REPUBLIC OF LEBANON
MINISTRY OF PUBLIC HEALTH

CLINICAL MANAGEMENT PROTOCOLS FOR THE MOST COMMON HEALTH CONDITIONS IN PRIMARY HEALTH CARE

DECEMBER 2014

ممّول من الإتحاد الأوروبي
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تم انتاج هذا الدليل بدعم من الاتحاد الأوروبي وتمت طباعته من قبل منظمة الصحة العالمية بالشراكة مع مفوضية الأمم المتحدة العليا لشؤون اللاجئين وذلك في إطار مشروع بإدارة وزارة الصحة العامة. إن وزارة الصحة العامة هي الجهة الوحيدة المسؤولة عن محتوى هذا الدليل ولا يمكن اعتباره بأي حال من الأحوال على أنه يعكس وجهة نظر الاتحاد الأوروبي.

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نفّذ هذا الدليل بالتعاون مع الجمعيّة اللبنانية لطب العائلة:

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PREAMBLE

Under its general strategy to ensure Universal Health Coverage, the MOPH engaged in a health reform that included reinforcing Primary Health Care (PHC) as a main pillar.

In this context, the MOPH over the past decade, expanded its national PHC network both in terms of number and geographical distribution, as well as in terms of types and scopes of services; the MOPH also initiated the accreditation system; with this national guidebook on clinical management of the most common conditions in ambulatory setting, the aim is to reinforce quality of care and standardize management of cases.

This guidebook is the basis of intensive training of healthcare providers, with special focus on medical doctors and nurses working in the PHC centers. It does not intend to replace reference medical books. It is intended to serve as an aide-memoire for medical service providers, and refers to national standards and protocols when they exist and to international standards when needed.

The guidebook development is a product of a fruitful partnership between the MOPH and the private sector represented by the Lebanese Society of Family Medicine and in full support of the World Health Organization; it will be updated periodically, as part of maintaining up-to-date recommendations based on evidence.

Dr Walid Ammar
Director General, MOPH, Lebanon

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ABBREVIATIONS

AAFP	American Academy of Family Physicians
ABGs	Arterial Blood Gas
ACC	American College of Cardiology
ACE	Angiotensin-Converting Enzyme
ACEI	Angiotensin-Converting Enzyme Inhibitor
ACOG	American College of Obstetricians and Gynecologists
ACR	American Colleage of Rheumatology
ADA	American Diabetes Association
AHA	American Heart Association
AIDS	Acquired Immune Deficiency Syndrome
ALT	Alanine Transaminase
anti-TNF	anti-Tumor Necrosis Factor
anti-TPO	Antithyroid Peroxidase Antibody
AOM	Acute Otitis Media
ARB	Angiotensin Receptor Blockers
ASA	Acetylsalicylic Acid
ASCVD	Atherosclerotic cardiovascular disease
AST	Aspartate Aminotransaminase
ATA	American Thyroid Association
BCG	Bacillus Calmette-Guerin
BID	Twice a Day
BMD	Bone Mineral Density
BMI	Body Mass Index
BNP	B-Type Natriuretic Peptide
BP	Blood Pressure
BPH	Benign Prostate Hypertrophy
BSE	Breast Self-Examination
BUN	Blood Urea Nitrogen
CAT	COPD Assessment Test
CAP	Community Acquired Pneumonia
CBC	Complete Blood Count
CBE	Clinical Breast Examination
CBT	Cognitive Behavioral Therapy
CD 4	Cluster Difference 4
CGA	Cause, GFR and Albuminuria categories
CH	Cluster Headache
CHD	Coronary Heart Disease
CK	Creatine Kinase
CKD	Chronic Kidney Disease
CMV	Cytomegalovirus
CNS	Central Nervous System
COPD	Chronic Obstructive Pulmonary Disease
COX-2	Cyclooxygenase 2
CRB	Confusion, Respiratory rate, Blood pressure
CRP	C-Reactive Protein
CT	Computed Tomography
CTU	CT Urography
CURB	Confusion, Uremia, Respiratory rate, Blood pressure
CVR	Cardiovascular Risk
CXR	Chest X-Rays
DALYs	Disability Adjusted Life Years
DASH	Dietary Approaches To Stop Hypertension
DBP	Diastolic Blood Pressure
DFA	Direct Fluorescent Antibody

DM	Diabetes Mellitus
DMPA	Depomedroxy-Progesterone Acetate
DSM-5	Diagnostic And Statistical Manual Of Mental Disorders -5
EBV	Epstein-Barr Virus
eGFR	Estimated Glomerular Filtration Rate
EKG	Electrocardiogram
ELISA	Enzyme-Linked Immunosorbent Assay
ENT	Ear, Nose & Throat
ESA	Erythropoietin Stimulating Agents
ESR	Erythrocyte Sedimentation Rate
ESRD	End-Stage Renal Disease
FDA	Food and Drug Administration
FEV1	Forced Expiratory Volume In 1 Second
FNAB	Fine Needle Aspirate Or Biopsy
FOBT	Fecal Occult Blood Testing
FPG	Fasting Plasma Glucose
FRAX	Absolute Fracture Prediction Algorithm
FSH	Follicle-Stimulating Hormone
FVC	Forced Vital Capacity
GAD	Generalized Anxiety Disorder
GAS	Group A Streptococcus
GERD	Gastroesophageal Reflux Disease
GFR	Glomerular Filtration Rate
GI	Gastrointestinal
GOLD	Global initiative for Chronic Obstructive Lung Disease
GnRH	Gonadotropin-Releasing Hormone
H2RA	H2 Receptor Antagonists
HbA1c	Hemoglobin A1c
HCG	Human Chorionic Gonadotropin
HCW	Health Care Workers
HDL	High-Density Lipoprotein
HF	Heart Failure
HFrEF	Heart Failure with reduced Ejection Fraction
HFpEF	Heart Failure with preserved Ejection Fraction
Hgb	Hemoglobin
HIV	Human Immunodeficiency Virus
HPF	High-Power Field
HPV	Human Papilloma Virus
HR	Heart Rate
HRT	Hormonal Replacement Therapy
HSV	Herpes Simplex Virus
IBD	Inflammatory Bowel Disease
IBS	Irritable Bowel Syndrome
ICS	Inhaled Corticosteroids
ICU	Intensive Care Unit
IgA	Immunoglobulin A
IGRAs	Interferon Gamma Release Assays
IVP	Intravenous Pyelography
IVU	Intravenous Urography
JVP	Jugular Venous Pressure
IM	Intramuscular
INH	Isoniazid
INR	International Normalised Ratio
ISH	International Society of Hypertension
IU	International Units
IUD	Intrauterine Device
KOH	Potassium Hydroxide
KUB	Kidneys, Ureters, And Bladder

LABA	Long Acting Beta Agonists
LAMA	Long-acting muscarinic antagonists
LDL	Low Density Lipoprotein
LFTs	Liver Function Tests
LGV	Lymphogranuloma Venereum
LTBI	Latent Tuberculosis Infection
LTRA	Leukotriene Receptor Antagonists
LVEF	Left Ventricular Ejection Fraction
MAOI	Monoamine Oxidase Inhibitor
METS	Metabolic Equivalent Tasks
MI	Myocardial Infarction
MMR	Measles Mumps Rubella
MNG	Multinodular Goiter
MOH	Medication-Overuse Headache
MRI	Magnetic Resonance Imaging
MRSA	Methicillin-Resistant Staphylococcus Aureus
MSE	Mental Status Exam
NASH	Non-Alcoholic Steato-Hepatitis
NCEP	National Cholesterol Education Program
NSAIDs	Non-Steroidal Anti-Inflammatory Drugs
NYHA	New York Heart Association
OA	Osteoarthritis
O&P	Ova & Parasite
OC	Oral Contraceptives
OCP	Oral Contraceptive Pill
OCS	Oral Corticosteroids
OCD	Obsessive- Compulsive Disorder
OGTT	Oral Glucose Tolerance Test
OME	Otitis Media With Effusion
ORS	Oral Rehydration Solution
PPD	Purified Protein Derivative
PEF	Peak Expiratory Flow
PCR	Polymerase Chain Reaction
PD	Primary Dysmenorrhea
PDE4-inh	Phosphodiesterase-4 Inhibitor
PHC	Primary Health Care
PID	Pelvic Inflammatory Disease
PKD	Polycystic Kidney Disease
PMDD	Premenstrual Dysphoric Disorder
PMS	Premenstrual Syndrome
POM	Persistent/Refractory Otitis Media
PPI	Proton Pump Inhibitor
PPSV23	Pneumococcal Polysaccharide Vaccine
PSA	Prostate Specific Antigen
PTH	Parathyroid Hormone
PTSD	Posttraumatic Stress Disorder
PUD	Peptic Ulcer Disease
QD	One a Day
RADT	Rapid Antigen Detection Testing
RAI	Radioiodine
RAST	Radioallergosorbent Test
RBC	Red Blood Cells
ROM	Recurrent Otitis Media
RPG	Random Plasma Glucose
RR	Respiratory Rate
RSV	Respiratory Syncytial Virus
SABA	Short Acting Beta Agonists
SAMA	Short Acting Muscarinic Antagonist

SBP	Systolic Blood Pressure
SD	Secondary Dysmenorrhea
SGOT	Serum Glutamic Oxaloacetic Transaminase
SGPT	Serum Glutamate Pyruvate Transaminase
SNRI	Serotonin And Norepinephrine Reuptake Inhibitor
SPEP	Serum Protein Electrophoresis
SS	Symptom Severity
SSRI	Selective Serotonin Reuptake Inhibitor
SSTBIs	Skin And Soft Tissue Bacterial Infections
STIs	Sexually Transmitted Infections
T	Temperature
TB	Tuberculosis
TCA	Tricyclic Antidepressants
Tdap	Tetanus, Diphtheria, acellular Pertussis
TID	Three Times a Day
TM	Tympanic Membrane
TRAB	Thyrotropin Receptor Autoantibodies
TTH	Tension-Type Headache
TSH	Thyroid-Stimulating Hormone
TST	Tuberculin Skin Test
UACR	Urine Albumin to Creatinine Ratio
UP/C	Urine Protein to Creatinine Ratio
UPEP	Urine Protein Electrophoresis
URTI	Upper Respiratory Tract Infection
USPTF	U.S. Preventive Services Task Force
UTI	Urinary Tract Infection
VNRS	Verbal Numerical Rating Scale
VZV	Varicella Zoster Virus
WBC	White Blood Cells
WHO	World Health Organization
WPI	Widespread Pain Index

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CHAPTER 1.

PERIODIC MEDICAL EXAMINATIONS—DISEASE DETECTION AND HEALTH PROMOTION

Claudine Nasr, MD

PERIODIC MEDICAL EXAMINATION IN ALL ADULTS

The adult well examination should include evidence-based counseling, screening tests and immunizations shown to improve health outcomes. The following recommendations were issued by the U.S. Preventive Services Task Force (USPTF) and the American Academy of Family Physicians (AAFP) (general population guidelines); they apply to all adults aged 18 years and more. Recommendations from societies of various specialties will be included as appropriate in *Italic*.

TOBACCO

Physicians should ask all adults about tobacco use and provide tobacco cessation interventions for those who use tobacco products.

ALCOHOL

Physicians should screen all adults for alcohol misuse and provide behavioral counseling interventions to reduce alcohol misuse in individuals who engage in risky or hazardous drinking.

DEPRESSION

Physicians should screen adults for depression when staff-assisted depression care supports are in place to ensure accurate diagnosis, effective treatment and follow-up.

SEXUALLY TRANSMITTED INFECTIONS

Sexually active adults at increased risk for sexually transmitted infections should be offered intensive behavioral counseling.

HUMAN IMMUNODEFICIENCY VIRUS (HIV)

All adults 15-65 years with increased risk of exposure to HIV (high risk sexual behavior, drug use, multiple transfusions) should be screened for HIV.

