History

1. 2-5 days prodrome of low grade fever, coryza and rhinorrhea
2. Characteristic croupy or barking cough
3. Fluctuating symptoms depending on the agitation of the child
4. May improve during the day and recur the following night
5. Majority are mild and resolve within 48 hours
6. Normal-appearing supraglottic region

## Physical examination

1. Assess the severity by checking the Westly score items
2. Hoarseness
3. Absence of drooling
4. Fever

## Imaging

1. Imaging is not usually indicated in the majority of croup cases as the diagnosis is usually clinical
2. Obtain posteroanterior and lateral neck films if symptoms are atypical and diagnosis is not certain to rule out epiglottitis, bacterial tracheitis or retropharyngeal abscess

3. X-ray show funnel-shaped subglottic region with normal epiglottis "steeple," "hour glass," or “pencil point" sign (present in 40-60% of children with laryngotracheobronchitis)
4. CT may be more sensitive for defining etiology of obstruction in a confusing clinical picture
5. Patient should be monitored during imaging as progression of airway obstruction may be very rapid

## Differential diagnosis

1. Acute epiglottitis- currently rare. High grade fever, cough is not present, marked drooling and sitting forward position
2. Foreign body aspiration
3. Bacterial tracheitis: suggested by high grade fever, toxic appearance as well as poor response to epinephrine
4. Retropharyngeal or peritonsillar abscess, Ludwig’s angina
5. Noninfectious inflammation or soft tissue edema; angioedema

## Treatment

### General measures

1. Minimize labs, imaging, and other procedures that upset the child; have the baby seated in his mother’s lap
2. Pulse oximetry in moderate to severe croup; however frequent observations may be more sensitive to worsening disease than pulse-oximetry.

### Medications

1. **Dexamethasone**
   a. Mainstay of therapy
   b. Oral, intramuscular and nebulized forms have all been efficacious
   c. Oral form is the most pleasant and less distressing for the child
   d. Usual dose 0.6 mg/kg once; however 0.15mg/kg may be as efficacious in mild-moderate croup
   e. Nebulized budesonide (2 mg) has been shown to be effective in mild to moderate croup and is equivalent to oral dexamethasone
2. **L-Epinephrine** (nebulized)
   a. Used in moderate-severe croup
   b. 0.5ml/kg (1:1000 = 1mg/ml) in 3cc NSS
   c. It improves symptoms at 30 minutes post inhalation
   d. Observe for a minimum of 2 to 4 hr if discharge is planned after administering nebulized epinephrine.
   e. Repeat as necessary if side-effects tolerated (tachycardia)
3. **Antibiotics**
   Not indicated in this viral illness irrespective of the severity of the disease
4. **Oxygen**
   There is widespread consensus that oxygen is beneficial in children with severe respiratory distress.
5. **Mist Therapy**
   There is no evidence about it efficacy

## Indication for hospitalization

There is no published evidence that addresses indications for hospitalized. The following are based on Alberta Clinical practice guidelines and should be used in caution

### Absolute

Significant respiratory distress persisting after 4 hours of treatment with steroids

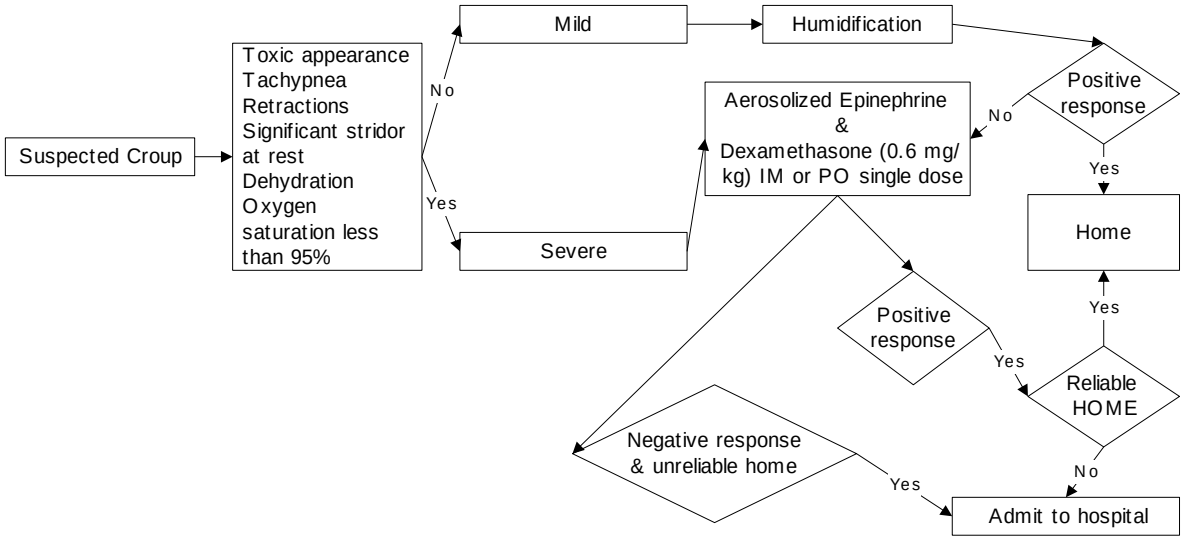
**Relative**

a. Parents living at a far distance from the hospital
b. Late in the evening as croup symptoms worsen at night
c. Significant parental anxiety
d. Recurrent emergency visits within 24 hours

## Patient education

1. Explain pathogenesis of symptoms and prognosis
2. Instructions on using vaporizers
3. Advise that child should be minimally disturbed
4. Instruct about follow-up if symptoms worsen

## Algorithm




## References


1. Westley CR, Cotton EK, Brooks JG. Nebulized racemic epinephrine by IPPB for the treatment of croup: A double-blind study. *Am J Dis Child*. 1978;132(5):484-487.
2. Wasiman Y, et al. Prospective randomized double-blind study comparing L-epinephrine and racemic epinephrine aerosols in the treatment of laryngotracheitis (croup). *Pediatrics*. 1992;89(2):302-306.
3. Geelhoed GC, Turner J, MacDonald WB. Efficacy of a small single dose of oral dexamethasone for outpatient croup: A double-blind placebo controlled clinical trial. *Br Med J*. 1996;313(7050):140-142.
4. Cetinkaya F, Tufekci BS, Kutluk G. A comparison of nebulized budesonide, and intramuscular, and oral dexamethasone for treatment of croup. *Int J Pediatr Otorhinolaryngol*. 2004;68(4):453-456.
5. Klassen TP. croup: A current perspective. *Pediatr Clin North Am*. 1999;46:1167-1178.

# Depression

Hiba Bzeih, Khalil Ashkar, Nisrine Makarem

## Definition and epidemiology

1. Major depression is characterized by a sustained dysphoric mood.
2. It is one of the most common diseases encountered in primary care setting and is often unrecognized or maltreated. About 1 out of every 5 people will suffer from depression at some time in his or her life with a 1.5 to 2 ratio of women to men.
3. It is a costly disease due to treatment cost and significant impairment of daily activities.

## Diagnosis

The primary care physician should probe for possibility of depression or anxiety disorders in patients presenting with multiple somatic or vague complaints. Two simple clinical questions are helpful in excluding depression:

a. "During the past month, have you often been bothered by feeling down, depressed or hopeless?"
b. "During the past month, have you often been bothered by little interest or pleasure in doing things?"

If both answers are negative the screening is negative.
One positive answer requires confirmation using the DSM-IV criteria:

Diagnosis is made if sad mood is present with at least five of the following for at least two weeks:

a. Poor appetite
b. Insomnia or hypersomnia
c. Loss of interest or pleasure in usual activities
d. Psychomotor retardation or agitation
e. Loss of energy
f. Feelings of worthlessness
g. Diminished ability to think or concentrate
h. Recurrent thoughts of death or suicide

Risk Factors for depression are:

a. Female
b. First degree relative with depression
c. Drug or alcohol abuse
d. Anxiety disorder
e. Eating disorder
f. Major medical condition like myocardial infarction, stroke, malignancy, diabetes and multiple sclerosis.

## Physical examination

1. A documented complete physical examination helps to discover any new problems or contra-indications to medications and to reassure the patient.
2. Depression questionnaire such as “Beck’s inventory” or “Hamilton Rating Scale” may be useful if the physician wishes to have a quantitative score of the severity of depression. Arabic versions are available.

## Differential diagnosis

1. Assess for potential associated mental or physical problems and suicide risk. In case of suicidal potential, schizophrenia or acute mania, psychiatric evaluation must be done on the same day.
2. It is important to screen the depressed patient for bipolar disease because 30%-50% of these patients will develop acute mania when started on antidepressant treatment.

3. Diagnostic dilemmas face the primary care physician when:
    1. Not all criteria for major depression are met. In that situation, consider:
        a. Dysthymia**:** depressed mood daily for 2 years or more with 2 or more of major depression symptoms
        b. **"**Depression not otherwise specified" is also another "minor" form of depression (shorter duration and less severe presentation). Both entities are DSM-IV diagnoses
        c. Recurrent brief depression: lasts for 3 to 4 days and can be quite severe with high risk of suicide
        d. Bereavement: symptoms are less severe, work or school functions are not incapacitated, no guilt feelings exist and the duration rarely extends beyond 6 months. It can, however, be incapacitating and interferes with daily life. In such situations, some experts recommend treatment as in depression.

    2. Somatic complaints are present. Consider any of the following:

| **Condition** | **Distinguishing Feature** |
|---|---|
| Somatization disorder | Distressing physical symptoms or pain with no diagnosable medical condition that has spanned over several years and begun before age 30 |
| Panic disorder | Symptoms occur primarily during panic attacks |
| Generalized anxiety disorder | Focus of anxiety and worry not limited to physical complaints |
| Depression | Symptoms always in context of depression and remit with treatment of depression |
| Hypochondriasis | Somatic preoccupation which can't be accounted for by one of the above conditions |

    3. Other co-existing mental problems exist
        a. Dementia in the elderly can sometimes be distinguished from depression by the following tips:

| | **Dementia** | **Depression** |
|---|---|---|
| Onset | Chronic | Acute |
| Neurologic symptoms | Present | Absent |
| Memory Loss | Severe | Present |
| Cognitive defects | May try to mask | Apathy |

        b. Generalized anxiety disorders (GAD) often co-exists with depression. However, patients with GAD do not have suicidal thoughts nor guilt feelings and they usually seek help and are worried about the future. DSM- IV criteria for diagnosis of GAD
            1. Excessive anxiety and worry about a number of events (which causes clinically significant distress or impairment in functioning) occurring more days than not for at least six months
            2. The person finds it difficult to control the worry
            3. Associated with at least three of the following:
                a. Restlessness, feeling "on edge"
                b. Fatigue
                c. Difficulty concentrating
                d. Irritability
                e. Muscle tension
                f. Sleep disturbance
                g. Palpitations

## Management

### Pharmacologic treatment

***A. Initial antidepressant choice***

1. Each primary care physician should familiarize him/herself with 3 or 4 medications especially the ones listed in the ministry of public health essential drug list.
2. All anti-depressants have similar success rate (around 70%); the main difference among them is related to their side effects and cost
3. Any antidepressant can be used because of their similar efficacy; but start by an SSRI or SNRI because of their tolerability and safety profile. SNRI are preferred in patient with chronic pain
4. Medications should be started at low dose and titrated to avoid side effects like nausea
5. Response rate with the first agent is 50%-65 %. If no response in 4-6 weeks:
    a. Check compliance of the patient
    b. Combine antidepressant and psychotherapy
    c. Combine SSRI and low dose desipramine
    d. Switch to another antidepressant of the same or different class
    e. Augment treatment with low dose Lithium (300-600mg) or tricyclic antidepressant
    f. Switch from antidepressant to psychotherapy or from psychotherapy to antidepressant

***B. Length of treatment***

1. **One lifetime episode**: patients should be treated for a total of 6-12 months after the acute phase treatment. Patients should achieve remission and remains asymptomatic for the next 6-12 months. After that, a trial of tapering and discontinuation should be attempted.
2. **Two or more lifetime episodes of major depression**: after the acute phase of treatment, the patient should be maintained on the antidepressant for a total of 15 months up to five years or maybe indefinitely
3. **Patient with chronic major depression and concurrent dysthymia**: those who improve on antidepressant should maintain the treatment for 15 to 28 months.

***C. Follow-up***

1. **Acute Phase (first three months):** patient should be seen once in the first month and another time 6-8 weeks later to check dosage compliance
2. **Continuation Phase (month 4 to 12):** after remission, patient should have one follow-up in the fifth or sixth month
3. **Maintenance phase (>12 months):** annual follow-up

***D. Discontinuation of treatment:***

Although antidepressants are not addictive, tapering the dose over 2-4 weeks is recommended to avoid withdrawal symptoms. Only those with long halftime duration, like fluoxetine, can be discontinued immediately.

### Electro convulsive therapy (ECT)

Remains a very effective and safe treatment for a selected group of patients like:

1. Patients with severe or psychotic features who are suicidal and dangerous or in case medical conditions prohibit the use of drugs
2. Severely depressed patients with significant neurovegetative symptoms or psychomotor disturbances who do not respond to a trial of medications
3. Patients in life-threatening situation that require rapid respond e.g. high risk of suicide or refusal to drink or to eat

## Common antidepressants

| Name | Starting dose (range) | Predominant effects |
|---|---|---|
| **Selective Serotonin Reuptake Inhibitors (SSRI)** | | |
| Can cause anorgasmia, agitation, nausea, headache, insomnia; non- lethal in overdose; blood levels not useful; several drug-drug interactions can occur due to cytochromes inhibitions. | | |
| Fluoxetine (Prozac) | 10- 20 mg (10- 80 mg qd) | Long half- life, anorexia |
| Fluvoxamine (Faverin) | 50 mg (100- 300 mg qd) | |
| Paroxetine (Seroxat) | 10- 20 mg (10- 50 mg qd) | Somnolence, dry mouth, constipation |
| Sertraline (Zoloft) | 25- 50 mg (25- 200 mg qd) | Loose stools, anorexia |
| Citalopram (Cipram) | 20 mg (10-40 mg qd) | |
| Ecitalopram (Cipralex) | 20-30mg qd | |
| **Tricyclic Antidepressants (TCA)** | | |
| Use caution in advanced atrio- ventricular delay, potentially lethal in overdose, blood levels useful. Can cause dry mouth, constipation, blurred vision, urinary retention, postural hypotension, tachycardia, somnolence, weight gain. | | |
| Desipramine (Norpramin) | 25- 50 mg (25- 300 mg qd) | Secondary amine - relatively more activating |
| Nortriptyline (Nortrilene) | 10- 25 mg (10- 150 mg qd) | Secondary amine - relatively more sedating |
| Amitriptyline (Tryptizol) | 50-150 mg (10-300 mg qd) | Tertiary amine – use in absence of serious medical illnesses, including cardiac disease that preclude use; need for rapid sedation |
| Imipramine (Tofranil) | 75-150 mg (75-200 mg qd) | |
| **SNRI** | | |
| *Venlafaxine* | 75-150mg qd | Nausea; headache, insomnia, sweating, nervousness, significant hypertension has been reported |
| *Duloxetine* | 30-60mgqd | |
| **Others: Include quaternary amines, mixed serotonin and norepinephrine reuptake inhibitors** | | |
| Bupropion (Wellbutrin) | 75 mg (150- 300 mg qd) | Dizziness, nausea, dry mouth, constipation, sweating, headache, agitation seizures have been reported |
| Trazodone (Desyrel) | 25- 50 mg qhs - insomnia (25- 150 mg qhs) depression (100- 600 mg qd) | Drowsiness, dizziness, dry mouth, fatigue; priapism has been reported |
| Nefazodone (Serzone) | 100 mg bid (200- 600 mg qd) | Headache, dry mouth, somnolence, nausea |
| Mirtazapine (Remeron) | 30 mg QD | Drowsiness |

## Patient self-management strategies

1. Exercises are recommended as adjunctive treatment
2. Bibliotherapy is an optimal adjunct therapy
3. Light therapy: insufficient evidence on the benefits
4. Music therapy is not evidence based in the treatment
5. Life review therapy is not recommended

## When to refer

Consider referral for patients who:

1. Are suicidal
2. Fail 2 medications trials
3. Psychotic and bi-polar
4. Have severe psychosocial problems (rape for example)
5. Require ECT or treatment with MAO inhibitors
6. Require augmentation therapy with Lithium
7. Have no clear diagnosis
8. Have deteriorating symptoms despite adequate treatment

## References


1. Depression clinical practice guidelines. Oakland (CA): Kaiser Permanente Care Management Institute; 2006
2. University of Michigan Health System. Depression. Ann Arbor (MI): University of Michigan Health System; 2005
3. Summaries for patients. Use of drugs to treat depression: guidelines from the American College of Physicians. *Ann Intern Med*. 2008;149:I56.

# Diabetes Mellitus 2

Jumana Antoun

## Definition and epidemiology

1. Diabetes mellitus is a group of metabolic diseases characterized by hyperglycemia resulting from defects in insulin secretion, insulin action, or both.
2. The chronic hyperglycemia of diabetes is associated with long-term damage, dysfunction, and failure of various organs, especially the eyes, kidneys, nerves, heart, and blood vessels.
3. The vast majority of cases of diabetes fall into two broad categories:
   a. Type 1 diabetes:
      1. Cause is an absolute deficiency of insulin secretion
      2. Increased risk of developing this type of diabetes can often be identified by serological evidence of an autoimmune pathologic process occurring in the pancreatic islets and by genetic markers
   b. Type 2 diabetes:
      Cause is a combination of resistance to insulin action and an inadequate compensatory insulin secretory response.
4. The estimated prevalence of DM in Lebanon and in the US is around 5 % for all age groups and up to 15 % in adults above 30 years. In the US half of all diabetics go undiagnosed and untreated.

## Diagnosis

Criteria for the diagnosis of Diabetes Mellitus 2

| | Diabetes | Impaired Glucose tolerance (IGT) |
|---|---|---|
| Fasting Plasma Glucose (FPG) (mg/dl) | FPG ≥ 126 | FPG ≥101 & < 126 |
| Casual Plasma Glucose (CPG) and symptoms (mg/dl) | CPG ≥ 200 | |
| HbA1c (%) | ≥ 6.5 | 5.7 – 6.4 |
| Oral Glucose Tolerance Test (OGTT) (mg/dl) | Two-hour plasma glucose >199 | 2hPG ≥ 140 and < 200 |

1. Fasting is defined as no caloric intake for at least 8 hours
2. You need at least 2 readings
3. OGTT should be performed using a glucose load containing the equivalent of 75 g anhydrous glucose dissolved in water.

## Prevention and screening

Prevention and testing for prediabetes and diabetes in asymptomatic patients:

1. Any age and overweight or obese (BMI>=25 kg/m2) and who have one or more additional risk factors for diabetes.
2. In those without these risk factors, testing should begin at age 45 years. (B)
3. If tests are normal, repeat testing should be carried out at least at 3-year intervals. (E)

## The initial office visit

### History

1. Symptoms of diabetes: polyuria; polydipsia; polyphagia; weight loss; fatigue
2. Symptoms of chronic complications of diabetes: paresthesias; recurrent skin infections; leg or chest pain; foot ulcer; diarrhea/constipation; impotence; urinary incontinence; blurred or decreased vision
3. Behavioral activities: eating habits; physical activity; alcohol/drug abuse

4. Psychosocial, cultural, and economic factors that might influence the management of diabetes
5. Risk factors for diabetes include:
    a. Risk factors for atherosclerosis: smoking, hypertension, dyslipidemia
    b. Family history of diabetes, cardiovascular disease, cerebrovascular disease, hyperlipidemia
    c. Gestational history of an infant weighing more than 4 kg, toxemia, stillbirth, or previous diagnosis of gestational diabetes
6. Current medications including over-the-counter (OTC) medications, dietary supplements and alternative therapies with a focus on medications known to induce diabetes-type states (e.g. steroids, atypical antipsychotics)

**Physical Examination**

1. Weight, height, body mass index (BMI), blood pressure
2. Cardiovascular system: heart, blood pressure, peripheral vascular circulation including pulses and bruits (abdominal, carotid, femoral)
3. Feet: nails, web spaces, ulcers, pulses, calluses, structural deformities, protective sensation and shoes
4. Other examinations as guided by the patient's symptoms and/or concerns:
    a. Skin: infections or diseases such as acanthosis nigricans, xanthoma
    b. Neurological symptoms: sensory state of hands and feet, muscle wasting, deep tendon reflexes
    c. Mental health: screen for depression and/or anxiety
    d. Referral to an eye specialist to assess optic health
    e. Referral to a dentist to assess oral health

**Evaluation**

1. Fasting plasma glucose or random plasma glucose
2. HbA1C
3. Fasting lipid profile: total cholesterol, high-density lipoprotein (HDL cholesterol), LDL cholesterol, and triglycerides
4. Serum creatinine and liver function test (alanine transaminase [ALT] and aspartate transaminase [AST])
5. Urinalysis and spot urine microalbumin

## Ongoing care

**Goal of the visits**

1. Assess glycemic control- frequency and severity of hyperglycemia and hypoglycemia attacks
2. Check for complications- targeted history and physical exam
3. Check for adherence and lifestyle modifications
4. Check for outcome measures- referral to specialist; lab tests; physical exam

**Frequency of the visits**

Every 3 months until HbA1c is controlled
Every 6 months if HbA1c is controlled

## Goals of glycemic control in diabetes mellitus

| Biochemical Index | Normal | Goal |
|---|---|---|
| Average Fasting Plasma Glucose or Pre-prandial Glucose (mg/dl) | < 100 | 90 – 130 |
| Average Postprandial 2 hours (mg/dl) | < 140 | < 160 |
| Average Bedtime Glucose (mg/dl) | < 120 | 110 – 150 |
| A1C (%) – sustained | < 6% | < 7% |

**Desired outcomes**

| Value | Optimal | Acceptable | Poor |
|---|---|---|---|
| Symptoms | Absent | Absent | Present |
| Fasting plasma glucose in mg/dl (mMol/l) | 80-120 (4.5-6.7) | <140 (8) | >160 (9) |
| Postprandial plasma glucose in mg/dl (mMol/l) | 90-145 (5-8) | <160 (10) | >180 (10) |
| Bedtime plasma glucose in mg/dl (mMol/l) | 100-140 | < 160 | > 180 |
| Glycosylated Hb level (HbA1C)* | <6% | <7% | >8% |
| Total cholesterol level in mg/dl (/l) | <200(5.2) | <250(6.5) | >250(6.5) |
| Triglyceride level in mg/dl (/l) | <150(1.7) | <200(2.2) | >200(2.2) |
| HDL | > 45 | > 35 | < 30 |
| LDL | ≤ 70 if CHD | ≤ 100 NO CHD | > 130 no CHD<br>> 100 if CHD |
| Blood pressure (mm Hg) | <135/85 | <140/90 | >160/90 |

## Management

### Non-pharmacologic treatment

***Dietary Therapy***

1. Work together toward gradual, realistic and culturally appropriate lifestyle change goals.
2. Healthful food choices: foods containing carbohydrates from whole grains, fruits, vegetables, legumes and low-fat dairy products should be included in a healthy eating plan.
3. Reduce total caloric intake by moderating food/beverage and limiting total fat intake.
4. Distribute carbohydrates evenly throughout the day to smaller meals and snacks.
5. Monitoring carbohydrates remains a key strategy in achieving glycemic control, whether by carbohydrate counting, exchanges or experience-based estimation
6. Limit intake to one drink per day for women and two drinks per day for men: a drink is defined as 350 ml of regular beer, 150 ml of wine, or 44 ml of 80-proof distilled spirits. To reduce the risk of hypoglycemia, alcohol should be consumed with food.
7. Involve a dietician with frequent visits and reminders
8. Non-nutritive sweeteners are safe when consumed within the acceptable daily intake levels established by the U.S. Food and Drug Administration (FDA).

***Exercise Program***

1. Exercise is a corner stone of diabetes therapy
2. 30 minutes of daily aerobic exercise in order to increase and maintain insulin sensitivity
3. Patients should be instructed to wear comfortable, protective foot wear and to examine their feet after exercise to look for pressure areas that may be prone to blistering or callus formation.
4. Education of how to avoid hypoglycemia during exercise

### Pharmacologic Treatment

1. Pharmacologic therapy should be initiated immediately in addition to diet and exercise
2. In determining which pharmacologic alternative is best, consider the following:
   a. Weight & age of the patient
   b. Severity of the patient's disease (i.e. degree of hyperglycemia, presence of symptoms)
   c. Preferences of the patient on the use, expected therapeutic effects, and possible side effects of oral agents & insulin

***Oral agents***

| Class | Generic | Brand Name | Usual starting dose | Maximum effective dose |
|---|---|---|---|---|
| Biguanides | Metformin | Glucophage | 1000-2550 given BID or TID | |
| | Metformin XR | Glucophage XR | 500-2000 given QD to BID | |
| Sulfonylureas 2nd generation | Glipizide | Minidiab | 5mg/day | 15 mg/day |
| | Gliclazide | Diamicron | 80 mg/day | 240 mg/day |
| | Glyburide Glibenclamide | Daonil | 2.5 mg/day | 15 mg/day |
| | Glimiperide | Amaryl | 1-2 mg/day | 6 mg/day |
| Glitinides | Repaglinide | Novonorm | 0.5 mg with each meal | 4 mg TID |
| | Nateglinide | Starlix | 120 mg TID | |
| Glitazones | Pioglitazone | Actos | 15 mg QD | 45 mg QD |
| DDP4 inhibitors | Sitagliptin | Januvia | 100 mg QD | |
| | Vildagliptin* | Galvus | 50 mg QD | |
| GLP1agonsit | Exenatide | Byetta | 5 µg BID SQ | 5 µg BID |
| α-Glucosidase inhibitors | Acarbose | Glucobay | 25 mg TID | 100 mg TID |

* As of December 2010, it was approved in Europe only.

***Oral agents effects comparison***

| **Drug Class** | **Action** | **Expected decrease in HbA1c** | **Advantages** | **Disadvantages** |
|---|---|---|---|---|
| Biguanides (Metformin) | Decrease hepatic glucose output and lower fasting glycemia | 1-2 | Weight neutral; inexpensive; No hypoglycemia | GI side effects; rare lactic acidosis |
| Sulfonylureas | Enhances insulin secretion | 1-2 | Inexpensive | Weight gain; hypoglycemia |
| Thiazolidinediones (glitazines) | Increase the sensitivity of muscle, fat, and liver to endogenous and exogenous insulin | 0.5-1.4 | Improve lipid profile | Fluid retention; twofold increase in risk of CHF; weight gain; expensive |
| Glinides | Stimulate insulin secretion (Repaglinide more effective than nateglinide) | 1-1.5 | Short duration | Three times/day dosing; expensive; hypoglycemia; weight gain |
| α-Glucosidase inhibitors | Reduce the rate of digestion of polysaccharides in the proximal small intestine, primarily lowering postprandial glucose levels | 0.5-0.8 | Weight neutral | Frequent GI side effects; three times/day dosing |
| Glucagon-like peptide 1 agonists (exenatide) | Potentiates glucose-mediated insulin secretion acts mainly by lowering postprandial blood glucose levels; suppresses glucagon secretion and slows gastric motility | 0.5-1.0 | Weight loss | Injections; frequent GI side effects; expensive; little experience |
| Amylin Agonists (Pramlintide) | Synthetic analog of the β-cell hormone amylin; slows gastric emptying, inhibits glucagon production in a glucose-dependent fashion, and predominantly decreases postprandial glucose excursions | 0.5-1.0 | Weight loss | Injections; three times/day dosing; frequent GI side effects; expensive; little experience |
| DDP4 inhibitors (Sitagliptin) | Increase incretin levels which inhibit glucagon release thus increase insulin secretion, decrease gastric emptying and decrease blood glucose levels | 0.5-0.8 | Weight neutral | Little experience; expensive |

***Insulin therapy***

1. Indications for the use of insulin:
   a. Periods of acute injury, stress, infection, or surgery
   b. Pregnancy
   c. Failure to achieve treatment goals with oral agents
   d. Glucose toxicity and HbA1c >9
2. Replacement insulin therapy should mimic normal release patterns. Basal insulin, using long-acting insulins (i.e. neutral protamine Hagedorn [NPH], ultralente, glargine) is injected once or twice a day and continued on sick days.
3. Bolus (or mealtime) insulin, using short-acting or rapid-acting insulins (i.e. regular, aspart, lispro) covers mealtime carbohydrates and corrects the current glucose level.
4. The starting dose of 0.15 units per kg per day for augmentation or 0.5 units per kg per day for replacement can be increased several times as needed for intermediate insulin; Glargine Insulin is started at an average dose of 10 IU once daily, and subsequently adjusted according to the patient's need to a total daily dose ranging from 2 to 100 IU.
5. About 50 to 60 percent of the total daily insulin requirement should be a basal type, and 40 to 50 percent should be a bolus type. The mealtime dose is the sum of the corrective dose plus the anticipated requirements for the meal and exercise.
6. Basal therapy with glargine insulin provides similar to lower A1C levels with less hypoglycemia than NPH insulin. Insulin aspart and insulin lispro provide similar A1C levels and quality of life, but lower postprandial glucose levels than regular insulin

**Description of Onset, Peak and duration of different forms of Insulin**

| Insulin | Onset | Peak (hrs.) | Usual effective duration (hrs.) | Usual max duration (hrs.) |
|---|---|---|---|---|
| Bolus or meal time insulin | | | | |
| Aspart (Novolog) | 5-10 min | 1-3 | 3-5 | 4-6 |
| Lispro (Humalog) | <15 min | 0.5-1.5 | 2-4 | 4-6 |
| Regular (Humulin R) | 30 to 60 min | 2-3 | 3-6 | 6-10 |
| Basal Insulin | | | | |
| NPH (Humulin N) | 2 to 4 hrs. | 4-10 | 10-16 | 14-18 |
| Lente | 3 to 4 hrs. | 4-12 | 12-18 | 16-20 |
| Ultralente | 6 to 10 hrs. | Peakless | 18-20 | 20-24 |
| Glargine(Lantus) | 1 hr | Peakless | 24 | 24 |

## Patient self-monitoring

| Therapy | Frequency and Timing |
|---|---|
| Non-pharmacologic or oral agent | Before breakfast and evening meal at least 2-3 days per week<br>Postprandial may be helpful |
| Simple insulin regimens (1 or 2 shots intermediate daily) | Before breakfast and evening meal at least 3-4 days per week<br>Daily for type I |
| Complex insulin regimens | Before breakfast, lunch, and supper and bedtime daily |

## Management of other risk factors/complications of diabetes mellitus

### Hypertension/ Blood pressure

1. BP should be taken at every routine diabetes visit
2. Patient should be treated to a BP of <130/80
3. Medication to treat BP should include ACEI or ARB; if not controlled a thiazide might be added

### Lipid Management

1. Measure lipid at least annually
2. Target LDL should be <100; in those with overt CAD LDL <70; target TG <150
3. Statin therapy is indicated irrespective of baseline LDL in the following diabetics
   a. With overt CAD
   b. Without overt CAD but more than 40 and have one or more CAD risk factors

### Antiplatelets

Use aspirin therapy in all diabetics >40 years

### Neuropathy

1. Inspect feet daily for cuts, bruises, bleeding, redness and nail problems
2. Wash feet daily and dry thoroughly including between the toes
3. Do not soak feet unless specified by a health care provider
4. Be careful of hot water
5. Don't walk barefoot
6. Check shoes each day for objects that may have fallen inside, excessive wear or areas that may cause irritation
7. Avoid injuries from cutting toenails, avoid self-cutting calluses or corns
8. Seek care immediately for new foot problems

### Retinopathy

Annual retinal exam with ophthalmologist

### Immunization

1. All diabetics should receive influenza vaccine annually
2. All diabetics should receive pneumococcal vaccine; a onetime revaccination should be done to those > 65 and 5 years has elapsed since their first dose

## When to refer

1. Nephrologist: proteinuria or elevated serum creatinine > 2.5 mg/dl
2. Podiatrist, orthopedist: neuropathic ulcer
3. Vascular surgeon: vascular insufficiency or complicated ulcer
4. Ophthalmologist: on initial visit and every year, and if there is retinopathy or decreased visual acuity
5. Diabetologist: consistently poor control
6. Nutritionist: on initial visit, every year, and as necessary if poor control

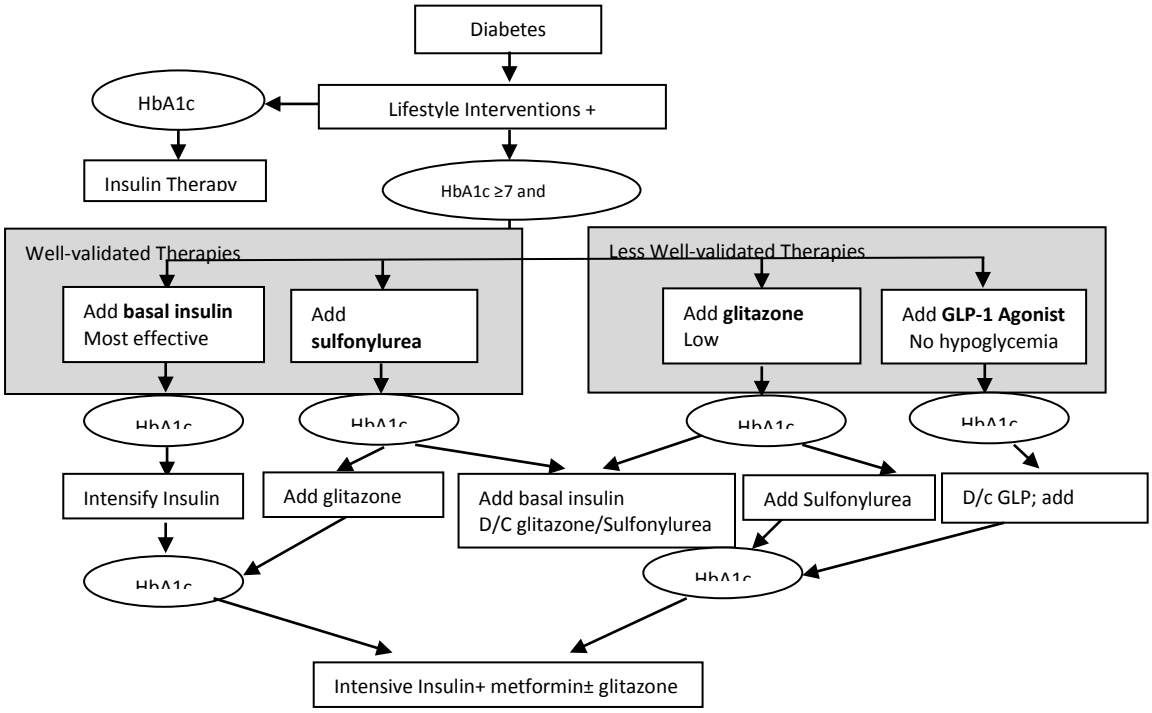
## Patient education

1. The pathophysiology of diabetes mellitus and the psychosocial impact of living with chronic disease
2. Patient responsibilities for self-care
3. Risks for complications of the disease
4. Diet and meal planning
5. Regular physical activity and exercise
6. Medication adherence
7. Regular appointments with medical provider(s)
8. Advise about symptoms and treatment of hypoglycemia
9. Self-monitoring of blood glucose and ketones in urine
10. Instruct about insulin injections.