OBESITY

Adults should be screened for elevated body mass index. Patients with obesity should be offered intensive counseling and behavioral interventions to promote sustained weight loss.

BLOOD PRESSURE

Adults should be screened for high blood pressure.

DIABETES MELLITUS

Asymptomatic adults with sustained blood pressure greater than 135/80 mmHg should be screened for type 2 diabetes mellitus. Three tests have been used for screening: fasting plasma glucose, 2-hour postload plasma and Hemoglobin A1c.

The American Diabetes Association (ADA) recommends screening all adults for diabetes every three years beginning at 45 years of age; adults of any age who are overweight or obese (BMI 25 kg/m^2) and who have one or more additional risk factors for diabetes should also be screened.

DYSLIPIDEMIA

1. Women: It is highly recommended that women 45 years and older should be screened for dyslipidemia if at increased risk of coronary heart disease (CHD). Also women 20-45 years at increased risk of CHD can be screened for dyslipidemia.
2. Men: All men 35 years and older should be screened for dyslipidemia. Men 20-35 years should be screened for dyslipidemia only if at increased risk of coronary heart disease.

3. The optimal interval for screening is uncertain; reasonable options include every 5 years, shorter if high lipid levels and longer if the lipid levels and the risk of CHD are low.

The National Cholesterol Education Program (NCEP) recommends screening all adults for dyslipidemia starting the age of 20 and to repeat the screening every 5 years.

ASPIRIN

1. Women 55 to 79 years of age should take approximately 75 mg of aspirin per day when the net benefit of ischemic stroke reduction outweighs the increased risk of gastrointestinal hemorrhage.
2. Men 45 to 79 years of age should take approximately 75 mg of aspirin per day when the net benefit of myocardial infarction outweighs the increased risk of gastrointestinal hemorrhage.

COLORECTAL CANCER

Adults 50 to 75 years of age should be screened for colorectal cancer with either a high sensitivity fecal occult blood testing (FOBT) annually, a sigmoidoscopy every five years, or a colonoscopy every 10 years.

LUNG CANCER

Adults 55-80 years who have smoked 30 pack year and are currently smoking or have quit in the past 15 years, should be screened with annual low dose computed tomography. This recommendation was not endorsed by other organizations due to limitations in the external validity of the study that the USPTF relied on. The AAFP took a more conservative stance and concluded that there is insufficient evidence for or against CT-based screening in high-risk persons.

FALLS

All community-dwelling adults aged 65 years or older who are at increased risk for falls should be recommended exercise or physical therapy and vitamin D supplementation.

OSTEOPOROSIS AND CALCIUM SUPPLEMENTATION

1. Women 65 years and older should be screened for osteoporosis. Women younger than 65 years should be screened if the risk of fracture is greater than or equal to that of a 65-year-old white woman without additional risk factors.
2. *Lebanese national guidelines recommend routine screening for women aged 65 and older and all post-menopausal women with evidence of radiological demineralization; vertebral deformity or fragility fracture or when corticosteroid therapy for > 3 months is contemplated.*
3. *The National Osteoporosis Foundation recommends bone mineral density testing in all men 70 years or older and in men 50 to 69 years of age who have additional risk factors.*
4. *The National Institute of Health recommends a total daily intake of 1,000 mg of calcium for women 19 to 50 years of age (men 19 to 70 years), and 1,200 mg for women older than 50 years (men older than 70), in addition to 600 to 800 IU of vitamin D using supplements if dietary intake falls short of these goals.*

IMMUNIZATION

All adults should receive age and interval appropriate immunizations.

1. Annual influenza vaccination is strongly encouraged for all adults.
2. For all adults more than 19 years, tetanus toxoid and reduced diphtheria toxoid (Td) should be administered every 10 years. Substitute one time Td with TdaP (which includes acellular pertussis) regardless of the time since the previous booster. Tdap is also recommended over Td vaccination for adults 65 years and older who will be in contact with children younger than one year.
3. Pneumococcal vaccine is recommended once for all adults aged 65 years or older.
4. All adults without evidence of immunity to varicella and Measles Mumps Rubella (MMR) and Hepatitis B should receive the appropriate vaccines.

SPECIAL PERIODIC MEDICAL EXAMINATION IN WOMEN

INTIMATE PARTNER VIOLENCE

Physicians should screen women of childbearing age for intimate partner violence, and those who screen positive should be provided with or referred to intervention services.

FOLIC ACID
All women planning or capable of pregnancy should take a daily folic acid supplement of 400 to 800 mcg.

CERVICAL CANCER
Women should be screened for cervical cancer with Pap tests beginning at 21 years of age. Low-risk women should receive Pap testing every three years. Co-testing for human papillomavirus virus (HPV) is an option beginning at 30 years of age, and can extend the screening interval to five years. Cervical cancer screening should be discontinued at 65 years of age or after total hysterectomy if the woman has a benign gynecologic history.

BREAST CANCER
Women 50 to 74 years of age should be screened for breast cancer with mammography biennially. Mammography should be considered in women 40 to 49 years of age based on each patient's values and the potential benefits and harms.

Lebanese national guidelines calls for annual clinical breast examination (CBE) and mammography starting age 40 and as long as a woman is in good health. It also calls for breast self-examination (BSE) every month starting age 20 and clinical breast examination by a physician every three years between the ages of 20 and 40 years.

The American College of Obstetricians and Gynecologists (ACOG) and the American Cancer Society recommend annual screening for breast cancer beginning at 40 years of age without a specific discontinuation age.

SPECIAL PERIODIC HEALTH EXAMINATION IN MEN

ABDOMINAL AORTIC ANEURYSM
Men 65 to 75 years of age should be screened once for abdominal aortic aneurysm with ultrasonography if they have a family history or have smoked at least 100 cigarettes in their lifetime.

PROSTATE CANCER
Significant controversy exists about prostate cancer screening in primary care. USPTSF recommends against prostate cancer screening. The American Urological Association recommends shared decision-making for men age 55 to 69 years that are considering Prostate Specific Antigen (PSA) screening, and proceeding based on a man's values and preferences. To reduce the harms of screening, an interval of 2 years may be preferred over annual screening.

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CHAPTER 2.

CARDIOVASCULAR DISEASES PREVENTION AND TREATMENT

I. HYPERTENSION

Mona Osman, MD, MPH, MBA

EPIDEMIOLOGY

1. Hypertension is the most common chronic disease treated in primary care.
2. In Lebanon, 13.8% of adults suffer from hypertension.

DEFINITION

1. Hypertension is defined as systolic blood pressure of 140 mmHg or higher or a diastolic blood pressure of 90 mmHg or higher based on the average of two or more different readings. Individuals who are taking antihypertensive medications are also considered to be hypertensive.
2. Hypertension is associated with an increased risk of coronary artery disease, heart failure, myocardial infarction, retinopathy, chronic kidney disease, cerebrovascular accidents and death.

RISK FACTORS

1. Risk factors for primary essential hypertension include:
    a. Age
    b. Obesity
    c. Family history of hypertension
    d. Race (more in blacks)
    e. High sodium diet (>3000mg/day)
    f. Excessive alcohol consumption
    g. Physical inactivity
    h. Diabetes mellitus
    i. Dyslipidemia
    j. Personality traits (with hostile attitudes or with time urgency/impatience) and depression
    k. Hypovitaminosis D (in some populations).

2. Secondary hypertension is suspected in the presence of severe or resistant hypertension, an acute increase in blood pressure compared to previous stable values, proven age of onset before puberty and age less than 30 years with no family history of hypertension and no obesity. Causes for secondary hypertension include:
    a. Over the counter medications
    b. Renal diseases (acute and chronic kidney diseases due to glomerular or vascular disorders)
    c. Illicit drug use
    d. Primary aldosteronism
    e. Renovascular hypertension
    f. Obstructive sleep apnea: mainly in obese men who snore; have daytime somnolence, fatigue and morning confusion
    g. Pheochromocytoma: suspected in the presence of paroxysmal elevation of blood pressure and a triad of headache, palpitations and sweating
    h. Cushing's syndrome: typical symptoms include cushingoid facies, central obesity, proximal muscle weakness and ecchymoses; affected individuals may have a history of glucocorticoid use
    i. Other endocrine disorders: hypothyroidism, hyperthyroidism, and hyperparathyroidism
    j. Coarctation of the aorta: presence of hypertension in the arms with delayed or diminished femoral pulses and low or unobtainable blood pressures in the legs.

SCREENING

1. U.S. Preventive Services Task Force recommends screening persons with systolic and diastolic blood pressures below 120 mmHg and 80 mmHg every 2 years, and yearly for persons with a systolic blood pressure of 120 to 139 mmHg or a diastolic blood pressure of 80 to 89 mmHg.

DIAGNOSIS

1. In the absence of end-organ damage, the diagnosis of mild hypertension should not be made until the blood pressure has been measured on at least three visits, spaced over a period of weeks to months.
2. Diagnostic criteria for classification of blood pressure in adults are highlighted in table 2.I.1.

TABLE 2.I.1. CLASSIFICATION OF BLOOD PRESSURE IN ADULTS

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

EVALUATION

OBJECTIVES

1. To determine the extent of target-organ damage and/or established cardiovascular disease.
2. To assess other cardiovascular risk factors.
3. To identify lifestyle factors that could potentially contribute to hypertension.
4. To identify interfering substances (such as chronic use of nonsteroidal anti-inflammatory drugs, oral contraceptives) and potentially curable causes of secondary hypertension.

HISTORY

1. Duration of hypertension (last known normal blood pressure and the changes of the blood pressure over time).
2. Previous attempts of treatment for high blood pressure.
3. Presence of aggravating factors: medications (Nonsteroidal anti-inflammatory drugs, estrogens, sympathomemetics, adrenal steroids etc), alcohol consumption, excessive sodium intake.
4. Symptoms of secondary causes: muscle weakness, bouts of tachycardia, sweating, tremor, thinning of the skin, and flank pain.
5. Symptoms of target organ damage: headaches, transient weakness or blindness, loss of visual acuity, chest pain, dyspnea, and claudication.
6. Presence of cardiovascular risk factors: smoking, diabetes mellitus, dyslipidemia, physical inactivity.
7. Dietary history: sodium, alcohol, saturated fats.
8. Family history of: hypertension, premature cardiovascular disease or death, familial diseases (renal disease, pheochromocytoma, diabetes, gout).
9. Psychosocial factors: family structure, work status, educational level.
10. Sexual function.
11. Features of sleep apnea: early morning headaches, daytime somnolence, loud snoring, erratic sleep.

PHYSICAL EXAMINATION

The physical examination generally aims to evaluate the presence of signs of end-organ damage, signs of established cardiovascular diseases and potential causes of secondary hypertension.

1. Accurate measurement of blood pressure (check Box 2.I.1 for tips for measuring blood pressure).
2. General appearance: distribution of body fat, skin lesions, muscle strength, alertness.
3. Fundoscopy: look for hemorrhage, papilledema, cotton wool spots.
4. Neck: palpation and auscultation of carotids, thyroid.
5. Heart: size, rhythm, sounds.
6. Lungs: rhonchi, rales.

7. Abdomen: renal masses, bruits over the aorta or renal arteries, femoral pulses.
8. Extremities: peripheral pulses, edema.
9. Neurologic assessment: visual disturbance, focal weakness, confusion.

BOX 2.I.1. TIPS FOR MEASURING BLOOD PRESSURE:

- The physical setting should be warm and quiet.
- It is recommended to measure blood pressure in the sitting position namely for follow up measurements.
- The patients should be advised to sit quietly with the back supported for five minutes and the arm supported at the level of the heart.
- Make sure that the patient did not take caffeine during the hour preceding the reading, and did not smoke during the preceding 30 minutes.
- Make sure that the patient did not take exogenous adrenergic stimulants such as phenylephrine in decongestants or eye drops for papillary dilatation.
- Take at least two readings on each visit; if readings vary by more than 5mmHg, take additional readings until two consecutive readings are close.
- For the diagnosis of hypertension, take three readings at least one week apart.