## Quality of care indicators

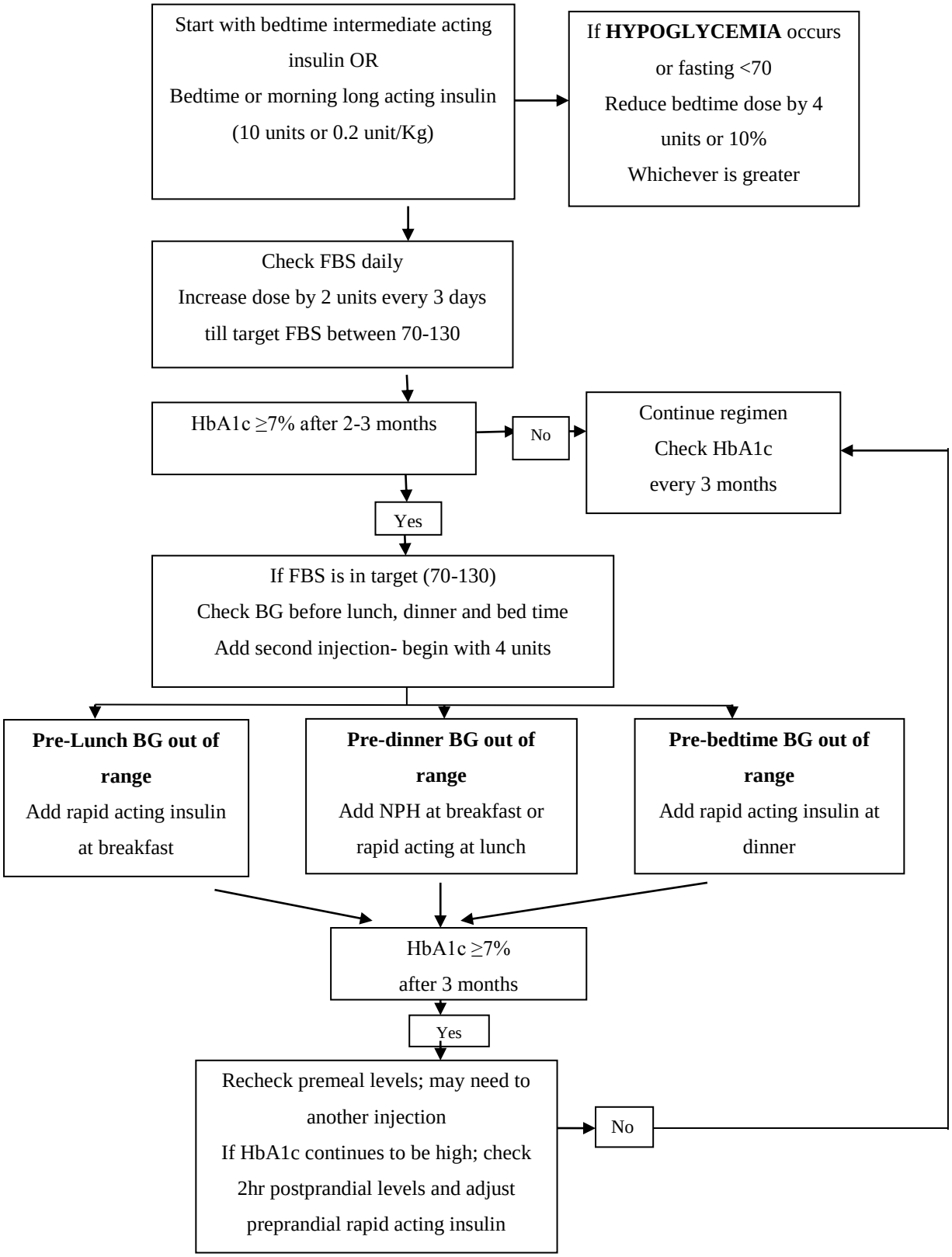
1. Percentage of patients attaining pre-set desired outcomes (e.g. with HbA1c < 7%)
2. Percentage of patients with HbA1c measured every 6 months.
3. Percentage of patients with a lipid profile every 12 months.
4. Percentage of patients with microalbumin tested within the last 12 months.
5. Percentage of patients with eye examination documented within the last 12 months.
6. Percentage of patients with foot examination documented within the last 12 months.
7. Percentage of patients without contraindications who regularly use aspirin.
8. Percentage of patients with tobacco use documented.
9. Percentage of current tobacco users given advice to quit.

## Algorithm for glycemic control




1. According to ADA, DDP4 inhibitors, Pramlintide, acarbose are not included due to their overall lower glucose lowering effectiveness and limited data. Good substitute for metformin or glitazones if there are contraindications to their intake

## Algorithm for insulin therapy



## References


1. Executive summary: standards of medical care in diabetes--2009. *Diabetes Care*. 2009;32(Suppl 1):S6-12.
2. Mayfield JA, White RD. Insulin therapy for type 2 diabetes: rescue, augmentation, and replacement of beta-cell function. *Am Fam Physician*. 2004;70:489-500.
3. Nathan DM, Buse JB, Davidson MB, et al. Management of hyperglycemia in type 2 diabetes: A consensus algorithm for the initiation and adjustment of therapy: a consensus statement from the American Diabetes Association and the European Association for the Study of Diabetes. *Diabetes Care*. 2006;29:1963-1972.
4. Sheehan MT. Current therapeutic options in type 2 diabetes mellitus: a practical approach. *Clin Med Res*. 2003;1:189-200.

# Diarrhea in children

Pascale Karam

## Definition

1. It is usually defined as the passage of loose or watery stools three times or more during a day.
2. Stools are usually foul smelling and are passed quickly.
3. It can be acute, starting suddenly and lasting for few days. It can also be chronic.

## History

1. Assess stool characteristics: frequency, quantity, consistency, presence of mucus or blood
2. Presence of fever
3. Urgency
4. Cramps, abdominal pain
5. Anorexia and vomiting
6. Cough
7. Food ingested prior to episodes
8. Diet: bottle vs. breast feeding
9. Hygiene measures
10. Urine and voiding frequency

## Physical Exam

1. Vital signs: temperature, heart rate, respiratory rate
2. BP, weight
3. Look for decreased hydration status: decreased skin turgor, dry mucus membranes and tearing, hypotension, decreased urination (dry diapers), depressed fontanelles
4. Anatomic defects
5. Mental status
6. Abdominal exam
7. ENT exam

## Differential diagnosis

1. Infections: bacterial, or viruses, parasites, fungi
2. Dietary causes: sorbitol, malnutrition, overfeeding
3. Extraintestinal infections: otitis, urinary tract infection, sepsis, pneumonia
4. Toxin
5. Pharmacologic effects
6. Absorption disorders cystic fibrosis, celiac disease
7. Metabolic defects
8. Endocrine problems
9. Neoplastic diseases
10. Immunologic defects
11. Neurologic disorders

## Laboratory tests

1. Stool microscopy
2. Stool Wright stain
3. Stool culture
4. Blood: BUN, creatinine, electrolytes
5. CBC, blood culture
6. Urine: analysis and culture

## Management

### Acute

A. Decide on presence /or degree of dehydration

| | | No dehydration | Mild dehydration (2 or more of signs) | Severe dehydration (2 or more of signs) |
|---|---|---|---|---|
| Ask | Stools | < 5 x/d watery | < 5-10 x/d watery | >10 x/d watery or with blood and mucous |
| | Vomiting | No or little | Some | A lot |
| | Thirst | Normal | Normal | Cannot drink |
| | Urination | Normal | Little, dark | No urine for 6 hours |
| Look | General status | Good, conscious | Sleepy, irritable | Very sleepy, lethargic |
| | Eyes | Normal | Sunken | Dry and sunken |
| | Mucous membranes | Normal, wet | Dry | |
| | Respiration | Normal | Fast | Rapid and shallow |
| Feel | Skin turgor | Normal | Skin slowly goes back when pinched | Skin goes back very slowly when pinched |
| | Pulse | Normal | Fast | Very fast and weak |
| | Fontanelles | Normal | Sunken, depressed | Very depressed |
| Weight | | Unchanged | Loss of 50-100 g per Kg | Loss > 100 g per Kg |
| Temperature | | | | High fever 39C |
| Decision | | Plan A | Plan B | Plan C |

B. Select plan commensurate with degree of dehydration

Plan A

a. No dehydration
b. Continue feeding especially if breast fed
c. Dilute formula milk
d. Give yogurt
e. Focus on protein rich food (chicken soup cereals)
f. Teach the mother to look for signs of dehydration
g. Give ORS (ready, or homemade)

Plan B

a. Mild dehydration
    1. Start with ORS (give based on weight and age)
    2. Patient not rehydrated → go to Plan C
    3. Patient rehydrated
        a. Maintenance therapy
        b. Resume feedings
b. Patient receiving medicines
    1. Consider medication associated diarrhea
    2. Stop medication or change it
c. Possible toxin ingested
    1. Toxin induced diarrhea
    2. Evaluate and treat
d. Evidence of food poisoning
    1. Supportive care
    2. Prevention for contacts
e. No infective causes identified
    1. Supportive treatment
    2. Hydrate

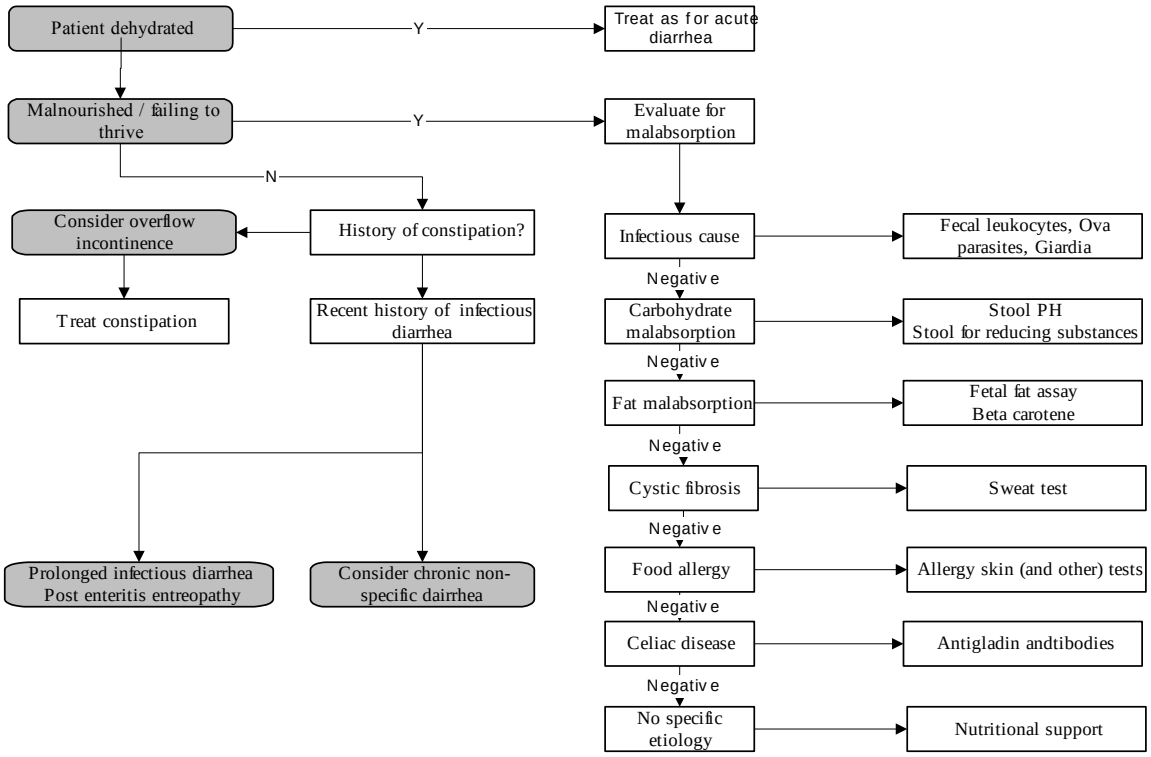
3. Stool culture
4. Ova and parasites
5. Treat as needed

f. No specific cause
1. Continue supportive management

Plan C Severe dehydration
- Start with ORS
- Refer to hospital for IV hydration or NG hydration
- When stable – Plan B

**Chronic Diarrhea**

Work up




## References


1. King CK, Glass R, Bresee JS, Duggan C. Managing acute gastroenteritis among children: oral rehydration, maintenance, and nutritional therapy**.** *MMWR Recomm Rep*. 2003 Nov 21; 52(RR-16):1-16.

# Dyslipidemia

Maya Romani

## Definition and epidemiology

1. Hyperlipidemia is a major modifiable risk factor for coronary heart disease with plasma lipoprotein (lipids) levels influenced by genetics, concomitant disease, medications and lifestyle.
2. The primary care doctor is mostly interested in hyperlipidemia as a risk factor for cardiovascular disease

## Classification of hyperlipidemia

| Type | Laboratory findings | Characteristics |
|---|---|---|
| Chylomicronemia (Type I-younger, V-older) | Elevated TG (700-10,000), VLDL, chylomicrons | 5% of all hyperlipoproteinemias<br>Serum lipemic, pancreatitis, eruptive xanthomas |
| Hypercholesterolemia (Type IIa) | Elevated total cholesterol (300-500), LDL (>250) | 10% of all hyperlipoproteinemias<br>LDL receptor defect.<br>Premature coronary heart disease (CHD), tendon xanthomas, arcus senilis |
| Combined Hyperlipidemia (Type IIb) | Elevated total cholesterol (250-350), LDL, and VLDL cholesterol and/or elevated TG. | 40% of all hyperlipoproteinemias<br>Different patterns in different family members<br>VLDL overproduction by the liver<br>Premature CHD, xanthelasma, arcus senilis |
| Dysbetaliproteinemia (Type III) | Elevated total cholesterol (300-600), TG (400-800). | < 1% of all hyperlipoproteinemias<br>Abnormal apolipoprotein E<br>In addition to genotype, need other factors to express (DM, obesity, hypothyroidism).When patients lose weight, lipids may normalize<br>Premature CHD, palmar xanthoma, peripheral vascular disease in nonsmokers. |
| Hypertriglyceridemia (Type IV) | Elevated total cholesterol, TG, and VLDL. LDL low. | 45% of all hyperlipoproteinemias<br>Delayed VLDL catabolism |
| Severe Polygenic Hypercholesterolemia | Elevated LDL (>220) | Multifactorial |
| Defective Apolipoprotein B | Levels similar to Hypercholesterolemia (IIa) | Decreased LDL receptor affinity<br>Premature CHD, tendon xanthomas |

## History and physical examination

Hyperlipidemia is a laboratory diagnosis made usually during screening for coronary heart disease (CHD) risk factors. As such, history and physical are geared at evaluating all cardiovascular risk factors and include the following:

1. Coronary heart disease risk factors
    a. Age: M>45yr, F>55yr or premature menopause without estrogen replacement therapy
    b. Family history of premature CHD
    c. Smoking
    d. Hypertension
    e. Diabetes and possibly insulin resistance syndromes

   f. HDL cholesterol <35mg/dL (0.9mMol)
   g. Central obesity
   h. Hyperhomocysteinemia
2. An initial evaluation of:
   a. Dietary habits
   b. Exercise habits
   c. History of thyroid or coronary heart disease
   d. Previous levels of cholesterol
   e. Current medications
   f. Cardiovascular examination
3. A follow-up for:
   a. Compliance with diet
   b. Compliance with exercise
   c. Compliance with medications
   d. Side effects from medications
   e. Serum cholesterol at 4-6 weeks, then q3 months for 1 year, then q6 months
4. LDL is calculated using the Friedenwald equation if triglyceride level is less than 400 mg/dL: LDL = total cholesterol – HDL – triglycerides/5. If triglyceride level is above 400, the blood sample has to be subjected to a non-routine special ultra-centrifugation technique.

## Risk stratification

There are three steps to determine risk stratification

**Step 1: Determine major cardiovascular risk factors**

   a. Smoking
   b. Hypertension
   c. Low HDL <40
   d. Family history of premature CHD ( Men 1st degree relative <55 y old; Women 1st degree relative <65)
   e. Age (Men ≥45; Women ≥55)

**Step 2: Determine CHD risk equivalent conditions**

   a. Diabetes Mellitus
   b. Peripheral vascular disease
   c. Carotid artery disease
   d. Abdominal aortic aneurysm

**Step 3: Calculate Framingham risk**

If two or more major cardiovascular risks, but no CHD risk equivalent conditions, calculate Framingham risk

   a. Risk>20%; high risk
   b. Risk 10-20%; moderately high risk
   c. Risk <10%; moderate risk

## Evaluation

1. A general chemistry screen is necessary if diabetes, renal or liver diseases are suspected
2. Thyroid function tests should be requested based on clinical judgment

## Management

Decision to treat is based on presence of coronary heart disease (CHD) risk factors and LDL level. Treatment options include dietary and pharmacologic therapy together with advice regarding other cardiovascular risk factors.

| Dyslipidemia | Medication | General Diet |
|---|---|---|
| LDL: 100-129 mg/dL | None | None |
| LDL: 130-159 mg/dL | If CHD present | All |
| LDL: 160-189 mg/dL | If CHD or 2 risk factors for CHD are present | |
| LDL: 190-220 mg/dL | All men above 35 y or postmenopausal women | |
| LDL: >=220 | All | |
| Triglycerides 200-500 | Evaluate other risks | |
| Triglycerides > 500 | All | |

**Follow up and goals of treatment**

| *Risk factor* | Cholesterol level | Recheck | LDL goal (mg/dl) |
|---|---|---|---|
| No CHD & No risk factors | Less than 240 | 1 year | < 160 |
| | More than 240 | 3-6 months | < 160 |
| No CHD & Less than 2 CHD risk factors | Less than 240 | 1 year | < 160 (optimal<130) |
| | More than 240 | 3-6 months | < 130 (optimal<100) |
| No CHD &2 or more CHD risk factors OR Diabetes | Any level | 3 months | < 100 (optimal <70) |
| CHD present | Any level | 3 months | < 100 (optimal <70) |

1. In isolated hypertriglyceridemia, therapy depends on the triglyceride level. Patients with triglycerides > 500 mg/dL are at increased risk of developing acute pancreatitis. This risk increases very significantly as triglycerides increase to > 1000 mg/dL. Although triglycerides may not normalize with the commonly used treatments, the risk of pancreatitis is reduced.
2. In patients with moderate hypertriglyceridemia (200-500 mg/dL) who have two or more CHD risk factors, an HMG reductase inhibitor may be considered for first line therapy.

## Therapeutic choices

### Nonpharmacologic treatment

1. Stop smoking
2. Diet
   a. General diet advice: reduce saturated fat and substitute with monosaturated and polyunsaturated fats; reduce total calories to maintain ideal body weight.
   b. Step I (10% of calories saturated fat): cholesterol <300mg/d, total fat <30% of calories
   c. Step II (7% of calories saturated fat): cholesterol <200mg/d, total fat <30% of calories
   d. Diet may not change Chol:HDL ratio, or may increase the ratio
   e. Probably indicated in all young persons with increased cholesterol
   f. Most effective in patients with higher than average fat intake
   g. Alcohol (EtOH) probably does not alter HMG CoA reductase inhibitor activity
   h. Alcohol increases HDL fraction when taken alone, and may reduce overall mortality
   i. Dietary fiber - soluble fiber probably more effective than insoluble fiber
3. Exercise
   30 minutes of aerobic activity at least 5 days a week

### Pharmacologic Treatment

### Lipid lowering classes

***HMG CoA reductase inhibitors (statins)***

1. Most potent agents
2. Lower cholesterol, LDL and TG with minimal increase in HDL
3. Considered as first line of treatment

4. Indicated in type IIa, IIb, high LDL and primary hypercholesterolemia
5. Evening doses more effective due to higher cholesterol synthesis

***Nicotinic acid (Niacin)***

1. Lower LDL and TG; moderate increase in HDL
2. Indicated in elevated cholesterol with high LDL and low HDL
3. Take with food; avoid hot beverages and alcohol at time of tablet; might give aspirin 325 mg before dose to decrease the hot flushes
4. Check uric acid levels if symptoms of gout occurs

***Bile Acid Sequestrants (Cholestyramine)***

1. Decreases LDL; increase HDL; no effect on TG
2. Good for combination therapy
3. Monitor with fasting lipid at 6-12 weeks then periodically every 6 months
4. Powder must be mixed with liquid prior to ingestion; mix and leave in fridge overnight

***Fibric acids***

1. Decreases TG and increase HDL; variable effect on LDL
2. Indicated in IIb with triad of high TG, low HDL and high LDL
3. Dose reductions in patients with renal insufficiency
4. Monitor as in statins

***Omega 3 fatty acids***

1. Decrease TG
2. Side effects are uncommon such as fishy taste and belching; caution in patients with fish allergy

***Ezetimibe***

1. Reduces LDL-C and increases HDL
2. Indicated in combination therapy

**Summary of the effect of lipid lowering classes**

| Class | Effect on LDL-C | Effect on HDL-C | Effect on TG |
|---|---|---|---|
| Statins | ↓↓↓ | →↑ | ↓ |
| Bile acid sequestrants | ↓↓ | →↑ | →↑ |
| Nicotinic acid | ↓↓ | ↑↑↑ | ↓↓↓ |
| Fibric acids | ↓ or ↑ | ↑↑ | ↓↓↓ |
| Omega-3 fatty acids | → | → | ↓↓↓ |
| Ezetimibe | ↓↓ | ↑ | → |

**Drug monitoring**

1. Fasting lipid panel, serum transaminases, CPK at base line
2. Fasting lipid panel, at 6–12 weeks after start or elevation in dose, then periodically approx. every 6 months.
3. If the transaminases are increased they should be followed until the abnormality resolves. If transaminases increase more than 3 times normal, and persist stop med
4. Check CPK if muscle symptoms develop

**Management and treatment tips**

1. HMG CoA reductase inhibitors (statins) are generally considered first line therapy for high LDL. Niacin is effective, lower cost, but poorly tolerated
2. Most patients with LDL >160mg/dL require >1 agent to reduce LDL to <130mg/dL
3. Combinations of agents (statins + bile acid sequestrants) may be needed to achieve goal, especially if cholesterol above 300 mg/dL
4. Combinations may also allow use of lower doses of each agent with reduced side effects
5. HDL >35mg/dL should be an additional goal in patients at risk or post-MI
6. Low HDL can best be increased with Niacin or Gemfibrozil

7. Treatment of hypertension and hypercholesterolemia
   a. Beta-blockers, thiazides and related agents increase total cholesterol
   b. Beta-blockers with intrinsic sympathomimetic activity decrease total cholesterol
   c. ACE inhibitors and alpha-adrenergic blockers reduce total cholesterol
8. Long term effects of pharmacologic therapy are not known

## Common medications list

| Class | Generic | Brand | Dosing ( Max/day) |
|---|---|---|---|
| **Statins** | Atorvastatin | Lipitor 10 mg ; 20 mg ; 40 mg | 10-20 mg QD (80 mg) |
| | | Liponorm 10 mg; 20 mg | |
| | Rosuvastatin | Crestor 10 mg; 20 mg ; 40 mg | 10 mg QD (40 mg) |
| | Fluvastatin | Lescol 20 mg ; 40 mg; XL 80 mg | 20 mg QD (40 mg in 1-2 doses) |
| | Pravastatin | Lipostat 10 mg ; 20 mg | 10-20 mg QD (40 mg) |
| | | Stavacor 10 mg ; 20 mg ; 40 mg | |
| | Simvastatin | Zocor 10 mg ; 20 mg ; 40 mg | 5 mg QD (80) |
| | | Stavine 10 mg; 20 mg ; 40 mg | |
| | | Vascor 10 mg ; 20 mg ; 40 mg | |
| **Nicotinic acid** | Niacin | Niaspan 500 mg ; 750 mg ; 1000 mg | 500 mg QD (2 g) |
| **Bile acid sequestrants** | Cholestyramine | Questran (4g/sachet) | 4 g 1-2 times/day (24 g) |
| **Fibric acid** | Gemfibrozil | Lopid 600 mg | 600 mg BID |
| | Fenofibrate | Lipanthyl 160 mg ; 200 mg ; Fegenor 200 mg (12$) | 200 mg QD |
| | Ezetimibe | Accotral 10 mg | 10mg QD |

## When to refer

1. Dietitian or nutritionist for Step-Two Diet or another 3 month trial of Step-One Diet - if goal not reached after 3 months on Step-One Diet.
2. Endocrinologist if
   a. Unsure about diagnosis or treatment protocol or patient does not respond to initial drug therapy
   b. Cases of familial hyperlipidemias

## Patient education

1. Explain the increased risk of coronary heart disease with increased blood cholesterol
2. Instructions about low cholesterol, low saturated fat diet
3. Advise regular exercise
4. Advise smokers to stop smoking
5. Tell patient his/her cholesterol level
6. Explain the target cholesterol level
7. Explain side effects of medications

## Screening guidelines

1. The US National Cholesterol Education Program (NCEP) expert panel
   a. Recommends routine lipid screening for men ages 35- 75 and women ages 45- 75
   b. Discuss uncertainty surrounding lipid screening benefit with men between the ages of 20- 34 years, women between the ages of 20- 44 years, and men and women after age 75
   c. Individuals in the latter groups should be screened on the basis of their cardiovascular risk profile and treatment availability after discussion of patient preference and risks and benefits of treatment.

2. Complete fasting lipid profile: total cholesterol, low and high density lipoproteins, and triglycerides should be done if cholesterol is above 240, between 200 and 239 in a patient with CHD or 2 risk factors for CHD or has an HDL < 35mg/dL.
3. Measurement of a non-fasting serum total cholesterol is recommended for children and young adults who have either
    a. A primary relative with a history of CHD prior to the age of 55 years
    b. A parent with a history of a total cholesterol >240 mg
    c. A primary relative is a parent, grandparent or sibling; CHD event at an early age includes occurrence prior to the age of 55 in men or prior to the age of 65 in women

## Quality of care indicators

1. Percentage of men aged 35-75 with a cholesterol screen in the last 5 years
2. Percentage of women aged 45-75 with a cholesterol screen in the last 5 years
3. Decrease in percentage of adults without history of hyperlipidemia with a serum cholesterol test whose last test within the last 3 years was normal
4. Percentage of children receiving serum cholesterol screening who are at risk for familial hypercholesterolemia
5. Percentage of patients with diagnosed coronary artery disease who have LDL- cholesterol less than 100 mg/ dL
6. Percentage of patients with referral for individual diet instruction or class
7. Percentage of patients on lipid lowering medication who may have a fasting lipid panel every six to twelve months

## References


1. Institute for Clinical Systems Improvement (ICSI). Lipid management in adults. Bloomington (MN): Institute for Clinical Systems Improvement (ICSI); 2007
2. Sarwar IN, Danesh J, Eiriksdottir G, Sigurdsson G, Wareham N, Bingham S, et al. Triglycerides and the risk of coronary heart disease: 10,158 incident cases among 262,525 participants in 29 Western prospective studies. *Circulation*. 2007 Jan 30;115(4):450-8.
3. Major outcomes in moderately hypercholesterolemic, hypertensive patients randomized to pravastatin vs. usual care: The Antihypertensive and Lipid-Lowering Treatment to Prevent Heart Attack Trial (ALLHAT-LLT). *JAMA*. 2002 Dec 18;288(23):2998-3007.
4. Kris-Atherton PM, Harris WS, Appel LJ. Fish consumption, fish oil, omega-3 fatty acids, and cardiovascular disease. *Circulation*. 2002 Nov 19;106(21):2747-57.
5. McKenney JM, Jones PH, Adamczyk MA, Cain VA, Bryzinski BS, Blasetto JW. Comparison of the efficacy of rosuvastatin versus atorvastatin, simvastatin, and pravastatin in achieving lipid goals: results from the STELLAR trial. *Curr Med Res Opin*. 2003;19(8):689-98.
6. Nissen SE, Tuzcu EM, Schoenhagen P, Brown BG, Ganz P, Vogel RA, et al. Effect of intensive compared with moderate lipid-lowering therapy on progression of coronary atherosclerosis: a randomized controlled trial. *JAMA*. 2004 Mar 3;291(9):1071-80.
7. Executive Summary of The Third Report of The National Cholesterol Education Program (NCEP) Expert Panel on Detection, Evaluation, And Treatment of High Blood Cholesterol In Adults (Adult Treatment Panel III). *JAMA*. 2001 May 16;285(19):2486-97.
8. Grundy SM, Cleeman JI, Merz C, Brewer CH Jr, Clark LT, Hunninghake DB, et al. Implications of recent clinical trials for the National Cholesterol Education Program Adult Treatment Panel III guidelines. *Circulation*. 2004 Jul 13;110(2):227-39.

# Dysmenorrhea & Premenstrual Syndrome

Beatrice Khater

## Definition and epidemiology

1. Dysmenorrhea refers to painful menstruation.
    a. **Primary** dysmenorrhea (PD) is painful menstruation in the absence of demonstrable pelvic disease. It usually occurs within a year or 2 of the menarche.
    b. **Secondary** dysmenorrhea (SD) has a pathologic cause such as endometriosis, adenomyosis, fibroids or pelvic inflammatory disease (PID), usually occurs 2 years after onset of menarche and is characterized by new onset of pain or worsening of usual pain.
2. Dysmenorrhea can affect up to 50% of menstruating women.
3. PD is caused by abnormal uterine contractions that result in uterine ischemia. Prostaglandins produced in the endometrium during menses are a major cause of these intense contractions. Discomfort and pain resolve at the end of menses.
4. Premenstrual syndrome (PMS) is a condition with multiple physical and non-physical complaints interfering with normal functioning, occurring in the premenstrual period and resolving at the onset of menses.
5. Premenstrual symptoms occur in 95 percent of all women of reproductive age

## Signs & symptoms

1. PD only occurs during ovulatory cycles
2. The pain characteristically begins just before or with the onset of menstrual bleeding and gradually diminishes over 12 to 72 hours
3. Fatigue, nausea, vomiting, back ache and diarrhea may also be present
4. In SD, symptoms and physical findings alert the physician to the presence of pelvic pathology
5. PMS manifests 10 to 14 days prior to menses with a multitude of symptoms including:
    a. Affective changes: emotional lability, irritability or depression
    b. Behavioral changes: aggression, altered libido or food cravings
    c. Cognitive changes: confusion, poor concentration or forgetfulness
    d. Physical symptoms: headache, fatigue, mastalgia, bloating, fluid retention or insomnia
6. In both conditions, the physician needs to explore:
    a. How severity interferes with daily living or function
    b. Possibility of other physical (genito urinary) or psychological problems
    c. Secondary gain issues at work or relationship
    d. A pelvic examination and ultrasound may be necessary to rule out genital infections, masses or leiomyomas; pregnancy test if suspected.

## History

1. Age at menarche and at onset of pain
2. Interval between the first day of each menses, number of days of menstrual bleeding, estimate of menstrual flow, presence of intermenstrual bleeding or premenstrual staining
3. Date of onset of last two menses
4. Relationship between onset of symptoms and onset of menstrual flow
5. Severity and location of pain with menses
6. Presence of nausea, vomiting, diarrhea, back pain, dizziness, or headache during menstruation
7. Presence of dyspareunia or dyschezia
8. Impact of dysmenorrhea on daily activities
9. Previous medication use, dose, duration, and efficacy
10. Progression of symptom severity
11. Presence of pelvic pain not related to menses

## Management options

### Dysmenorrhea

***Non- pharmacological interventions***

1. Application of heat to the lower abdomen appears to be as effective as oral analgesics for relief of dysmenorrheal pain
2. Exercise appears to be associated with fewer menstrual symptoms
3. Thiamine, vitamin E, and fish oil supplements, a low-fat vegetarian diet, and acupuncture may show some benefit

***Pharmacological interventions***

1. First line treatment of choice is non-steroidal anti-inflammatory drugs (NSAID)
2. It is unclear whether specific NSAIDS are more effective than others
3. NSAID should be prescribed at the upper end of the dose range, started before the onset of pain for maximum effect and continued for 2-3 days
4. If there is inadequate response to one agent after three cycles, it should be discontinued and another one tried
5. Oral contraceptives (OCP): in patients requiring both contraception and relief of dysmenorrhea
6. Treatment with both hormonal contraceptives and NSAIDs may be effective in women who remain symptomatic on either drug alone
7. If dysmenorrhea remains uncontrolled with any of these approaches, pelvic ultrasonography should be performed and referral for laparoscopy should be considered to rule out secondary causes of dysmenorrhea

### PMS

No universal treatment for PMS is known
Treatments that have shown to be beneficial:

1. Spironolactone (100 mg/day) during luteal phase
2. NSAID (particularly mefenamic acid and naproxen)
3. Oral contraceptives
4. Pyridoxine (vitamin B6)(50mg once or twice daily) either continuous or during the luteal phase
5. Treat with SSRI

## When to refer

1. Refer dysmenorrhea to gynecologist if
   a. Endometriosis is suspected
   b. Failure to respond to NSAID or OCP for 6 cycles
   c. Combination of NSAID and OCP provides no relief after 6 months, laparoscopy should be performed
2. Refer PMS
   a. For counseling if indicated
   b. For gynecologist if no improvement after lifestyle changes

## Patient education

1. Explain pathogenesis of symptoms
2. Explain prognosis
3. Instruction on life style changes: diet, exercise, stop smoking and vitamins

## References


1. French L. Dysmenorrhea *Am Fam Physician*. 2005;71:285-91, 292.
2. Kwan I, Onwude JL. Premenstrual syndrome. *Clin Evid (Online)*. 2007.
3. Harel Z. Dysmenorrhea in adolescents and young adults: etiology and management. J *Pediatr Adolesc Gynecol*. 2006 Dec;19(6):363-371.
4. Brown J, O'Brien PM, Marjoribanks J, Wyatt K. SSRI for premenstrual syndrome. *Cochrane Database Syst Rev*. 2009 15:CD001396.

# Dyspepsia

Dima Dandachi, Bassem Saab

## Definition and epidemiology

Broad term used by patients to describe any chronic or recurrent discomfort centered in the upper abdomen. To describe it, patients may use the words nausea, vomiting, belching, bloating, early satiety, fullness, or heartburn. Prevalence varies from 20% to 40%.

| **Functional dyspepsia known also as non-ulcer dyspepsia (NUD)** | **Dyspepsia caused by structural or biochemical diseases** |
|---|---|
| Up to 60 % of cases<br><br>At least for 3 months with no definite structural or biochemical explanation | Peptic ulcer disease<br>Gastroesophageal reflux disease (GERD)<br>Gastric or esophageal cancer<br>Other: biliary diseases, carbohydrate malabsorption (ex. lactose) medications |

## Pathogenesis of NUD

1. Gastric motor function; delayed gastric emptying
2. Visceral hypersensitivity
3. Helicobacter pylori infection. However, a clear association between H. pylori and functional dyspepsia has not been established
4. Psychosocial factors, anxiety, somatization and depression are increased in this group compared with healthy controls

## Classification

1. Ulcer-like or acid dyspepsia (e.g. burning, epigastric hunger pain)
2. Dysmotility-like dyspepsia (with predominant nausea, bloating, anorexia)
3. Unspecified dyspepsia

## Diagnosis

1. Avoid testing if functional dyspepsia is suspected and close observation is helpful
2. Trial of anti-secretory for two weeks
3. Testing for H. pylori using a noninvasive method is controversial if they are younger than 55 years and do not have alarming symptoms; otherwise upper endoscopy should be requested

## Management

1. Antacids
   a. Have not been found to be beneficial
2. Anti-secretory therapy
   a. Proton pump inhibitors (PPIs) are more effective than histamine 2 receptor antagonist (H2RAs) in relieving heartburn in patients with GERD like symptoms.

| No significant difference between equivalent doses of PPI. The decision to choose one over another should be based on cost and on individual patient response. |
|---|

   b. Trial with Ranitidine is more cost-effective than Omeprazole and if symptoms do not improve within two weeks, treatment could be shifted to PPI.