LABORATORY TESTS

1. Blood Glucose level.
2. Fasting lipid profile including total cholesterol, low-density lipoprotein cholesterol, high-density lipoprotein cholesterol, and triglyceride.
3. Serum Creatinine.
4. Serum Calcium.
5. Serum Potassium level.
6. Hematocrit.
7. Urinalysis.
8. Other tests might be indicated in case secondary hypertension is suspected.

OTHER TESTS

1. Electrocardiography (EKG).
2. Ambulatory blood pressure monitoring is not always indicated. Indications are summarized in Box I.2.

BOX 2.I.2. INDICATIONS FOR AMBULATORY BLOOD PRESSURE MONITORING:

- To confirm the diagnosis of suspected white coat hypertension.
- To confirm a poor response to antihypertensive medications.
- To confirm normal blood pressure readings obtained by self-monitoring at home.
- Suspected episodic hypertension.
- To determine blood pressure control in patients known to have substantial white coat effect.
- Presence of hypotensive symptoms while taking antihypertensive medications.
- Resistant hypertension.
- Autonomic dysfunction.

MANAGEMENT

NON-PHARMACOLOGICAL MANAGEMENT

1. Weight reduction: maintain body mass index (BMI) within normal ranges. A 10 kilogram weight loss may decrease systolic blood pressure by 5 to 20 mmHg.
2. Dietary approaches to stop hypertension (DASH): consume a diet rich in fruits, vegetables, fiber, low fat dairy products, lean meat, calcium, magnesium and potassium with a reduced content of saturated and total fat. This diet has shown to decrease systolic blood pressure by 8-14 mmHg.
3. Reduction in dietary sodium: reduce dietary sodium intake to no more than 2.4 gram sodium or 6 gram

sodium chloride. This has proven to decrease systolic blood pressure by 2-8 mmHg.
4. Physical activity: aerobic physical activity such as brisk walking for at least 30 minutes per day on most days of the week was found to reduce systolic blood pressure by 4-9 mmHg.
5. Moderate alcohol consumption: Limit consumption to no more than 2 alcoholic drinks per day for men and one alcoholic drink for women. This has shown to decrease systolic blood pressure by 2-4 mmHg.

PHARMACOLOGICAL MANAGEMENT

1. Antihypertensive medications should be started if systolic blood pressure is persistently ≥ 140 mmHg in patients younger than 60 years or ≥ 150mmHg in patients 60 years and above and/or diastolic blood pressure is persistently ≥ 90mmHg despite attempted non-pharmacologic treatment.
2. Starting with 2 drugs should be considered in patients with a baseline blood pressure above 160/100 mmHg. This should be practiced with caution in patients at increased risk of orthostatic hypotension such as patients with diabetes mellitus and elderly.
3. The evidence of the benefits of antihypertensive therapy is less clear in patients with mild hypertension and no preexisting cardiovascular disease as well as frail elderly.
4. For initial monotherapy, the primary care doctor can start with any of the following classes: Thiazide diuretics, long acting calcium channel blockers, Angiotensin-converting enzyme inhibitors (ACE inhibitors), and Angiotension II Receptor blockers (ARB).
5. When starting antihypertensive, it is important to make sure of the presence of contraindications, potential side effects or additional benefits. Table 2.I.2 summarizes these factors.

TABLE 2.I.2. FACTORS TO CONSIDER WHEN STARTING ANTIHYPERTENSIVE MEDICATIONS

Potential side effects on co-morbid conditions	• Depression: Beta Blockers, central alpha-2 agonist • Gout: Diuretic • Hyperkalemia: Aldosterone antagonist, ACE inhibitor, ARB, Renin inhibitor • Hyponatremia: Thiazide diuretic • Renovascular disease: ACE inhibitor, ARB, rennin inhibitor
Contraindications	• Angioedema: ACE inhibitor • Bronchospastic disease: Beta blocker • Depression: Reserpine • Liver disease: Methyldopa • Pregnancy (or at risk of pregnancy): ACE inhibitor, ARB, rennin inhibitor • Second or third degree heart block: Beta blocker, nondihydropyridine calcium channel blocker
Potential favorable effect	• Benign Prostatic Hypertrophy: Alpha Blocker • Essential tremor: Beta blocker (non-cardio-selective) • Hyperthyroidism: Beta Blocker • Migraine: Beta Blocker, Calcium Channel Blocker • Osteoporosis: Thiazide diuretic • Raynaud's syndrome: Dihydropyridine calcium channel blocker
Compelling indications	• Heart failure with low ejection fraction: ACE inhibitor, ARB, beta blocker, diuretic, aldosterone antagonist • Post myocardial infarction: ACE inhibitor, beta blocker, ARB, aldosterone antagonist • Proteinuric chronic kidney disease: ACE inhibitor, ARB • Angina pectoris: beta blocker, calcium channel blocker • Atrial fibrillation rate control: beta blocker, nondihydropyridine calcium channel blocker • Atrial flutter rate control: beta blocker, nondihydropyridine calcium channel blocker

TARGET

1. Target blood pressure is < 140/90 mmHg in patients younger than 60 years of age.
2. Target blood pressure < 150/90 mmHg in patients 60 years and older is recommended by the eight joint national committee; however a target < 140/90 mmHg is still aimed in those who are fit.
3. Target blood pressure < 140/90 mmHg in patients with diabetes mellitus and chronic kidney disease is

recommended by the eight joint national committee, although a target < 130/80 mmHg is still recommended by other scientific authorities.

FOLLOW UP VISITS

1. Follow up visits twice per year if blood pressure is controlled.
2. During each visit: Measure blood pressure and weight, calculate BMI, assess end organ damage, address other cardiovascular risks, remind patient about lifestyle modifications and monitor compliance with drugs and presence of side effects.
3. Annual follow up laboratory tests: spot urine for microalbumin, fasting lipid profile, serum potassium and serum creatinine.
4. Vaccination: pneumococcal vaccine, and influenza vaccine (yearly basis).

REFERRAL TO SPECIALIST

1. Uncontrolled hypertension.
2. Suspicion of secondary hypertension.
3. Malignant hypertension.

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II. DYSLIPIDEMIA

Mona Osman, MD, MPH, MBA

EPIDEMIOLOGY

1. Dyslipidemia is an important risk factor for coronary heart disease and stroke.
2. In Lebanon, around 18% of men and 15% of women have dyslipidemia.

DEFINITION

1. Dyslipidemia is defined as elevated total cholesterol level, or elevated low-density lipoprotein (LDL) cholesterol levels, or low levels of high-density lipoprotein (HDL) cholesterol or elevated triglyceride levels.
2. Dyslipidemia is typically asymptomatic.
3. Dyslipidemia can be primary (familial) or secondary.

CAUSES OF SECONDARY DYSLIPIDEMIA

1. Diet: Weight gain, diets rich in saturated or trans fats, high intake of carbohydrates (causes elevated triglycerides) and excessive intake of alcohol.
2. Drugs: Diuretics, cyclosporine, glucocorticoids, amiodarone, oral estrogens, bile acid sequestrants, protease inhibitors, retinoic acid, anabolic steroids, raloxifene, tamoxifen, and thiazides.
3. Diseases: Biliary obstruction, nephrotic syndrome, chronic renal failure and lipodystrophies.
4. Disorders and altered states of metabolism: Hypothyroidism, obesity, pregnancy and poorly controlled diabetes mellitus.

SCREENING

1. The United States Preventive Services Task Force (USPSTF) recommends screening for lipid disorders in men aged 35 years and older and in women aged 45 years and older (Grade A recommendation).

Screening is recommended for men aged 20 to 35 years and women aged 20 to 45 years in the presence of risk factors for coronary heart diseases (Grade B recommendation).
2. The United Kingdom National Institute of Clinical Excellence (NICE) recommends conducting an evaluation of all individuals aged 40 years and above for coronary heart disease risk including measurement of total cholesterol and HDL.

DIAGNOSIS

The diagnostic criteria for dyslipidemia are summarized in table 2.II.1 below.

TABLE 2.II.1. DIAGNOSTIC CRITERIA FOR DYSLIPIDEMIA

Cholesterol (mg/dl)	LDL (mg/dl)	HDL (mg/dl)	Triglyceride (mg/dl)
Desirable < 200	Optimal < 100	Low < 40	Normal < 150
Borderline High 200-239	Near optimal 100-129	High ≥ 60	Borderline High 150-199
High ≥ 240	Borderline High 130-159		High 200-499
	High 160-189		Very High ≥ 500
	Very High ≥ 190		

EVALUATION

HISTORY

1. Assess for the presence of risk factors for atherosclerotic cardiovascular disease (ASCVD): smoking, hypertension, diabetes mellitus, obesity, family history of premature coronary heart disease.
2. Assess for the presence of secondary causes for dyslipidemia as mentioned earlier especially in individuals with LDL ≥ 190 mg/dl or Triglyceride ≥ 500 mg/dl (Grade B recommendation).
3. Assess dietary habits.
4. Assess exercise habits.
5. Ask for current medications.

PHYSICAL EXAMINATION

1. A general exam including cardiovascular examination should be conducted.
2. Typical findings to look for include xanthomas (tendon or eruptive), xanthelasma (yellowish streaks on eyelids) and presence of corneal arcus (especially in young patients).

LABORATORY TESTING

1. Laboratory testing is indicated mainly to assess for presence of suspected secondary causes of dyslipidemia, before initiating lipid lowering drugs or to assess for conditions that may influence the safety of these drugs.
2. Fasting lipid profile.
3. Serum Glutamate Pyruvate Transaminase (SGPT) also known as Alanine Transaminase (ALT) before initiating statins.
4. Creatine Kinase (CK) in case of increased risk for adverse muscle events with statins therapy.
5. Creatinine if treatment with fibrates is indicated.

MANAGEMENT

LIFESTYLE MODIFICATIONS

1. Diet modification: Balance energy intake and expenditure to maintain a desirable body weight and prevent weight gain. The nutrient composition of the diet is advised to include:
    a. Saturated fat less than 7% of total calories
    b. Polyunsaturated fat up to 10% of total calories
    c. Monounsaturated fat up to 20% of total calories
    d. Total fat 25 to 35% of total calories
    e. Carbohydrate 50 to 60% of total calories
    f. Fiber 20 to 30 grams per day
    g. Protein around 15% of total calories
    h. Cholesterol less than 200 mg/day

i. Diet rich in fruits and vegetables

2. Weight loss in overweight patients.
3. Exercise: 30 minutes per day for at least five days per week.
4. Limit alcohol intake.

PHARMACOLOGIC TREATMENT

1. Statins are the first line of treatment when drug therapy is considered.
2. For adults aged 21 years old and more with LDL ≥ 190 mg/dl, it is recommended to treat with statin and start preferably with high intensity therapy (Grade B recommendation). Please check table 2.II.2 that summarizes the different types of lipid lowering drugs available in the chronic list of the ministry of public health in Lebanon.
3. For adults 40 to 75 years old with LDL between 70 and 189 mg/dl and without clinical ASCVD or diabetes mellitus but with an estimated 10 years ASCVD risk ≥ 20%, it is recommended to treat with moderate to high-intensity statin therapy (Grade A recommendation).
4. For adults with diabetes mellitus and aged 40 to 75 years of age with LDL between 70 and 189 mg/dl, it is recommended to treat with moderate intensity statin therapy (Grade A recommendation).
5. For adults aged 75 years and below with clinical ASCVD, it is recommended to treat with high intensity statin therapy unless contraindicated (Grade B recommendation).
6. Fenofibrate may be added to low or moderate intensity statin only if the benefits of reducing triglyceride (triglyceride level > 500 mg/dl for example) outweigh the potential risk for adverse events.

TABLE 2.II.2. LIPID LOWERING DRUGS AVAILABLE IN THE CHRONIC LIST OF THE MINISTRY OF PUBLIC HEALTH IN LEBANON.