3. Prokinetic Agents
    a. Evidence of efficacy is most convincing for the symptoms of nausea and early satiety more than heartburn
    b. Cisapride may cause QT prolongation and death especially when given with other drugs that inhibit CYP3A4, Domperidone and Metoclopramide may also be effective.
4. Antidepressants
    a. Tricyclic antidepressants may be effective.
    b. A therapeutic trial should begin with a low dose (e.g. amitriptyline or desipramine 10 to 25 mg at night) adjusting the dose upward while observing for daytime sedation or other side effects.

There is insufficient evidence to confirm the efficacy of psychological interventions including psychotherapy, psychodrama, cognitive behavioral therapy, relaxation therapy and hypnosis in dyspepsia.

Dietary recommendations have not been systematically studied. Avoiding food that aggravates symptoms is logical.

Prolonged use of PPIs may cause osteoporosis and affect drug absorption of other drugs.

## Patient education

1. Stop smoking
2. Avoid alcohol intake
3. Decrease the use of anti-inflammatory medications
4. In case of heart burn, avoid eating before bedtime, heavy meals and instruct patient to raise the head bed

## References


1. Ables AZ, Simon I, Melton ER. Update on Helicobacter pylori treatment. *Am Fam Physician*. 2007 Feb 1;75(3):351-8.
2. Camilleri M. Functional dyspepsia: mechanisms of symptom generation and appropriate management of patients. *Gastroenterol Clin North Am*. 2007 Sep;36(3):649-x.
3. Conroy RT, Siddiqi B. Dyspepsia. *Prim Care*. 2007 Mar;34(1):99-108.
4. Moayyedi P, Soo S, Deeks J, Delaney B, Innes M, Forman D. Pharmacological interventions for non-ulcer dyspepsia. *Cochrane Database Syst Rev*. 2006;(4):CD001960.
5. Soo S, Moayyedi P, Deeks J, Delaney B, Lewis M, Forman D. Psychological interventions for non-ulcer dyspepsia. *Cochrane Database Syst Rev*. 2005;(2):CD002301.
6. Van PB, Numans ME, Bonis PA, Lau J. Short-term treatment with proton pump inhibitors, H2-receptor antagonists and prokinetics for gastro-esophageal reflux disease-like symptoms and endoscopy negative reflux disease. *Cochrane Database Syst Rev*. 2006;3:CD002095.

# Dysuria

Jibrael Razzouk

## Definition and epidemiology

1. Pain or discomfort on urination localized to bladder or urethra typically referred to the tip of penis in men or to urethra in women
2. 3% of all visits to primary care are mostly due to urinary tract problems

## History

1. External dysuria (occurs after voiding) suggests genital tract problems. Symptoms of genital irritation may be present including itching, discharge or swelling.
2. Internal dysuria (occurs before voiding) associated with the urinary tract infections and accounts for 2/3 of dysuria cases. Symptoms of urinary tract irritation may be present and include urgency, hesitancy, nocturia, and suprapubic discomfort.
3. Systemic symptoms of infection may also be present.
4. Fever, chills, abdominal pain, flank pain and vomiting suggest upper urinary tract infection.
5. Women with only symptoms of lower tract infection may have some degree of upper tract infection.

## Physical examination

1. Vital signs, abdominal, testicular and pelvic exam can guide to source of complaint. Tenderness over flank or in mid abdomen suggests upper tract disease.
2. Suprapubic tenderness common with uncomplicated lower tract infection. Fever, tachycardia or hypotension alert to urosepsis & need for hospitalization.
3. Rectal exam to rule out prostatitis & prostate cancer. Be careful in suspected prostatitis because of hypothetical risk of seeding blood stream with bacteria.
4. Penis is gently milked to rule out penile discharge.
5. Vaginal exam if vaginal discharge or irritation

## Diagnosis

### Cystitis

a. Patient presents with frequency, urgency, dysuria, and may have hematuria
b. Check history of recent sexual intercourse
c. Physical exam might show suprapubic tenderness
d. Urine analysis shows pyuria
e. A 3 days therapy results in cure rate similar to 7 to 10 days of treatment but with fewer antibiotic complications
f. In men, urine culture growing> 1000 colony forming unit /ml is a best sign of UTI

### Sub clinical pyelonephritis

a. Patient presents with symptoms of cystitis but there is renal parenchymal involvement in 30 % of women presenting with symptoms of cystitis and 50% of women presenting to emergency room. It is suspected in patients with symptoms of cystitis & having one or more of following risk factors:
    1. Symptoms for more than one week
    2. Diabetes mellitus
    3. Immunocompromised patients
    4. Pregnancy
    5. Anatomic anomaly of urinary tract
    6. Vesicoureteral reflux
    7. Relapse of symptoms within three days of treatment for acute cystitis

8. Urethral obstruction
9. History of acute pyelonephritis within one year

b. Urine analysis is positive for pyuria. Urine culture usually shows more than $10^{+5}$ colony forming unit per ml. Renal cortical scintigraphy is usually positive.

**Acute pyelonephritis**

a. Patient presents with fever, nausea, emesis, sepsis, back or flank pain
b. Physical exam: costovertebral angle tenderness, deep right or left upper quadrant tenderness
c. Urine analysis shows pyuria with WBC casts
d. Urine culture & sensitivity should be obtained
e. 7 days treatment with fluoroquinolone is generally effective for out-patient treatment of otherwise healthy women with pyelonephritis

**Urethritis (Non-gonococcal)**

Patients present with history of unprotected intercourse. Urethral swab is usually positive for WBC. Gram stain may detect intracellular gram negative diplococci (N. gonorrhea)

**Interstitial cystitis**

a. Inflammation of bladder with unknown etiology. Characteristic symptoms suprapubic pain with nocturia, frequency of at least 8 times a day for at least 9 months.
b. Majority of patients have dyspareunia, 20 % have gross hematuria, patients are older than 18 years, bladder capacity less than 350 ml & there is an urge at 150 cc. No history of bacterial UTI in last 3 months, no alternative explanation, and bladder biopsy may be used to rule out other etiologies. Urodynamic study to demonstrate reduced bladder capacity.

## Management

1. Urine analysis:
   a. Pyuria indicates urethritis, prostatitis or other urinary problems.
   b. WBC casts suggest acute pyelonephritis.
   c. First 10 cc of first morning specimen examined in suspected trichomonas infections.
2. Gram stain:
   Urethral discharge part of initial evaluation in suspected urethritis. It directs in choosing initial empiric antibiotics.
3. Urine cultures & sensitivities:
   a. To identify causative organism in all suspected urinary infection.
4. Potassium hydroxide (KOH) smears may reveal mycelia indicating fungal infection.
   Saline smears may reveal trichomonas.
5. Renal ultrasound or CT scan: for evidence of urinary obstruction or abscess.

## Treatment

1. Urinary tract infection (cystitis, acute and subacute pyelonephritis)
   a. Oral therapy should be considered in women with mild to moderate symptoms who are compliant with therapy & can tolerate oral antibiotics but do not have other significant conditions (such as pregnancy & gastrointestinal upset). Oral fluoroquinolones should be considered in regions where resistance exceeds 15 % to trimethoprim - sulfamethoxazol which is often considered treatment of choice.
      1. Trimethoprim sulfamethoxazol (Bactrim forte or Septrin DS), one tablet 2X / day for 3 days in cystitis and up to 14 days in pyelonephritis.
      2. Norfloxacin 400 mg (Noroxin, Urobacid), one tablet 2X / day for 3 days in cystitis and up to 14 days in pyelonephritis.
      3. In pregnant women Amoxil 250 mg, 3X / day for 3 to 7 days.

   b. Patients too ill to take oral antibiotics or unable to take them should be initially treated with a parenterally administered single agent.
      1. Ceftriaxone ( Rocephin ) one gram per day
      2. Ciprofloxacin 400 mg IV 2X / day
      3. Ofloxacin 400 mg IV 2X / day
      4. Gentamicin 3 mg / Kg / day divided three times daily
2. Non gonococcal urethritis
   a. Ceftriaxone 250 mg I.M. once for gonorrhea
   b. Ofloxacin 400 mg once or ciprofloxacin 500 mg once for N. gonorrhea
   c. Doxycycline 100 mg 2X / day for 10 days for Chlamydia trachomatis
   d. Ofloxacin 300 mg 2X / day for 10 days for Chlamydia trachomatis
3. Interstitial cystitis
   a. Pentosan polysulfate (Elmiron ) 300 mg per day
   b. Amitriptyline (Tryptizol ) 25 mg / increasing 25 mg every 1 week up to 150 mg per day at bed time
   c. Hydroxyzine (Atarax ) 25 to 50 mg at bed time

## Patient education

1. Explain pathogenesis & prognosis
2. Good hygiene
3. Generous fluid intake every day
4. Urination after sexual activities
5. Avoid unprotected intercourse & multiple partners
6. Stop using diaphragms with spermicides
7. Avoid heat, moisture & occlusive clothing
8. In menopausal women, estrogen replacement therapy reduce the frequency of UTI
9. Report to your doctor as soon as possible
10. Proper follow up

## References


1. Barker LR, Burton JR, Zieve PD, Fiebach NH. *Principles of ambulatory medicine*. 7th edition ed. Philadelphia: Lippincott Williams & Wilkins, 2007.
2. Kurowski K. The women with dysuria. *Am Fam Physician* 1998; 57:2155-2170.
3. Orenstein R, Wong ES. Urinary tract infections in adults. *Am Fam Physician* 1999; 59:1225-34, 1237.
4. Sloane PD. *Essentials of family medicine*. 5th edition ed. Philadelphia: Wolters Kluwer/Lippincott, Williams & Wilkins, 2008.
5. Tierney LM, McPhee SJ, Papadakis MA. *Current medical diagnosis & treatment, 2008*. New York: McGraw-Hill Medical, 2008.

# Fever without a source under 3 years

Pascale Karam

## Definition and epidemiology

1. An acute febrile illness with a rectal temperature of 38.3C in which the etiology of fever is not apparent after careful history and physical examination
2. 20% of febrile children have fever without an apparent source of infection after history and physical examination. Of these, a small proportion may have an occult bacterial infection, including bacteremia, urinary tract infection (UTI), occult pneumonia, or, rarely, early bacterial meningitis.

## Pearls

1. High risk febrile infants are those who are toxic looking: lethargic, signs of poor perfusion, marked hypoventilation, hyperventilation or cyanosis.
2. Low risk febrile infants are those who were previously healthy and have no evident focal infection on physical exam and do not look toxic.

## History

1. Degree of fever, measurement of fever patterns
2. Duration of fever, response to antipyretics
3. Level of activity
4. Appetite and feeding
5. Runny nose
6. Cough
7. Vomiting
8. Diarrhea
9. Abdominal pain
10. Contact with sick persons
11. Previous medical history
12. Current medications
13. Immunization status

## Physical examination

1. General state
2. Vital signs: rectal temperature, heart rate and respiratory rate
3. ENT exam
4. Check lymph nodes
5. Meningeal signs
6. Heart exam
7. Lung exam
8. Abdominal exam
9. Skin exam
10. Extremities exam
11. Neurological exam

## Diagnostic considerations

Scales to identify the risks of serious illness in a child: can be used in the fever assessment.

### 1. The Yale observation scale

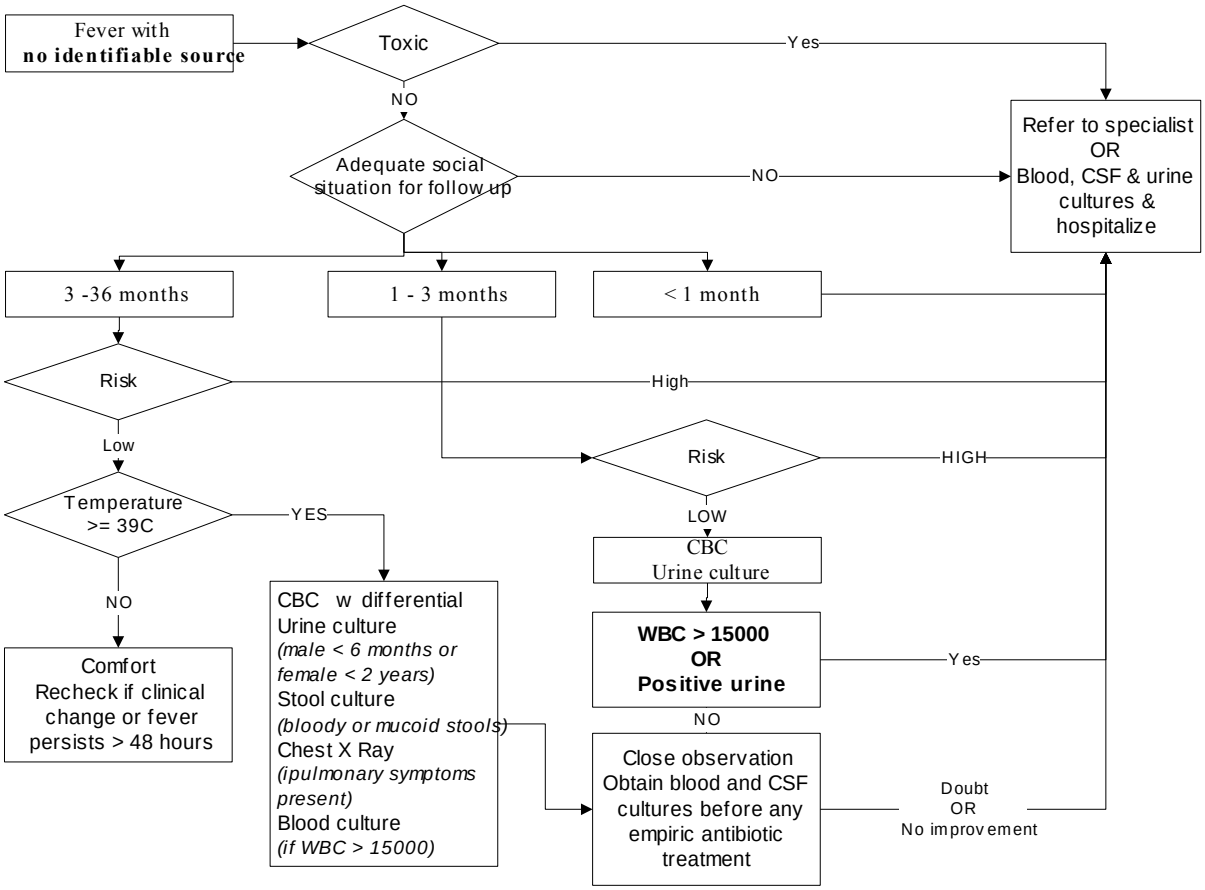
| Observation Item | Normal | Moderate Impairment | Severe Impairment |
|---|---|---|---|
| Quality of cry | Strong cry and normal tone OR content and not crying | Whimpering OR sobbing | Weak OR moaning OR high-pitched |
| Reaction to parent stimulation | Cries briefly then stops OR content and not crying | Cries off and on | Continuous cry OR hardly responds |
| State variation | If awake→ stays awake OR is asleep and stimulated → wakes up quickly | Eyes close briefly → awake OR awakes with prolonged stimulation | Falls to sleep OR is not aroused easily |
| Color | Pink | Pale extremities OR acrocyanosis | Pale OR cyanotic OR mottled OR ashen |
| Hydration | Skin normal, eyes normal, AND mucous membranes moist | Skin normal, eyes normal, AND mouth slightly dry | Skin doughy OR tented AND dry mucous membranes AND/OR sunken eyes |
| Response (talk, smile, anxiety to social overtures) | Smiles OR alerts (≤2mo) | Brief smile OR alerts briefly ≤2mo) | No smile, face dull expressionless OR no alerting (2 < months) |

### 2. Low-risk criteria for febrile infants

| | |
|---|---|
| Goal | Defines febrile infant at low risk of serious bacterial infection if following criteria are met |
| History | Previously healthy<br>Term infant, normal perinatal course, no antibiotics, no medical conditions, no hospitalizations |
| Physical examination | Well appearing<br>No focal bacterial infections |
| Laboratory | White blood cell count (WBC) 5000-15,000<br>Band count ( immature neutrophils)/neutrophils ratio < 0.2<br>Urinalysis: negative gram stain of unspun urine (preferred), or negative urine leukocyte esterase and nitrite, or <5 WBCs/hpf |
| Stool WBC (if diarrhea is present) | < 5 WBC/high-power field |

## Laboratory and diagnostic studies (see algorithm)

## Algorithm




## Management

Ceftriaxone 50 mg/kg IM (maximum dose 1 gram) can be given as empiric antibiotic therapy until specific diagnosis made and after all cultures are obtained and proper close follow up ensured, if (see algorithm):

1. Low risk between 1 and 3 months old with WBC count > 15000
2. Low risk 3-36 months old with WBC count > 15000 and temperature > 39 C

## When to refer

1. If in doubt of management steps
2. Signs of toxicity present

## References


1. Baraff LJ. Management of fever without source in infants and children. *Ann Emerg Med*. 2000 Dec;36(6):602-14.

# Headache

Jibrael Razzouk

## Pearls

1. Headache is diagnosed by history and complete physical examination (with focus on neurological examination) with limited need for imaging or laboratory tests
2. The primary goal is to distinguish between primary and more serious secondary causes of headache which accounts for <1%

## Etiology

| Common Headaches | Serious causes of headaches |
|---|---|
| Tension | Increased intracranial pressure |
| | Meningitis |
| Migraine | Subarachnoid hemorrhage |
| | Cerebral venous sinus thrombosis |
| Cluster | Vasculitis/Temporal arteritis |
| | Pseudo tumor cerebri |
| | Tumors |

## Red Flags

Warning signs of possible disorder other than primary headache that warrant imaging study (CT/MRI) include:

1. Focal neurological signs
2. Acute headache following significant trauma to the head or neck
3. Sudden onset of the "worst headache of my life"
4. A different headache pattern
5. Headache exacerbated by coughing, sneezing, straining, sexual activity or valsalva
6. Headache with early morning worsening or awakening patient from sleep
7. New headache starting after the age of 50 or less than 5 years
8. Progressively worsening daily headache (especially with vomiting)
9. Presence of altered mental status, nuchal rigidity, fever or papilledema
10. New headache in HIV-positive patients or those with known cancer

## Migraine: with and without aura

### 1. Classification criteria

A. At least two of 1-4, plus one of 5 or 6
   1. Unilateral location
   2. Pulsating/throbbing quality
   3. Moderate or severe intensity (inhibits or prohibits daily activities)
   4. Aggravation by routine activity
   5. Nausea and/or vomiting
   6. Photophobia and phonophobia

B. Aura criteria
   1. One or more fully reversible aura symptoms
   2. At least one aura symptoms develops over more than 4 min or two aura symptoms occur in succession
   3. Symptoms do not last more than 60 minutes
   4. Attack follow within 60 minutes
   5. Previous similar attacks

C. Organic disorder is ruled out by the initial evaluation or by diagnostic studies. If another disorder is present, the headaches should not have started in close temporal relationship to the disorder

### 2. Treatment

***Abortive agents***
**Mild headaches**: Aspirin or NSAIDS (Acetaminophen alone has not been shown to be beneficial in migraine treatment, but it is effective in combination with aspirin and caffeine)
**Moderate headaches**: triptans, ergotamine + caffeine, dihydroergotamine (opioids should be avoided)
**Severe Headaches**: triptans, Valproic acid (Depakene) as alternative

***Prophylactic agents***
Indicated for ≥3 attacks/month, incapacitating or complicated migraines
**Highest efficacy:** Propranolol, Amitriptyline, Sodium Valproate, Gabapentin or Topiramate, Timolol
**Moderate efficacy:** Metoprolol, Nadolol, Nortriptyline, Fluoxetine or Paroxetine, Sertraline, Carbamazepine, Verapamil

## Cluster headache

### 1. Classification criteria

A. Severe unilateral orbital, supraorbital and/or temporal pain lasting 15-180 minutes untreated
B. Attack is associated with at least one of the following signs on the side of the pain:
   1. Conjunctival injection
   2. Lacrimation
   3. Nasal congestion
   4. Rhinorrhea
   5. Forehead and facial swelling
   6. Miosis
   7. Ptosis
   8. Eyelid edema
   9. Agitation, unable to lie down
C. Frequency from one every other day to eight per day
D. Organic disorder is ruled out by diagnostic evaluation or by diagnostic studies. If another disorder is present, the headache should not have started in close temporal relationship to the disorder

### 2. Treatment

Have patient breathe 100% oxygen at 8–10 L/min. by mask for 20 minutes
***Abortive agents:*** Dihydroergotamin, Sumatriptan
**Prophylactic agents**: Verapamil, Valproic acid, Prednisone 40–80 mg PO daily × 5–7 d then taper off over 10–12 days, Lithium, Topiramate

## Episodic tension type headache

### Classification criteria

A. Headache less than 15 days per month
B. Lasts 30 min to 7 days
C. At least two of the following characteristics
   1. Pressing/tightening (non pulsating) quality
   2. Mild-moderate intensity (may inhibit but does not prohibit activities)
   3. Bilateral location
   4. Not aggravated by routine physical activity
D. Both of the following
   1. No nausea or vomiting (anorexia may occur)
   2. Photophobia and phonophobia are absent, or only one of the two is present
E. Organic disorder is ruled out by diagnostic evaluation or by diagnostic studies. If another disorder is present, the headache should not have started in close temporal relationship to the disorder

**Treatment**

***Abortive therapy:*** Acetaminophen or NSAIDS
***Prophylactic therapy***: Nortriptyline or Amitriptyline
Avoid ergots, caffeine & opioids for potential of abuse & dependence

## When to refer

1. Unsure of the diagnosis
2. Unsuccessful response to treatment
3. Red flags are present

## Patient education

1. Identify food or alcohol triggers
2. Stress reduction, regular eating and sleeping schedules, and regular aerobic exercise may have benefit
3. Avoid overuse of analgesics or acute treatment medications
4. Keep a headache diary has the potential benefit of monitoring treatment effect upon severity, frequency and disability
5. Acute treatment has the goal of shortening individual headaches, while prophylaxis can reduce frequency and possibly severity
6. It is often not possible to eliminate primary headache completely

## Summary of the characteristics of common headache syndromes

| | **Tension** | **Migraine** | **Cluster** |
|---|---|---|---|
| **Location** | Global Bilateral | 70% unilateral | Retro orbital Peri orbital Unilateral |
| **Characteristics** | ♀ > ♂<br><br>band-like pain or bilateral tightness | Rarely starts > 40 years<br><br>Gradual onset, pulsating quality ♀> ♂, + family history and migraine triggers | Abrupt onset, ♂>>♀<br><br>Deep and stabbing, People are restless |
| **Duration** | Variable min.-hours | 4–72 hours | 5–80 min.<br>Headache clusters |
| **Associated Symptoms** | Fatigue, unaffected by activity, nausea rare | Nausea, vomiting, photophobia, phonophobia and/or aura (classical) | Ipsilateral lacrimation, rhinorrhea, eye redness, miosis, ptosis & sweating |
| **Exacerbating factors** | Stress | Activity, exertion, bright light, loud noise, and valsalva | Alcohol or nitroglycerin use |
| **Relieving factors** | Relaxation Biofeedback | Rest<br>Darkness<br>Quiet | **None** |

## Summary of the medications used for treatment of headache

| *Medication* | *Name (mg)* | *Typical dosage* |
|---|---|---|
| Dihydroergotamine | Seglor (5) | |
| Ergotamine+caffeine | Cafergot 1/100 | Two tablets at onset, then one tablet every 30 minutes, up to six tablets per attack |
| Sumatriptan | Imigran (tablets) 50, 100<br><br>Imigran refill pack (S/C) 6mg/0.5 cc | 50 to 100 mg orally every two hours, maximal dosage: 200 mg per day<br>6 mg SC, repeated in one hour; maximal dosage, 12 mg per 24 hours |
| Rizatriptan | Maxalt (10) | 5 to 20 mg orally every two hours to maximal dosage of 30 mg per day |
| **Prophylactic Medications** | | |
| Propranolol | Inderal(10,40) | 80 to 240 mg per day, in three or four divided doses |
| Amitriptyline | Tryptizol (10,25) | 10 to 150 mg per day |
| Valproic acid | Depakene (200, 500) | 250 to 500 mg twice per day |
| | Sustained-release (Inderal LA,160) | 80 to 240 mg per day |
| Timolol | Blocadren (10) | 10 to 15 mg twice per day |
| Topiramate | Topamax (25,50,100) | 50 mg twice per day (titrate from 15 to 25 mg) |
| Flunarizine | Sibelium (5) | 10 mg QD |
| Gabapentin | Neurontin (300,400) | 300 mg TID titrate to 400 mg TID |
| Verapamil | Isoptin SR (240) | 120 mg TID |

## References


1. Institute for Clinical Systems Improvement. Diagnosis and treatment of headache; 2009. http://www.icsi.org/headache/headache__diagnosis_and_treatment_of_2609.html.
2. Beck E, Sieber WJ, Trejo R. Management of cluster headache. *Am Fam Physician*. 2005; 71(4):717-724.
3. Silberstein SD. Migraine. *Lancet*. 2004; 363(9406):381-391.
4. Modi S, Lowder DM. Medications for migraine prophylaxis. *Am Fam Physician*. 2006; 73(1):72-78.

# Heart Failure

Jumana Antoun

## Definition

Heart failure is a complex clinical syndrome that can result from any structural or functional cardiac disorder that impairs the ability of the ventricle to fill with or eject blood. The diagnosis of CHF requires both clinical features and an objective measure of abnormal ventricular function.
Definitions usually include:
**Systolic heart failure:** a weakened ability of the heart to contract in systole, and remains the most common cause of CHF. This reflects the prevalence of coronary heart disease (CHD) and hypertension.
**Diastolic heart failure** or heart failure with preserved systolic function (HFPSF): impaired diastolic filling of the left ventricle because of slow early relaxation or increased myocardial stiffness resulting in higher filling pressures, with or without impaired systolic contraction. It is more common in the elderly, where ischemia, hypertrophy and age-related fibrosis may all act to impair diastolic filling of the heart

## History

A full medical history is important to determine
1. The cause/s of CHF- past history of CHD, hypertension, or rheumatic fever; alcohol consumption, family history of CHF or cardiomyopathy
2. The severity of the disease: exertional dyspnea; orthopnea; paroxysmal nocturnal dyspnea (PND); dry irritating cough particularly at night; fatigue and weakness; dizzy spells or palpitations. Symptoms related to fluid retention may occur in patients with more advanced CHF, such as epigastric pain, abdominal distension, ascites, and sacral and peripheral edema.

## Physical examination

Patients with CHF may show no detectable abnormal physical signs, because they are typically a late manifestation.
The following signs may be present:
1. Signs of underlying cardiac disease- a displaced apex beat, or murmur
2. Signs of fluid retention, including soft basal inspiratory crepitations, resting tachypnea, raised jugular venous pressure, ankle and sacral edema, ascites or tender hepatomegaly
3. Signs of cardiac strain, including tachycardia or a third heart sound

## Evaluation

1. Though the diagnosis of CHF is based on clinical grounds, it is necessary that investigations are performed to confirm the diagnosis.
2. Investigation is necessary in any patient with suspected CHF (even in the presence of a normal examination). As a minimum, this should include an electrocardiogram (ECG), chest x-ray, echocardiogram, and measurement of plasma electrolytes and full blood count.

| Test | Comments |
|---|---|
| ECG | Screens for rhythm; previous MI; structural abnormalities |
| CXR | Evaluates pulmonary congestions; cardiomegaly; lung disease |
| Echocardiogram | Distinguishes systolic from diastolic HF; identifies structural abnormalities |
| TSH | Detect hyper/hypothyroidism that can lead to HF |
| CBC | Anemia may cause high output HF |
| Renal function (creatinine and urinalysis) | HF reduces GFR |
| Liver functions | HF may cause hepatic congestion |
| Electrolytes | Volume overload and diuretic use cause electrolyte disturbances |
| Lipids | Dyslipidemia increases risk of cardiac disease |
| Stress tests/coronary angiography | Selected patients with chest pain on exertion with or without CHD |

MI: myocardial infarction, HF: heart failure, GFR: glomerular filtration rate

## Role of Natriuretic peptides

1. Plasma levels of atrial natriuretic peptide (ANP) and B-type natriuretic peptide (BNP) reflect the severity of CHF, the risk of hospitalization and prospect of survival.
2. ProBNP levels have been shown to predict all-cause mortality, including death from pump failure and sudden death.
3. Changes in BNP levels in response to medical therapy also predict survival.
4. Useful for differentiating dyspnea caused by CHF from dyspnea due to other causes. In one large study, a BNP level less than 50 pg/mL had a 96% negative predictive value. A cut-off value of 100 pg/mL had a sensitivity of 90% and a specificity of 76%.
5. A measurement of BNP or N-terminal proBNP is not recommended as routine in the diagnosis of CHF.
6. Its clinical use depends on the context in which the patient is being evaluated mostly in ER with a patient presenting with dyspnea.

## Symptom classification New York heart association grading

The traditional system for symptom classification in CHF is the New York Heart Association (NYHA) grading system; although a new classification is being used recently.
Staging and classification schemes for heart failure

| **ACC/AHA staging systems** | | **NYHA functional classification system** | |
|---|---|---|---|
| A | At high risk for HF without structural heart disease or symptoms of HF | I | Cardiac disease but no symptoms of HF with ordinary activity |
| B | Structural heart disease without symptoms of HF | II | Cardiac disease that limits function slightly, with HF symptoms occurring during ordinary activity but not at rest |
| C | Structural disease with prior or current symptoms of HF | III | Cardiac disease that limits function significantly, with HF symptoms occurring during less-than-ordinary activity but not at rest |
| D | Refractory HF requiring specialized intervention | IV | Any physical activity causes HF symptoms; symptoms may occur at rest and get worse with activity |
| ACC, American College of Cardiology; AHA, American Heart Association; HF, heart failure; NYHA, New York Heart Association | | | |

## Management

### Non pharmacological treatment

Recommendations for non-pharmacological treatment of HF

| | Grade of recommendation |
|---|---|
| **Regular exercise** activity is recommended. Patients should also walk daily at home for 10–30 minutes/day, five to seven days a week. They should not exercise to a level preventing normal conversation. Elderly patients should not be excluded. Patients who have acute exacerbation should have bed rest till they improve. | B |
| **Dietary sodium** should be limited to below 2g/day | C |
| **Fluids intake** should be limited to 1.5 L/day with mild-moderate symptoms and 1 L/day in severe cases | C |
| **Alcohol intake** should be avoided; but standard drink a day is acceptable | D |
| **Smoking** should be discouraged | D |
| Patient should **weigh themselves** and consult their doctor if weight increase by 2 kg in a 2-day period. | D |
| Patients should be **vaccinated** with influenza and pneumococcal vaccines | B |
| **High altitude** places should be avoided as well as travel to humid and hot climates | C |
| **Sildenafil** and other phosphodiesterase V inhibitors are safe in patient with HF but contraindicated with concomitant nitrate therapy; sexual intercourse is allowed if able to perform 6 METS | C |
| **Decrease obesity** | D |
| Reduced saturated fat rich **diet** and high fiber diet is needed | D |
| Maximum of 2 cups of **caffeine** are allowed per day | D |
| **Pregnancy** should be avoided in patients with CHF | D |

### Pharmacologic treatment

| ***First Line Agents*** | Level of recommendation |
|---|---|
| **ACEIs** are recommended for all patients with systolic heart failure (LVEF<40%) irrespective of severity of symptoms unless not tolerated or contraindicated. ACEIs have been shown to prolong survival in patients with NYHA Class II, III and IV symptoms; improve symptom status, physical activity tolerance and need for hospitalization in patients with worsening; increase ejection fraction compared to placebo in many studies. | A |
| **Beta- blockers** are recommended for all patients with systolic heart failure who are mildly to moderately symptomatic unless not tolerated or indicated.<br><br>Prolong survival in patients with mild to moderate CHF already receiving an ACEI due to reductions in sudden death, as well as death due to progressive pump failure.<br><br>Beta-blockers should not be initiated during a phase of acute decompensation, but only after the patient's condition has stabilized. | A |
| **Diuretics** should be used to achieve euvolemia in fluid-overloaded patients. They should never be used as monotherapy | D |
| **Aldosterone receptor blockade with spironolactone** is recommended for patients who remain severely symptomatic despite adequate doses of ACEI and diuretics. Increase risk of hyperkalemia especially with ACEI. | B |
| **Angiotensin II receptor antagonists** as alternative to ACEI if not tolerated | A |

| | |
|---|---|
| ***Second line agents*** | |
| **Digoxin** for symptoms relief and reduce hospitalization with advanced CHF<br>A valuable therapy in CHF patients with atrial fibrillation | B |
| **Hydralazine-isosorbide dinitrite combination** if not tolerant to ACE or ARB | B |
| ***Other agents*** | |
| **Amlodipine** can be used to treat co morbidities such as hypertension. They neither increase not decrease mortality. Verapamil and diltiazem are contraindicated in CHF patients | B |

## Frequency of follow-up visits

Class I: initial revisit in 2 weeks; follow-up at 3 months (if tests normal), then annually if patient stable
Class II: initial revisit in 2 weeks; follow-up at 3 months, then 2 times per year
Class III: initial revisit in 1 week; follow-up at 2 weeks, then at 1-month intervals for three months, then at 3-month intervals
Class IV: consider hospital admission for diagnostic work-up, referral to a cardiologist, or weekly follow-up.

## Approach to pharmacotherapy

A stepwise approach to instituting pharmacotherapy in systolic heart failure

| Step | Drug class | Comments |
|---|---|---|
| Step 1 | ACE inhibitor | Start low and titrate to maximum tolerated dose |
| | Beta-blocker | Start a low dose when stable on a low dose of ACE inhibitor; titrate to maximum tolerated dose |
| | Diuretic | All patients with past or present hypervolemia |
| Step 2 | ARB | Substitute if patient unable to tolerate ACE inhibitor |
| | Hydralazine *þ* nitrate | Substitute if patient unable to tolerate ACE inhibitor or ARB |
| Step 3 | Aldosterone inhibitor | For persistent NYHA Class III or IV HF |
| Step 4 | Digoxin | For persistent symptomatic HF or recurrent hospitalization |

ACE, angiotensin-converting enzyme; ARB, angiotensin II receptor blockers; HF, heart failure; NYHA, New York Heart Association.