Class of Drugs	Dose	Effect	Major side effects
Statins (HMG CoA reductase inhibitors)			
Simvastatin	5-40 mg/day (in the evening) - Moderate intensity therapy*: 20-40 mg - Low intensity therapy: 10 mg	↓ LDL by 20%-60% ↑ HDL by 5%-10% ↓ Triglyceride by 10%-33%	Headache, nausea, sleep disturbance, elevation in hepatic transaminases, myositis, rhabdomyolysis.
Rosuvastatin	5-40 mg/day (in the evening) - High intensity therapy**: 20 mg (can go up to 40 mg) - Moderate intensity therapy: 10 mg		
Fibrates			
Fenofibrate	160-200 mg/day (with meals)	↓ LDL by 6%-20% ↑ HDL by 5%-20% ↓ Triglyceride by 41%-53%	Skin rash, nausea, bloating, cramping, myalgia.
	* Daily dose reduces LDL between 30 to < 50% ** Daily dose reduces LDL by ≥ 50%		

TARGET LEVELS

1. Target LDL < 100 mg/dl in high 10 year ASCVD risk patients (≥ 20%) and even < 70 mg/dl in very high 10 year ASCVD risk patients.
2. Target LDL < 130 mg/dl in moderate 10 year ASCVD risk patients.

MONITORING LIPID LOWERING DRUG THERAPY

1. Follow up with a fasting lipid profile to monitor the response to treatment within 4 to 12 weeks after initiating statin therapy and then every 3 to 12 months.
2. Follow up of lipid lowering drug safety is to be monitored clinically; laboratory tests (such as CK, SGPT) to be conducted if clinical signs of toxicity are present.
3. It is recommended to use the maximum tolerated intensity of statin in individuals for whom a high- or moderate-intensity statin is recommended, but not tolerated (Grade B recommendation).
4. In individuals who have a less than the anticipated therapeutic response it is recommended to:

a. Reinforce adherence to lipid lowering drugs.
b. Reinforce adherence to lifestyle modifications.
c. Exclude secondary causes of hyperlipidemia.

REFERRAL

1. Endocrinologist in case of non-response to treatment and in case of familial hyperlipidemia.

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III. TYPE 2 DIABETES MELLITUS

Mona Osman, MD, MPH, MBA

EPIDEMIOLOGY

1. Around 9% of the adult population aged 18 years and above suffers from diabetes mellitus.
2. In Lebanon, diabetes mellitus affects 15% of the population and accounts for 3.7% of total mortality from all causes.
3. The incidence of Type 2 diabetes mellitus increases with age.

DEFINITION

1. Type 2 diabetes mellitus is a chronic metabolic disease characterized by chronic hyperglycemia, which results from a progressive defect in insulin secretion. It is associated with insulin resistance and progressive beta cells failure.
2. Type 2 diabetes mellitus is associated with many co-morbid conditions including: Obesity, hypertension, dyslipidemia, hearing impairment, sleep apnea, fatty liver disease, periodontal diseases, cognitive impairment, depression, and fractures.
3. Complications of type 2 diabetes include: Nephropathy, retinopathy, neuropathy, and accelerated Atherosclerosis (coronary, cerebral and peripheral vascular diseases).

RISK FACTORS

1. Physical inactivity.
2. Obesity.
3. Family history of diabetes mellitus namely in a first degree relative.
4. Women with a history of gestational diabetes or who delivered a baby weighing 4 kilograms or more.
5. Hypertension.
6. Dyslipidemia.
7. History of cardiovascular diseases.
8. Women with polycystic ovary syndrome.
9. Clinical conditions with insulin resistance.

SYMPTOMS

1. Most patients with type 2 diabetes mellitus do not have any symptoms.
2. Classic symptoms of polyuria, polydipsia, polyphagia and weight loss might be present.
3. Other symptoms include blurred vision, lower extremities parasthesia, and yeast infections.

SCREENING

1. Testing in all adults of any age who are overweight (BMI ≥ 25 Kg/m^2) and have additional risk factors for diabetes (Grade B recommendation).
2. Testing of all adults aged 40 years and above regardless of the presence of risk factors for diabetes mellitus, as recommended by the World Health Organization (WHO).
3. Screening should be repeated at three (3) years interval if the results were normal. In case of pre-diabetes, testing should be done on yearly basis. More frequent testing is also indicated in individuals with risk factors for diabetes.
4. WHO supports conducting the initial screening using capillary plasma glucose when laboratory services are not available.

DIAGNOSIS

1. Diagnosis of Type 2 diabetes mellitus can be done using different tests: Fasting blood glucose (FPG), Hemoglobin A1c or the Oral Glucose Tolerance Test (OGTT) - Grade B recommendation. Diagnostic criteria are summarized in table 2.III.1 below. It is important to note the following:
    a. Fasting is defined as no caloric intake for at least 8 hours.
    b. Two abnormal readings are needed to diagnose diabetes mellitus.
    c. OGTT should be performed using a glucose load containing the equivalent of 75 g of anhydrous glucose dissolved in water.
    d. HbA1c needs to be done in a laboratory using a standardized method.
2. The progress of type 2 diabetes mellitus is usually insidious and the diagnosis can be delayed sometimes.

TABLE 2.III.1. DIAGNOSTIC CRITERIA FOR TYPE 2 DIABETES MELLITUS

	Normal Blood Glucose level	Pre-diabetes	Diabetes Mellitus
Fasting Blood Glucose (FPG) (mg/dl)	FPG < 100 mg/dl	100 ≤ FPG < 126 (Impaired Fasting Glucose IGT)	FPG ≥ 126
Random Plasma Glucose (RPG) with presence of symptoms (mg/dl)	RPG < 200		RPG ≥ 200
HbA1c (%)	< 5.7	5.7 - 6.4	≥ 6.5
Oral Glucose Tolerance Test (OGTT) (mg/dl)	2hPG < 140	140 ≤ 2hPG < 200 (Impaired Glucose Tolerance IGT)	≥ 200

EVALUATION

OBJECTIVES OF THE EVALUATION

1. To assess the characteristics of the onset of diabetes mellitus (asymptomatic laboratory finding or symptomatic polyuria and polydipsia).
2. To assess the presence of risk factors.
3. To document the presence of complications of diabetes mellitus.
4. To assist the patient in formulating a management plan.
5. To provide the patient with the basis for continuing care.

HISTORY

1. Age.
2. Check for symptoms of diabetes mellitus if any.
3. Lifestyle factors including eating habits (nutrition), physical activity habits.
4. Cardiovascular risk factors.
5. Presence of diabetes-related complications: retinopathy, neuropathy, nephropathy, coronary heart diseases, cerebrovascular diseases and peripheral artery diseases.
6. Psychosocial history including screening for depression and/or anxiety.
7. Dental diseases.

PHYSICAL EXAMINATION

1. Measurement of height and weight with calculation of BMI.
2. Measurement of Blood Pressure (orthostatic measurements when indicated).
3. Fundoscopic examination.
4. Palpation of the thyroid.
5. Examination of the skin (for acanthosis nigricans).
6. Comprehensive foot examination.
    a. Inspect the skin for integrity especially between toes and under metatarsal heads. Look for areas of erythema, warmth or callus formation. Check for bony deformities, joint mobility, gait and balance.
    b. Palpate the dorsalis pedis and posterior tibialis pulses.
    c. Assess the presence or absence of patellar and Achilles reflexes.
    d. Assess propioception, vibration and monofilament sensation: vibration using a 128 Hz tuning fork, pinprick sensation, or ankle reflexes.

INVESTIGATION

1. Fasting lipid profile including total, LDL and HDL cholesterol and triglycerides.
2. Fasting Blood Glucose.
3. Hba1c if not done within the last 2-3 months.
4. Liver function tests (SGPT, SGOT).
5. Test for urine albumin excretion with spot urine albumin-to-creatinine ratio.
6. Serum creatinine.
7. Thyroid stimulating hormone (TSH) in dyslipidemia or women over the age of 50 years.

MANAGEMENT

NON-PHARMACOLOGIC MANAGEMENT

1. Dietary modification: The right mix of carbohydrate, protein and fat is important in the management of diabetes mellitus. Monitoring of carbohydrate intake is key for achieving glycemic control in patients with diabetes mellitus. This can be done through carbohydrate counting, choices or experience-based estimation.
2. Weight reduction: it is recommended for all overweight or obese individuals who have diabetes mellitus. A low-carbohydrate, or low-fat calorie-restricted, or Mediterranean diets may be effective in the short term weight reduction (Grade A recommendation).
3. Exercise: moderate exercise of 30 minutes per day for at least five days per week.
4. Smoking cessation.
5. Moderate alcohol consumption: limit to 2 drinks per day for men and 1 drink per day for women.

PHARMACOLOGIC MANAGEMENT

1. Metformin therapy should be initiated along with lifestyle modifications at the time of diagnosis and in those who do not have renal insufficiency, liver disease or hypoxia (Grade A recommendation).
2. Give sulfonylurea to patients who have contraindications to metformin or in whom metformin does not improve glycemic control (strength of recommendation: strong).
3. If the non-insulin monotherapy at maximal tolerated dose does not achieve or maintain the target HbA1c over 3-6 months, there is a need to add a second oral agent, a glucagon-like peptide 1 (GLP-1) receptor agonist, or insulin (Grade A recommendation).
4. A patient-centered approach should be adopted when selecting pharmacological treatment. Considerations should include efficacy, cost, potential side effects, and patient preferences.
5. Insulin can be added as augmentation (in addition to oral hypoglycemic medications) with a starting dose of 0.3 units per kilogram, or it can be given as a replacement with a starting dose of 0.6 to 1 unit per kilogram.
6. Human insulin is similar in general to analogue insulin in controlling diabetes mellitus.

Table 2.III.2 depicts the different types of medications used in the treatment of type 2 diabetes mellitus. Algorithm 2.III.1 depicts the approach to treatment of patients with type 2 diabetes mellitus.

TABLE 2.III.2. ORAL MEDICATIONS USED IN THE TREATMENT OF TYPE 2 DIABETES MELLITUS.

Medication	Action	Advantages	Side effects
Metformin	Decrease Hepatic Gluconeogenesis	Weight neutral	Gastrointestinal side effects (diarrhea), contraindicated in renal insufficiency or liver failure
Sulfunylurea	Increase Insulin secretion	Rapidly effective	Weight gain, hypoglycemia especially with glibenglamide or chloropropamide
Thiazolidinedione TZD	Increase Insulin sensitivity in adipose tissue and muscle	Improved lipid profile (pioglitazone), potential decrease in MI (pioglitazone)	Fluid retention, heart failure, weight gain, bone fractures, expensive, potential increase in MI (rosiglitazone)
Alpha-glucosidase inhibitor	Decrease intestinal absorption of carbohydrates	Weight neutral	Frequent GI side effects, three times per day dosing, expensive
Glinide	Increase Insulin secretion	Rapidly effective	Weight gain, 3 times per day, expensive, hypoglycemia
Pramlintide	Delays gastric emptying, decrease glucagon	Weight loss	Three injections daily, frequent GI symptoms, long-term safety not established, expensive
Dipeptidyl peptidase-4 (DPP-4 inhibitor)	Blocks degradation of GLP1	Weight neutral	long-term safety not established, expensive
Sodium – glucose cotransporter 2 (SGLT2 inhibitor)	Promotes glucosuria	Weight loss, reduction in systolic blood pressure	Vulvovaginal candidiasis, urinary tract infections, long term safety not established

TARGET

1. Hemoglobin A1C < 7.0%.
2. Blood pressure < 140/90 mmHg as recommended by the eight joint national committee although other scientific authorities still recommend a target of < 130/80 mmHg.
3. LDL cholesterol < 100 mg/dL (should be ≤ 70mg/dl if the 10 year Atherosclerotic Cardiovascular Diseases (ASCVD) risk is very high).