## Drugs to avoid in CHF

1. Anti-arrhythmic agents (apart from beta-blockers and amiodarone)
2. Non-dihydropyridine calcium-channel blockers (verapamil, diltiazem)
3. Tricyclic antidepressants
4. Non-steroidal anti-inflammatory drugs and COX-2 inhibitors
5. Clozapine
6. Metformin and thiazolidinediones (pioglitazone)
7. Corticosteroids (glucocorticoids and mineralocorticoids)
8. Tumor necrosis factor antagonist biologicals

## Drugs commonly used for treatment of chronic heart failure

Commonly used medications in heart failure

| Drug | Initial Dose | Maximum Dose |
|---|---|---|
| **Loop diuretics** | | |
| Bumetanide | 0.5 to 1.0 mg once or twice daily | Titrate to achieve dry weight (up to 10 mg daily) |
| Furosemide | 20 to 40 mg once or twice daily | Titrate to achieve dry weight (up to 400 mg daily) |
| **ACEI** | | |
| Captopril | 6.25 mg 3 times daily | 50 mg 3 times daily |
| Enalapril | 2.5 mg twice daily | 10 to 20 mg twice daily |
| Lisinopril | 2.5 to 5.0 mg once daily | 20 to 40 mg once daily |
| Ramipril | 1.25 to 2.5 mg once daily | 10 mg once daily |
| **ARBS** | | |
| Irbesartam | 150 mg once daily | 300 mg once daily |
| Losartan | 25 to 50 mg once daily | 50 to 100 mg once daily |
| Valsartan | 20 to 40 mg twice daily | 160 mg twice daily |
| **Beta blockers** | | |
| Carvedilol | 3.125 mg twice daily | 25 mg twice daily |
| Metoprolol | 12.5 mg daily | 200 mg daily |
| **Other agents** | | |
| Spironolactone | 12.5 mg daily | 50 mg daily |
| Digoxin | 0.0625 to 0.25 mg daily | Pre-dosing levels 0.5-0.9 mg/dl) |
| Hydralazine | 10-25 mg TID | 100 mg TID |
| Isosorbide dinitrite | 10 mg TID | 80 mg TID |

## Management of diastolic heart failure

There is little evidence to guide the treatment of diastolic dysfunction. Management relies on identifying and treating the cause of diastolic dysfunction and relieving the symptoms. Generally, blood pressure should be controlled, initially with an ACE inhibitor, ARB, thiazide diuretic, or a combination of antihypertensives. Tachycardia should be controlled, usually with a beta-blocker or calcium channel blocker. Hypervolemia is treated with diuretics and sodium restriction.

## When to refer

Reasons for referral to cardiologists depend on several factors.

1. The cause of the heart failure must be identified, and importantly for systolic heart failure, identifying whether ischemic heart disease is the etiology is paramount.
2. Patients who are candidates for revascularization should be referred for diagnostic evaluation, including coronary angiogram.
3. Patient response to a medication is atypical, the diagnosis remains in doubt, or more intensive treatment is required through hospitalization.

## Patient education

Patients should be educated about:

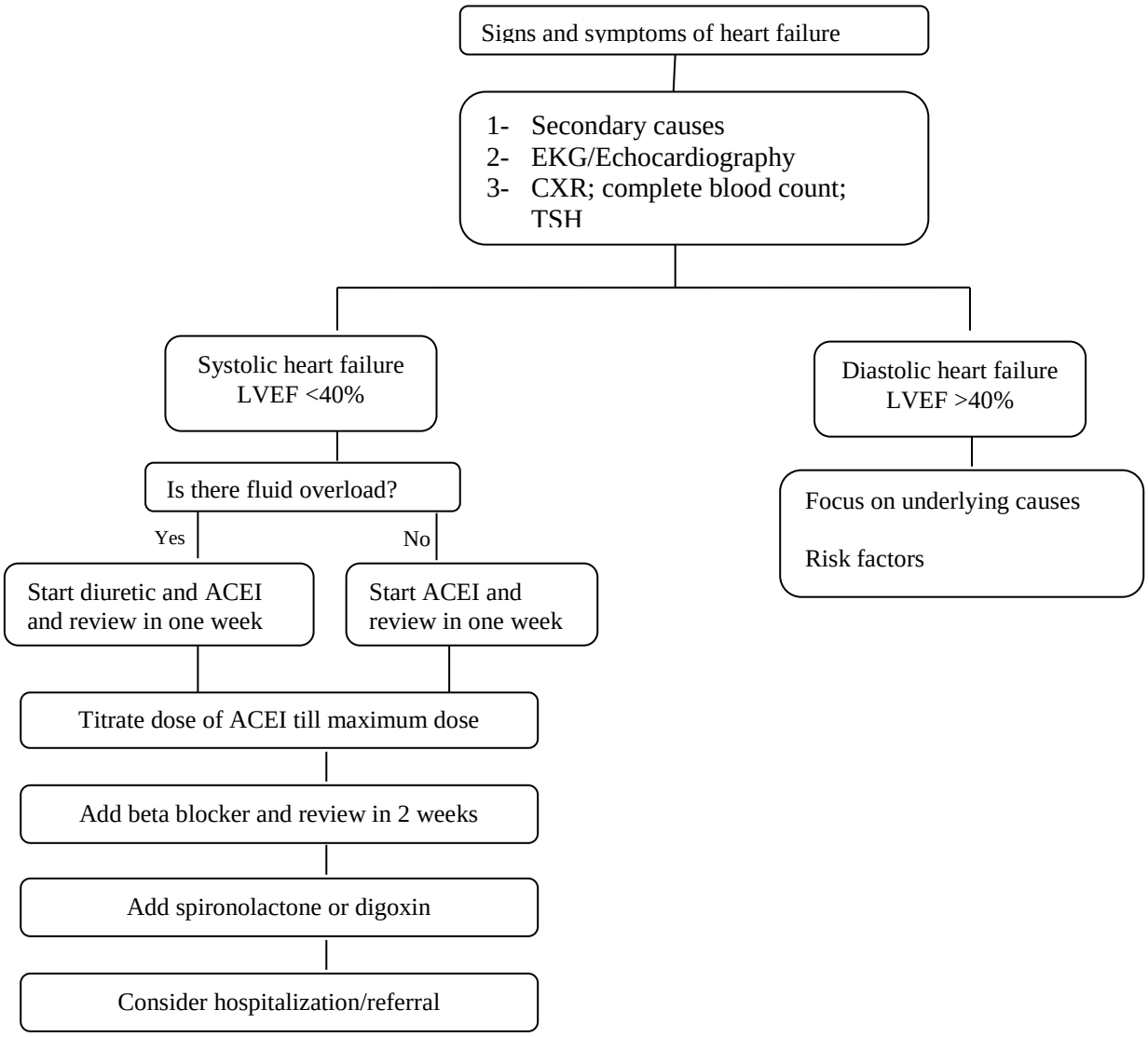
1. Their underlying condition; beneficial lifestyle changes; function of their medication
2. Possible side effects of therapy
3. Signs of deterioration in their condition

4. Importance of adherence to therapy
5. Role of family members in treatment plan

## Quality of care indicators

1. Percentage of patients with heart failure who also have LVSD who were prescribed ACE inhibitor or ARB therapy.
2. Percentage of patients with heart failure with quantitative or qualitative results of LVF assessment recorded.

## Algorithm



## References


1. Foody JM, Farrell MH, Krumholz HM. beta-Blocker therapy in heart failure: scientific review. *JAMA*. 2002 Feb 20; 287(7):883-9.
2. Hunt SA, Abraham WT, Chin MH, Feldman AM, Francis GS, Ganiats TG, et al. 2009 focused update incorporated into the ACC/AHA 2005 Guidelines for the Diagnosis and Management of Heart Failure in Adults: a report of the American College of Cardiology Foundation/American Heart Association Task Force on Practice Guidelines: developed in collaboration with the International Society for Heart and Lung Transplantation. *Circulation*. 2009 Apr 14; 119(14):e391-e479.
3. Ray P, Delerme S, Jourdain P, Chenevier-Gobeaux C. Differential diagnosis of acute dyspnea: the value of B natriuretic peptides in the emergency department. *QJM*. 2008 Nov; 101(11):831-43.
4. Wilbur J, James P. Diagnosis and management of heart failure in the outpatient setting. *Prim Care*. 2005 Dec; 32(4):1115-29.

# Hematuria

Jibrael Razzouk

## Definition

1. Hematuria is the presence of red blood cells in the urine > 0-3 RBC/hpf.
2. Pseudo hematuria is caused by:
    a. **Exogenous sources** as medications (Pyridium, Nitrofurantoin, Rifampin, Sulfonamide, Chloroquine, Primaquine, Levodopa; Methyldopa); vegetable dyes (beats, blackberries); antiseptics (Betadine, Mercurochrome).
    b. **Endogenous cause**s (myoglobin & hemoglobin).
        1. Innocent hematuria may occur after sexual activity, genitourinary tract exam (pelvic prostate).
        2. Hematuria can be present after vigorous exercise (swimming, football, and boxing, running) that usually resolves in 24-48 hrs.
3. Work-up is recommended if:
    a. 3 RBC/hpf on 2 or 3 clean catch specimens
    b. Gross hematuria
    c. Large microhematuria (>100 RBCs/hpf)

## Differential diagnosis

1. Upper urinary tract
    a. Infection (pyelonephritis)
    b. Nephrolithaisis
    c. Renal cysts
    d. Renal tumors
    e. Glomerulonephritis
2. Lower urinary tract
    a. Infection (cystitis, urethritis, prostatitis)
    b. Bladder stone
    c. Bladder tumors
    d. Benign prostate hypertrophy
    e. Prostate cancer
3. Non urinary tract origin
    a. Menstruation
    b. Trauma (sexual activity, contusion, exercise)
    c. Urinary tract tuberculosis

## History

1. Associated symptoms of infections: dysuria, urgency, frequent, and ± fever
2. Menses, recent sexual activity, exercise
3. Symptoms of stone passage: flank pain, past history
4. Associated pain
    a. Painful hematuria: urinary tract infections, renal stones, obstruction, glomerulonephritis, endometriosis, papillary necrosis
    b. Painless hematuria: bladder tumor, polycystic kidneys, stag horn calculus, hydronephrosis, sickle cell, hypercalciuria, bleeding disorders
5. Stage of hematuria
    a. Initial hematuria: distal urethral involvement
    b. Terminal hematuria: bladder neck or prostatic urethral problems
    c. Total hematuria: upper tract or bladder disease

6. Presence of clots
    a. Small clots: upper tract disease
    b. Large clots: bladder disease
7. Family history of kidney or bladder disease
8. Medication intake
    a. Prolonged analgesic use: papillary necrosis
    b. Aspirin, warfarin (complete work up should be done before we ascribe hematuria to anticoagulation)
    c. Antibiotics: interstitial nephritis
    d. Cyclophosphamide: chemical cystitis
9. Social history of smoking, occupation and possible chemical exposure

## Physical examination

1. Blood pressure
2. Signs of bleeding disorder: petechiae, bruises
3. Abdominal exam
4. Costovertebral angle tenderness: pyelonephritis or renal colic
5. Digital rectal exam for prostate exam
6. Genital exam

## Laboratory tests

1. Urine analysis on 2 occasions to confirm microscopic hematuria
    a. Pyuria & WBC casts suggest infection
    b. Proteinuria & RBC casts suggest glomerular disease
2. Urine protein to creatinine ratio: >0.3 suggests renal parenchymal disease
3. Creatinine

## Imaging tests

IV urography, kidney ultrasound, computed tomography (CT) are used to detect renal tumors

1. KUB Detects 80% of renal stones
2. I.V.P
    a. Exposure to potentially nephrotoxic contract media
    b. Limited ability to detect small kidney tumors
    c. Cannot differentiate between cystic and solid masses
    d. Contraindicated in allergy to dye, diminished renal function and pregnancy
3. Ultrasonography
    a. Not effective as IVP in evaluating urolithiasis
    b. High degree of operator dependence
    c. Limited ability to detect small kidney stones
4. CT scan
    a. High sensitivity for detecting renal stones
    b. Can detect small renal masses, aneurysm or abscesses
5. CT urography
    a. Has replaced IV urography

## Urine cytology

1. Evaluate lower urinary tract
2. First morning urine on 3 consecutive days optimized sensitivity
3. Good for transitional cell carcinoma, less ability to detect low grade lesions in bladder or renal adenocarcinoma
4. Useful if positive but can rule our urinary tract malignancy

## Cystoscopy

1. Used to evaluate lower urinary tract
2. Indications:
   a. Abnormal urine cytology
   b. Age>40
   c. Age < 40 with risk factors for bladder cancer e.g. smoking, chemical exposure and irritative symptoms

## Pathology

Renal biopsy is required if laboratory data suggest that glomerulonephritis is the cause of hematuria such as proteinuria and red cells cast

## Management options

### Asymptomatic microscopic hematuria

1. Obtain urine analysis and laboratory studies
2. If all negative, repeat analysis in 3 months
3. If persistent, obtain CT or U/S or urologic consult

### Asymptomatic gross hematuria

1. Obtain urine analysis, laboratory studies and CT or U/S
2. Prompt referral to urologist because best time to identify the site of bleeding is when the bleeding is active.

## References


1. McDonald MM, Swagerty D, Wetzel L. Assessment of microscopic hematuria in adults. *Am Fam Physician*. 2006 May 15;73(10):1748-54.
2. Grossfeld GD, Litwin MS, Wolf JS, et al. Evaluation of asymptomatic microscopic hematuria in adults: the American Urological Association best practice policy--part I: definition, detection, prevalence, and etiology. *Urology*. 2001 Apr;57(4):599-603.
3. Grossfeld GD, Litwin MS, Wolf JS Jr, et al. Evaluation of asymptomatic microscopic hematuria in adults: the American Urological Association best practice policy--part II: patient evaluation, cytology, voided markers, imaging, cystoscopy, nephrology evaluation, and follow-up. *Urology*. 2001 Apr;57(4):604-10.

# Hypertension

Jumana Antoun

## Definition

Elevated blood pressure has been shown to be a contributing factor in coronary artery disease, stroke, and renal disease.

## Diagnosis

| Method | Notes |
|---|---|
| In-office | Two readings, 5 minutes apart, sitting in chair<br>Confirm elevated reading in contralateral arm |
| Ambulatory BP monitoring | Indicated for evaluation of "white coat hypertension"<br>Absence of 10–20 percent BP decrease during sleep may indicate increased CVD risk. Not routinely indicated |
| Patient self-check | Provides information on response to therapy<br>May help improve adherence to therapy and is useful for evaluating "white coat hypertension." |

## Classification of hypertension (JNC VII guidelines)

| Category | Systolic BP (mmHg) | | Diastolic BP (mmHg) |
|---|---|---|---|
| Normal | <120 | And | <80 |
| Pre-hypertension | 120-139 | Or | 80-89 |
| Stage 1 hypertension | 140-159 | Or | 90-99 |
| Stage 2 hypertension | ≥ 160 | Or | ≥ 100 |

## Initial Evaluation

### Goals of the initial evaluation

1. *Rule out secondary hypertension*: focused history, physical examination, and laboratory work-up
2. *Identify end-organ effects*. The initial history, physical examination, and laboratory work-up should include investigations that will identify common end-organ damage from the hypertension as well as establish baselines for end-organ function
3. *Identify other major cardiovascular risk factors*, in particular those that are modifiable with intervention

### Diagnostic workup/investigations

1. Assess presence of target organ damage. Optional spot urine microalbumin as kidney damage; echocardiography as it indicates LVH
2. Obtain laboratory tests: urinalysis, blood glucose, hematocrit and lipid panel, serum potassium, creatinine, and calcium
3. Obtain electrocardiogram

## Management

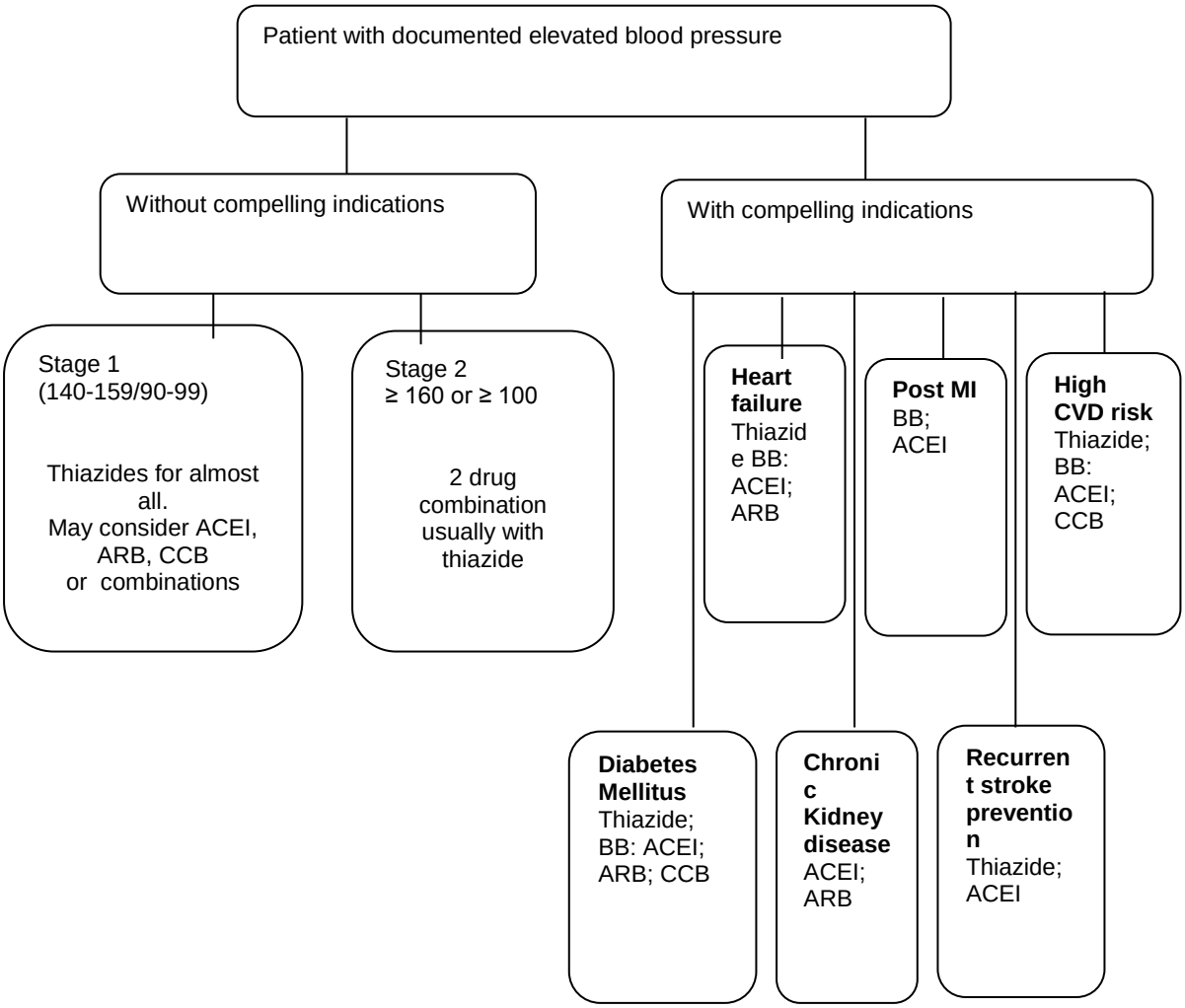
### Targets of therapy

1. Treat to BP <140/90 mmHg or BP <130/80 mmHg in patients with diabetes or chronic kidney disease
2. Majority of patients will require two medications to reach goal

**Non pharmacologic treatment of hypertension**

1. Weight reduction
2. Reduce salt intake to < 6 g NaCl/day
3. DASH diet; rich in fruits and vegetables and low dairy products and fats
4. Limit alcohol consumption
5. Regular aerobic exercise- 30 minutes/day for most of the days of the week
6. Stop smoking
7. Limit caffeine intake to 2 cups per day

**Pharmacologic treatment of Hypertension**




## Follow up visits

1. Biannually visits if BP is stable
2. Check adherence issues such as cost of medications and cultural issues, etc.
3. Measure BP and weight
4. Reminder of lifestyle changes
5. Spot urine microalbumin
6. Assess benefits vs. harms of B aspirin
7. Address other cardiovascular risks such as hyperlipidemia; diabetes mellitus and smoking
8. Monitor side effects of drugs

## When to refer

1. Uncertain about diagnosis
2. Failure to control blood pressure despite use of a three medications regimen
3. Suspicion of secondary hypertension
4. Malignant hypertension

## Quality of care indicators

1. Percentage of hypertensive patients with blood pressure in control
2. Percentage of staff with documented initial and annual education on correct blood pressure measurement technique
3. Percentage of hypertensive patients on medication with a documented follow-up plan
4. Percentage of hypertensive patients presenting in clinic within the last month for whom patient education about modifiable risk factors has been documented in medical record

## References


1. The National High Blood Pressure Education Program of the National Heart, Lung And Blood Institute (NHLBI) the seventh report - www.nhlbi.nih.gov, May 2003
2. Nice (2006) Hypertension: Management of hypertension in adults in primary care. http://guidance.nice.org.uk/CG34/Guidance/pdf/English

# Menopause, hormone replacement & osteoporosis

Jinan Usta, Fadila Naji

## Definition

1. Menopause is the cessation of menses for 12 continuous months due to permanent loss of ovarian responses to gonadotropins
2. The average range is 40-55 years with the median around 51 years; reduced by about two years in women who smoke
3. Menopause occurring prior to age 40 years is considered premature ovarian failure
4. Menopause is defined clinically: although serum FSH is often measured, it offers no additional information, and may be misleading

## Clinical manifestations

1. Irregular menstrual cycles and variation in the amount and duration of menstrual flow
2. Hot flashes: occur in up to 75 percent of women, may resolve without treatment. Sudden sensation of heat centered on the upper chest and face lasting for minutes, associated with sweating and occasionally palpitations, and usually followed by chills and shivering
3. Genitourinary symptoms:
    a. Vaginal dryness, itching and often dyspareunia
    b. The increase in vaginal pH and vaginal atrophy may lead to impaired protection against vaginal and urinary tract infection
    c. Low estrogen predisposes to both stress and urge urinary incontinence
    d. Decreased sensation in the clitoral and vulvar area that may contribute to reduced sexual function
4. Psychological effects: anxiety, mood swings, irritability, loss of concentration, memory problems, crying spells, tiredness and depression, sleep disorders
5. Migraines may worsen in frequency and intensity during the menopausal transition

## Differential diagnosis

1. Pregnancy, hyperprolactinemia, and thyroid disease (menstrual cycle changes)
2. Carcinoid, pheochromocytoma, or underlying malignancy (if hot flashes not typical)

## Facts

Menopause does not cause chronic disease but postmenopausal women are at increased risk for

1. Osteopenia and osteoporosis due to accelerated bone loss thus leading to increased risk for fractures
2. Cardiovascular disease: the most common cause of death in postmenopausal women. There is reduction in HDL cholesterol and increase in total cholesterol

## Management

### 1. Hormonal replacement therapy

**Recommended for:**

a. Short-term management of moderate-to-severe vasomotor symptoms
b. Treatment of moderate to severe uro-genital symptoms (if only for this indication, consider topical vaginal preparations)
c. Use the lowest dose for shortest period not more than 4-5 years because symptoms diminish after several years, whereas the risk of breast cancer increases

**Risks and side effects:**

a. The most common reported side effects are breast tenderness, vaginal bleeding, nausea and vomiting
b. Increased risk of endometrial cancer only if estrogen is used without progestin

c. Increased risk of breast cancer
d. Possible increased risk for CHD
e. Increased risk of venous thromboembolism
f. Increased risk of gallstones and gallbladder disease

**Contraindications:**

a. Unexplained abnormal vaginal bleeding
b. Active liver disease
c. Estrogen-dependent carcinoma, breast cancer, endometrial cancer
d. Thromboembolic diseases

**Precautions:** hypertriglyceridemia, cardiovascular disease, hepatic dysfunction, renal insufficiency, asthma, epilepsy, gallbladder disease, diabetes, fibroids or endometriosis

**Regimen**

**Unopposed oral estrogen**

1. Used for women who had a hysterectomy
2. May have an advantageous profile relative to estrogen-progesterone for reducing the incidence of CHD and mortality

**Cyclic combined regimen, daily estrogen and cyclic progestins (10-14 of each month)**

1. Generally given in the earlier years of peri-menopause
2. Results in a predictable monthly withdrawal bleed

**Continuous combined regimen daily estrogen and progesterone**

Generally given later in menopause

**Transdermal patches of 0.05/0.1 mg of estrogen /patch to be used twice weekly with progesterone**

1. Medroxyprogesterone 5 mg
2. Norethindrone 0.25-1.25 mg

**2. Progestins**

Megesterol and other progestins have been shown to reduce flushing in patients with a history of breast or uterine cancer

**3. Androgen therapy**

Shown to increase libido
FDA has not yet approved any use of androgens in women

**4. Tibolone**

Synthetic steroid with estrogenic and progestogenic effects
Reduces vasomotor and urogenital symptoms, effect comparable to HRT
Adverse effects include pain, weight gain, and headache
The long-term effects with respect to breast cancer, cardiovascular disease, and the reduction of osteoporotic fractures, are still unknown

**5. Raloxifene**

Selective estrogen receptor modulator may be recommended when there is an increased risk of breast cancer
Improves bone mineral density
Worsens hot flashes, possible increased risk of thromboembolic events

**6. Selective serotonin reuptake inhibitors**

(Fluoxetine, Paroxetine) and Venlafaxine

a. Provides relief from hot flashes in a short period, so brief trial of 1 week may be sufficient to determine if they are beneficial
b. Known adverse effects for antidepressants include diminished libido, insomnia, headache, and nausea

## Follow up

1. Pap smear- annually as long as on HRT, tibolone or raloxifene
2. Mammogram- annually
3. Liver function tests annually
4. Endometrial biopsy – when abnormal vaginal bleeding is present
5. Lipid profile- annually: LDL-C is decreased by 7-10%, triglycerides are increased by 6-7%, HDL-C is increased by 4%- hypertriglyceridemia may worsen
6. Bone mineral density (BMD) measurement if
    a. Menopaused or peri-menopaused woman with hip, vertebral or other fracture by X-ray or clinically
    b. Women with high risk for osteoporosis (low trauma fracture after 45 years, maternal history of hip fracture, above 65 years, thin body build, early menopause, prolonged amenorrhea, chronic steroid use, thyroid and parathyroid disease, prolonged immobilization)
    c. Age 65 and above

## Osteoporosis prevention / treatment

1. Elemental calcium – 800 to 1500 mg/d (equivalent to 1 liter of milk a day) with vitamin D 800 IU daily
2. Alendronate or residronate - Both have been shown to stabilize bone, increase its density and decrease fracture risk when given for 3 consecutive years, both with calcium and vitamin D supplements
3. Calcitonin (Miacalcic) is considered second line after alendronate in the treatment of BMD confirmed osteoporosis. Given intranasally as 200 u daily or as intra muscular injection
4. Estrogen replacement decreases risk of fracture if continued for 5 years at least

## Patient education

1. Encourage healthy lifestyles as the most important first steps in both menopausal symptom relief and disease prevention
    a. Exercise, lighter clothing, sleeping in a cooler room and reducing stress may be sufficient to manage hot flashes for many women
    b. Avoidance of possible triggers, including spicy foods, caffeine, smoking and alcohol may help
    c. Avoiding exercise late in the day, taking a hot shower or bath immediately prior to going to bed and maintaining regular bedtimes can help improve sleep
2. Discuss options for menopausal symptom relief with potential risks and benefits
3. Vaginal lubricants and moisturizers may provide some relief for genital symptoms
4. Explain expected bleeding pattern and advise to report any abnormal vaginal bleeding

## References


1. D. Carroll. Non hormonal therapies for hot flashes in menopause. *Am Fam Physician*. 2006;73:457-64, 467.
2. J. Wilkinson. Menopause and Hormone Therapy. Institute for Clinical Systems Improvement Ninth Edition/October 2008.
3. J. Xu, M. Bartoces, A. Neale, R. Dailey, J. Northrup, and K. Schwartz. Natural History of Menopause Symptoms in Primary Care Patients: A MetroNet Study. *J Am Board Fam Pract*. 2005;18(5):374-382.
4. The North American Menopause Society. Estrogen and progesterone use in postmenopausal women. *Menopause*. 2008;15(4): 584-602.

# Obesity

Maya Romani

## Definition

1. Obesity is an excess of body fat above the norm for age and sex with a mean weight more than 20% above ideal body weight.
2. Severity is defined as frankly obese if 20-50% above ideal body and grossly obese if more than 50% above ideal body weight.
3. Distribution of body fat is often characterized as centrally vs. peripherally located fat distribution
   a. Central obesity is characterized by an "android" or "apple" shape
      1. Central obesity is more common in men and is a strong risk factor for several diseases
      2. Ratio of waist (umbilicus) to hip (pubic symphysis) > 0.85 is a risk factor (central form)
      3. This ratio also correlates (r=0.4) with elevated serum triglyceride and low HDL
   b. Peripherally distributed ("gynecoid" or "pair" shape) is more common in women
      Although not completely benign, peripheral (non-central) obesity appears to be less of a risk factor for cardiovascular disease than central obesity

## History

### Initial encounter

1. Duration of obesity
2. Eating habits
3. Activity habits
4. Hour dietary recall
5. Previous weight loss attempts
6. Assess patient readiness
7. Weight loss expectations
8. Family history of obesity
9. Presence of comorbid conditions
   a. Hypertension
   b. Cardiovascular disease
   c. Dyslipidemia
   d. Type 2 diabetes
   e. Sleep apnea \ obesity hypoventilation syndrome
   f. Osteoarthritis
   g. Lower extremity venous stasis disease
   h. Gastro-esophageal reflux
   i. Urinary stress incontinence

### Follow up

Eating and activity habits

## Classifications

1. Adults
   BMI should be calculated by the following formula: Weight/height squared= kg/m²

| BMI | Category |
|---|---|
| Less than 18.5 | Under weight |
| 18.5-24.9 | Normal weight |
| 25-29.9 | Over weight |
| 30-34.9 | Obese(class I) |
| 35-39.9 | Obese (class II) |
| 40 or more | Extreme obese(class III) |

2. Children and adolescents
   BMI is based on percentiles on the growth charts

| Percentile | Category |
|---|---|
| 85% | Over weight |
| 95% | Obese |
| 99% | Extreme obesity |

## Clinical conditions associated with adolescent obesity

| History | Physical | Condition |
|---|---|---|
| Developmental delays | Dysmorphic features | Genetic disorders, e.g. Prader-Willi syndrome, Lawrence Moon-Biedl syndrome |
| Poor linear growth | Short stature | Hypothyroidism, Cushing's, growth hormone deficiency |
| Nocturnal breathing difficulty | Enlarged tonsils | Sleep apnea, hypoventilation syndrome |
| Exercise intolerance | Wheezing | Asthma |
| "Dirty neck" | Acanthosis nigricans | Insulin resistance, type 2 diabetes mellitus |
| Hip/knee pain | Loss of hip range of motion | Slipped capital femoral epiphysis |
| Amenorrhea | Hirsutism, Acanthosis nigricans, Insulin resistance | Polycystic ovarian syndrome or HAIRAN syndrome |
| Headache | Optic disc changes | Pseudotumor cerebri |
| Abdominal pain | Right upper quadrant tenderness | Gall bladder disease |

## Laboratory tests

Perform needed tests to rule out obesity related illnesses
1. TSH for hypothyroidism
2. FBS for diabetes
3. Serum cholesterol
4. Dexamethasone suppression test for Cushing's syndrome

## Management steps

1. Advise weight maintenance for those with BMI in the normal range and manage other risk factors: physical activity, nutrition and behavior management strategies
2. Assess for major and minor comorbid conditions
   a. Waist circumference ≥ 102 cm for males and ≥ 88cm for females is an additional risk factor for complications related to obesity
   b. Assess for depression and eating disorders
   c. Assessment should include a complete medical history to identify medications that may induce weight gain or interfere with weight loss

**Minor comorbid conditions**

- Cigarette smoking
- Hypertension (BP ≥ 140/90) or current use of antihypertensives
- LDL cholesterol > 130 mg/dL
- HDL cholesterol < 40 mg/dL for men < 50 mg/dL for women
- Prediabetes
- Family history of premature
- coronary artery disease
- Age > 65 years for males
- Age > 55 years for females or menopausal females

**Major comorbid conditions**

- Waist circumference (males >102cm, females >88cm)
- Established coronary artery disease
  - History of myocardial infarction
  - History of angioplasty
  - History of CABG
  - History of acute coronary syndrome
- Peripheral vascular disease
- Abdominal aortic aneurysm
- Symptomatic carotid artery disease
- Type 2 diabetes mellitus
- Obstructive sleep apnea

## Weight reducing drugs

| Drug | Dose | Action | Adverse effects |
|---|---|---|---|
| Orlistat (Xenical) | 120 mg PO three times daily before meals | Inhibits pancreatic lipase, decreases fat absorption. | Decrease in absorption of fat-soluble vitamins; soft stools and anal leak; may cause severe liver injury even in healthy people |

## Bariatric surgery

1. Bariatric surgery is recommended as a treatment option for adults with obesity if all of the following criteria are fulfilled:
   a. BMI > 40
   b. BMI between 35-40 and other significant disease: severe cardiac disease , type 2 diabetes, obstructive sleep apnea and other respiratory disease (chronic asthma, obesity, hypoventilation syndrome, Pickwickian syndrome), end-organ damage, pseudo-tumor cerebri, gastroesophageal reflux disease, hypertension, hyperlipidemia, severe joint or disc disease if interferes with daily functioning that could be improved if they lost weight
   c. All appropriate non-surgical measures have been tried but have failed to achieve or maintain adequate, clinically beneficial weight loss for at least 6 months
   d. Person has been receiving or will receive intensive management in a specialist obesity service
   e. Person is generally fit for anaesthesia and surgery
   f. Person commits to the need for long-term follow-up

2. Bariatric surgery is also recommended as a **first-line option** (instead of lifestyle interventions or drug treatment) for adults with a BMI >50 in whom surgical intervention is considered appropriate

3. Comparison of surgical procedures

| Procedure | Advantages | Particular Risks |
|---|---|---|
| Roux-en-Y Gastric bypass | Very well defined long-term success<br>"Dumping" symptoms, although uncomfortable, can be beneficial in food choice | Marginal ulcers with NSAID use or smoking Internal hernia risk<br>Vitamin/mineral malabsorption<br>Loss of endoscopic access |
| Adjustable band | No division or anastomosis of stomach or bowel<br>Adjustability<br>Extremely low mortality<br>No nutrient malabsorption | Higher rate of nonfatal complications<br>Slip requires surgical repair (2%-5%)<br>Erosion/foreign body (less than 1/1,000)<br>Port site infection may require removal and subsequent replacement |
| Malabsorptive: BPD/duodenal switch | "Normal" intake volumes (can continue to overeat) | Severe malnutrition risk – may require TPN or surgical revision<br>Chronic diarrhea in many Most complex procedure without additional health benefit |

4. Contraindications for Surgery
    1. **Strong Contraindications** are medical or psychiatric conditions that significantly increase the risk of surgery
        a. Life-threatening, multisystem organ failure
        b. Uncontrolled or metastatic malignancy, or other serious medical illness where caloric restriction may compromise the patient
        c. Uncontrolled HIV infection
        d. Hypercarbic respiratory failure
        e. Active systemic infection
        f. Untreated endocrine dysfunction
        g. Pregnancy and/or lactation
        h. Current abuse of alcohol or other substances
        i. Severe or unstable psychiatric illness that would prevent adjustment to the surgical procedure
    2. **Relative Contraindications** are medical or psychosocial conditions that may need to be managed or resolved *before* surgery in order to minimize the risk of an adverse outcome
        a. Reversible obstructive sleep apnea (that can be medically optimized before surgery)
        b. Presence of severe liver, renal or gastrointestinal disease
        c. Current tobacco abuse (nicotine addiction)
        d. Binge eating at an average frequency of twice a week for the past six months
        e. Problems with impulse control
        f. Documented history of non-compliance (either medical or psychosocial)

## Desired outcomes

Weight not more than 20% greater than norm for height

## Strategies to help people achieve and maintain a healthy weight

### Diet

1. Base meals on starchy foods such as potatoes, bread, rice and pasta, choosing whole grain where possible
2. Eat plenty of fiber-rich foods – such as oats, beans, peas, lentils, grains, seeds, fruit and vegetables, as well as wholegrain bread, and brown rice and pasta
3. Eat at least five portions of a variety of fruit and vegetables each day, in place of foods higher in fat and calories
4. Eat a low-fat diet and avoid increasing your fat and/or calorie intake

5. Eat as little as possible of:
    a. Fried foods
    b. Drinks and confectionery high in added sugars
    c. Other food and drinks high in fat and sugar, such as some take-away and fast foods
6. Eat breakfast
7. Watch the portion size of meals and snacks, and how often you are eating
8. For adults, minimize the calories you take in from alcohol

**Activity**

1. Make enjoyable activities – such as walking, cycling, swimming, aerobics and gardening – part of everyday life
2. Minimize sedentary activities, such as sitting for long periods watching television, at a computer or playing video games
3. Build activity into the working day – for example, take the stairs instead of the lift, take a walk at lunchtime

## When to refer

1. The underlying causes of overweight and obesity need to be assessed
2. The person has complex disease states and/or needs that cannot be managed adequately in either primary or secondary care
3. Conventional treatment has failed in primary or secondary care
4. Drug therapy is being considered for a person with a BMI more than 50 $kg/m^2$
5. Specialist interventions (such as a very-low-calorie diet for extended periods) may be needed
6. Surgery is being considered

## Patient education

1. Explain the cause of obesity
2. Explain the prognosis
3. Advise about the complications of obesity
4. Advise to avoid fat diets
5. Advise to avoid self-prescribed diet pills
6. Advise about the exercise program

## References


1. Institute for Clinical Systems Improvement (ICSI). Prevention and management of obesity (mature adolescents and adults). Bloomington (MN): Institute for Clinical Systems Improvement (ICSI); 2009.
2. National Collaborating Centre for Primary Care. Obesity: the prevention, identification, assessment and management of overweight and obesity in adults and children. London (UK): National Institute for Health and Clinical Excellence; 2006.
3. Berg F, Buechner J, Parham E. Guidelines for childhood obesity prevention programs: promoting healthy weight in children. *J Nutr Educ Behav*. 2003;35(1):1-4.

# Otitis media

Maya Romani

## Definition

**Acute otitis media (AOM):** acute onset of signs and symptoms of an ear infection, fluid in the middle ear and signs of middle ear inflammation
**Persistent otitis media (POM):** unresolved otitis media after 6 days of antibiotics or recurrence of otitis within few days of completion of a 10 days course. It occurs in about 25% of patients after an initial course of treatment
**Recurrent otitis media (ROM):** three or more attacks in the preceding six months or four or more attacks in the preceding twelve months with at least one in the past six months

## Etiology

It is caused mostly by:
1. Streptococcus pneumoniae (38%)
2. Haemophilus influenzae (27%)
3. Moraxella (Bordetella) catarhalis (10%)
4. Group A beta hemolytic strep (3%)

## Diagnosis

A diagnosis of AOM requires:
- Acute onset of signs and symptoms
- Presence of Middle ear effusion:
    - Bulging of the tympanic membrane (TM)
    - Limited mobility of the TM
    - Air-fluid level behind the TM
    - Otorrhea
- Signs and symptoms of middle-ear inflammation:
    - Distinct erythema of the TM
    - Distinct otalgia

## History

### Under 3 years old

Non-specific symptoms: irritability, fever, night wakening, poor feeding, coryza.

### Above 3 years old

(Percentage of children with acute otitis media who have the corresponding symptom)
1. Ear ache (47-83%)
2. Fever (22-69%)
3. Associated respiratory symptoms (94%)
4. Ear pulling (12%)
5. Irritability (56%)

## Physical examination

Pneumatic otoscopy findings are:
1. Cloudy TM -80% positive predictive value (PPV)
2. Distinctly red TM- 65% PPV
3. Slightly red TM- 16% PPV
4. Bulging TM- 89% PPV
5. Immobile TM- 78% PPV
6. Absence of effusion- 77% negative predictive value

## Complications

### Persistent OM

1. Mastoiditis
2. Meningitis
3. Sinusitis

### Recurrent OM

1. Sinusitis
2. Allergy
3. Immuno-deficiencies
4. Tumors of the nasopharynx

## Management

### AOM

***Observation***

Observation for 48–72 h is an option for

1. All children ≥2 yrs. with non-severe AOM
2. ≥6 months if non severe illness, uncertain diagnosis and follow-up ensured. Non severe illness is mild otalgia and fever <39°C (<102.2°F)

***Pain treatment***

Treat pain with acetaminophen and/or ibuprofen +/− topical benzocaine (if >5 yr)

***Antibiotics***

If symptoms worsen after 48–72 hrs. of observation or initial choice of antibiotic, start or change antibiotics respectively.

*Choice of antibacterial*

1. First line antibiotics are the initial choice in management.

| **Antibacterial agents for treatment of acute otitis media** | |
|---|---|
| **First Line** | **Second line** |
| **Temperature <39°C and mild otalgia** | |
| Amoxicillin 80–90 mg/kg per day | **Non urticarial/anaphylaxis allergy**<br>– Cefuroxime axetil 30 mg/kg/day PO divided bid<br>– Cefdinir 14 mg/kg PO daily or divided bid<br>– Cefpodoxime proxetil 10 mg/kg PO daily<br>**Urticarial/anaphylactic allergy**<br>– Azithromycin 10 mg/kg/day on day 1 then 5 mg/kg/day × 4 days<br>– Clarithromycin 15 mg/kg/day divided bid<br>– Trimethoprim-sulfamethoxazole 6–10 mg/kg/day of trimethoprim divided bid |
| **Temperature ≥39°C and/or severe otalgia** | |
| Amoxicillin-clavulanate (90 mg/kg per day of amoxicillin with 6.4 mg/kg per day of clavulanate | Ceftriaxone, 1 or 3 days |

2. Second line antibiotics are indicated when there is:
   a. Failure to respond to 1st line drugs
   b. History of failure of 1st line drugs
   c. Hypersensitivity to 1st line drugs
   d. Culture proven resistant organism
   e. Coexisting illness requiring 2nd line medication

*Duration of antibiotic therapy*

Duration is 10 days except for low risk children in whom 5 days may be enough which includes:

a. >2 years
b. Negative history of OM
c. Intact tympanic membranes

**Recurrent AOM**

1. Antibiotic prophylaxis with trimethoprim–sulfamethoxazole (50mg/kg/daily) or amoxicillin (20mg/kg daily) can reduce recurrence by an average of 1 episode per year but is not recommended because of cost and risks for antibiotic resistance.
2. Other approaches (of questionable overall value):
   a. Tympanostomy tubes
   b. Adenoidectomy
   c. Tonsillectomy plus adenoidectomy

**Otitis media with effusion**

1. Watchful waiting as 90-95% resolve in 3-4 months
2. Continued follow up is appropriate for possibility of hearing loss
3. A trial of 10 days course of antibacterial is warranted after watchful waiting
4. A referral to ENT for tympanostomy is considered if failure of antibacterial course

## When to refer

Referral for consideration of ventilating tubes insertion, in the following conditions:

1. Recurrent AOM which fails medical management
2. Refractory AOM with moderate to severe symptoms unresponsive to at least 2 antibiotics
3. Bilateral or unilateral OME persisting for at least 3 months with hearing threshold of 20dB or worse
4. Development of advanced middle ear disease involving tympanic membrane atrophy, retraction pockets, ossicular erosion or cholesteatoma
5. Medical treatment failure secondary to multiple drug allergy or intolerance
6. At least 2 recurrences of AOM within 2-3 months of ventilation tube extrusion with failed medical management
7. Impending or existing OM complication(s): mastoiditis, facial paralysis, lateral sinus thrombosis, meningitis, brain abscess, labyrinthitis
8. History of 6 months of OME in the past 12 months

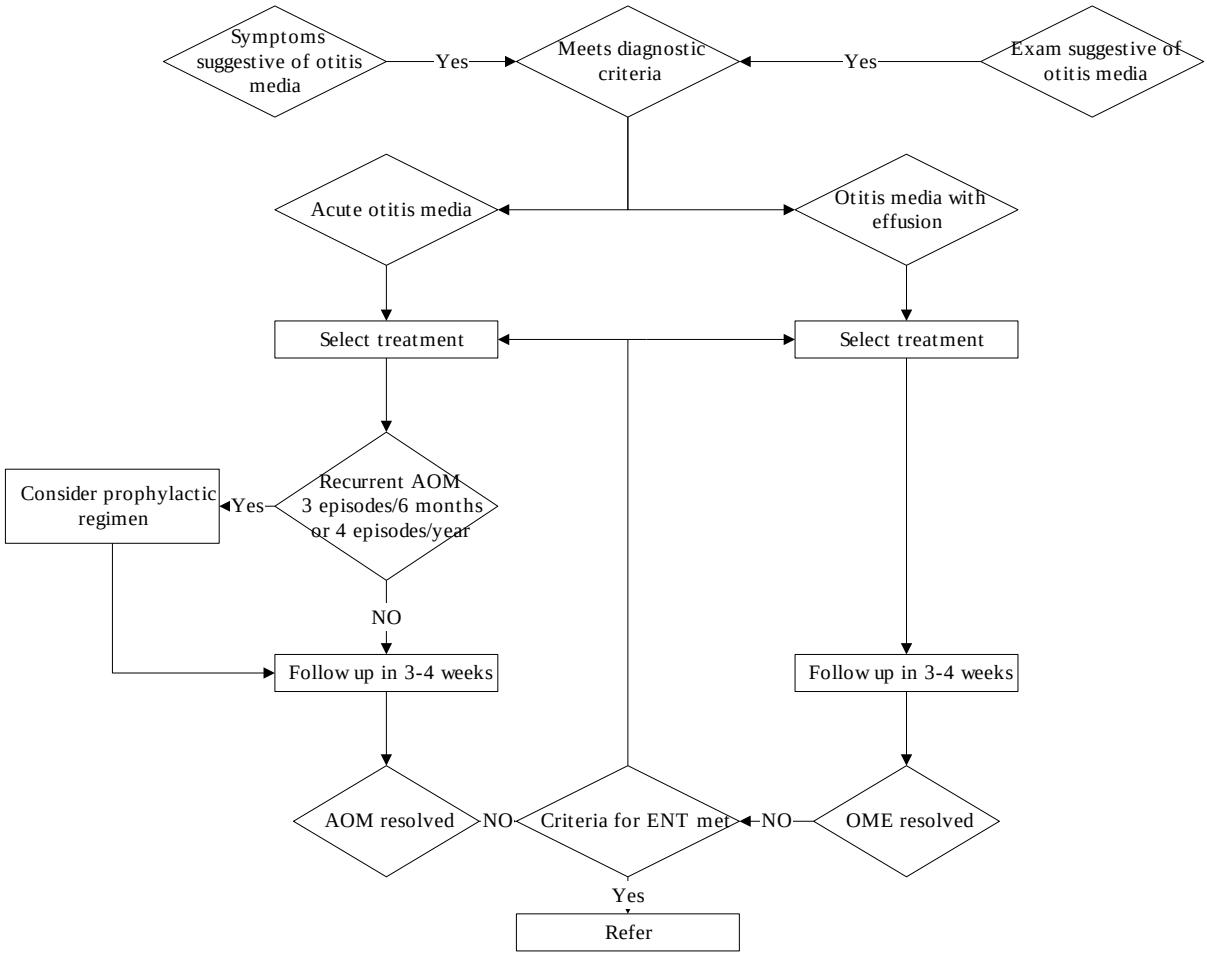
## Patient education

1. Encourage breast feeding
2. Avoid passive smoking
3. Limit exposure to upper respiratory tract infections
4. Avoid pacifier beyond 10 months of age
5. Adult careful hand washing before handling children

## Quality of care indicators

1. Increase appropriate antibiotic usage for otitis media infections.
   a. Percentage of children with a diagnosis of acute otitis media who were prescribed first line antibiotics.
   b. Percentage of children with a diagnosis of acute otitis media who were prescribed second line antibiotics who met the indications for second line antibiotics.
2. Increase the timely and appropriate clinical follow-up for patients with a diagnosis of otitis media:
   a. Percentage of children referred to ENT meeting the criteria for referral.
   b. Percentage of children with a diagnosis of acute otitis media who had an appropriate routine follow- up visit within the recommended time interval.

## Algorithm




## References


1. Institute for Clinical Systems Improvement (ICSI). Diagnosis and treatment of otitis media in children. Bloomington (MN): Institute for Clinical Systems Improvement (ICSI); 2008.
2. Ramakrishnan K, Sparks RA, Berryhill WE. Diagnosis and treatment of otitis media. *Am Fam Physician*. 2007;76(11):1650-1658.
3. Diagnosis and management of acute otitis media. *Pediatrics*. 2004;113(5):1451-1465.
4. McCaig LF, Besser RE, Hughes JM. Trends in antimicrobial prescribing rates for children and adolescents. *JAMA*. 2002;287(23):3096-3102.
5. Rosenfeld RM. Observation option toolkit for acute otitis media. *Int J Pediatr Otorhinolaryngol*. 2001;58(1):1-8.

# Panic Disorder and Panic Attacks

Najla Lakkis

## Definition

Panic disorder (PD) is an anxiety disorder characterized by recurrent unexpected panic attacks for at least one month, with persistent fear and concern of additional ones occurring. Panic attacks occur one to several times per week, usually unpredictably, often associated with a sense of imminent danger and an urge to escape, and may interfere with the patient's normal activities and work.

| **DSM-IV Criteria for Panic Attack**<br>*DSM-IV* = Diagnostic and Statistical Manual of Mental Disorders, *4th ed.* |
|---|
| **A discrete period of intense fear or discomfort, in which ≥ 4 of the following somatic or cognitive symptoms developed abruptly and reached a peak within 10 minutes:**<br>1. Palpitations, pounding heart, or accelerated heart rate<br>2. Sweating<br>3. Trembling or shaking<br>4. Sensations of shortness of breath or smothering<br>5. Feeling of choking<br>6. Chest pain or discomfort<br>7. Nausea or abdominal distress<br>8. Feeling dizzy, unsteady, lightheaded, or faint<br>9. Derealization (feelings of unreality) or depersonalization (being detached from oneself)<br>10. Fear of losing control or going crazy<br>11. Fear of dying<br>12. Paresthesias (numbness or tingling sensations)<br>13. Chills or hot flushes |
| ***Panic disorder consists of recurrent panic attacks <u>for at least one month</u>*** and fear and concern about having another attack or worry about the implications and consequences of the attacks. |

## Epidemiology

1. PD occurs commonly in patients in primary care settings
2. Lifetime Prevalence: 1 to 3% with the mean age of onset in 20 to 25 years in US
3. Women affected 2 to 3 times more often than men
4. 17-25% of patients who present to ER with chest pain meet the criteria for panic disorder

## Pathophysiology

Many theories and proposed abnormalities/inefficiencies in molecular signal processing in specific neuronal regions or neurotransmitter pathways

## History

1. Initial history should assess the possibility of an organic illness underlying the panic attacks. Mainly, ruling out hyperthyroidism, excessive caffeine intake, unstable angina and substance abuse (i.e. alcohol, etc.). Frequency, duration and precipitating factors of attacks should be noted.
2. Diagnosis of PD is made when:
   a. Recurrent unexpected panic attacks
   b. At least one attack has been followed by 1 month or more of at least one of the following: persistent concern about additional attacks, worry about the implications of the attack, or a significant change in behavior related to the attacks
   c. With or without agoraphobia (a fear of being in a place from which escape would be difficult, or where it might be difficult to get help if a panic attack were to occur)

   d. No direct psychological effect of a substance or medication can be identified
   e. No other mental disorders can explain the attack
3. Check for co-morbidities:
   a. Agoraphobia (26%) or social phobia (33%)
   b. Other mental disorders such as depressive disorders (with or without suicidal ideation)
   c. Medical conditions (headaches; insomnia; chronic fatigue)
   d. Substance-related disorders (e.g. intoxication, withdrawal states)

## Physical examination

A complete physical examination is necessary initially with careful cardiac evaluation and documentation of findings.

## Differential diagnosis

1. Other anxiety disorders (post-traumatic stress disorder; generalized anxiety disorder)
2. Anxiety secondary to illicit drug use or to medications (ephedrine and other decongestants; digoxin toxicity; theophylline toxicity; selective serotonin reuptake inhibitors (SSRI); neuroleptics; methylphenidate; corticosteroids; anticholinergics; clonidine; beta adrenergic agonists such as Albuterol and Terbutaline) or to excess caffeine intake
3. Anxiety due to stimulant or medication withdrawal (nicotine; alcohol; caffeine; narcotic; benzodiazepines; beta-blocker; anticholinergic)
4. Anxiety secondary to cardiopulmonary disease (mitral valve prolapse; arrhythmia; myocardial infarct; hypertension or hypotension; sleep apnea; COPD; asthma; recurrent pulmonary embolus)
5. Anxiety secondary to endocrine disease (hypoglycemia; hyperthyroidism; pheochromocytoma; hypoparathyroidism; Cushing's Disease; carcinoid syndrome; menopause).
6. Anxiety secondary to neurologic disease (migraine headaches; seizures; narcolepsy).

## Pearls/Not to be missed

1. To make the diagnosis of panic disorder, panic attacks cannot directly or physiologically result from substance use, medical conditions, or another psychiatric disorder
2. Check for co-morbidities: headaches; insomnia; chronic fatigue; depression; suicidal ideation; substance abuse (alcohol; medications)
3. Alcohol or drug abuse/dependence are predisposing factors as well as co-morbidities

## Laboratory and imaging tests

1. TSH and T4 if suspect hyperthyroidism
2. Blood sugar
3. Blood count
4. Echocardiogram if mid-systolic click is heard
5. Chest X-Ray if pulmonary problem suspected
6. EEG or CT of brain may be done if any neurologic condition is suspected

## Management options

1. Remove exacerbating factors: caffeine, tobacco, alcohol, drugs
2. Discuss previous therapies (psychotherapies or drugs) the patient may have used and explore their interests and choices of treatment
3. Offer brief therapy in your office if you are trained or suggest referral psychological counseling with cognitive or group psychotherapy
4. Therapeutic options: it remains unclear whether one treatment modality is superior to the other. Cognitive behavioral therapy (CBT) combined with an antidepressant appears to be significantly more effective in agoraphobia than either treatment alone.
5. Pharmacotherapy may be used first line, especially in PD in acute setting:
   a. Antidepressants such as serotonin reuptake inhibitors (SSRIs) or tricyclic antidepressants (TCAs). SSRIs are better tolerated but more expensive than TCAs. Selective norepinephrine reuptake inhibitors (SNRIs) such as Venlafaxine may be also used.

b. Antidepressants may be combined with benzodiazepines initially; the benzodiazepine slowly tapered after the antidepressant becomes effective.
c. Propranolol may be used to control vegetative symptoms, particularly palpitations, trembling, restlessness or motor tension.
d. Begin with low doses and to titrate up very slowly the SSRIs every 1-2 weeks and the TCAs every 2-3 days, as patients' sensitivity to side-effects may cause them to terminate their use prematurely.
e. The duration of antidepressants is usually six months.

6. Cognitive behavior therapy (CBT) 4 to 12 sessions: When possible, referral to a therapist experienced in exposure techniques is preferred. CBT includes
   a. Cognitive therapy (e.g. identifying misinterpreted feelings, educating patients about panic attacks, panic management, and cognitive restructuring)
   b. Behavior therapy (e.g. breathing exercises, applied relaxation, exposure in vivo or through imagery)

| **Medicines Used in the Treatment of Panic Disorder** | | |
|---|---|---|
| | *Agent* | *Dosage* |
| Benzodiazepines | Alprazolam (Xanax)<br>Clonazepam (Rivotril) | 0.5 mg three times daily<br>0.5 mg three times daily |
| SSRIs | Citalopram (Cipralex)<br>Fluoxetine (Prozac)<br>Fluvoxamine (Faverin)<br>Paroxetine (Seroxat)<br>Sertraline (Zoloft) | 40 mg daily<br>40 mg daily<br>150 mg daily<br>40 mg daily<br>50 to 200 mg daily |
| TCAs | Clomipramine (Anafranil)<br>Imipramine (Tofranil) | 75 to 150 mg at bedtime<br>150 mg at bedtime |
| Other agents | Mirtazapine (Remeron) | 15 to 30 mg daily |
| *SSRIs = selective serotonin reuptake inhibitors; TCAs = tricyclic antidepressants* | | |

## When to refer

1. Evidence of suicidal intent
2. Uncertainty about diagnosis, especially possible depression, schizophrenia
3. Comorbid diagnosis, e.g. substance misuse, schizophrenia
4. Specialist investigations required, e.g. cardiac monitoring
5. Incapacitating symptoms, either social or occupational, that do not respond quickly to initial treatment
6. For psychotherapy
7. Phobias or mixed disorders

## References


1. American psychiatric association: Diagnostic and statistical manual of mental disorders, 4th edition. Washington, DC, American psychiatric association, 2000:432.
2. Saeed SA, Bruce TJ. Panic disorder: effective treatment options. *Am Fam Physician.* 1998;57:2405-12.
3. Walley EJ, et al. Management of common anxiety disorders. *Am Fam Physician.*1994; 50:1745-53.
4. Cross-National Group. The cross-national epidemiology of panic disorder. *Arch Gen Psych*. 1997;54:1.
5. Ham P, Waters DB, Oliver MN. Treatment of panic disorder. *Am Fam Physician*. 2005 Feb 15;71(4):733-9.

# Peptic Ulcer Disease

Dima Dandachi, Bassem Saab

## Etiology

1. Non-steroidal anti-inflammatory drugs (NSAIDS) are the most common cause of PUD in patients without Helicobacter pylori (H. pylori) infection. Complications are more common in long term use, coexisting H. pylori infection, older patients, patients with history of gastrointestinal bleeding, those who use steroids, bisphosphonates, anticoagulants, or has major organ impairment.
2. H. pylori infection is detected in more than 90 percent of duodenal ulcers and 70-90 percent of gastric ulcers. However, only a small percentage of infected people develop peptic ulcer disease (PUD).
3. Rare causes: acid-hypersecretory states (e.g. Zollinger-Ellison syndrome), acute illness, multi-organ failure, extensive burns, head injury, gastric cancer, lymphomas, lung cancer

## Pathogenesis

1. Imbalance between protective factors and injurious factors
2. Genetic predisposition is also implicated in the pathogenesis of PUD

## History and physical examination

1. Epigastric pain (gnawing, burning or vague)
   a. Occurring at nighttime
   b. May be relieved by food intake, antacids
2. The physical examination is often unreliable.

   **Abdominal pain is absent in at least 30 percent of older patients with peptic ulcers, they may present acutely with gastroduodenal bleed or perforation or non-specific symptoms.**

3. Digital rectal exam (DRE) should be done to detect any rectal bleed or melena.

## Alarm signs for cancer or complicated ulcer

1. Age older than 55 years
2. Anemia
3. Rectal bleed or melena by DRE or positive stool Guaiac
4. Weight loss, anorexia
5. Dysphagia, vomiting
6. Jaundice
7. Positive family history of gastric cancer

## Evaluation

1. Prompt upper endoscopy is recommended for
   a. Patients older than 55 years
   b. Patients who have alarming symptoms (see above)
   c. Patients with peptic ulcers that do not respond to treatment

2. H. pylori testing is indicated in all patients with symptoms suggestive of PUD

| Non-invasive | Invasive: for those who will undergo endoscopy + biopsy |
|---|---|
| **Urea breath test**; very sensitive and specific. Stop antibiotics and PPI at least 2 weeks before testing<br>**Stool antigen test**; accurate, take multiple specimens<br>**Serology tests (ELIZA);** inexpensive, diagnostic accuracy is low, cannot be used to confirm eradication. | **Rapid Urease Test (CLO);** accuracy of this test in case of bleeding, PPI, antibiotic administration.<br><br>**Histology**<br><br>**Culture** |

## Differential diagnosis

1. Functional dyspepsia
2. Gastroesophageal reflex
3. Biliary tract disease
4. Cardiac associated conditions
5. Pancreatitis
6. Cancer of the stomach, lymphoma
7. Crohn's disease

**Eradication of H. pylori has the potential to reduce the risk of gastric cancer.**
**Eradication of H. pylori to prevent gastric cancer in asymptomatic patients is not recommended.**
**H. pylori eradication significantly reduces the risk of ulcer recurrence and re-bleeding and is less expensive than chronic antisecretory therapy.**

## Regimens for eradication

Choice of therapy should consider effectiveness, cost of various regimens and side effects.

**Triple therapy**

1. Omeprazole (20mg bid) or Lansoprazole (30mg bid) + Clarithromycin (500 mg bid) + Amoxicillin (1 g bid) or Metronidazole (500mg bid)
2. Amoxicillin is preferred for patients who have been treated with metronidazole previously.
3. Metronidazole is preferred for patients allergic to penicillin.

**Quadruple therapy**

1. H2 blocker or PPI + Bismuth subsalicylate (525mg qid) + Metronidazole (250 mg qid) + Tetracycline (500 mg qid)
2. Doses of H2 blockers: Cimetidine 400 mg bid (many drug interaction), Ranitidine or Nizatidine 150 mg bid or 300 mg QHS

**It is unnecessary to continue anti-secretory maintenance therapy in patients after H. pylori eradication unless patients have concomitant GERD.**

**Proton pump inhibitors provide acid suppression, healing rates, and symptom relief superior to other antisecretory therapies.**

**Duration**

The most widely recommended regimens 10-14 days

## Prevention

Patients at high risk of complications secondary to NSAIDS are given

1. Double doses of H2RAs since standard doses are ineffective at preventing NSAID related gastric ulcers.
2. Standard doses of PPIs.
3. Misoprostol (200 micrograms qid) is effective. Lower doses are associated with fewer diarrheas but are less effective at preventing endoscopic gastric ulcers.
4. COX-2 provides only a small reduction in GI complications compared to NSAIDs, and only in the short term.

## Patient education

1. Neither stress nor spicy food cause ulcer
2. Advice patient to
   a. Stop NSAIDs
   b. Avoid alcohol
   c. Stop smoking

## References


1. Ables AZ, Simon I, Melton ER. Update on Helicobacter pylori treatment. *Am Fam Physician*. 2007 Feb 1;75(3):351-8.
2. Fendrick AM, Forsch RT, Harrison RV, Scheiman JM. Guidelines for clinical care: peptic ulcer disease. University of Michigan Health System. 2005. http://cme.med.umich.edu/pdf/guideline/PUD05.pdf
3. Malfertheiner P, Megraud F, O'Morain C, Bazzoli F, El-Omar E, Graham D, et al. Current concepts in the management of Helicobacter pylori infection: the Maastricht III Consensus Report. *Gut*. 2007 Jun;56(6):772-81.
4. Ramakrishnan K, Salinas RC. Peptic ulcer disease. *Am Fam Physician*. 2007 Oct 1;76(7):1005-12.
5. Rostom A, Dube C, Wells G, Tugwell P, Welch V, Jolicoeur E, et al. Prevention of NSAID-induced gastroduodenal ulcers. *Cochrane Database Syst Rev*. 2002;(4):CD002296.

# Periodic Health Examination

Dima Dandachi, Bassem Saab

## Definitions

1. Periodic examinations are based on recommendations of professional organizations. These recommendations sometimes disagree depending on:
   a. Population targeted and the prevalence of the subject of recommendation
   b. The subjectivity of the decision analysis in the choice of cut off points for decision making
   c. The use of explicit criteria in screening programs
   d. The clinical significance of the intervention
   e. The methodology with which the evidence is evaluated
2. Screening can be viewed along two broad lines:
   a. Formal screening – the health providers reach out to the population. This is usually done in campaigns or systemic outreach to the population served by a provider
   b. Opportunistic screening (case finding)– the patient comes to the health provider. In this method, the health provider takes the opportunity of the patient's visit for some ailment to discuss preventive and health promotion issues.
3. The decision to include a condition in screening and set the frequency with which it is checked is based on a cost benefit analysis that may vary from one population to another. The variables taken into this decision process include:
   a. Attributes of the condition: common, important, diagnosable and has a latent interval which allows effective interventional treatment.
   b. Attributes of the intervention (or test): acceptable to the users, inexpensive, effective, safe and has high sensitivity and specificity to minimize false results.
4. Lebanon lacks vital statistics that enable us to give sound recommendation on some preventive issues. The information presented here is derived mainly from the US Preventive Services Task Force (USPSTF).
5. USPSTF graded recommendations based on presence and strength of evidence as follows:
   A: There is good evidence to support the recommendation that the condition be specifically considered in a periodic health examination.
   B: There is fair evidence to support the recommendation that the condition be specifically considered in a periodic health examination.
   C: There is insufficient evidence to recommend for or against the inclusion of the condition in a periodic health examination, but recommendations may be made on other grounds.
   D: There is fair evidence to support the recommendation that the condition be excluded from consideration in a periodic health examination.
   E: There is good evidence to support the recommendation that the condition be excluded from consideration in a periodic health examination.

## Behavioral counseling

**The 5-A**

1. Assess
2. Advise
3. Agree
4. Assist
5. Arrange

**Metabolic, Nutritional, and Endocrine Conditions**

| Service / Adults | Sex | Age | Frequency | Remarks | Grading |
|---|---|---|---|---|---|
| Obesity | MF | Adults | 1-2 years | Weight and Height (Body Mass Index) | B |
| Diabetes | | Adults* | Q 3 years | Fasting blood sugar, HbA1c, 2hr post load plasma glucose test can be used | |
| | | | | *Those with BP > 135 / 80 | B |
| | | > 45* years | | < 45 if risk factors present | I |
| Intensive behavioral dietary counseling | | Adults* | >1 session /month for at least 3 month | *Those at risk for CHD and those with hyperlipidemia | B |
| | | | | *Obese adults | |
| | | | Other organizations recommends nutritional counseling or dietary advice for patients at average risk for chronic disease | | I |
| Exercise | | Adults | Every visit | Counseling 3-5 min | I |
| Lipid profile (LDL, HDL) | M | M: 35 - 65 | 5 years | Stop at 65 if screened before | A |
| | F* | F: 45 - 65 | | *Those at increased risk of CHD | |
| Bone mineral density for osteoporosis | F | 65* - 85 | ? 2 years | 60 years if increased risk factors | B |
| Thyroid disease | MF | Some organizations suggest screening in selected populations (family history of thyroid disease, diabetics) | | | I |
| Anemia (iron deficiency) | | > 50 | 5* years | Complete blood count | |
| | | | | *Every 4 years for persons with underlying chronic conditions | |
| Vitamin supplements | MF* | *Females should be counseled on maintaining good calcium intake to prevent osteoporosis | | | |
| Beta-carotene supplements for the prevention of cancer or cardiovascular disease | | (USPSTF) recommends against its use | | | |
| Hormone therapy | F | | | | |

## Cancer screening and prevention

| | | | | | |
|---|---|---|---|---|---|
| Cervical cancer | F | ? - 65* | 1-3 years | Pap smear<br>*Start 3 years after sexual activity or at 21 years depending on which comes first, stop at 65 years if adequately screened and not at high risk for cervical cancer | A |
| Colorectal Cancer | MF | 50 – 75 | 1 year | Fecal occult blood test (FOBT) | |
| | | | 5 years | or Flexible sigmoidoscopy | |
| | | | 10 years | or Colonoscopy (most sensitive and specific) | |
| | | | 3 year / 5 year | or FOBT + sigmoidoscopy (more sensitive than either test alone) | |
| | Digital rectal exam is no longer recommended | | | | |
| | Recommends against the use of aspirin and nonsteroidal anti-inflammatory drugs (NSAIDs) to prevent colorectal cancer | | | | |
| Breast cancer | F | 40 - ?* | 1-2 years | Mammography / * related to life expectancy | B |
| | | > 20 | 1-3 years | Clinical breast exam | I |
| | | > 20 | Monthly | Self-breast exam | |
| | F* | Genetic counseling and evaluation for BRCA testing | | *Family history is associated with an increased risk for mutations in BRCA1 or BRCA2 genes | B |
| | | Tamoxifen for prevention for breast cancer | | *High risk for breast cancer and at low risk for adverse effects | |
| Prostatic cancer | M | < 75 | ? | PSA | I |
| | | > 75 | (USPSTF) recommends against routine screening | | |
| Lung cancer | AAFP recommends against the use of chest x-ray and/or sputum cytology in asymptomatic persons for lung cancer screening | | | | I |
| Oral cancer | Clinicians should be alert to the possibility of oral cancer when treating patients who use tobacco or alcohol | | | | |
| Skin cancer | Total-body skin examination in high-risk individuals (family or personal history of skin cancer, predisposing phenotypic characteristics, and increased exposure to sunlight, or clinical evidence of precursor lesions (e.g. dysplastic or congenital nevi) | | | | |
| | Counseling about sun avoidance and sun screen use to prevent skin cancer | | | | |
| Pancreatic cancer | (USPSTF) recommends against screening | | | | |
| Testicular cancer | | | | | |
| Bladder cancer | | | | | |
| Thyroid cancer | | | | | |
| Ovarian cancer | | | | | |

## Heart and vascular diseases

| | | | | | |
|---|---|---|---|---|---|
| Aspirin for prevention of coronary heart disease | MF* | M: > 40 | Younger those with risk factors | | A |
| | | F: postmenopausal | Regimens variable: 75mg or 100 mg daily or 325 mg every other day | | |
| Abdominal aortic aneurysm ultrasonography | M* | 65-75 | | * who have ever smoked | B |
| Blood pressure (BP) | MF | Adults | 1-2 years* | *Every 2 years if BP < 120 / 80 | |
| Peripheral arterial disease | (USPSTF) recommends against screening | | | | |
| Carotid artery stenosis | | | | | |
| Screening for coronary heart disease | | | | | |

## Infectious diseases

| | | | | | |
|---|---|---|---|---|---|
| Human immunodeficiency virus (HIV) | MF | Adults* | | *High risk individuals | A |
| Syphilis infection | | | | | |
| Behavioral counseling to prevent sexually transmitted infections | | | Multiple sessions of counseling | | B |
| Hepatitis C virus (HCV) infection | | | | | I |
| Bacteriuria (asymptomatic) | (USPSTF) recommends against screening | | | | |

## Injury and violence

| | | | | |
|---|---|---|---|---|
| | | | | |
| Screening for family and intimate partner violence | MF | Adults | Physicians should be alert to physical and behavioral signs and symptoms associated with abuse or neglect | I |
| Counseling about proper use of motor vehicle occupant restraints | | | Other organizations supports the counseling of all parents and patients older than 2 years of age about accidental injury prevention | |

## Mental health and alcohol abuse

| | | | | | |
|---|---|---|---|---|---|
| Screen for tobacco use and provide counseling and cessation interventions | MF | Adults | Every visit | Brief behavioral counseling (less than 3 minutes) | A |
| Screening and behavioral counseling for alcohol misuse | | | Brief behavioral counseling interventions with follow up | | B |
| Screening for depression | | | Different screening tools are available | | |
| Screening for suicide risk | | | Physicians should remain alert to suicide in high-risk patients | | I |
| Screening for Illicit Drug Use | | | Clinicians should be alert to the signs and symptoms of illicit drug use in patients | | |

## Vision and hearing disorders

| | | | | |
|---|---|---|---|---|
| Visual impairment | MF | > 65 | Some organizations recommend screening | Pending |
| Hearing impairment | | | Recommend screening by questioning about patients' hearing | |

# Pharyngitis

Jibrael Razzouk

## Definition and epidemiology

1. Direct infection of the pharynx (pharyngitis) primarily by viruses or bacteria.
2. Group A Beta Hemolytic Streptococcus (GABHS) pharyngitis accounts for 15 to 30 percent of cases in children and 5 to 15 percent of cases in adults
3. Peak seasons for sore throat late winter and early spring
4. Usually between 5 and 15 years old

## Clinical presentation

1. GABHS etiology
    a. Acute onset of sore throat and odynophagia
    b. Pharyngeal and/or tonsillar erythema and exudates
    c. Cervical lymphadenopathy
    d. Fever
    e. Rhinorrhea and myalgia uncommon
2. Viral etiology
    a. Rhinorrhea
    b. Cough
    c. Hoarseness
    d. Conjunctivitis
    e. Diarrhea
3. Infectious mononucleosis etiology
    a. Myalgias and arthralgias
    b. Hepatosplenomegaly
    c. Posterior cervical lymphadenoapthy
    d. Pharyngeal injection with exudates

## Diagnosis

1. Most important is to identify GABHS and other bacterial infection
2. Streptococcal and viral sore throat are difficult to distinguish clinically
3. Throat cultures are often necessary for diagnosis confirmation
4. Monospot can be used to rule out infectious mononucleosis
5. Rule out other causes: gastroesophageal reflux, postnasal drip secondary to rhinitis, persistent cough, thyroiditis, allergies, a foreign body, and smoking

**Streptococcal score validated in adults and children**

| *Symptom* | *Points* | *Scoring* |
|---|---|---|
| Fever (subjective or measured in office) | 1 | 0 or –1 points: Streptococcal infection ruled out (2 %) |
| Absence of cough | 1 | |
| Tender anterior cervical adenopathy | 1 | |
| Tonsillar swelling or exudates | 1 | |
| Age | | 1 to 3 points: Order throat culture and treat accordingly |
| Younger than 15 years | +1 | |
| 15 to 45 years | 0 | |
| Older than 45 years | –1 | |
| | | 4 to 5 points: Probable streptococcal infection (52%), consider empiric antibiotics |

## Complications of GABHS

1. Peritonsillar abscess
2. Glomerulonephritis
   Therapy does not prevent it
3. Acute rheumatic fever
   Therapy can initiated up to 9 days after onset of symptoms and still be effective.