HEALTH MAINTENANCE

1. Vaccination
    a. Annual Influenza vaccine to all diabetic patients.
    b. Pneumococcal polysaccharide vaccine to all diabetic patients. A one-time revaccination is recommended for individuals 65 years of age if the vaccine was administered more than 5 years ago.
    c. Hepatitis B vaccination to unvaccinated adults with diabetes who are aged 19 through 59 years.
2. It is also important for diabetic patients to undergo the age and gender recommended health maintenance services especially for cancer since there is a possibility of increased cancer risk in patients with diabetes mellitus namely liver, pancreas, endometrium, colon/rectum, breast, and bladder.

MONITORING AND FOLLOW UP

Patients with Type 2 diabetes mellitus should be followed up on regular basis as depicted in table 2.III.3 below.

TABLE 2.III.3 FOLLOW UP OF PATIENTS WITH TYPE 2 DIABETES MELLITUS

	Component	Frequency	Description
Consultation	Blood Pressure	Each visit	< 130/80 (< 140/80)
	Eye exam	Once a year	Ophthalmologist start at onset
	Dental Exam	Once a year	Tooth and gum exam
	Brief foot exam	Each visit	
	Complete foot exam	Once a year	
	Influenza vaccine	Once a year	
	Smoking cessation counseling	Every visit	For smokers only
	BMI	Each visit	
Laboratory	Hemoglobin A1c	Every 3-6 months	< 7%
	Triglyceride	Once a year	< 150 mg/dl
	Total Cholesterol	Once a year	< 200 mg/dl
	LDL Cholesterol	Once a year	< 100 mg/dl (even < 70)
	HDL Cholesterol	Once a year	> 40 mg/dl in males and > 50 mg/dl in females
	Albumin Urine Creatinine	Once a year	< 30 microgram/mg
	Electrocardiogram	Once a year	normal
Health Education	Treatment objectives	Each visit	Discuss with the patient
	Blood glucose	Monitoring	Recommend according to need
	Healthy Diet	Each visit	Recommend always
	Physical Activity	30 minutes, 5-7 times per week	Recommend according to need

REFERRAL

1. Ophthalmologist for annual dilated eye exam starting from the time of diagnosis.
2. Dentist for comprehensive periodontal examination.
3. Mental health professional if needed.
4. Vascular surgeon in case of foot ulcer.
5. Dietician.

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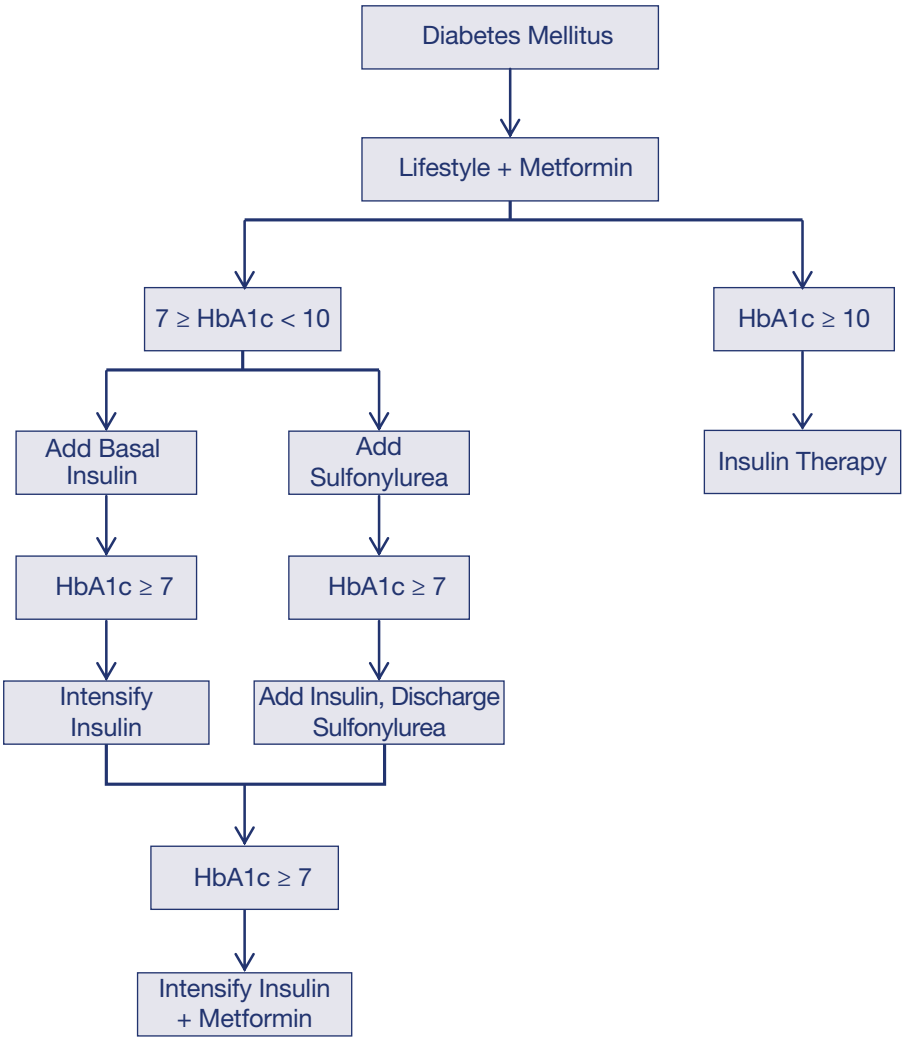
ALGORITHM 2.III.1. MANAGEMENT OF TYPE 2 DIABETES MELLITUS



IV. PREVENTION OF CARDIOVASCULAR DISEASES

Mona Osman, MD, MPH, MBA

EPIDEMIOLOGY

1. Around 40% of all deaths in Lebanon are due to cardiovascular diseases.
2. In Lebanon, around 38.5% of adults are current smokers, 20.5% drink alcohol, 65.4% are overweight, and 45.8% perform minimal physical activity. Around 34.4% of them have 1 to 2 cardiovascular risk factors; and 18.5% have 3 to 5 cardiovascular risk factors.

DEFINITION

Cardiovascular diseases encompass coronary heart disease, cerebrovascular diseases and peripheral vascular diseases.

RISK FACTORS

Major risk factors for cardiovascular diseases fall in two groups:

1. Non-modifiable risk factors: increased age, male sex, family history of cardiovascular diseases and ethnic background.
2. Modifiable risk factors: dyslipidemia, hypertension, smoking, diabetes mellitus, obesity, and sedentary lifestyle.

CARDIOVASCULAR DISEASE RISK ASSESSMENT

1. The World Health Organization (WHO) and International Society of Hypertension (ISH) developed the WHO/ISH risk prediction charts to assess the estimated cardiovascular risks in individuals who did not yet develop clinical cardiovascular diseases.
2. WHO/ISH Risk Prediction Chart and mode of use are depicted in figure 2.IV.1.

MANAGEMENT (TABLE 2.IV.1)

TABLE 2.IV.1 COMPREHENSIVE MANAGEMENT OF PATIENTS WITH DIFFERENT CARDIOVASCULAR RISKS

	Risk < 10%	10 ≤ Risk < 20	20 ≤ Risk < 30	Risk ≥ 30
Prevention of Cardiovascular Diseases	Individuals in this category are at low risk. Conservative management focusing on lifestyle interventions.	Individuals in this category are at moderate risk of fatal or non-fatal vascular events. Monitor risk profile every 6–12 months.	Individuals in this category are at high risk of fatal or non-fatal vascular events. Monitor risk profile every 3–6 months.	Individuals in this category are at very high risk of fatal or non-fatal vascular events. Monitor risk profile every 3–6 months.
Smoking Cessation	Smoking cessation counseling.	Smoking cessation counseling.	Nicotine replacement therapy and/or Medications should be offered to motivated smokers who fail to quit with counseling.	Nicotine replacement therapy and medications should be offered to motivated smokers who fail to quit with counseling.

Hypertension	Individuals with persistent blood pressure ≥ 140/90 mmHg and < 160/ 100 mmHg should continue lifestyle Strategies to lower blood pressure and have their blood pressure and total cardiovascular risk reassessed every 2–5 years depending on clinical circumstances and resource availability.	Individuals with persistent blood pressure ≥ 140/90 mmHg and < 160 / 100 mmHg should continue lifestyle strategies to lower blood pressure and have their blood pressure and total cardiovascular risk reassessed annually depending on clinical circumstances and resource availability.	Individuals with persistent blood pressure ≥ 140/90 mmHg and < 160 /100 mmHg who are unable to lower blood pressure through lifestyle strategies with professional assistance within 4–6 months should be considered for treatment with medications.	Individuals with persistent blood pressure ≥ 130/80 mmHg and < 160/100 mmHg should be considered for treatment with medications.
Lipid lowering medications	Should be advised to follow a lipid-lowering diet.	Should be advised to follow a lipid-lowering diet.	Adults > 40 years with high serum Cholesterol (> 190 mg/dl) and/or LDL cholesterol > 115 mg/dl, despite a lipid-lowering diet, should be given statin.	Individuals in this risk category should be advised to follow a lipid-lowering diet and given a statin.
Antiplatelet (primary prevention)	The harm caused by aspirin treatment outweighs the benefits. Aspirin should not be given to individuals in this low-risk category.	The benefits of aspirin treatment are balanced by the harm caused. Aspirin should not be given to individuals in this risk category.	The balance of benefits and harm from aspirin treatment is not clear. Aspirin should probably not be given to individuals in this risk category.	Individuals in this risk category should be given low-dose aspirin.

PREVENTION OF CARDIOVASCULAR DISEASES

DIETARY CHANGES

1. All individuals should be strongly encouraged to reduce total fat and saturated fat intake.
2. Total fat intake should be reduced to about 30% of calories, saturated fat to less than 10% of calories, trans-fatty acids intake should be reduced as much as possible or eliminated and most dietary fat should be polyunsaturated (up to 10% of calories) or monounsaturated (10–15% of calories).
3. All individuals should be strongly encouraged to reduce daily salt intake by at least one third and, if possible, to < 5 g per day.
4. All individuals should be encouraged to eat at least 400 g a day of a range of fruits and vegetables as well as whole grains and pulses.

PHYSICAL ACTIVITY

1. Advise individuals to perform at least 30 minutes of moderate physical aerobic activity per day for at least 5 days per week.
2. Individuals can do 25 minutes of vigorous intensity aerobic activity per day for at least three days per week or a mix of moderate and vigorous activity.

WEIGHT CONTROL

1. All individuals who are overweight or obese should be encouraged to lose weight through a combination of a reduced-energy diet (dietary advice) and increased physical activity.

ALCOHOL

1. Men should not regularly drink more than 2 cups of alcohol per day and women should not drink more than 1 cup of alcohol per day.