## Management

1. Hydration, antipyretics (acetaminophen or ibuprofen), gargle with warm salt water
2. Untreated, streptococcal pharyngitis resolves on its own. Antibiotic treatment is necessary, however, to prevent complications mainly rheumatic fever and not glomerulonephritis
3. Children can return to school 24 hours after therapy is initiated
4. In infectious mononucleosis, about one third has secondary strep tonsillitis. Ampicillin should be avoided as it induces rash
5. Antibiotics
   a. Penicillin: 250–500 mg twice or three times daily (bid-tid) x 10 days
   b. Amoxicillin: 40 mg/kg/day divided bid-tid x 10 days or 750 mg daily x 10 days if compliance is a concern
   c. Benzathine penicillin G intramuscularly (IM) x 1
   d. If allergic to penicillin: erythromycin ethyl succinate: 40 mg/kg/day two-four times daily (bid-qid) (max 1 g/day) x 10 days or azithromycin
   e. With oral antibiotics, a full 10 day course is required (exception: azithromycin)

## When to refer

1. Severe mononucleosis requiring steroids
2. Peritonsillar abscess
3. Recurrent infections : five or more documented episodes of strep pharyngitis in one year or three documented episodes in two consecutive years
4. Suspected tonsillar neoplasia

## Patient education

1. Explain about etiology and prognosis
2. Advise that antibiotics are not helpful for viral infections
3. Return for recheck if not better after 3 days
4. Stress the intake of the complete course of antibiotics for 10 days for strep infection

## References


1. Vincent MT, Celestin N, Hussain AN. Pharyngitis. *Am Fam Physician*. 2004;69(6):1465-1470.
2. McIsaac WJ, Kellner JD, Aufricht P, Vanjaka A, Low DE. Empirical validation of guidelines for the management of pharyngitis in children and adults. *JAMA*. 2004;291(13):1587-1595.

# Pneumonia in Adults - Community Acquired

Najla Lakkis

## Definition and epidemiology

1. Community acquired pneumonia (CAP) is defined as an acute infection of the lung parenchyma and pulmonary system not acquired in a hospital or a long-term care facility, with or without new infiltrate on chest radiographs.
2. Mortality rates from CAP are higher in case of co morbidities and increased age and are lower among vaccinated people.
3. It is frequently seen in practice with an incidence of 1,200 cases per 100,000 persons per year, and one-fifth of these are admitted to the hospital for treatment in US.

## Classification and common causative agents

The causative organism is identified only in 50% of cases.
Bacterial pneumonia can be classified as typical or atypical, although the clinical presentations are often similar.

1. Bacterial typical: accounting for around 85% of cases
    a. Streptococcus pneumonia: the most frequent cause of CAP in patients of all ages
    b. Haemophilus influenza: especially in children, smokers, patients with COPD and elderly people
    c. Moraxella catarrhalis (less common): especially in smokers and patients with COPD
    d. Gram-negative pathogens (rare): e.g. Klebsiella in alcoholics and diabetics; Pseudomonas aeruginosa in patients with chronic pulmonary disease e.g. COPD; gram-negative enteric pathogens if high risk for aspiration
    e. Staphylococcus aureus (rare): especially post viral and in injection drug users
    f. Anaerobes (rare & difficulty in culture): mostly if high risk for aspiration
2. Bacterial atypical: accounting for around 15% of cases
    a. Mycoplasma pneumonia and Chlamydia species: more common in healthy young people 20 to 40 years of age
    b. Legionella species (rare & requires contact with an environmental source): to be considered in seriously ill individuals above 40 years who may be immunocompromised or do not respond to beta-lactams or have low serum sodium
3. Viral
    a. Influenza virus A and B
    b. Respiratory syncytial virus: in children < 2 years and in the elderly people
    c. Others: parainfluenza viruses; adenovirus; coronavirus

## History

1. Onset: sudden versus insidious
2. Triad of the most common symptoms: fever (+/- chills), dyspnea, and cough (productive of purulent sputum with typical bacteria; non-productive with atypical and viral). In patients with COPD: change in quantity and character of sputum
3. Chest pain (pleuritic or nonpleuritic) and rigors may occur
4. Extrapulmonary symptoms sometimes: upper respiratory tract symptoms (sore throat, runny nose, etc.) with viral pneumonia; gastrointestinal symptoms (nausea/vomiting; diarrhea; abdominal pain; anorexia), myalgias and headaches with Legionella

## Physical Examination

1. Signs of respiratory distress (tachypnea, tachycardia or bradycardia, cyanosis)
2. Respiratory signs of consolidation: (bronchial breath sounds: rales or wheezing, decreased breath sounds, dullness to percussion, increased tactile fremitus, egophony ("E" to "A" changes)
3. Signs of pleural involvement: (decreased breath sounds, dullness to percussion, friction rub, decreased tactile fremitus

## Differential diagnosis

1. Infectious: acute tracheobronchitis, health care–associated, viral, or fungal, mycobacterial infection, postobstructive pneumonia, septic emboli from right-sided endocarditis
2. Noninfectious: chronic bronchitis, congestive heart failure with pulmonary edema, pulmonary embolism with infarction, malignancy, foreign body, collagen vascular disease with vasculitis, radiation; chemical pneumonitis, aspiration pneumonitis.

## Evaluation

### Laboratory tests

(Not recommended in non-severe CAP)

1. Sputum gram stain & cultures positive in ≤ 50% of cases. Controversial because utility is limited, but recommended for inpatients
2. Blood cultures before antibiotics (2 set minimum if possible): recommended only in hospitalized CAP
3. Special microbiological studies: if there is a high clinical suspicion for a specific etiologic organism, seek appropriate available testing such as rapid PCR (sputum or bronchoalveolar lavage fluid), urinary antigen if suspected Legionella pneumophila (sensitivity 50%).
4. CBC with differential (leukocytosis with shift to the left, sometimes leucopenia)
5. Electrolytes (hyponatremia); BUN/creatinine; glucose; LFTs
6. Arterial blood gases: hypoxemia, hypocapnia initially, then hypercapnia

### Imaging tests

1. Chest X-Rays (CXR PA & lateral) is recommended for diagnosis with lateral decubitus views if pleural effusion present
   a. False negatives in early presentation.
   b. In typical CAP: focal segmental or lobar pulmonary infiltrates in only 40% of acute cases Sometimes pleural effusion (should be tapped if > 1cm)
   c. In atypical and viral CAP: diffuse bilateral infiltrates
2. Chest CT Scan: consider if failing to respond to appropriate therapy

## Decision for outpatient treatment or admission

This decision should be based on a three-step process

1. **Presence of pre-existing conditions**
   a. Age over 65 years
   b. Use of antimicrobials within the previous 3 months or resistance to antibiotics
   c. Co-morbidities: immune suppressing conditions (e.g. HIV infection) or use of immunosuppressing drugs including corticosteroids, lung disease (asthma, COPD), malignancy, circulatory disease (chronic heart failure, cerebrovascular disease), diabetes mellitus, liver disease, chronic kidney disease, asplenia, alcoholism
2. **Severity Index Score: Pneumonia Patient Outcomes Research Team (PORT)**
   A score > 70 should prompt serious consideration of hospitalization.
3. **Clinical Judgment:** objective criteria or scores should always be supplemented with physician determination of subjective factors, including the ability to safely and reliably take oral medication and the availability of outpatient support resources.

| **Characteristic or finding** | | | **Points assigned** |
|---|---|---|---|
| Demographic | Male | | = Age (years) |
| | Female | | = Age (years) -10 |
| | Nursing home resident | | + 10 |
| Co-morbidities | Cancer present | | + 30 |
| | Liver disease | | +20 |
| | CHF | | + 10 |
| | Cerebrovascular disease | | + 10 |
| | Renal disease | | + 10 |
| Physical examination Findings | Altered mental state | | + 20 |
| | Respiratory rate > 30 breaths/minute | | + 20 |
| | Systolic blood pressure < 90 | | + 20 |
| | Temperature < 35 or > 40$^{o}$C | | + 15 |
| | Pulse > 125 beats/minute | | + 10 |
| Laboratory and radiographic findings | Arterial pH < 7.35 | | +30 |
| | BUN > 64mg/dl (22.85 mmol/L) | | + 20 |
| | Sodium < 130 mEq/L (130 mmol/L) | | + 20 |
| | Glucose > 250mg/dl (13.87 mmol/L) | | + 10 |
| | Hematocrit < 30% | | + 10 |
| | PO2 < 60 mm Hg or Sa $O_2$<90% | | + 10 |
| | Pleural effusion present | | + 10 |
| *Total score* | *Risk Class* | *Mortality %* | *Site of care* |
| No predictors<br>≤ 70<br>71 to 90<br>91 to 130<br>> 130 | I (low risk)<br>II (low risk)<br>III (low risk)<br>IV (moderate risk)<br>V (high risk) | 0.1<br>0.6<br>2.8<br>8.2<br>29.2 | Outpatient<br>Outpatient<br>Inpatient (briefly)<br>Inpatient<br>Inpatient (ICU) |
| *Ref: Fine MJ, Auble TE, Yealy DM, et al. A prediction rule to identify low-risk patients with community-acquired pneumonia. NEJM 1997; 336:243-250.* | | | |

## Pearls

1. It is important to differentiate between pneumonia and acute bronchitis. In the latter case, symptoms are a nonproductive or minimally productive cough accompanied or preceded by upper respiratory tract symptoms.
2. Diagnosis of CAP is suspected on the basis of clinical presentation and is confirmed by chest x-ray

## Management

1. Treatment is empirical most of the time
2. Should be started as soon as possible (i.e. 4-8h) after the diagnosis
3. Should always cover Streptococcus pneumonia
4. The selection of empiric therapy should be based on the severity of the illness, the local prevalence of pathogens, resistance patterns of Streptococcus pneumoniae, and the presence of co-morbidities.
   a. Macrolides are the first line empirical outpatient treatment for infants ≥ 4 months year old and children.
   b. 25% of strep pneumonias are resistant to penicillin.
   c. In case of influenza virus epidemic, the treatment regimen should cover Staph aureus.
   d. Clinical response to treatment must be closely monitored in the initial 48 to 72 hours. CXRs are not helpful for monitoring and may look worse early on treatment and may not clear up to 4 weeks after illness. A repeat CXR is indicated only when complications are suspected (e.g. ongoing fever, hypoxia, clinical deterioration)

e. A follow-up CXR in 4–8 weeks should be ordered to ensure that the infiltrate has cleared. This is especially important in smokers and older patients
f. Duration of treatment: patients with CAP should be treated for a minimum of 5 days, should be afebrile for 48–72 hours, and should have no more than 1 CAP-associated sign of clinical instability before discontinuation of therapy

**Empiric antimicrobial therapy for CAP**

<table>
<tr><th>CAP</th><th>Risk Class & Site of Care & Preferred Empiric Antibiotics</th></tr>
<tr><td>Without co-morbidities and have not received antibiotic therapy in the previous 3months</td><td>Low risk (Outpatient):<br>1st line: Macrolide (Azithromycin or Clarithromycin)<br>2nd line: Doxycycline</td></tr>
<tr><td rowspan="3">With co-morbidities or have received antibiotic therapy in the previous 3months (in which case an alternative from a different class should be selected)</td><td>Low risk class I or II (Outpatient):<br>1st line: Fluoroquinolone alone (e.g. Levofloxacin, Moxifloxacin)<br>OR β-lactam*+ Macrolide (Azithromycin or Clarithromycin)<br>2nd line: β-lactam*+ Doxycycline</td></tr>
<tr><td>Low risk class III (Outpatient or Briefly inpatient)</td></tr>
<tr><td>Moderate risk class IV (Inpatient, non-ICU treatment)<br>1st line: Fluoroquinolone alone<br>2nd line: β-lactam^+ Macrolide<br><br>High risk class V (Inpatient, ICU treatment)<br>REFER TO SPECIALIST<br>1st line: β-lactam§+ Fluoroquinolone<br>OR β-lactam§+ Azithromycin<br>2nd line: Aztreonam (If Penicillin allergies) + Fluoroquinolone</td></tr>
<tr><td colspan="2">*β-lactams: High-dose Amoxicillin or Amoxicillin-Clavulanic acid are the beta-lactams of choice; however, a Cephalosporin (Ceftriaxone, Cefpodoxime, or Cefuroxime) is an acceptable alternative.<br>^β-lactams: Intravenous Cefotaxime or Ceftriaxone or Ampicillin<br>§β-lactams: Intravenous Cefotaxime or Ceftriaxone or Ampicillin-Sulbactam.</td></tr>
</table>

**Common antibiotics used**

| Agent | | Dosage |
|---|---|---|
| **Cephalosporins** | | |
| Cefpodoxime | (Orelox) | 200 mg PO every 12 hours |
| Cefuroxime | (Zinnat) | 500 mg PO every 12 hours |
| | (Zinacef) | 0.75 to 1.5 g IV every 8 hours |
| Cefotaxime | (Claforan) | 1 g IV every 6 to 8 hours |
| Ceftriaxone | (Rocephine) | 1 g IV every 24 hours |
| **Clindamycins** | (Clindamycin) | 300 mg PO every 6 hours<br>600 mg IV every 8 hours |
| **Fluoroquinolones** | | |
| Gatifloxacin | (Tequin) | 400 mg PO or IV once per day |
| Levofloxacin | (Tavanic) | 500 mg PO or IV once per day |
| Moxifloxacin | (Avalox) | 400 mg PO once per day |
| **Macrolides** | | |
| Azithromycin | (Zithromax) | 500 mg orally for one dose, then<br>250 mg once per day for 4 doses<br>500 mg IV every 24 hours |
| Clarithromycin | (Klacid) | 500 mg orally twice per day |
| Erythromycin | | 500 mg (10mg/kg) orally every 6 hrs.<br>500 to 1,000 mg IV every 6 hours |
| **Penicillins** | | |
| Amoxicillin | (Amoxil; Ospamox; Hiconcil; Amoxicillin) | 500 mg PO every 8 hours |
| Amoxi/Clav | (Augmentin; Curam) | 875 mg PO 875 mg/125mg PO every 12 hours |
| Penicillin G | (Penicillin G) | 1 to 3 mU IV every 4 hours |
| Penicillin V | (Ospen) | 500 mg orally every 6 hours |
| Ampicillin/Sulbactam | | IV |
| **Tetracyclines** | | |
| Doxycycline | (Vibramycin) | 100 mg PO |

## When to refer

1. Using the scoring table above, the primary care physician should consider transferring the patient to a pulmonary specialist whenever the scores are > 90
2. Non resolving pneumonia or poor clinical improvement within 48-72 hours of treatment

## Patient education

Upon recovery, the following preventive measures should be offered to the patient:

1. Pneumococcal vaccine (for persons 65 years of age and for those with selected high-risk concurrent diseases)
2. Influenza vaccine (annually during the fall and winter)
3. Encourage smoking cessation

## References


1. British Thoracic Society: Guidelines for the management of community, acquired pneumonia in adults admitted to hospital. *BM J. Hosp. Med.* 1993;49: 346-350.
2. Fine MJ, Auble TE, Yealy DM, et al. A prediction rule to identify low-risk patients with community-acquired pneumonia. *NEJM.* 1997; 336:243-250
3. Infectious diseases society of America: Community acquired pneumonia in adults: Guidelines for management. *Clin Infect Dis.* 1998;26:811-838
4. Lutfiyya MN, Henley E, Chang LF, Reyburn SW. Diagnosis and treatment of community-acquired pneumonia. *Am Fam Physician*. 2006 Feb 1;73(3):442-50.
5. Mandell LA, Wunderink RG, Anzueto A, et al. Infectious Diseases Society of America/American Thoracic Society Consensus (IDSA/ATS ) Guidelines on the Management of Community-Acquired Pneumonia in Adults. *Clin Infect Dis*. 2007;44(Suppl 2):S27-72.

# Prenatal care

Jinan Usta, Fadila

## Schedule of prenatal care

1. Important role in the reduction of maternal and infant mortality
2. Includes continuous risk assessment, education, counseling, and intervention when problems are identified
3. First prenatal visit should occur at 6-8 weeks gestation
4. For healthy women, the recommended schedule for prenatal follow up is monthly visit until 32 weeks then biweekly at 32 and 34 weeks, and weekly through delivery

## Initial visit

1. Establish pregnancy (if visit is within the first trimester) with a pregnancy test (the commercial tests sold in pharmacies are highly sensitive, specific and inexpensive)
2. Estimate the date of confinement: 40 weeks from last period (LMP)
    a. Use the commonly available tables or wheel
    b. Add 7 days to the LMP and count back 3 months
    c. Quickening, occurring at 16-18 weeks in multigravida and at 19-20 weeks in primigravida, is commonly used in dating but vary by ±2 weeks
    d. A *pelvic bimanual exam*: can help determine the gestational age:
        1. At 7 weeks the uterus is the size of a hen's egg
        2. At 10 weeks of an orange
        3. At 12 weeks a grapefruit
        4. Uterine fundal height at the umbilicus is for 20 weeks gestation
    e. *Ultrasound for dating* :
        1. Commonly used when a woman can't recall her last menstrual cycle, has irregular periods, has recently used OCPs or there is size date discrepancy
        2. In the first trimester can establish gestation within a ±4 days of accuracy
        3. A single ultrasound at 18 weeks can confirm dating within ± 1.5 weeks in addition to scanning for anomalies
    f. Fetal heart rate: usually heard by Doppler US at 10-12 weeks GA

## History/special considerations

1. *Age*: if less than 18 years or more than 35 years, advise amniocentesis at 12-14 weeks gestation
2. *Medical history*: hypertension, diabetes, pyelonephritis, asthma, recent exposure to infectious diseases as rubella or toxoplasma
3. Essential but potentially teratogenic medications are to be changed to lowest risk category
4. *Reproductive history*: previous pregnancy complications, previous method of delivery, newborn weight, history of premature labor, premature delivery, second trimester loss (suggestive of cervical incompetence), gestational diabetes, hypertensive disorder, postpartum hemorrhage makes the pregnancy high risk and a referral is to be considered. N.B. Short inter pregnancy interval place the pregnancy at nutritional risk
5. *Behavior history*:
    a. Substance abuse, promiscuity in the mother or partner increase the chance of HIV and premature labor and may need referral
    b. Smoking and alcohol intake have adverse effects and discontinuation is to be advised
6. *Social history*: marital status, education, employment (strenuous activity, excessive hours, toxic or radiation exposures are associated with less favorable outcome), support system (family and partner)
7. *Family history*: diabetes, congenital malformations, mental retardation, hemoglobinopathies, multiple births in relatives

## Physical examination

1. First prenatal visit: -thorough physical examination with special attention directed toward the size of the uterus, the configuration of the bony pelvis (clinical pelvimetry) and the patient's baseline blood pressure, height and weight
2. Following visits: fundal height, fetal heart sounds, blood pressure

## Laboratory tests

1. *Blood type*: to assess the risk of developing D (Rh) or ABO incompatibility/ indirect Coomb's test (antibodies to other blood group antigens)..
    a. Rh negative women should be questioned regarding the use of anti D in prior pregnancies, including spontaneous or therapeutic abortions, breech version, or other possible occurrence of fetal-maternal hemorrhage
    b. Unless the father of the pregnancy is known to be D-negative, anti D is given at the time of the amniocentesis and at 28 weeks for all D negative mothers who tested negative on indirect coombs test, and within 72 hours of birth for all D negative mothers who tested negative on indirect coombs test and whose newborn is Rh positive
2. *Hemoglobin or hematocrit*: to screen for anemia
3. Hemoglobin less than 10 g/dl (hematocrit<30) is associated with poor outcome (prematurity, low birth weight and fetal demise)
4. *Serology screen:* rubella antibody IgG, toxoplasma IgG and HBsAg
5. Non rubella immune women should receive the vaccine postpartum
6. HIV and VDRL are encouraged particularly for women with behaviors that place them at a higher risk for infection
7. *Urinalysis* (protein and glucose)
8. *Urine culture*: between 12 and 16 weeks gestation to screen for asymptomatic bacteriuria (higher risk of maternal pyelonephritis, preterm delivery and low birth weight)
9. *Pap smear* if she did not have in the past year
10. *Gestational diabetes:* screen for all mothers at 28 weeks gestation or at presentation when the mother has any of the following: previous gestational diabetes, prior history of stillborn infant, one with congenital anomalies or one weighing more than 4000 g, history of neonatal death associated with traumatic delivery, family history of diabetes mellitus, repetitive pregnancy loss, history of recurrent prematurity, toxemia, hydramnios, maternal age more than 35 years

## Medication

1. Folic acid 0.4mg per day: has been shown to reduce the risk of neural tube defects
2. Iron supplementation:
    a. Not necessary in the first 4 months of pregnancy because the requirements are slight
    b. Starting the second trimester, 30 mg of elemental iron supplied in the form of a simple iron salt such as ferrous fumarate, sulfate or gluconate taken regularly once a day provides the iron requirement of pregnancy
    c. Supplementation should continue throughout lactation
    d. If the pregnant woman is large, has twin pregnancy, takes iron irregularly or has depressed hemoglobin, she may benefit from 60 to 100 mg of iron
3. Calcium supplementation:
    a. 1200 mg of calcium are needed each day to meet the requirements of the developing fetal skeleton
    b. Three or 4 servings of milk can meet this additional need
    c. Several calcium preparations are also available in the market
4. Vitamin $B_{12}$: 2 micrograms are needed for complete vegetarians

## Patient education

1. Instruct the patient about diet, relaxation and sleep, bowel habits, exercise, bathing, clothing, recreation, sexual intercourse, smoking, drug and alcohol ingestion, and follow up visits
2. Instruct the woman to report immediately about any the following warning signals: vaginal bleeding, swelling of the face and fingers, severe or continuous headache, dimness or blurring of vision, abdominal pain, persistent vomiting, chills or fever, dysuria, escape of fluid from the vagina, marked change in intensity or frequency of fetal movements

## Follow up visits

### History

1. Continuous risk assessment
2. Symptoms of pregnancy or medical complications, including nausea, headache, altered vision, bleeding, discharge, contractions, and dysuria
3. Fetal movement and signs of preterm labor

### Physical examination

Maternal

1. Weight: the average weight gain is 0.3 kg/week from 8 to 20 weeks and about 0.45 kg/week from 20 to delivery.
2. Blood pressure: actual and extent of change
3. Peripheral edema.
4. Cervical examinations are not necessary or useful until induction is being considered or there is a question about fetal position or preterm labor

Fetal

1. Fetal cardiac activity
2. Presenting part
3. Fetal size: determine the fundal height by measuring the length in centimeters from the pubis to the top of the fundus: between 20 and 31 weeks, the fundal height in centimeters equaled the gestational age in weeks

### Laboratory tests

1. Urine dipstick for protein and glucose in all visits
2. Hemoglobin or hematocrit repeated at 24 to 28 weeks
3. Diabetes screening at 24 to 28 weeks (1 hr 50 grams glucose tolerance test). If level is above 140 mg/dl, 3 hour 100 grams glucose test is performed.
4. Indirect coombs testing and anti D is administered at the 28 weeks visit if indicated

## Health promotion activity

1. Patient education about the physiologic changes, sexuality, and common problems as well as comfort measures
2. In the third trimester, more information on fetal development, family adjustments, childbirth and parenting classes is appropriate
3. During the last month or two, information regarding labor and birth should be covered
4. Nutrition:
   a. Emphasize food rather than supplement
   b. Encourage women to eat generous amounts of fruits and vegetables, whole grain bread and cereal, calcium rich dairy products, and moderate amounts of protein rich foods such as legumes, fish, poultry, lean meat
   c. Avoid alcoholic beverages
5. Nausea and vomiting:
   a. Common complaints in the first half of pregnancy: starts between the first and second missed menstrual period and continue until about the time of the fourth missed period
   b. Eating small feedings at more frequent intervals but stopping short of satiation is of value

6. Heartburn:
   Symptoms are relieved by frequent small meals, avoidance of bending over and lying flat. Antacid preparations may provide considerable relief: aluminum or magnesium hydroxides are preferred to sodium bicarbonate
7. Exercise:
   a. Not necessary for the pregnant to limit exercise, provided she does not get fatigued excessively or injure herself
   b. Women accustomed to aerobic exercise should be allowed to continue this during pregnancy
   c. Caution against starting new aerobic exercise programs or intensifying training efforts
   d. With some pregnancy complication like pregnancy induced hypertension, intrauterine growth retardation, multiple pregnancies, the woman and her fetus may benefit from sedentary existence
8. Coitus: whenever abortion or preterm labor threatens, coitus should be avoided

## References


1. Institute for Clinical Systems Improvement (ICSI). Routine prenatal care. Bloomington (MN): Institute for Clinical Systems Improvement (ICSI); 2009.
2. Kirkham C, Harris S, Grzybowski S. Evidence-based prenatal care: Part I. General prenatal care and counseling issues. *Am Fam Physician*. 2005;71(7):1307-1316.
3. 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):1555-1560.

# Red eye

Beatrice Khater

## Definition

Inflammation of the eye that causes vasodilatation of the vessels

## History

1. Discharge
2. Pain
3. Itching
4. Photophobia
5. Decrease in visual acuity
6. Trauma
7. Associated symptoms: headache, nausea and vomiting
8. Foreign body sensation
9. Contact lenses use

## Physical examination

1. Conjunctiva exam
2. Corneal inspection
3. Pupil size and reactivity
4. Color of discharge and appearance
5. Visual acuity (Snellen chart or near vision)
6. Pattern of redness

## Differential diagnosis

### Red eye with deep pain

1. Corneal ulcer
2. Scleritis
3. Uveitis/iritis
4. Periorbital/orbital cellulitis
5. Acute angle closure glaucoma

### Red eye with irritation or foreign body sensation

1. Conjunctivitis
2. Corneal abrasion or foreign body
3. Keratitis
4. Episcleritis

### Red eye with no pain

Subconjunctival hemorrhage

## Pearls

1. Pain and/or decreased visual acuity may indicate a more serious etiology of red eye
2. Eyes glued shut in the morning is predictor of bacterial conjunctivitis
3. Itchiness and prior history of conjunctivitis are predictors of viral conjunctivitis

## Evaluation

Culture of conjunctival discharge if:

1. Diagnosis in doubt
2. No response to multiple antibiotics

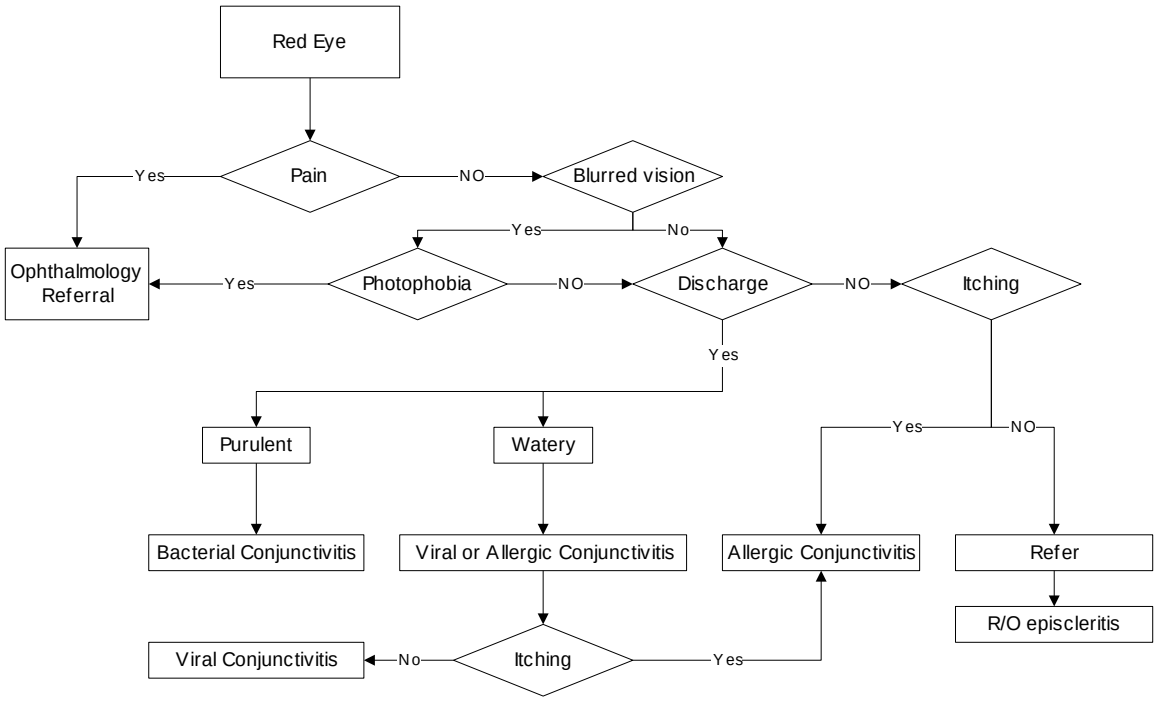
## Management

1. **Viral conjunctivitis:**
   a. Cold compresses
   b. Irrigation with water
   c. Hygiene recommendations
2. **Bacterial conjunctivitis**
   a. Any ophthalmic antibiotics
   b. Drops or ointments
   c. Culture if no response in 7 days or patient is in hospital
3. **Allergic conjunctivitis**
   a. Topical mast cell stabilizers alone or in combination with topical antihistamines
   b. Naphcon A (Decongestant + Antihistamine) 1-2 drops q 6h
   c. Olopatadine (Patanol) BID
4. **Foreign body**:
   a. Remove with a sterile needle with the use of a topical anesthetic
   b. Topical antibiotic ointment should be placed in the eye, firmly patched for 24h
   c. If there is no improvement in 24 h or foreign body cannot be easily removed, referral is indicated
   d. Refer immediately if high velocity foreign body
5. **Episcleritis:**
   a. Artificial tears
   b. Topical NSAID
   c. Refer if disease persists more than 3 weeks or recurs
6. **Scleritis, uveitis and iritis**:
   Urgent referral is needed
7. **Angle-closure glaucoma**:
   Urgent referral to ophthalmology after Diamox 500 mg IV

## When to refer

1. Severe pain refractory to topical anesthetics
2. Need for topical steroids
3. Vision loss
4. Copious purulent discharge
5. Corneal involvement
6. Traumatic eye injury
7. Recent ocular surgery
8. Distorted pupil
9. Herpes infection
10. Recurrent ocular infections
11. Foreign body with high velocity or that does not dislodge easily

## Algorithm




## References


1. Cronau H, Kankanala RR, Mauger T. Diagnosis and management of red eye in primary care. *Am Fam Physician*. 2010 Jan 15;81(2):137-44.
2. Pokhrel PK, Loftus SA. Ocular emergencies. *Am Fam Physician*. 2007;76:829-836.
3. Vafidis G. When is red eye not just conjunctivitis? *Practitioner*. 2002;246:469-5, 478.
4. Leibowitz HM. The red eye. *N Engl J Med*. 2000;343:345-351.
5. Galor A, Jeng BH. Red eye for the internist. *Clev Clinic J Med*. 2008;75:137-144.

# Sinusitis

Dima Dandachi, Bassem Saab

## Definition and epidemiology

1. Acute sinusitis is one of the most common conditions that physicians treat in ambulatory practice.
2. It is defined as inflammation or infection of one or more of the para-nasal sinuses, with symptoms lasting less than 4 weeks.

## Etiology

1. Viral infections are the most common cause.
2. Streptococcus pneumoniae, Haemophilus influenzae and Moraxella catarrhalis are the most common pathogens responsible of community acquired bacterial sinusitis.

## Predisposing factors

1. Previous viral upper respiratory tract infection
2. Allergic/ non-allergic rhinitis
3. Anatomic abnormalities (nasal polyp, septal deviation, adenoidal hypertrophy)
4. Irritants (tobacco, smoke, chemicals)
5. Gastro-esophageal reflux

## History

1. The following signs and symptoms are the most helpful in predicting bacterial sinusitis:
    a. Symptoms for 10 days
    b. Purulent nasal discharge
    c. Maxillary pain
    d. Maxillary tenderness
    e. Worsening symptoms after initial improvement
    f. Other signs and symptoms
        1. Headache or facial pressure pain that increases by leaning forward
        2. Nasal obstruction
        3. Cough secondary to post nasal drip
        4. Poor response to decongestants
        5. Abnormal trans-illumination (the utility of this test is debatable)
    g. Less frequent symptoms
        1. Fever
        2. Irritability, nausea, malaise, fatigue
        3. Halitosis
        4. Hyposmia/Anosmia
        5. Sore throat
2. Signs of complications
    a. Facial edema
    b. Cellulitis
    c. Orbital swelling or pain, diplopia
    d. Meningeal involvement

## Physical examination

1. Inspect the nasal mucosa aided by nasal speculum for color, edema, character of nasal secretions, presence of polyps, and structure of the nasal septum. Purulent discharge from the middle meatus is highly predictive of bacterial sinusitis
2. Palpation for tenderness of both the maxillary and frontal sinuses is helpful
3. Check for maxillary tooth tenderness by tapping the teeth with a tongue blade

4. Examine the throat for post nasal drip

In a completely darkened room, trans-illuminate the maxillary sinuses by placing a penlight over the infra-orbital rim. Look for light transmission through the hard palate; it could be opaque or dull:

## Differential diagnosis

1. Common cold
2. Allergic rhinitis
3. Vasomotor rhinitis

> The diagnosis of sinusitis is usually made on clinical grounds.
> Sinus radiography is not recommended for the diagnosis of uncomplicated sinusitis .

## Evaluation

1. Plain sinus radiographs
   a. Single Water's view (occipito-mental) is a viable diagnostic substitute for a 4-view sinus series in many patients
   b. Findings of air-fluid level, opacity, or mucus thickening (sensitivity 90% specificity 61%)
2. Ultrasonography
   a. Training and experience are necessary to interpret results accurately; therefore ultrasonography cannot be recommended for routine use
3. Limited-sinus CT without contrast
   a. Provides better visualization of the sinuses' anatomy that predisposes patients to recurrent and chronic sinusitis. Indicated prior to sinus surgery
   b. CT is unable to distinguish between viral or bacterial sinusitis therefore it should not be used for routine evaluation of bacterial sinusitis
   c. CT with contrast can identify complications of sinusitis.
4. Nasal cultures
   a. Not reliable to determine a specific causative microorganism

## Management

### 1. Antibiotics

1. Antibiotics have a small treatment effect that should be weighed against the potential for adverse effects
2. 80% of patients improve within 10-14 days without antibiotics
3. May start with high dose penicillins (including Amoxicillin)
4. Prescribed for 10 to 14 days, or 7 days after the patient is symptom free. Recently 5 days treatment with Azithromycin was found to be effective
5. If symptoms fail to improve in 5-7 days, it is reasonable to switch to second line antibiotic (cephalosporin)

| First line agents | | Pediatric doses | Adult doses |
|---|---|---|---|
| Amoxicillin | First line for both adults and children | 80-90 mg/kg divided q8 hrs. q12 hrs. | 500 mg tid or 875mg q12 hrs. |
| Trimethoprim - sulfamethoxazole (TMP-SMX) | Alternative first line in patient allergic to penicillins | 4mg/kg TMP and 20mg/kg SMX q12 hrs. | 160mg TMP/800mg SMX q12 hrs. |
| Doxycycline | | | 100 mg–200 mg qd |
| **Second line agents** | | | |
| Amoxicillin-clavulanate | | 45mg/kg/ Amoxicillin dose q12 hrs. 6.4mg/kg/day Clavulanic | 875mg Amoxicillin /125mg q12 hrs. |
| Second generation cephalosporins | Cefuroxime | 15mg/kg/dose q12 hrs. | 250 mg q12 hrs. |
| Third generation cephalosporins | Cefpodoxime | 5mg/kg/dose q12 hrs. | 200 mg q12 hrs. |
| | Cefdinir | 14mg/kg/d | 300mg once daily |
| Fluoroquinolones | Levofloxacin | Avoided in children | 500 mg once daily |
| | Moxifloxacin | | 400 mg once daily |
| Macrolides | Azithromycin | 10mg/kg/day1 then 5mg/kg/day 2-5 | 500 mg on day 1/ 250 mg from day 2-5 |
| | Clarithromycin | 7.5mg/kg/dose q12 hrs. | 500 mg q12 hrs. |

**2. Adjunct treatment**

The evidence supporting the use of ancillary treatment for acute sinusitis is relatively weak. Some studies show improvement in symptoms, but no treatments have been shown to affect the duration of illness.

1. Nasal decongestants
    a. Avoid use in children < 6 years old, glaucoma, hypertension, urine retention and for more than 3 days
    b. Oral pseudoephedrine: adult: (60 mg Q6 hours or 120 mg bid)
    c. Topical
        1. Oxymetazoline (2 sprays or drops each nostril bid)
        2. Xylometazoline (2 sprays tid)
        3. Phenylephrine (2 sprays or drops tid)
2. Nasal saline irrigation
    a. May decrease nasal crusting and liquefy secretions
    b. 1/ 4 teaspoon salt dissolved in 1 cup of water; use bulb syringe or dropper
3. Antihistamines, mist and vitamin C are not recommended for acute sinusitis

3. **Hospitalization**

If orbital, intracranial or bone complications occur.

## When to refer

1. Complicated bacterial sinusitis
2. Treatment failure after extended course of antibiotics
3. Nosocomial infections
4. Immunocompromised host
5. Recurrent sinusitis
6. Anatomic defects causing obstruction

## Patient education

1. Following comfort measures might be helpful:
   a. Adequate rest
   b. Adequate hydration
   c. Analgesics as needed
   d. Warm facial packs
   e. Steamy showers
   f. Sleeping with the head of the bed elevated
2. Educate about the treatment
   a. Substantial improvement occurs after 5-6 days of effective therapy
   b. Instruct the patient to complete the course of antibiotics
   c. Follow up is recommended if there is no response to treatment
   d. Emphasize that use of topical decongested beyond 3 days is harmful

## References


1. Scheid DC, Hamm RM. Acute Bacterial Rhinosinusitis in Adults: Part I, Evaluation. *Am Fam Physician*. 2004;70:1685-92.
2. Scheid DC, Hamm RM. Acute Bacterial Rhinosinusitis in Adults: Part II. Treatment. *Am Fam Physician*. 2004;70:1697-704.
3. Zalmanovici A, Yaphe J. Steroids for acute sinusitis. *Cochrane Database Syst Rev*. 2007;(2):CD005149.
4. Ahovuo-Saloranta A, Borisenko OV, Kovanen N, Varonen H, Rautakorpi UM, Williams JW Jr, et al. Antibiotics for acute maxillary sinusitis. *Cochrane Database Syst Rev*. 2008;(2):CD000243.
5. Leung RS, Katial R. The Diagnosis and Management of Acute and Chronic Sinusitis. *Primary Care Clinics Office Practice*. 2008; 35;11–24
6. Slavin RG, Spector SL, Bernstein IL. The diagnosis and management of sinusitis: A practice parameter update. *J Allergy Clin Immunol*. *20*05;116: S; 13-47.

# Thyroid nodule

Hiba Bzeih, Nisrine Makarem, Khalil Ashkar

## Epidemiology

1. Life time risk of developing a palpable thyroid nodule is 5-10%
2. Affects more women than men
3. Roughly 5% of thyroid diseases are malignant; the remainder represents a variety of benign conditions, nodules, cysts, hyperplasia or benign neoplasms

## Factors suggesting a malignant diagnosis

1. Age younger than 20 or older than 70
2. Male sex
3. Associated symptoms of dysphasia or odynophagia
4. History of neck irradiation
5. Prior history of thyroid carcinoma
6. Firm, hard or immobile nodule
7. Presence of cervical lymphadenopathy
8. Rapidly growing nodule

## Factors suggesting a benign diagnosis

1. Family history of autoimmune disease (Hashimoto thyroiditis)
2. Family history of benign thyroid nodule or goiter
3. Presence of thyroid hormonal dysfunction (hypo/hyperthyroidism)
4. Pain or tenderness associated with nodule
5. Soft, smooth, and mobile nodule

## Physical examination

1. Location and size of the nodule
2. Solitary or multiple
3. Fixed/ movable
4. Consistency
5. Presence of cervical lymphadenopathy

## Evaluation

### Laboratory tests

1. Sensitive thyroid-stimulating hormone (TSH) assay: used to screen for hypothyroidism or hyperthyroidism
2. Additional serum thyroxin (free T4) and triiodothyronine (freeT3) levels may be helpful if TSH is abnormal
3. If autoimmune disease (e.g. Hashimoto thyroiditis) is suspected, obtain serum antithyroid peroxidase (anti-TPO) antibody and antithyroglobulin (anti-Tg) antibody levels. A diagnosis of Hashimoto thyroiditis does not exclude the possibility of malignancy

**Imaging tests**

1. Ultrasonography is highly sensitive in determining the size and number of thyroid nodules. By itself, ultrasonography may provide certain malignant features but it cannot reliably be used to distinguish a benign nodule from a malignant nodule. Thyroid ultrasonography can be helpful in certain cases to guide fine needle aspirate biopsy (FNAB) such as non-palpable nodules less than 1 cm in size.
2. CT or MRI is generally not cost-effective in the initial evaluation of solitary thyroid nodules.
3. Thyroid scintigraphy: Nuclear imaging can be used to describe a nodule as being hot, warm, or cold on the basis of its relative uptake of radioactive isotope. Hot nodules are rarely malignant; however, 5-8% of warm or cold nodules are malignant.

**Fine needle aspirate**

FNAB has emerged as the most important and cost-effective step in the initial diagnostic evaluation of thyroid nodules to rule out malignancy (sensitivity 80% and specificity 90%).

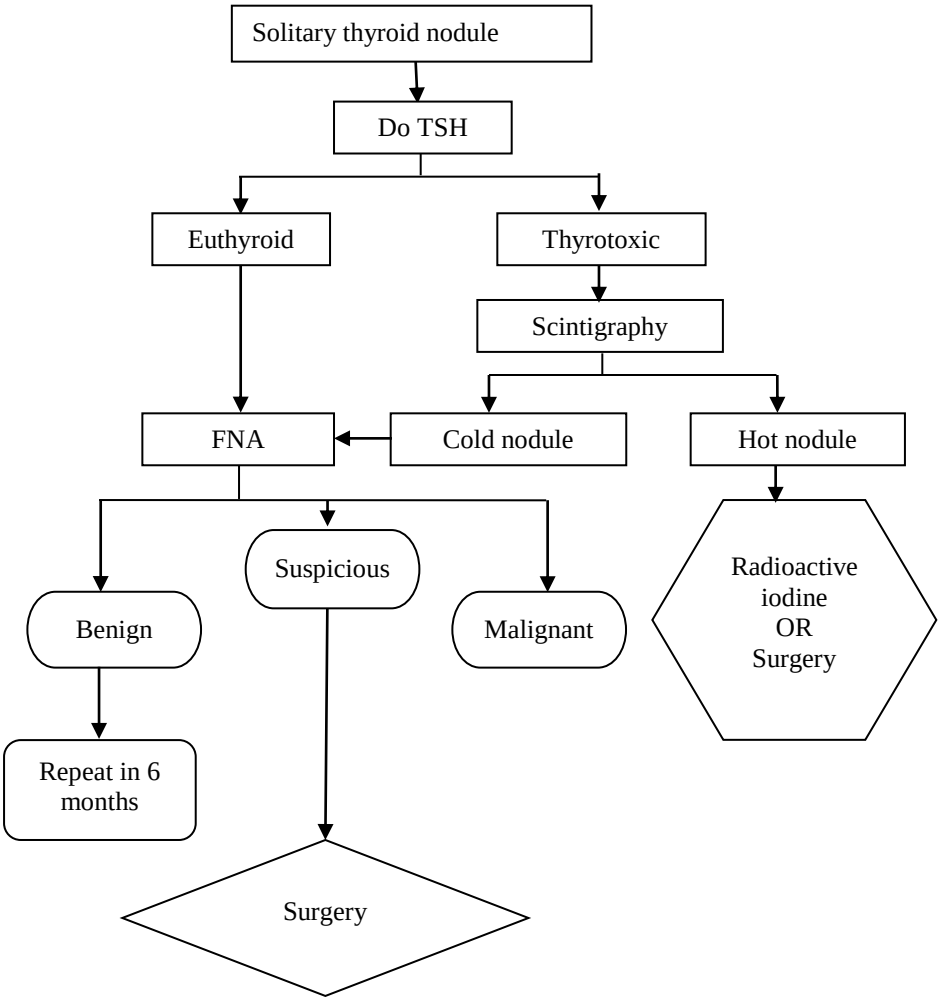
## Incidental nodule

1. Incidentally discovered thyroid nodules are increasing. When the history and physical findings result in a low index of suspicion for malignancy, periodic follow-up evaluation with high-resolution ultrasonography is appropriate.
2. If sequential sonograms (e.g. obtained at 6-mo intervals) reveal an increase in nodular size, ultrasonography-guided FNAB may be appropriate, even if the nodule remains non palpable.

## When to refer

Refer to endocrinologist to discuss iodine-131 treatment versus surgical intervention for autonomously functioning thyroid nodule (solitary thyroid nodules associated with suppressed TSH levels or overt/subclinical hyperthyroidism).

## Algorithm




Adapted from *Am Fam Physician.* 2003 Feb1;67(3):559-566

## References


1. Dankle SV. Thyroid nodule. http://emedicine medscape com/article/127491-overview 2009; Available from: eMedicine, Inc.
2. Cooper DS, Doherty G, Haugen BR, Kloos RT, Lee SL, Mandel SJ, et al. Revised American Thyroid Association management guidelines for patients with thyroid nodules and differentiated thyroid cancer. *Thyroid*. 2009 Nov;19(11):1167-214.
3. Gharib H, Papini E, Valcavi R, Baskin HJ, Crescenzi A, Dottorini ME, et al. American Association of Clinical Endocrinologists medical guidelines for clinical practice for the diagnosis and management of thyroid nodules. *Endocr Pract*. 2006 Jan;12(1):63-102.
4. Welker MJ, Orlov D. Thyroid nodules. *Am Fam Physician*. 2003 Feb 1;67(3):559-66.

# Pulmonary Tuberculosis

Alaa Abul-Hosn, Umayya Musharrafieh

## Classifications

1. Latent infection
   a. Asymptomatic patient with positive PPD
   b. Negative chest radiograph
   c. Noninfectious
2. Active disease
   a. Occurs in 10% of infected individuals without preventive therapy
   b. Risk increases with immunosuppression and is highest within 2 years of infection
   c. 85% of cases are pulmonary, which is contagious.
3. Primary: disease resulting from initial infection.
4. Recrudescent: active disease occurring after period of latent, asymptomatic infection
5. Miliary: disseminated disease

## Epidemiology

1. One third of the world's population is infected with TB bacillus
2. 23 countries account for 80% of all new TB cases:> 50% in 5 countries (Bangladesh, China, India, Indonesia, and Nigeria)

## Risk factors

1. For infection
   a. Homeless and minority
   b. Institutionalization (e.g. prison, nursing home)
   c. Close contact with infected individual
   d. Immigrant within 5 years (from Asia, Africa, Latin America, former Soviet Union states)
   e. Health care workers
2. For development of disease once infected
   a. HIV; lymphoma; diabetes mellitus; chronic renal failure; cancer of head, neck, or lung
   b. Gastrectomy
   c. Steroids, immunosuppressive drugs
   d. IV drug abuse, malnutrition

## History

1. Cough
2. Hemoptysis
3. Fever and night sweats
4. Weight loss
5. Malaise
6. Pleuritic chest pain
7. Late findings: renal, bone, or CNS disease
8. Recent travel to or immigration from high-prevalence country
9. Exposure to high-risk populations or to known infected persons
10. HIV status/risk factors

## Physical Examination

1. Often normal
2. May note rales on lung exam
3. Specific findings vary based on organ involvement: hepatosplenomegaly; painless adenopathy

## Diagnosis

Usually detected by skin test (tuberculin skin test TST) or x-ray

**Active respiratory tuberculosis**

1. A posterior-anterior chest x-ray: chest x-ray appearances suggestive of TB should lead to further diagnostic investigation.
   a. Ghon focus- single lesion; Ghon complex- primary lung lesion and lymph node
   b. Primary TB: infiltrates with or without effusion, atelectasis, or adenopathy
   c. Recrudescent TB: cavitary lesions and upper-lobe disease with hilar adenopathy
   d. HIV: maybe normal; atypical findings with primary infection, right upper-lobe atelectasis
2. Early sputum samples TB microscopy and culture for suspected respiratory TB
3. Spontaneously produced sputum should be obtained if possible; otherwise induction of sputum or bronchoscopy and lavage should be used.

**Active non respiratory tuberculosis**

1. Biopsy and needle aspiration sent for culture depending on the site
   a. Lymph node biopsy
   b. Pus aspirated from lymph nodes
   c. Pleural biopsy
   d. Any surgical sample sent for routine culture
   e. Any radiological sample sent for routine culture
   f. Histology sample
   g. Aspiration sample
2. All patients with non-respiratory TB should have a chest x-ray to check for coexisting respiratory TB

## TST interpretation

1. Induration ≥ 5 mm is considered positive if:
   a. HIV infection or risk factors for HIV infection with unknown status
   b. Recent contact with individual with active tuberculosis (household, social, or unprotected occupational exposure similar to duration and intensity to household contact)
   c. Fibrotic chest x-ray (consistent with healed tuberculosis)
   d. Patients with organ transplants and other immunosuppressed patients (receiving equivalent of prednisone 15 mg/day or more for > 1 month)
2. Induration ≥ 10 mm is considered positive if:
   a. Injection drug users
   b. Persons with high risk clinical conditions
      1. Silicosis
      2. Diabetes mellitus
      3. Chronic renal failure
      4. Some hematologic disorders (e.g. leukemias and lymphomas)
      5. Other specific malignancies (e.g. carcinoma of the head or neck and lung)
      6. Weight loss 10% or more of ideal body weight
      7. Gastrectomy/jejunoileal bypass
   c. Children < 4 years old
   d. Infants, children, and adolescents exposed to adults at high-risk
   e. Immigration within last 5 years from high prevalence countries
   f. Persons from medically underserved, low-income populations
   g. Residents and employees of high-risk congregate settings (prisons, nursing homes), residential facilities for patients with AIDs, homeless shelters); ≥ 15 mm induration considered positive for employees who are otherwise at low risk and are tested at start of employment
   h. Mycobacteriology laboratory personnel

3. Induration ≥ 15 mm considered positive in persons without above risk factors
4. Booster phenomenon
    a. Repeat testing with PPD does NOT sensitize individuals to the test substance
    b. Delayed sensitivity or positive reaction to PPD may wane and decrease over time
    c. Some individuals who may have exposed to TB many years previously (and should test positive) may show false negative test results: in these, a repeat test within a week may show positive result which is a booster phenomenon (indicating a remote infection) and NOT a recent conversion
    d. Repeat testing is usually done in the initial screening for individuals who will receive annual skin testing so that a positive PPD is known as a boosted reaction and not a recent infection
5. Tuberculin skin-test conversion is an increase of at least 10mm within a period of 2 years
6. Prior BCG vaccination does not alter the guidelines for interpreting skin test results

## Pharmacologic treatment

### Regimens

1. Regimen 1 (preferred)
    a. Initial phase: isoniazid (INH), rifampin (RIF), pyrazinamide (PZA), and ethambutol (EMB) once daily for 8 weeks
    b. Continuation phase: INH/RIF daily for 18 weeks or INH/RIF twice weekly for 18 weeks (only use for $HIV^+$ if CD4>100) or INH/ Rifapentine once weekly for 18 weeks (acceptable alternative for $HIV^-$ patients only)
2. Regimen 2
    a. Initial phase: INH/RIF/PZA/EMB daily for 2 weeks, then twice weekly for 6 weeks
    b. Continuation phase: INH/RIF twice weekly for 18 weeks ($HIV^+$ patients only if CD4>100) or INH/Rifapentine once weekly for 18 weeks (acceptable alternative for $HIV^-$ patients only)
3. Regimen 3 (acceptable alternative)
    a. Initial phase: INH/RIF/PZA/EMB daily for 8 weeks
    b. Continuation phase: INH/RIF 3 times weekly for 18 weeks
4. Regimen 4 (only when unable to give preferred regimen)
    a. Initial phase: INH/RIF/EMB daily for 8 weeks
    b. Continuation phase: INH/RIF daily or twice weekly for 31 weeks
    c. No studies proving efficacy of 5 times weekly regimen, but clinical evidence suggests it.
    d. Directly observed therapy required for nondaily regimens.
5. Latent tuberculosis should be treated with isoniazid 300 mg/d for adults, and 10-15 mg/kg (not to exceed 300 mg/d) in children for 6-12 months with DOT.

**Dosing**

| | | Adult 40-55 kg | Adult 56-75 kg | Adult >75 kg | Pediatric |
|---|---|---|---|---|---|
| **Ethambutol** (tabs of 100, 400 mg) | Daily | 15- 20 mg/kg Max 800 mg | 16-22 mg/kg Max 1.2 g | 22-26 mg/kg Max 2.6 g | 15-20 mg/kg Max 1 g |
| | 3 times weekly | 22-30 mg/kg Max 1.2 g | 27-36 mg/kg Max 2 g | 33-40 mg/kg Max 2.4 g | |
| | Twice weekly | 36-50 mg/kg Max 2 g | 37-50 mg/kg Max 2.8 g | 44-53 mg/kg Max 4 g | 50 mg/kg Max 4 g |
| **Pyrazinamide** (scored tabs of 500 mg) | Daily | 18-25 mg/kg Max 1 g | 20-27 mg/Kg Max 1.5 g | 22-26 mg/kg Max 2 g | 15-30 mg/kg Max 2 g |
| | 3 times weekly | 27-37 mg/kg Max 1.5 g | 33-45 mg/kg Max 2.5 g | 33-40 mg/kg Max 3 g | |
| | Twice weekly | 36-50 mg/kg Max 2 g | 40-54 mg/kg Max 3 g | 44-53 mg/kg Max 4 g | 50 mg/kg Max 4 g |
| **Isoniazid** (scored tabs of 50, 100, 300; Syrup 10 mg/ml or 100 mg/ml | Daily | 5 mg/kg Max 300 mg | | | 10-15 mg/kg Max 300 mg |
| | 3 times weekly | 15 mg/kg Max 900 mg | | | |
| | Twice weekly | 15 mg/kg Max 900 mg | | | 20-30 mg/kg Max 900 mg |
| | Weekly | 15 mg/kg Max 900 mg | | | |
| | Consider pyridoxine 10-50 mg/d | | | | |
| **Rifampin** (tabs of 150, 300 mg) | Daily or twice weekly | 10-20 mg/kg Max 600 mg | | | |
| **Rifabutin** (capsules of 150 mg) | Daily or twice weekly | 5 mg/kg Max 300 mg | | | |
| **Rifapentine** (tabs of 150 mg) | Weekly | 600 mg once | | | |

**Contraindications**

RIF: Avoid if patient taking antiretrovirals

EMB: May cause optic neuritis. Avoid unless patient old enough to cooperate for visual acuity and color testing

**Precautions**

1. INH, RIF, PZA: may cause hepatitis; caution if liver disease
2. RIF: colors urine, tears, and secretions orange; can stain contact lenses
3. INH: peripheral neuritis and hypersensitivity possible. Treat with pyridoxine
4. PZA: may increase uric acid; unclear safety during pregnancy [C]
5. Rifamycin: alter level of phenytoin, antivirals, and other drugs metabolized by liver and may inactivate birth control pills (recommend a barrier method)

## Alert

***Pregnancy Considerations***

1. Treat pregnant women with INH, RIF, and EMB; add pyridoxine
2. Avoid streptomycin due to ototoxicity
3. Use pyrazinamide with caution
4. Breast-feeding OK while taking TB drugs

## DOTS

Directly Observed Treatment, Short-course (DOTS) is a comprehensive strategy promulgated by WHO with the goal of controlling the TB epidemic. Essential to this strategy is the close follow up and direct observation of treatment for at least the first two months. This follow up is usually through specialized management units supported by governments. The ministry of public health (MoPH) in Lebanon has such a unit and program. It is therefore essential for physicians identifying patients with positive smears to inform the MoPH and to refer the patient to TB units for free medications and close follow up.

## Patient education

1. Explain the significance of a positive TB
2. Explain prognosis
3. Advise that household contacts should be screened for tuberculosis
4. Advise patients on the importance to adhere to treatment
5. Educate patients about signs and symptoms of hepatitis; instruct about avoiding alcohol intake and acetaminophen
6. Refer to ministry of health
7. Complete epidemiological surveillance unit (ESU) form and fax to the ministry
8. Emphasize importance of drug therapy
9. Identify patient contacts to notify
10. Let patient know that you are obligated to inform the local health department

## References


1. Potter B. Management of active TB. *Am Fam Physician*. 2005;72(11).
2. Centers for Disease Control. Guideline for using the QuantiFERON-TB gold test for detecting mycobacterium tubercular infection. United States. *MMWR*. 2005;54(RR15): 49-55.
3. Golden M. Extrapulmonary TB; an overview. *Am Fam Physician*. 2005;72(9).

# Urinary Incontinence in the Elderly

Najla Lakkis

## Definition and epidemiology

1. Urinary incontinence is the involuntary loss of urine.
2. Urinary incontinence affects 15% to 30% of elderly people aged 65 years and above.
3. It is 2 to 3 times more common in women until age 80, after which the sexes are equally affected.
4. This disorder is greatly under recognized and underreported because of embarrassment or misconceptions regarding treatment.

## Types of incontinence

1. Stress incontinence
   a. Associated with increased intra-abdominal pressure such as coughing, sneezing or exertion
   b. Caused by weakness of the muscles of the urethral sphincter or pelvic floor
2. Urge incontinence:
   a. Sudden uncontrollable urgency (also called over active bladder)
   b. Most common cause of urinary incontinence in patients over 60 years
3. Mixed incontinence
   Loss of urine from a combination of stress and urge incontinence
4. Overflow incontinence
   a. High residual or chronic urinary retention leading to urine spillage from over distended bladder
   b. Causes include bladder outlet obstruction (prostatism, cervical cancer, urethral stricture or bladder cancer) or a neurogenic bladder (diabetic neuropathy, sacral cord lesions or medications)
   c. Diagnosis by an elevated post void residual >150–200 mL
5. Functional incontinence: loss of urine due to deficits in cognition or mobility

## History

1. Screening Questions: Do you have trouble with your bladder? Do you lose urine when you don't want to? Do you wear pads or adult diapers for protection?
2. Onset (pregnancy, postpartum, surgery, trauma), previous treatment and response
3. Duration of complaint
4. Patterns (periodic/constant, nocturnal/diurnal), precipitants (urge, cough, sneeze, position change, sound of running water), frequency/severity/quantity
5. Concomitant symptoms (fecal incontinence, pelvic organ prolapsed, vaginal splinting for bowel movements, urinary hesitancy, frequency, urgency, dysuria, incomplete emptying, poor stream, pelvic pressure/pain, chronic constipation, sacral backache.
6. Reversible conditions that can cause or contribute to geriatric urinary incontinence (DIAPPERS symptoms; see below).
7. Surgical, obstetric and gynecologic history in females (including pelvis radiation)
8. Social history (living conditions, activities, history of smoking, alcohol and caffeine use)
9. Fluid intake

## Physical examination

1. Vital Signs
2. Heart and lungs: signs of heart failure
3. Neurological examination
4. Abdominal/suprapubic palpation: distended bladder or suprapubic discomfort after voiding in extreme acute cases of urinary retention

5. Rectal: resting and active sphincter tone, stool impaction, masses, prostate size, contour, tenderness
6. External genitalia and skin condition
7. Pelvic (severe atrophy, vaginitis, severe prolapsed, mass/tenderness)
8. Cough test for stress incontinence: forceful cough with comfortably full bladder in an upright position

## Differential diagnosis

| **Potentially Reversible Conditions that Can Cause or Contribute to Geriatric Urinary Incontinence (DIAPPERS symptoms)** | |
|---|---|
| **Condition or finding** | **Management** |
| **D**elirium (acute confusion) or hypoxia from drugs or medical illness | Treat underlying cause |
| **I**nfection (symptomatic UTI) | Antibiotic therapy |
| **A**trophic vaginitis and urethritis | Estrogen therapy (topical) |
| **P**harmaceuticals adverse effects* | Discontinue or change medication, if possible |
| **P**sychiatric disorders (mainly Depression) | Treat underlying cause |
| **E**xcess urine output related to:<br>– Diabetes mellitus or insipidus<br>– Hypercalcemia<br>– Drugs e.g. diuretics; alcohol; caffeine<br>– Excess fluid intake<br>– Edema (/CHF, peripheral venous congestion, cirrhosis) | <br>Control diabetes<br>Treat underlying cause<br>Discontinue or change medication if possible<br>Reduction of fluid intake<br>Support stockings, leg elevation, sodium restriction, diuretic therapy, and optimized medical therapy for CHF |
| **R**estricted mobility | Regular toileting, use of toilet substitutes (urinal), environmental alterations, removal of restraints (e.g. bedside commode) |
| **S**tool impaction | Dis-impaction and stool softeners |
| ** Incriminated Drugs: Alcohol; Caffeine; Diuretics; Anticholinergics [Antihistamines, Psychotropics, Tricyclic Antidepressants, Antispasmodics, Antiparkinsonian meds (not Sinemet), Antiarrhythmics, Antidiarrheals]; Psychoactive Drugs [Benzodiazepines, Sedatives/Hypnotics, Psychotropics, Tricyclic Antidepressants]; Opioids or Narcotic analgesics (urinary retention, fecal impaction, sedation, delirium); α-Adrenergic agonists mainly in males and antagonists mainly in females; Calcium Channel Blockers; ACE inhibitors; Misoprostol; Estrogen-progestin.*<br>Modified from Curtis LA, Dolan TS, Cespedes RD. Acute urinary retention and urinary incontinence. Emerg Med Clin North Am. 2001;19(3):591-619 | |

## Pearls

1. Identify potentially transient or reversible causes of incontinence especially if new onset or exacerbation of incontinence in an elderly. Diagnose and treat appropriately (e.g. urinary infection /UTI, fecal impaction, prostatic hypertrophy)
2. Classify chronic incontinence and manage accordingly
3. Exclude any serious underlying condition: brain or cord lesion, bladder cancer, hydronephrosis
4. Identify conditions that need further evaluation or specialty care

## Evaluation

1. Urinalysis with or without urine culture
2. Ultrasound evaluation of post void residue
3. Urodynamic tests are indicated if evidence of overflow incontinence i.e. if PVR > 200ml

## Management

1. Manage reversible conditions that cause or contribute to urinary incontinence
2. Behavioral modification therapy:
   a. Encourage weight loss (if stress incontinence)
   b. Avoid caffeine, alcohol and limit nighttime fluids
   c. Regular voiding every 1 to 2 hours during the day (if urge incontinence)
   d. Alleviation of constipation (dietary fiber, fluid intake, appropriate use of stool softeners, laxatives, suppositories)
   e. Pelvic floor muscle rehabilitation: bladder training including pelvic muscle (Kegel exercises), biofeedback, pelvic floor electrical stimulation
3. Medications and surgical management

**Urge or Mixed with urge predominant**

1. Anti-muscarinic drugs (Avoid if narrow-angle glaucoma or prostatic hypertrophy)
   a. Oxybutynin
      Short-acting (Ditropan or Driptane 5mg): 2.5-5 mg every 8 hours
   b. Tolterodine
      Short-acting (Detrusitol 1mg, 2mg): 1- 2 mg every 12 hours
   c. Solifenacin (Vesicare 5mg, 10mg): 5-10 mg q day
2. Topical Estrogen for severe vaginal atrophy or atrophic vaginitis
   Cream (Estreva): 0.5-1.0 g per day for 2 weeks, then twice weekly
3. Extracorporeal magnetic innervations
4. Surgery: neuromodulation of the sacral nerve roots or various forms of bladder augmentation

**Stress or Mixed with stress predominant**

1. α-Adrenergic agonists for women (controversial and poorly tolerated; avoid if high blood pressure)
2. Pseudoephedrine (Sudafed 60mg) 30-60 mg q8 hours, or 60-120 mg long acting
3. Selective serotonin and norepinephrine reuptake inhibitor for women
4. Duloxetine (Cymbalta 30mg, 60mg) 20-40 mg twice daily to 80 mg once daily (under watching/FDA)
5. Topical Estrogen - controversial
6. Tricyclic antidepressants wit α-adrenergic agonist and anticholinergic effect
   ($2^{nd}$ line agent for stress incontinence that is caused by sphincter incompetence)
   Imipramine (Tofranil) 10-25 mg, 1-3 times daily initially. Increase gradually PRN; not to exceed 75 mg/d
7. Occlusive devices (such as pessaries)
8. Periurethral or submucosal injections with bulking agents such as collagen
   Cystourethropexy or surgical bladder neck suspension or sling if no improvement on medical management

**Overflow**

1. Exclude & manage obstruction (large pelvic prolapsed, benign prostate hypertrophy):
   a. Indwelling catheterization to decompress for 10-14 days. A small catheter with a small balloon is preferred. Catheter inserted must be properly managed in a sterile manner and discontinued as soon as possible
   b. Intermittent catheterization (can be done by the patient 4 times a day) in case of detrusor under activity
   c. Surgery to relieve obstruction
2. Cholinergic agonists if overflow incontinence with atonic bladder
   Bethanechol: 10-30 mg 3 times a day

3. α-Adrenergic antagonists if benign prostate enlargement
    a. Alfuzosin *(Xatral 2.5mg, 5mg, 10mg)*: 10 mg daily
    b. Doxazosin *(Cardular 1mg, 4mg)*: 1-8 mg daily
    c. Tamsulosin *(Omnic 0.4mg)*: 0.4-0.8 mg daily
    d. Terazosin *(Itrin 2mg, 5mg)*: 1-10 mg daily
    e. Finasteride *(Proscar 5mg)*: 5mg daily can also improve outcomes and provides additional benefits to an α-adrenergic antagonist

**Functional**

1. Modifications of diuretic and fluid intake patterns
2. Supportive interventions
    a. Environmental manipulations: safe lighted path to the bedroom, assistive devices such as raised toilet seats, bathroom grab bars, toilet seat arms, appropriate use of toilet substitutes if decreased mobility is an issue (bedside commode, collective devices including urinals, condoms)
    b. Regular toileting, prompted voiding
    c. Incontinence undergarments, pads, and catheters (intermittent or chronic indwelling)
    d. Good skin care
3. Family support

**Mixed**

Tricyclic antidepressants or α-Adrenergic agonists (refer to stress incontinence)

## When to refer

1. Refer for cystoscopy to exclude bladder neoplasm should be considered in this case
    a. Two or more symptomatic UTIs in a 12-month period
    b. Hematuria
    c. Surgery/irradiation involving the pelvic area or lower urinary tract within past 6 months
    d. Previous anti-incontinence surgery
    e. Pelvic trauma
    f. Severe hesitancy, straining, low flow rate, or interrupted urinary stream when voiding
    g. Stress incontinence in men
2. Acute urinary retention
3. Marked prostatic enlargement, prominent asymmetry, or induration of the prostatic lobes
4. Marked pelvic prolapse (beyond hymen area)
5. Neurologic abnormality suggesting systemic disorder or spinal cord lesion

## Patient education

1. Kegel's exercises: can be self-taught or taught during examination
    a. Ask patient to identify floor muscles: they are the ones that start and stop flow
    b. Perform repetitive contractions and relaxations of the pelvic floor muscles
    c. Practice 5 times a day or with each void. Hold floor muscles tight as if stopping urine for 5 seconds – relax – repeat 10 times
    d. They need motivation and home practice for strengthening
2. Biofeedback (timed-voiding bladder training)
    a. Bladder training-works in 75 % of the cases with detrusor instability
    b. Urinate in a receptacle at least half of the time
    c. Determine interval time leading to incontinence by using voiding charts
    d. Set frequency of voiding to 1 hour before expected incontinent time or start by voiding every 2 hours while awake and every 2-4 hours at night
    e. Extend period by 30 min every week until voiding every 4 hours or an acceptable time
    f. Ask patient to void on schedule: if needs to void earlier, make every effort to hold it until scheduled time; if feels no urge to void on schedule, make an effort to void on time

## References


1. Culligan PJ, Heit M. Urinary incontinence in women: evaluation and management. *Am Fam Physician*. 2000;62:2433-44.
2. Weiss BD. Selecting medications for the treatment of urinary incontinence. *Am Fam Physician*. 2005;71:315-22.
3. Gibbs CF, Johnson TM 2nd, Ouslander JG. Office management of geriatric urinary incontinence. *Am J Med.* 2007;120:211-20.
4. Thuroff J, Abrams P, Andersson KE, et al; European Association of Urology. Guidelines on urinary incontinence. European Association of Urology. 2006.
5. Curtis LA, Dolan TS, Cespedes RD. Acute urinary retention and urinary incontinence. *Emerg Med Clin North Am*. 2001;19(3):591-619.