SMOKING CESSATION

1. All smokers should be counseled to stop smoking.
2. Nicotine replacement therapy can be offered as needed.

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3. World Health Organization. Package of essential Non Communicable Diseases Interventions for primary health care in low resource settings, 2010.
4. World Health Organization. Global recommendations on physical activity for health, 2010.
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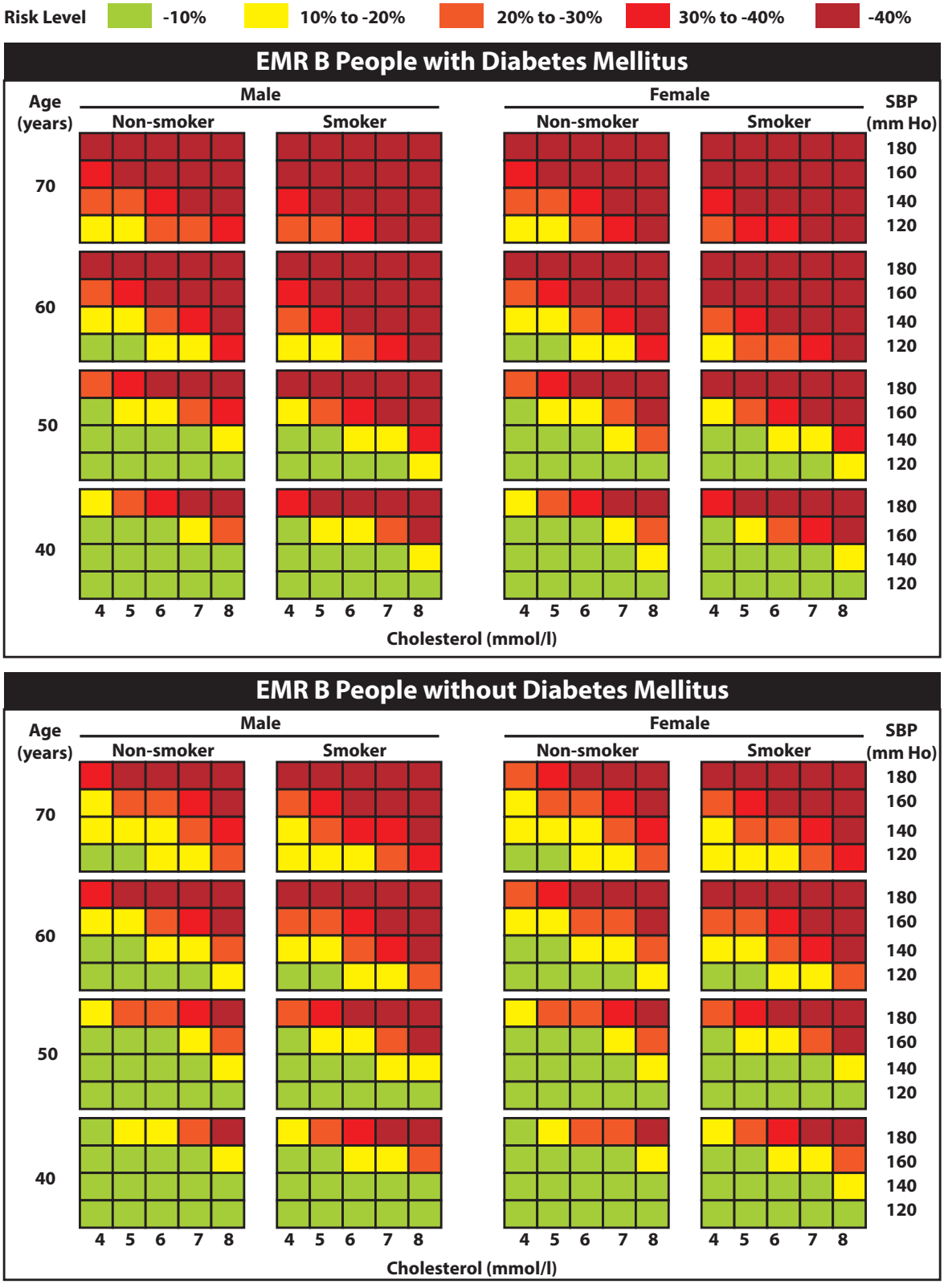
FIGURE 2.IV.1 WHO/ISH RISK PREDICTION CHARTS

WHO/ISH Risk prediction charts

for 14 WHO epidemiological sub-regions

WHO/ISH risk prediction chart for EMR B. 10-year risk of a fatal or non-fatal cardiovascular event by gender, age, systolic blood pressure, total blood cholesterol, smoking status and presence or absence of diabetes mellitus.



This chart can only be used for countries of the WHO Region of Eastern Mediterranean, sub-region B, in settings where blood cholesterol can be measured.

INSTRUCTIONS ON HOW TO USE WHO/ISH RISK PREDICTION CHARTS

Make sure that you select the appropriate charts using the following information:

- Presence or absence of diabetes mellitus. This is defined as someone taking insulin or oral hypoglycemic drugs, or with a fasting plasma glucose concentration above 7.0 mmol/l (126 mg/dl) or postprandial plasma glucose. Concentration above 11.0 mmol/l (200 mg/l) on two separate occasions.
- Gender.
- Smoker or non-smoker. All current smokers and those who quit smoking less than 1 year before the assessment are considered smokers for this assessment.
- Age (if age is 50-59 years select 50, if 60-69 years select 60 etc).
- Systolic blood pressure (the mean of two readings on each of two occasions).
- Total blood cholesterol (if in mg/dl divide by 38 to convert to mmol/l).

Please note that CVD risk may be higher than indicated by the charts in the presence of the following:

- Already on antihypertensive therapy.
- Premature menopause.
- Approaching the next age category or systolic blood pressure category.
- Obesity (including central obesity).
- Sedentary lifestyle.
- Family history of premature coronary heart disease (CHD) or stroke in first degree relative (male < 55 years, female < 65 years).
- Raised triglyceride level (>2.0 mmol/l or 180 mg/dl).
- Low HDL (high density lipoprotein) cholesterol level (< 1 mmol/l or 40 mg/dl in males, < 1.3 mmol/l or 50 mg/dl in females).
- Raised levels of C-reactive protein, fibrinogen, homocysteine, apolipoprotein B or Lp(a), or fasting glycaemia, or impaired glucose tolerance.
- Microalbuminuria (increases the 5-year risk of diabetics by about 5%).
- Raised pulse rate.
- Socioeconomic deprivation.

Risk levels

The color of the cell indicates the 10-year risk of combined myocardial infarction and stroke risk (fatal and non-fatal) as shown below:

Green <10% Yellow 10% to <20% Orange 20% to <30%
Red 30% to <40% Deep Red > 40%

PS. Please note that persons with already established cardiovascular diseases are at high cardiovascular risk, and they should belong to the high risk category.

V. OBESITY

Antoine Aoun, MD

EPIDEMIOLOGY

1. It is a substantial public health crisis with the prevalence increasing rapidly worldwide.
2. The prevalence of obesity in Lebanon is around 26%, according to study conducted on a representative sample of 3500 participants in 2012.

DEFINITION

1. Defined as abnormal or excessive fat accumulation that may impair health.

CAUSES

1. Hypothyroidism.
2. Cushing's Syndrome.
3. Insulinoma.
4. Hypothalamic obesity.
5. Polycystic ovary syndrome.
6. Family history.
7. G syndromes such as Parder Willi, Alstroms, Bardet Biedl, Cohens, Borjeson Forsmsman Lehmann and Frohlich's syndrome.
8. Growth hormone deficiency.
9. Medication related: including phenothiazines, sodium valproate, carbamazepine, tricyclic antidepressants, lithium, glucocorticoids, megesterol acetate, the thiazolidinediones, the sulphonylureas, insulin, adrenergic antagonists, serotonin antagonists, and oral contraceptives.
10. Eating disorders: especially binge eating disorder, bulimia nervosa and night eating disorder.
11. Hypogonadism.
12. Pseudohypoparathyroidism.
13. Environmental: sedentary behaviors, culture and dietary habits etc. e.g., television-video-computer games, consumption of sweetened soft drinks.

DIAGNOSIS

1. Body Mass Index (BMI) is calculated as Weight in kg/Height in m^2. Commonly used to classify obesity as:
    a. Grade 1 overweight (commonly called overweight) - BMI of 25-29.9 kg/m^2
    b. Grade 2 overweight (commonly called obesity) - BMI of 30-39.9 kg/m^2
    c. Grade 3 overweight (commonly called severe or morbid obesity) - BMI $\geq$ 40 kg/m^2
2. Waist circumference: considered high, in the Middle Eastern region, if above 94 cm in men and 80 cm in women.
3. Waist to hip ratio above 0.90 for males and 0.85 for females reflects central obesity characterized by an "android" or "apple" shape. It is more common in men and considered a strong risk factor for several diseases, whereas the "gynoid" or "pear" shaped obesity is more frequent in women.

CO-MORBIDITIES

1. Respiratory: obstructive sleep apnea, greater predisposition to respiratory infections, increased incidence of bronchial asthma, and Pickwickian syndrome (obesity hypoventilation syndrome).
2. Malignancy : endometrial, prostate, colon, breast, gall bladder, and possibly lung cancer.
3. Psychological: social stigmatization and depression.
4. Cardiovascular: coronary artery disease, essential hypertension, left ventricular hypertrophy, cor pulmonale, obesity-associated cardiomyopathy, accelerated atherosclerosis, and pulmonary hypertension of obesity.
5. Central nervous system: stroke, idiopathic intracranial hypertension, and meralgia paresthetica.
6. Obstetric and perinatal: pregnancy-related hypertension, fetal macrosomia, and pelvic dystocia.
7. Surgical: Increased surgical risk and postoperative complications, including wound infection, postoperative pneumonia, deep venous thrombosis, and pulmonary embolism.
8. Urinary stress incontinence.
9. Gastrointestinal: gall bladder disease (cholecystitis, cholelithiasis), nonalcoholic steatohepatitis (NASH), fatty liver infiltration, and reflux esophagitis.
10. Orthopedic : osteoarthritis, coxa vera, slipped capital femoral epiphyses, Blount disease and Legg-Calvé-Perthes disease, and chronic lumbago.
11. Metabolic: type 2 diabetes mellitus, prediabetes, metabolic syndrome, and dyslipidemia.
12. Reproductive:
    a. in women: anovulation, early puberty, infertility, hyperandrogenism, and polycystic ovaries
    b. in men: hypogonadotropic hypogonadism
13. Cutaneous: Intertrigo (bacterial and/or fungal), acanthosis nigricans, hirsutism, and increased risk for cellulitis and carbuncles.
14. Extremity: venous varicosities, lower extremity venous and/or lymphatic edema.
15. Miscellaneous: reduced mobility and difficulty maintaining personal hygiene.

PHYSICAL EXAMINATION

1. Anthropometric measurements: height, weight, waist and hip circumference.
2. Skin: intertriginous rashes reflects skin friction; hirsutism in women, acanthosis nigricans, and skin tags are common with insulin resistance state.
3. Neck : goiter may denote thyroid abnormalities.
4. Abdomen: tender large liver may suggest hepatic fatty infiltration or NASH (non alcoholic steatohepatitis) and pink broad striae that suggest cortisol excess.
5. Extremities: joint deformities (e.g. coxa vara), crepitations suggestive of osteoarthritis, pressure ulcers. Localized and lipodystrophic fat distribution should also be identified, because of their common association with insulin resistance.

LABORATORY TESTING

1. Fasting lipid panel.
2. Liver function studies.
3. Thyroid function tests.
4. Fasting glucose and hemoglobin A1c (HbA1c).
5. Insulin level is *not recommended.*

MANAGEMENT (please check algorithm 2.V.1)

1. Highlight the relationship between eating behavior and stressors.
2. Consistent low-calorie and small portion eating patterns.
3. Avoid skipping meals especially breakfast.
4. Weigh once/week.
5. 1 hour physical activity/day and less than 10 hours television (TV) per week.
6. Family support and involvement.

Clinical Practice Recommendations for management of obesity are included in table 2.V.1.