# Vaccines

Maya Romani

## Lebanese Ministry of Public Health Immunization Schedule:

- **Hepatitis B: 0, 1-2, 6-12 months**
- **DPT : 2, 4, 6 months, 15-18 months, 4-6 years, 11-12 years**
- **Hib: 2, 4, 6 months**
- **OPV: 2, 4, 6 months, 15-18 months, 4-6 years**
- **MMR: 12-15 months, 4-6 years**
- **Measles: 9 months**
- **PPD: yearly as of 1 year**

## Contraindications

True contraindications, applicable to all vaccines, include:

1. History of anaphylactic or anaphylactic-like reactions to the vaccine or a vaccine constituent
2. Presence of a moderate or severe illness with or without a fever

## Misconceptions

The following conditions are not regarded as contraindications to vaccination

1. Diarrhea and minor upper- respiratory illnesses with or without fever
2. Mild to moderate local reactions to a previous dose of vaccine
3. Current antimicrobial therapy
4. Convalescent phase of an acute illness
5. Routine physical examinations and measuring temperatures are not prerequisites for vaccinating infants and children who appear to be healthy

## Polio

### Vaccine types

Two types are available: live oral poliovirus vaccine (OPV) and enhanced-potency inactivated poliovirus vaccine (IPV). Both vaccines contain antigens to poliovirus types I, II, and III and are highly effective.

### Schedule

Administer at ages 2, 4and 6 months, followed by two doses at ages 15-18 months and 4-6 years.

IPV is given at the same schedule wherever health authorities have included it in the national schedule. OPV remains the vaccine of choice for mass vaccination campaigns to control outbreaks of wild poliovirus.

### Dosage and administration

OPV:

1. Single dose of 0.5 mL
2. Administered orally, either directly or mixed with distilled water, chlorine-free tap water or milk. If a substantial amount of OPV is regurgitated or spit out within 5-10 minutes of administration, it may be re-given. If the repeat dose is also lost, re-administration should be attempted at the next visit.

IPV:

1. Single dose of 0.5 mL given subcutaneously in the thigh in infants and in the deltoid area for older children.

**Adverse Reactions**

1. There is an extremely small risk of paralysis in recipients after OPV use. In immunologically normal recipients, the risk is 1 case per 6.8 million doses.
2. IPV does not induce paralysis and its side effects are minor - such as local pain and swelling at the injection site.

**Contraindications**

1. Persons infected with HIV, with household contacts infected with HIV, or with known altered immunodeficiency should receive IPV rather than OPV.

## Diphtheria, Tetanus, and Pertussis

**Vaccine types**

Types available in Lebanon.

1. DTP and DTaP with preparations of diphtheria and tetanus toxoids in which the pertussis portion of the vaccine is whole-cell or acellular respectively.
2. DT and Td contain only the diphtheria and tetanus toxoids, with Td containing fewer flocculating units of diphtheria toxoid per dose than DT. If a child under 7 years of age has a contraindication to pertussis vaccine, DT should replace DTP or DTaP in the immunization schedule.
3. Adolescent & adult Tdap contains the same tetanus toxoid, diphtheria toxoid, and three of the five pertussis antigens as those in pediatric DTaP, but with decreased quantities of the diphtheria and pertussis components
4. TdaP should only be used to immunize children 7 years of age and older.

**Schedule**

**DTP or DTaP** :

1. Administer at 2, 4, 6 months of age.
2. Boosters at 15-18 months of age; 4 to 6 years of age.

**TdaP** :

1. Administer at age 11–12 years for those who have completed the recommended childhood DTP/DTaP vaccination series and have not received a tetanus and diphtheria toxoids (Td) booster dose.
2. 13–18 year old who missed the 11–12 year Tdap or received Td only, are encouraged to receive one dose of Tdap 5 years after the last Td/DTaP dose.
3. TdaP should replace a single dose of Td for adults aged <65 years who have not previously received a dose of TdaP (either in the primary series, as a booster, or for wound management)
4. Booster immunizations with Td should be given every 10 years (Substitute 1 dose of TdaP for Td)

**Dosage and Administration**

The recommended dosage of DTP, DTaP, DTP-Hib, DT, Td is 0.5 mL, given intramuscularly in the anterolateral thigh in infants and the deltoid area in older children.

DTP and DTaP may be given simultaneously with other childhood vaccinations. It is preferable to avoid giving other vaccinations in the same limb with DTP or DTaP.

**Adverse Reactions**

1. Local side effects (redness, swelling, or pain) and mild systemic reactions (fever >38° C, drowsiness, vomiting, or anorexia) are fairly common. These side effects occur somewhat less frequently with the use of the acellular DTaP vaccine.
2. The following moderate-to-severe systemic events have rarely occurred after DTP and DTaP vaccination, and are considered precautions for further vaccination:
   a. Severe allergic hypersensitivity.
   b. Fever 40.5°C within 48 hours.
   c. Collapse or shock like state (hypotonic-hyporesponsive episode) within 48 hours.

d. Persistent, inconsolable crying for 3 hours or more, or an unusual, high-pitched cry within 48 hours.
e. Seizure within 3 days of receiving the previous dose of DTP/DTaP

3. Acetaminophen, given in a dose of 15 mg/kg at the time of DTP or DTaP vaccination and 4 hours later, may help prevent or relieve minor side effects (e.g. fever, pain) of the vaccine.

**Contraindications for DTP/DTaP Vaccination**

1. Persons who developed an encephalopathy within 7 days of administration of a previous dose of DTP or DTaP should not receive further doses of DTP or DTaP.
2. An unstable neurologic condition, or a history of Guillain-Barré syndrome within six weeks of receiving a tetanus-containing vaccine

## Measles, Mumps, and Rubella

**Vaccine types**

1. Measles, mumps, and rubella are live attenuated vaccines
2. Available as single antigen preparations and as combination

**Schedule**

1. Administer measles vaccine at 8-10 months
2. Administer a primary MMR dose at 12-15 months of age
3. Administer a booster dose at 4-6 years of age

**Dosage and administration**

0.5 mL given subcutaneously in the deltoid

**Adverse reactions**

1. The measles component may cause a transient rash in 5% of vaccines. Fever greater than 39.4°C develops in 5% to 15% of individuals susceptible to measles, beginning 5 to 12 days after immunization and usually lasting 1 to 2 days (up to 5 days). Because of the late onset of fever, acetaminophen prophylaxis may not be practical in preventing febrile seizures.
2. The rubella component is associated with the development of a mild rash lasting 1 to 2 days and mild pain and stiffness in the joints 1 to 2 weeks after the immunization, usually lasting up to 3 days. The joint problem affects 1% of children.

**Contraindications**

1. Anaphylactic reaction to eggs
2. Pregnancy or possible pregnancy within next 3 month
3. Immunosuppressed patients due to cancer, leukemia, lymphoma, immunosuppressive drug therapy ( including high-dose steroids)
4. HIV positivity is not a contraindication to MMR except for those who are severely immunocompromised
5. Measles vaccination may temporarily suppress tuberculin reactivity. If testing cannot be done the day of MMR vaccination, the test should be postponed for 4-6 weeks

## Haemophilus influenza Type b

**Vaccine types**

1. Inactivated vaccine
2. Two types of conjugate vaccines are licensed for use in Lebanon, and are now considered interchangeable for primary as well as booster vaccination

**Schedule**

1. Administer primary series at 2, 4, and 6 months of age
2. Administer a booster at 12-15 months of age
3. Children who start the primary series at 7-11 months of age should receive a primary series of 2 doses of the vaccine

4. Children beginning the primary series at 12-59 months of age should receive one dose only
5. In general, Hib vaccine should not be given after the fifth birthday, except in certain special circumstances (such as asplenia or sickle cell anemia) that may make a child particularly vulnerable to Hib infection

**Dosage and administration**

0.5 mL, given intramuscularly in the anterolateral thigh in infants and in the deltoid area in older children

**Adverse reactions**

Minor and limited to mild fever and redness and/or swelling at the injection site

**Contraindications**

No specific contraindications

## Hepatitis A

**Vaccine types**

Inactivated Hepatitis A virus and is available in two formulations that differ in dosage according to patient's age

**Schedule**

1. Administer at 12-15months of age, 6 to 12 months later
2. Children not vaccinated by two years of age can be vaccinated at later visits

**Dosage and administration**

Adults: 1ml IM
2 to 18 years: 0.5 ml given IM in the deltoid

**Contraindications**

1. The safety of hepatitis A vaccination during pregnancy has not been determined

### Routine adult recommendations

Include the following groups
1. Persons traveling to or working in countries that have high or intermediate indemnity of infection
2. Homosexuals (both adolescents and adults)
3. Users of injection and non-injection illicit drugs
4. Persons who work with HAV-infected primates or with HAV in a research laboratory setting
5. Susceptible persons who are administered clotting-factor concentrates
6. Susceptible persons with chronic liver disease
7. Anyone who seeks to be protected

## Hepatitis B

**Vaccine types**

Recombinant DNA product

**Schedule**

1. Administer at birth, 1 to 2 months, and 6 to 18 months of age. Do not restart series, no matter how long since previous dose
2. Infants of HBsAg positive mothers should receive immunoglobulin and vaccination within 12 hours of birth

**Dosage and administration**

0.5 mL given intramuscularly in the anterolateral thigh in infants and in the deltoid area in older children

**Adverse reactions**

Relatively minor in children; these include pain at the injection site (3% to 29%) and temperature greater than 38C

**Contraindications**

No contraindications

**Routine adult recommendations**

Include the following high risk groups:

a. End-stage renal disease, HIV infection, chronic liver disease
b. Health-care personnel and public-safety workers
c. Non-monogamous sexual relationship, homosexuals
d. Current or recent injection-drug users
e. Household contacts and sex partners of persons with chronic hepatitis B virus (HBV) infection
f. International travelers to countries with high or intermediate prevalence
g. Any adult seeking protection from HBV infection

## Varicella

**Vaccine types**

Live, attenuated, cell-free preparation vaccine

**Schedule**

1. Administer at 12 months of age, 4-6 years
2. The second dose can be given at age earlier than 4-6 years provided that at least 3 months have passed since 1st dose
3. Children 13 years of age and adults should receive two doses of varicella vaccine 4-8 weeks apart (0, 4-8 weeks)

**Dosage and administration**

0.5 ml given subcutaneously

**Adverse reactions**

Local injection site reaction such as redness, pain, swelling, itching, warmth, mild fever, skin rash, irritability, tiredness

**Contraindications**

1. History of an anaphylactic reaction to neomycin
2. Blood dyscrasias, leukemia, lymphomas, primary or acquired immunodeficiency (including AIDS)
3. Persons on immunosuppressive therapy
4. Women who are pregnant or intend to become pregnant within three months

**Precautions**

Children receiving the vaccine should avoid use of salicylates for six weeks following vaccination due to the theoretical risk of developing Reye's syndrome

## Rotavirus

**Vaccine types**

Live attenuated viral vaccines

1. Attenuated Human Rotavirus Vaccine (HRV): a monovalent vaccine derived from the most common human rotavirus strain. (available in Lebanon)
2. A Pentavalent human-bovine rotavirus (PRV): that contains five human bovine reassortants. Each reassortant virus contains a single gene encoding a major outer capsid protein from the most common human serotypes: G1, G2, G3, G4, and P1A.

### Schedule

1. For HRV, administer at 6 weeks and 10 weeks; not later than 24 weeks of age
2. For PRV, administer at 2, 4, and 6 months of age for the PRV
1. First dose should be administered between 6 and 12 weeks of age
2. A minimum interval of 4 weeks should be left between doses

#### Dosage and administration

1. HRV: 1 ml orally
2. PRV: 2 ml orally

#### Adverse reactions

Minimal: fever

#### Contraindications

1. Severe allergy to any component of the vaccine including Latex
2. Known immunodeficiency
3. Precaution in acute moderate to severe gastroenteritis/febrile illness; history of intussusception

#### Precautions

1. Do not initiate vaccination for children older than 12 weeks of age because of a lack of safety data when the series is begun after 12 weeks of age
2. All 3 doses should be administered by 32 weeks of age because of lack of safety data

## Meningococcal

#### Vaccine types

***MPSV4:***

1. Approved for persons 2 years of age and older
2. Adverse events: mild including fever
3. Acceptable for persons ages 11-55 years if MCV4 is not available

***MCV4:***

1. Quadrivalent polysaccharide vaccine (serotypes A, C, Y, W-135) conjugated to diphtheria toxin (IM)
2. MCV4 is recommended for children aged 2–10 years with risk factors
3. Approved for persons up till the age of 55 years
4. Adverse events mild including fever
5. History of Guillain-Barré syndrome is a precaution for MCV4

#### Contraindication

Previous anaphylactic or neurologic reaction to diphtheria toxoid is a contraindication

#### Revaccination

1. If previous vaccine was MPSV4, revaccinate after 5 years if the risk continues
2. If previous vaccine was MCV4, revaccination is not recommended

## Human Papilloma Virus

#### Vaccine types

1. Bivalent with sustained immunity to HPV types 16 and 18
2. Quadrivalent with sustained immunity to HPV types 6, 11, 16, and 18

#### Schedule

1. Recommended for girls 11 and 12 years of age in three separate doses at 0,2, 6 months
2. Girls as young as 9 years can be vaccinated with an eligible age of 9 to 26 years
3. Recommended for all females 13 through 26 years of age to catch up missed doses or to complete the vaccination series

4. HPV vaccine can be given to:
    a. Women with minor acute illnesses (e.g. diarrhea, respiratory tract illnesses with or without fever) but should not be given until recovery from a moderate or severe illness
    b. Women who are immunocompromised by disease or medications, but the immune response and vaccine effectiveness may be reduced
    c. Lactating women but never to pregnant women

**Dosage and administration**

Intramuscular

**Adverse effects**

Most adverse events are mild to moderate:

1. Injection site reactions: pain, redness, and swelling
2. Systemic adverse effects: fever, headache, and nausea

**Contraindications**

1. Pregnancy
2. Severe acute illness
3. Hypersensitivity to the vaccine components or to yeast

## Herpes Zoster

**Vaccine types**

Live attenuated virus

**Schedule**

Administer one dose at age 60 years of age and older whether or not they report a prior episode of herpes zoster

**Dosage and administration**

Subcutaneously

**Adverse effects**

1. Local injection site reaction such as redness, pain, swelling, itching, and warmth
2. Risk that patients may still develop shingles and post-herpetic neuralgia, even after vaccination.

**Contraindications**

1. History of anaphylactic reaction to gelatin, neomycin or any other component of the vaccine
2. Immunosuppression due to disease or chronic steroid intake

## Influenza

**Vaccine types**

1. Trivalent inactivated Influenza vaccine ( Available in Lebanon)
2. Live attenuated Influenza vaccine

**Schedule**

Annual Influenza Vaccination is recommended for:

1. Children aged 6 months and older (2010-2011 guidelines)

**Dosage and administration**

1. Age determines the number of influenza vaccine doses to be administered:
    a. Adults receive one dose of the vaccine (0.5 ml IM TIV or 1 vial intranasal LAIV)
    b. Children aged at least 9 years who have not previously received the influenza vaccine require only **one dose** in their first season of immunization
    c. Any child younger than 9 years who is vaccinated against influenza for the first time should receive a second dose at least 4 weeks after the first (0.25 ml for children aged 6 to 35 months and 0.5 ml for children aged 3 years and older)

d. Children younger than 9 years who received only 1 dose of influenza vaccine in the first season they were vaccinated should receive 2 doses of influenza vaccine the following season

2. The best time to administer the vaccination is during October and November
3. May start giving September to March
4. Antibody titer peaks within 2 weeks after receiving the vaccine

**Adverse reactions**

1. Fever
2. Malaise & myalgia
3. Flu like symptoms
4. Rarely, allergic reactions such as hives and angioedema in case of hypersensitivity to vaccine components (e.g. residual egg protein)

**Contraindications**

1. Allergy to eggs
2. Moderate illness with and without fever, history of Guillain-Barre Syndrome

## Pneumococcal

**Vaccine types**

***Pneumococcal conjugate vaccine (PCV7)***

a. Pneumococcal polysaccharide conjugated to nontoxic diphtheria toxin (7 serotypes) causing 86 percent of bacteremia and 83 percent of meningitis among children younger than 6 years
b. More than 90 percent effective against invasive disease in children; less effective against pneumonia and otitis media

***Pneumococcal polysaccharide vaccine (PPV23)***

1. Purified capsular polysaccharide antigens from 23 serotypes causing 88 percent of invasive disease; 88% of bacteremic pneumococcal disease
2. 60 to 70 percent effective in preventing invasive disease; less effective in preventing pneumonia
3. Single Dose in persons 2 years and older with selective revaccination at least 5 years after the first dose
4. Duration of immunity: at least 5 years

**Schedule**

***PCV7***

1. Administer pediatric schedule: 2, 4, 6, 12-15 months of age
2. Not vaccinated and older than 12 months: 2 doses 8 weeks apart
3. Not vaccinated and ages between 24-59 months, receive 1 dose
4. Not routinely given to children 5 years of age or older

***PPV23***

1. Single Dose in persons 2 years and older with selective revaccination at least 5 years after the first dose
2. Duration of immunity: at least 5 years

## References


1. CDC: Centers for disease control and prevention: 2009 Child & Adolescent Immunization Schedules: http://www.cdc.gov/vaccines/recs/schedules/child-schedule.htm.
2. Prevention and Control of Seasonal Influenza.
3. Dellepiane N, Griffiths E, Milstien JB. New challenges in assuring vaccine quality. WHO Bulletin, 2000, 78: 155-162.

# Vaginal discharge

Jinan Usta, Fadila Naji

## Definition

1. Normal vaginal discharge
   a. Consists of 1 to 4 ml fluid per 24 hours
   b. White or transparent, thick
   c. Mostly odorless
   d. Consists of desquamated vaginal epithelial cells, lactic acid, and secretions from cervical cells
2. Abnormal vaginal discharge
   Notable for its amount, odor or color; associated with skin lesions, itching, bad odor, change in the color or consistency and dyspareunia

## Etiology

1. Infection (bacteria, yeast or parasite)
2. Atrophy secondary to estrogen deficiency
3. Foreign body/ trauma/ recent surgery
4. Alteration of vaginal flora secondary to antibiotic use
5. Chemical irritants
6. Neoplasms

## History

1. Distinguish normal from abnormal discharge
2. Look for characteristics that point to a specific organism or other causes:
   a. A scant discharge associated with marked inflammatory symptoms (pruritus and soreness)- candidal infection
   b. A malodorous vaginal discharge mostly following intercourse and no inflammatory complaints points to bacterial vaginosis
3. Dyspareunia is a common feature of atrophic vaginitis
4. History of previous episodes: confirmed diagnosis or an empirical treatment given
5. Sexual history: inquire about new spermicidal agents, condoms, symptoms in the partner(s)
6. History of dysuria: accompanies infection in approximately one fifth of the cases
   a. Usually the pain felt externally with urination
   b. Additional urinary symptoms with vaginal discharge favor Trichomonas or chlamydia
7. Recent use of antibiotic, OCPs, corticosteroids, douching or spermicides favor candidal infection. Increased physiologic discharge can occur with estrogen-progestin contraceptives
8. Relation of symptoms to menses:
   a. Candida vulvovaginitis often occurs in the premenstrual period
   b. Trichomoniasis often occurs during or immediately after the menstrual period
9. Systemic conditions: poorly controlled diabetes, menopause, AIDS

## Physical examination

1. Check urethra, labia and vulva for ulcerations, warts, tears, cysts, lesions and edema.
2. Inspect vagina for color, lesions and edema
   a. Pink with moist folds-normal vaginal mucosa
   b. Fiery red weepy mucosa with a clear exudate- inflammation (douching, spermicides, condoms)
   c. Cheesy white exudates with plaques adherent to the vaginal wall- yeast infection
   d. A yellow green and bubbly discharge with “strawberry” vagina- trichomonal infection
   e. A normal looking mucosa with a thin gray discharge- bacterial infection
   f. Pale thin mucosa in postmenopausal women- atrophic vaginitis

3. Observe the cervical os
    a. Use a large cotton swab, clean all discharge
    b. Observe for 10 seconds: if a purulent discharge appears at the os, it is an indicator of upper pelvic infection
    c. Check for polyps, erosion or eversion of the cervix
4. Perform a bimanual exam to assess adnexal tenderness or masses

## Diagnostic tests

1. Vaginal pH
    1. There are 2 methods:
        a. A pH paper is applied to the vaginal sidewall (to avoid contamination by blood, semen, cervical mucus which can pool in the posterior fornix) for a few seconds
        b. The vaginal sidewall is swabbed and then the swab rolled onto pH paper
    2. Narrow range pH paper (4.0 to 5.5) is easier to interpret than broad range paper (4.5 to 7.5)
    3. Vaginal pH may be altered (usually to a higher pH) by contamination with lubricating gels, semen, douches, and intravaginal medications
    4. Interpretation of the pH
        a. A pH above 4.5 in a premenopausal woman suggests infections such as bacterial vaginosis or trichomoniasis (pH 5 to 6)
        b. A pH 4 to 4.5 - candida vulvovaginitis
        c. The pH of normal vaginal secretions in premenarchal and postmenopausal women is 4.7 or more, thus measurement of pH for diagnosis of bacterial vaginosis, trichomoniasis, or candidiasis is less useful at the extremes of age
2. Smear
    a. Prepare 2 wet mounts using 10% KOH and normal saline and view them under the microscope using low (10X) and high (40X) power
    b. Fluid should be examined as soon as possible after it is obtained as Trichomonas is fragile and may die quickly. Smell it immediately for a fishy odor
    c. KOH slide
        1. Look for hyphae
        2. The sensitivity of the KOH smear is 40%
    d. Saline slide
        1. Under low power, look for motion of cells, sheets of epithelial cells or clue cells (epithelial cells studded with bacteria). These can be present normally in up to 10% of the field; however, a preponderance of them especially when combined with a fishy odor on the KOH smear supports the diagnosis of bacterial vaginosis
        2. Under high power, look for Trichomonas vaginalis (motile triangular cells with long moving tails)
        3. Sensitivity of the saline smear: 25%
3. Other lab studies
    a. Culture of the discharge for Gonococci and Chlamydia (if the media are available). (Yield from the culture is low for other pathogens)
    b. CBC and ESR if PID is suspected
    c. U/A (clean) is obtained when concurrent dysuria
    d. Pap smear may be deferred until vaginitis has been treated since it may be abnormal in the presence of inflammation

## Management

1. Avoid empiric treatment
2. Encourage patient to finish course of therapy despite symptom resolution
3. Choose the shortest regimen possible
4. Advise use of condoms or abstain from intercourse during treatment

## Therapeutic choices

1. Trichomonas- treat partner(s) at the same time
   a. Metronidazole 2 grams single dose or 500 mg q12 hrs. for 7 days
   b. If recurred, retreat with metronidazole 2 g in a single dose daily for 3-5 days
   c. Treat partner at the same time
2. Bacterial vaginosis
   a. Metronidazole 500 mg q12 hrs. for 7 days, or
   b. Clindamycin 300 mg qid for 7 days
3. Candidiasis
   a. Topical antifungal treatment (ovules with cream if vulvitis is present)- if pregnant or first attack of vaginal candidosis: Nystatin- two ovules intravaginally for 14 nights
   b. Oral antifungal if women do not accept inserting cream applicators or vaginal suppositories or have multiple attacks
      1. Itraconazole 200 mg twice daily, or
      2. Fluconazole 150 mg single dose
4. Atrophic vaginitis
   Conjugated estrogen cream 2-4 grams intravaginally at bedtime 21 days a month
5. In case of recurrence or persistence of symptoms, inquire about
   a. Compliance to previous therapy
   b. Details of diet, clothing and irritants
   c. Use of new tampons, pads, or other agents
   d. Relation to exercise gear

## References


1. Wilson JF. In the clinic. Vaginitis and cervicitis. *Ann Intern Med*. 2009 Sep 1;151(5):ITC3.
2. Mashburn J. Etiology, diagnosis, and management of vaginitis. *J Midwifery Womens Health*. 2006 Nov; 51(6):423-30.
3. Owen MK, Clenney TL. Management of vaginitis. *Am Fam Physician*. 2004 Dec 1;70(11):2125-32.
4. Anderson, MR, Klink, K, Cohrssen, A. Evaluation of vaginal complaints. *JAMA*. 2004;291:1368.

# Viral Upper Respiratory Tract Infection (Common Cold)

Zeinab Toufaily

## Definition and epidemiology

1. Self-limited illness lasting typically 5 to 14 days, mostly caused by rhinovirus.
2. Incidence peaks during the winter season when crowding indoors is the rule, most frequently 1 to 2 days after inoculation with the virus through inhalation of coughed material or hand to hand contact.

## History

1. Sore throat (usual presenting symptom)
2. Rhinorrhea (watery or mucoid; may become purulent at a later stage)
3. Cough (dry or slightly productive)
4. Fever less than 39C for less than 72 hours
5. Malaise, myalgias, weakness

## Physical examination

1. Throat exam: hyperemia, tonsillar enlargement, follicle/exudates
2. Nose exam: watery versus purulent discharge
3. Ear exam: acute otitis media especially in the pediatric age group
4. Cervical lymph nodes
5. Chest exam: lower respiratory tract complications such as bronchitis or pneumonia
6. Sinus tenderness
7. Temperature measurement

## Pearls

Rule out presence of serious illness manifested usually by:

1. Respiratory distress: grunting, retractions, rapid respiratory rate, dyspnea or cyanosis
2. Decreased responsiveness in a child or an old person, flaccidity, lethargy, altered mental state and loss of appetite
3. Meningeal signs: stiff neck, persistent vomiting or severe headache
4. Dehydration: reduced wet diapers or absence of urine for more than 6 to 8 hours in a child less than one year or absence of urine for more than 12 hours in an older child or adult

## Differential diagnosis

1. Lower respiratory tract conditions: asthma, pneumonia and bronchitis
2. Sinusitis: nasal discharge of any type >10- 14 days, cough persisting beyond 7- 14 days and not improving and/ or worsening, fever, and seems ill, moderate periorbital swelling with red or blue discoloration
3. Allergic rhinitis: rhinorrhea occur usually in the morning and not associated with fever or body aches
4. Vasomotor rhinitis: symptoms are perennial and are not associated with fever or body aches and respond with difficulty to anti-histamines/decongestants
5. Acute bacterial tonsillo-pharyngitis: high grade fever, usually sudden onset of symptoms mostly of severe sore throat with tender submandibular lymphadenopathy
6. Nasal polyps: persistent discharge with nasal obstructive symptoms in a patient with allergic rhinitis
7. Rhinitis medicamentosa: history of prolonged use of topical decongestants; symptoms of nasal pain, purulent discharge and inflamed nasal mucosa
8. Infectious mononucleosis: sore throat - usually severe, several enlarged lymph nodes, fatigue, temperature elevated longer than usual for common cold

## Management

Symptomatic relief:

1. Topical decongestants for adolescents and adults
   E.g. Otrivin nasal drops: tid for 3 to 4 days: caution against prolonged use
2. Topical Ipratropium (Atrovent) is a treatment option for nasal congestion in children older
3. Oral antihistamines-decongestants combinations (not recommended for children)
   a. Actifed (= Triprolidine + Pseudoephedrine); 1 tab tid for adults and 5 cc tid for children
   b. Disophrol (Dexbropheniramine + Pseudoephedrine): 1 tab q12 hrs.
   c. Clarinase (Loratidine + Pseudoephedrine): 1 tab q12 hrs.
   d. Dimetapp (Brompheniramine + Phenylpropanolamine): 2 teaspoons tid
4. Antipyretics
5. Throat sprays or lozenges e.g. Aspegic sachets
6. Cough syrup (Mucolytic)
   a. Mucosolvan/Fluibron: 5 cc tid in children; 15 cc tid for adult
   b. Rhinathiol with or without promethazine: 5cc q12 hrs. in children up to 15 cc tid in adults

## Patient education

1. Explain the etiology and usual course of colds
2. Encourage fluid intake and relative rest
3. Explain that cold is contagious and that precautions should be taken to avoid transmission to contacts
4. Explain that antibiotics are not helpful and that they may be harmful
5. Ask patient to report back if symptoms do not improve in one week time or if significant deterioration occurs before that period

## References


1. Work group Members. Diagnosis and treatment of respiratory illness in children and adults. Institute for Clinical Systems Improvement, 2008
2. Schroeder K, Fahey T. Over-the-counter medications for acute cough in children and adults in ambulatory settings. *Cochrane Database Syst Rev*. 2004:(4):CD001831.
3. Sutter AI, Lemiengre M, Campbell H, Mackinnon HF. Antihistamines for the common cold. *Cochrane Database Syst Rev*. 2003;(3):CD001267.
4. Taverner D, Latte J, Draper M. Nasal decongestants for the common cold. *Cochrane Database Syst Rev*. 2004;(3):CD001953.
5. Eccles R, Jawad MS, Jawad SS, Angello JT, Druce HM. Efficacy and safety of single and multiple doses of pseudoephedrine in the treatment of nasal congestion associated with common cold. *Am J Rhinol*. 2005;19:25-31.
6. Arroll B, Kenealy T. Antibiotics for the common cold and acute purulent rhinitis. *Cochrane Database Syst Rev*. 2005;(3):CD000247.
7. Hayden FG, Diamond L, Wood PB, Korts DC, Wecker MT. Effectiveness and safety of intranasal ipratropium bromide in common colds. A randomized, double-blind, placebo-controlled trial. *Ann Intern Med.* 1996;125:89-97.
8. Williams JW Jr, Simel DL. Does this patient have sinusitis? Diagnosing acute sinusitis by history and physical examination. *JAMA.* 1993;270:1242-1246.

# Well child health supervision

Durriyah Sinno

## Definition and epidemiology

1. The objective of supervising health of children is to detect and manage problems at an early stage, prevent disease and promote healthy behavior and lifestyles.
2. It includes monitoring physical growth, motor and psychological development, counseling, anticipatory guidance, screening and immunizing.

## History

History during health supervision must include:

1. Interval history
2. Prenatal history
3. Growth history
4. Nutritional history: breast/formula, diet, vomiting
5. Developmental history: speech, fine motor, gross motor, social interaction
6. Family history of genetic diseases
7. Immunization history
8. Psychological history
9. Sleep patterns

## Objective findings

1. Growth: height, weight and head circumference parameters, and fontanelles (CDC growth charts)
2. Vital signs (temperature, pulse, respiratory rate, blood pressure)
3. Head, ENT exam
4. Heart, lungs, abdomen
5. Genitalia
6. Neurologic examination
7. Vision
8. Hearing
9. Developmental milestones (Denver's chart)
10. CBC (at certain ages) see chart
11. Urine analysis
12. PPD (annual)

## Diagnostic considerations

**1. Failure to thrive**

Attained growth:

1. Weight < 3rd percentile on NCHS growth chart
2. Weight for height <5th percentile on NCHS growth chart
3. Weight 20% or more below ideal weight for height
4. Triceps skin fold thickness <5 mm

Rate of growth:

1. Depressed rate of weight gain
2. <20 g/d from 0-3 months of age
3. <15 g/d from 3-6 months of age
4. Fall off from previously established growth curve
5. Downward crossing of >2 major percentiles on NCHS growths chart

2. **Developmental milestones (delay in development) using Denver charts**
3. **Screening**
    1. ***Neonatal screening (at birth)***
        a. Multiple metabolic diseases, congenital hypothyroidism, G6PD
    2. ***Developmental screening using Denver charts***
    3. Vision screening:
        a. Gross eye inspection
        b. Evaluation of red reflex
        c. Pupillary light reflect
        d. Ability to follow an object
        e. Ocular alignment
        f. Vision acuity testing; (Snellen chart or other, at 3 years); yearly for school aged
    4. ***Hearing***
        a. At birth
        b. Selective screening for newborns at visits
        c. Screen at 3 months for babies with:
            1. Positive family history
            2. History of congenital infection
            3. Anatomic malformations of head neck or ears
            4. Birth weight of less 1500 g
            5. History of hyperbilirubinemia (over exchange levels)
            6. APGAR 0-4 at 1 minute or 0-6 at 5 minutes
            7. History of bacterial meningitis
            8. Significant exposure to ototoxic medication
            9. Prolonged mechanical ventilation
    5. ***Blood pressure***
        Routinely at least once a year for children aged 3 years and older
    6. ***Cholesterol and lipids***
        Selective screening based on high-risk family history, weight status
    7. ***Iron deficiency anemia***
        a. Screening at 9-15 months
        b. Screening for adolescents
        c. Risk factors include during infancy:
            1. Prematurity
            2. Low birth weight
            3. Introduction of cow's milk before 12 months of age
            4. Insufficient non-intake
        d. Low socioeconomic status
4. **Psychological problems**

## Parent education

1. Counseling and anticipatory guidance should be part of every visit. The Ministry of Public Health's – Parent Held Handbook (PHH) includes check lists and basic information to be discussed with the parents; of particular importance are injury prevention and breast feeding
2. Injury prevention:
    a. Safe baby furniture
    b. Car safety
    c. Water thermostats set
    d. Bath safety
    e. Sun exposure
    f. Protection from falls, burns
    g. Small objects
    h. Electrical outlets
    i. Ingestions
    j. Playground safety
    k. Bicycle safety
3. Nutrition:
    a. Breast vs. bottle feeding
    b. Weaning
    c. Introduction of solids, cereals, fruits
    d. Discouraging non-nutritive snacks
    e. Balanced diet

## References


1. Overby, Kim: Health Supervision in Rudolph's fundamentals of Pediatrics, 3rd edition, Chapter 1, pp1-50
2. Unti SM. The critical first year of life. History, physical examination, and general developmental assessment. *Pediatr Clin North Am.* 1994 Oct;41(5):859-73.
3. Ministry of Public Health of Lebanon. Parent held handbook. 1996.

# Index

# Index