TABLE 2.V.1: CLINICAL PRACTICE RECOMMENDATIONS FOR OBESITY

Clinical Practice Guideline Recommendations	GRADE
Screening and Assessment	
1. Screen adult patients to establish a diagnosis of overweight or obesity by calculating body mass index (BMI), and document the presence of overweight or obesity in the medical record.	**B**
Normal Weight Patients	
2. Consider providing normal weight patients with information and behavioral counseling regarding healthy diet and physical activity behaviors, in order to maintain a healthy weight.	**C**
Overweight Patients Without Obesity-Associated Condition(s)	
3. Consider providing overweight patients without obesity-associated conditions with information and behavioral counseling regarding healthy diet and physical activity behaviors, in order to pursue a healthy weight.	**C**
Overweight Patients With Obesity-Associated Condition(s)	
4. Offer comprehensive lifestyle intervention to achieve weight loss and to improve blood pressure and/or glucose control in overweight patients.	**A**
5. Offer comprehensive lifestyle intervention to overweight patients with dyslipidemia for weight loss and to improve lipid levels.	**B**
Obese Patients	
6. Offer obese patients comprehensive lifestyle intervention for weight loss to improve lipid levels, blood pressure, and/or glucose control.	**A**
7. Offer obese patients comprehensive lifestyle intervention for weight loss to reduce harms of obstructive sleep apnea.	**B**

8. Consider offering obese patients comprehensive lifestyle intervention for weight loss to reduce harms of degenerative joint disease.	**C**
General Treatment Principles of Weight Loss	
9. Offer patients at least 12 contacts within 12 months of a comprehensive lifestyle intervention that combines dietary, physical activity and behavioral strategies.	**B**
10. Plan a net deficit of 500 to 1,000 kcal/day addressing both diet and physical activity to achieve a weight loss of 0.3-1 kg per week, resulting in a 5-10% reduction in body weight over 6 months.	**A**
11. Offer patients who have met their weight loss goals a comprehensive maintenance program consisting of behavioral components and ongoing support.	**B**
Behavioral and Lifestyle Approaches	
12. Offer comprehensive lifestyle interventions for weight loss, in either individual or group setting.	**B**
13. Offer telephone-based comprehensive lifestyle intervention for weight loss, either as an alternative or an adjunct to face-to-face intervention.	**B**
14. There is insufficient evidence for or against offering internet-based comprehensive lifestyle intervention for weight loss, as an alternate or adjunct to face-to-face intervention.	**I**
Dietary Approaches	
15. Offer any of several diets that produce a caloric deficit and have evidence for weight loss efficacy and safety (e.g., low-carbohydrate, Dietary Approaches to Stop Hypertension (DASH), low-fat).	**A**
16. Offer very-low-calorie diets for weight loss, but only for short durations (12-16 weeks) and under close medical supervision.	**B**
17. Offer meal replacements to achieve low-calorie or very low-calorie diets.	**A**
Physical Activity Approaches	
18. Offer physical activity options that include short intermittent bursts (at least 10 minutes) as well as longer continuous exercise.	**A**
19. Offer, as part of a comprehensive lifestyle intervention, moderate-intensity physical activity performed for at least 150 minutes/week to result in weight loss.	**A**
Pharmacotherapy	
20. Offer pharmacotherapy with the combination phentermine/topiramate extended-release to patients with a BMI ≥ 30 kg/m^2 and to those with a BMI ≥ 27 kg/m^2 who also have obesity-associated conditions, as an adjunct to comprehensive lifestyle intervention, when lifestyle interventions alone do not produce the desired weight loss.	**A**
21. Offer pharmacotherapy with orlistat or lorcaserin to patients with a BMI ≥ 30 kg/m^2 and to those with a BMI ≥ 27 kg/m^2 who also have obesity-associated conditions, as an adjunct to comprehensive lifestyle intervention, when lifestyle interventions alone do not produce the desired weight loss.	**B**
22. Offer patients who achieve their weight loss goal a program that includes continued use of medication for weight maintenance.	**B**
Bariatric Surgery	
23. Offer bariatric surgery, as an adjunct to comprehensive lifestyle intervention, for weight loss in adult patients with a BMI > 40 kg/m^2 or those with BMI 35.0-39.9 kg/m^2 with one or more obesity-associated conditions.	**A**

MEDICATIONS

Currently, the major drugs approved by the FDA and used to manage obesity are included in table 2.V.2:

TABLE 2.V.2: RECOMMENDED DOSES FOR OBESITY PHARMACOTHERAPY

Recommended Dosage for Selected Obesity Drug Therapy		
Drug	**Recommended Dosage and Administration**	**Contraindications and Cautions**
Orlistat 120 mg capsule **[Gastrointestinal lipaseinhibior]**	120 mg, three times a day - Taken with or within 1 hour of each meal containing fat - Take daily multivitamin (containing fat soluble vitamins A, D, E, and K at least two hours prior to orlistat)	- Contraindicated during pregnancy (FDA category X) - Not recommended for mothers who are nursing - Increased gastrointestinal adverse effects when taken with diets high in fat
Lorcaserin 10 mg tablet **[Serotonin receptor agonist]**	10 mg two times a day - Maximum 20 mg/day - May be taken without regard to food - Consider stopping after 12 weeks if lorcaserin has not been effective in reducing weight more than 5% of initial body weight	- Contraindicated during pregnancy (FDA category X) - Not recommended for mothers who are breastfeeding - Use with caution in patients with valvular heart disease, bradycardia, congestive heart failure, or those using serotonergic or antidopaminergic drugs - Potential for cognitive impairment and psychiatric reactions including sedation, euphoria and suicidal thoughts - Potential risk of hypoglycemia inpatients being treated for diabetes, anemia, neutropenia, hyperprolactinemia
Phentermine / topiramate 3.75 mg/23 mg, 7.5 mg/46 mg, 11.25 mg/69 mg, 15 mg/92 mg Extended-release capsules (ER caps) **[Appetite suppressant / Anticonvulsant]**	**Dose Titration** - One 3.75 mg/23 mg ER cap each morning for 14 days; then increase to 7.5 mg/46 mg each morning for an additional 12 weeks. - If a weight loss of 3% of baseline body weight is not achieved discontinue or increase the dose to 11.25 mg/69 mg each morning for 14 days; then increased to 15 mg/92 mg (maximum dose) daily. - If after 12 weeks on 15 mg/92 mg the patient has not lost at least 5% of baseline body weight, discontinue treatment using every other day weaning over one week thereby decreasing risk of seizure	- Contraindicated during pregnancy (FDA category X) and use not recommended in breast feedin mothers - Avoid use in glaucoma, hyperthyroidism, or within 14 days following use of a MAOI - Not recommended in patients with unstable cardiac or cerebrovascular disease - Potential for metabolic acidosis, elevated creatinine, hypotension, CNS depression, hypokalemia, kidney stones, withdrawal seizures, and hypoglycemia in patients being treated for diabetes

SURGERY

A summary of surgical procedures for obesity treatment is included in table 2.V.3.

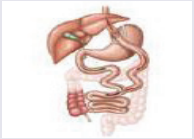
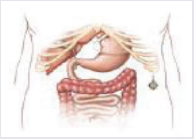
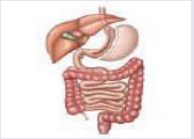
SELECTION CRITERIA:

1. Able to adhere to postoperative care
2. BMI ≥ 40 kg/m^2
3. BMI ≥ 35 kg/m^2 with obesity-related comorbidity
4. Previous failed nonsurgical attempts at weight reduction, including nonprofessional programs

EXCLUSION CRITERIA:

1. Cardiopulmonary disease that would make the risk prohibitive
2. Current drug or alcohol abuse
3. Lack of comprehension of risks, benefits, expected outcomes, alternatives, and required lifestyle changes
4. Reversible endocrine or other disorders that can cause obesity
5. Uncontrolled severe psychiatric illness

TABLE 2.V.3: SUMMARY OF SURGICAL PROCEDURES FOR OBESITY TREATMENT

		Gastric Bypass 		Gastric Banding 		Sleeve Gastrectomy 	
What's involved?		Staples partition the stomach below the esophagus to make a small pouch. This pouch connects to the lower small intestine, bypassing the upper segment.		An adjustable band constricts the stomach just below the esophagus, creating a small pouch with a narrow outlet to the larger part of the stomach.		A thin vertical sleeve of stomach is created using a stapling device. The sleeve is about the size of a banana. The rest of the stomach is removed.	
Type		Combination		Restrictive		Restrictive	
Excess weight loss	in 1 year	38%		21%		26%	
	in 2 years	62%		47%		68%	
Long term weight loss		10 years, 25%		10 years, 13%		10 years, 17%	
Surgery risk of death		Laparo-scopic	Open	Laparo-scopic	Open	Laparo-scopic	Open
		< 1%	< 1%	< 0.1%	< 1%	< 1%	< 1%
Percentage of people having gastrointestinal side effects after surgery		17%		7%		18%	
Nutrient or vitamin deficiency		17%		NA		3%	
Average hospital stay after surgery	Laparo-scopic	2 days		1 day		1 day	
	Open	3 days		4 days		4 days	

REFERRAL

1. Refer all to registered dietician for implementation of prescribed diet
2. Refer to "obesity treatment center" or endocrinologist if uncertain about diagnosis or patient desires multidisciplinary treatment or if BMI > 40 or BMI > 35 with significant co-morbidity

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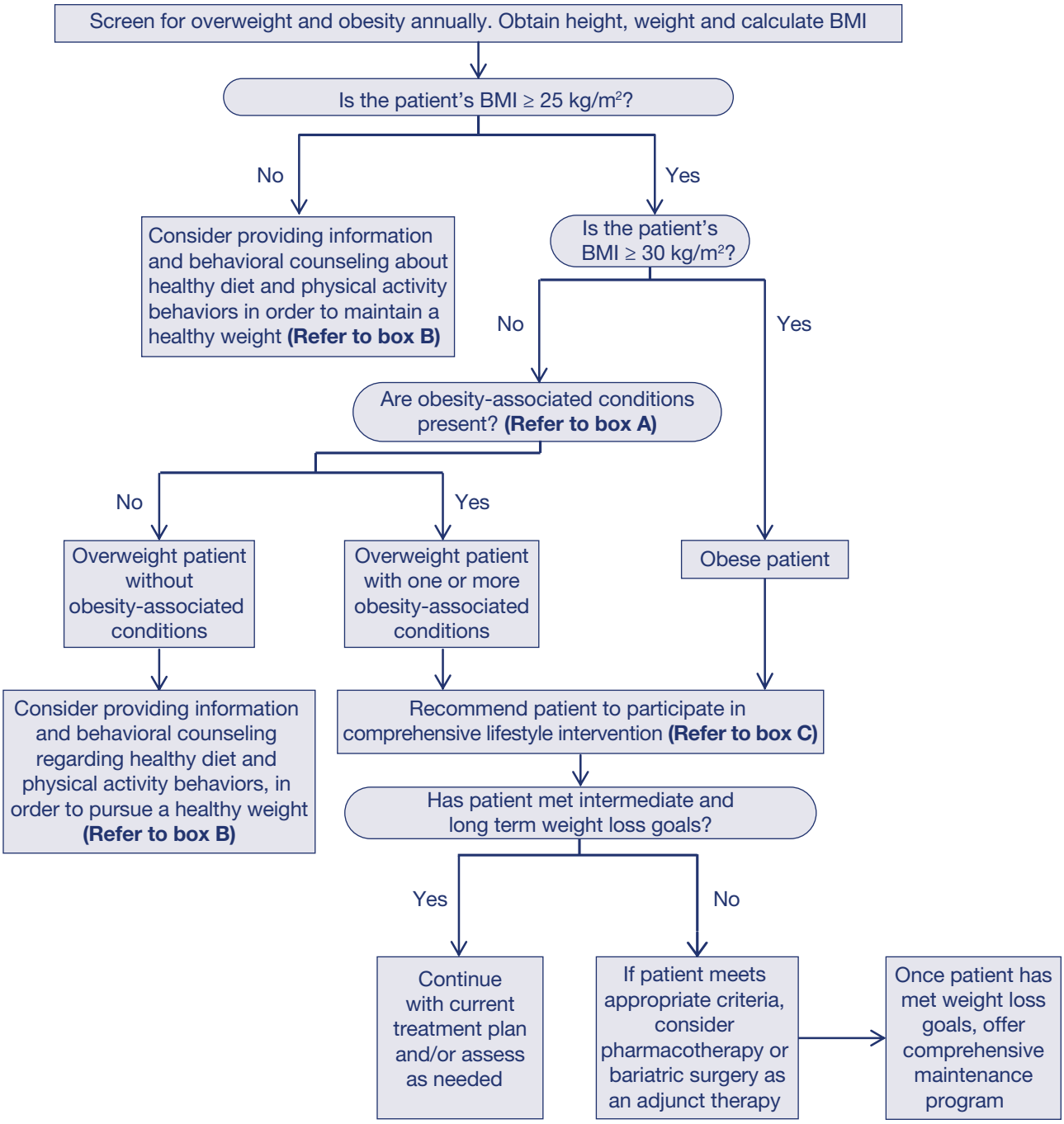
ALGORITHM 2.V.1: MANAGEMENT OF OBESITY



Box A: Common Obesity-Associated

1. Hypertension
2. Type 2 diabetes and prediabetes
3. Dyslipidemia
4. Metabolic syndrome
5. Obstructive sleep apnea
6. Degenerative joint disease
7. Non alcoholic fatty liver disease

Box B: Behavioral Counseling

Healthcare staff-delivered activities to assist patients adopt change or maintain healthy dietary and physical activity behaviors.

Box C: Comprehensive Lifestyle Intervention

An intervention that combines dietary, physical activity and behavioral components; and it includes at least 12 intervention sessions over a 12 month period.

CHAPTER 3.

HEART FAILURE

Jumana Antoun, MD, MS, CPHIMS

EPIDEMIOLOGY

1. In developed countries, 1-2% of adults have heart failure (HF).
2. Prevalence of heart failure increases with age, more above70 years.
3. Absolute mortality rate for heart failure patients is approximately 50% within 5 years of diagnosis.
4. Heart failure is now classified as
    a. Heart failure with reduced ejection fraction of < 40% (HFrEF, previously referred to as systolic heart failure), caused mainly by coronary artery disease in two third of the cases. Hypertension and diabetes are contributing factors
    b. Heart failure with preserved ejection fraction (HFpEF, previously referred to as diastolic heart failure); more likely to occur in patients with hypertension, atrial fibrillation, or obese female.

DIAGNOSIS

1. Diagnosis of heart failure can be difficult as it is mainly clinical, the signs and symptoms are nonspecific and there is no standard diagnostic test. Looking for an underlying cardiac cause is very important in the workup of HF. Algorithm 3.1 describes the different steps for heart failure evaluation.

HISTORY

1. The patient could present with (1) fatigue and dyspnea affecting exercise tolerance, OR (2) water retention reflected in pulmonary congestion and peripheral edema. The term “congestive heart failure’ is no more used because patients can present without volume overload symptoms.
2. Typical symptoms include breathlessness, orthopnea, paroxysmal nocturnal dyspnea, reduced exercise tolerance, fatigue and ankle swelling.
3. Less typical symptoms include: nocturnal cough, wheezing, weight gain of > 2 kg in a week, weight loss in advanced HF, loss of appetite, depression, abdominal distention, ascites and syncope.
4. A full medical history is important to determine the cardiac and non-cardiac causes of HF. It includes:
    a. Past history of coronary heart disease, hypertension, or rheumatic fever; alcohol consumption, family history of HF or cardiomyopathy, thyroid diseases.

PHYSICAL EXAMINATION

1. Patients with HF may show no detectable abnormal physical signs; they typically manifest late.
2. Specific signs include elevated jugular venous pressure, hepatojugular reflux, third heart sound, laterally displaced apex and cardiac murmur.
3. Measurement of jugular venous pressure:
    a. Head of bed elevated at 45 degree angle; head turned to right
    b. Identify top of venous pulsation in neck (JVP)
    c. Identify Angle of Louis located at notch of sternum
    d. Measure distance between top of pulsation and sternum in cm (should be less than 3 cm)
4. Less specific signs include peripheral edema, crepitation, tachycardia, irregular pulse, hepatomegaly and cachexia.
5. Volume status and vital signs should be assessed at each patient encounter. This includes serial assessment of weight, as well as estimates of jugular venous pressure and the presence of peripheral edema or orthopnea. (Grade B Recommendation)

EVALUATION

1. Diagnosis of HF is based on clinical grounds and the below workup tests are grade C recommendation. Table 3.1 includes the recommended tests for HF diagnosis.

TABLE 3.1: RECOMMENDED TESTS FOR HF DIAGNOSIS

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, Calcium	Detect possible causes of HF; hypocalcemia, hypo/hyperthyroid
CBC	Anemia may cause high output HF
Renal function (cr and urinalysis)	Can cause HF or be complication of HF
Liver functions	HF may cause hepatic congestion
Electrolytes	Volume overload and diuretic use cause electrolyte disturbances.
Lipids	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 pro B-type natriuretic peptide (BNP) are correlated with the severity of HF, the risk of hospitalization and mortality.
2. Changes in pro BNP levels in response to medical therapy also predict survival.
3. A measurement of pro BNP is **not recommended** as routine in the diagnosis of HF or in directing therapy.

SYMPTOM CLASSIFICATION

The traditional system for symptom classification in CHF is the New York Heart Association (NYHA) grading system; although a new classification (ACC/AHA) is being used recently. Table 3.2 depicts the two systems used for staging and classification of heart failure.

TABLE 3.2: STAGING AND CLASSIFICATION SYSTEMS FOR HEART FAILURE

ACC/AHA staging systems	NYHA functional classification system
A At high risk for HF without structural heart dis ease 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

1. Therapeutic interventions in each AHA stage includes modifying risk factors (stage A), treating structural heart disease (stage B), and reducing morbidity and mortality (stages C and D).
2. The goal of treatment is to relieve symptoms and signs, reduce hospitalization and improve survival.
3. The below recommendations are for treatment of HFrEF. Little is known about the best evidence treatment of HFpEF.

NON PHARMACOLOGICAL TREATMENT (TABLE 3.3)

TABLE 3.3: 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 2 g/day	**C**
Fluids intake may be limited to 1.5-2 l/day in patients with severe symptoms	**C**
Alcohol intake should be avoided; but standard drink a day is acceptable	**D**
Smoking should be discouraged	**D**
Patients should **weigh themselves** and consult their doctor if weight increases by 2 kg in a 3-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 patient is able to perform 6 Metabolic Equivalent Tasks (METS)	**C**
Reduce 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 HF	**D**

PHARMACOLOGIC TREATMENT (TABLE 3.4)

TABLE 3.4: PHARMACOLOGIC TREATMENT OF HF

First Line Agents	Grade of recommendation
ACEIs are recommended for all patients with systolic heart failure (LVEF < 40%) irrespective of severity of symptoms unless not tolerated or contraindicated.	**A**
Beta-blockers are recommended for all patients with systolic heart failure who are mildly to moderately symptomatic unless not tolerated or indicated. 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.	**C**
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. Creatinine should be 2.5 mg/dl or less in men or 2.0 mg/dl or less in women (or estimated glomerular filtration rate > 30 ml/min/1.73 m^2), and potassium should be less than 5.0 mEq/l.	**A**
Angiotensin II receptor antagonists as alternative to ACEI if not tolerated.	**A**
Second line agents	
Digoxin for symptoms relief and reduce hospitalization with advanced HF is a valuable therapy in HF 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 nor decrease mortality. Verapamil and diltiazem are contraindicated in HF patients.	**B**

Medications commonly used for treatment of heart failure

A list of commonly used medications in treatment of heart failure is included in table 3.5.

TABLE 3.5: COMMONLY USED MEDICATIONS IN HEART FAILURE

Category	Drug	Initial Dose	Maximum Dose
Loop diuretics	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
ACEI	Lisinopril	2.5 to 5.0 mg once daily	20 to 40 mg once daily
Beta blockers	Bisoprolol 5 mg	1.25 mg once daily	5 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
	Isosorbide dinitrite	10 mg TID	80 mg TID

Drugs to avoid in HF

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

Management of HFpEF

There is little evidence to guide the treatment of HFpEF or diastolic failure previously. Management relies on identifying and treating the cause 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.

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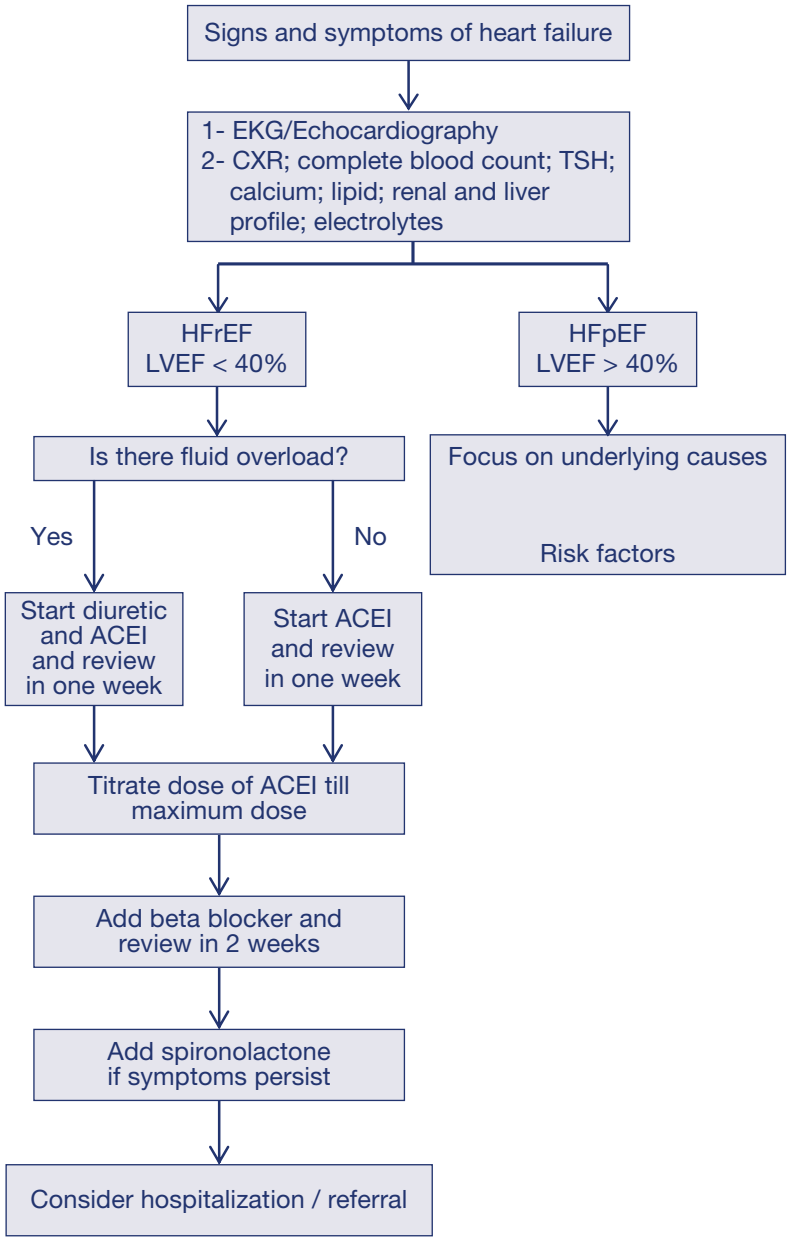
ALGORITHM 3.1: APPROACH TO HEART FAILURE



CHAPTER 4.

CHRONIC KIDNEY DISEASE

Remi Daou, MD

EPIDEMIOLOGY

Chronic kidney disease (CKD) is common, frequently unrecognized, and associated with significant morbidity.

DEFINITION

Abnormalities of **kidney function** or **kidney structure** present for **more than 3 months**.

1. Glomerular filtration rate (GFR) of less than 60 ml/min/1.73 m^2 on at least 2 occasions separated by a period of at least 90 days
   OR
2. Presence of markers of kidney damage:
   a. Albuminuria
   b. Urine sediment abnormalities, i.e. RBC in proliferative glomerulonephritis, WBC in pyelonephritis or interstitial nephritis
   c. Electrolyte and other abnormalities due to tubular disorders, i.e. renal potassium wasting, renal magnesium wasting, nephrogenic diabetes insipidus, renal tubular acidosis
   d. Abnormalities detected or inferred by histology i.e. glomerular diseases (autoimmune diseases, diabetes, and systemic infections), vascular diseases, tubulointerstitial diseases and congenital diseases.
   e. Structural abnormalities detected by imaging polycystic kidney disease, dysplastic kidneys, hydronephrosis due to obstruction, renal artery stenosis
   f. History of kidney transplantation

RISK FACTORS

1. Diabetes (the leading cause of kidney failure)
2. Hypertension
3. Acute kidney injury
4. Cardiovascular disease
5. Structural renal tract disease, recurrent renal calculi or prostatic hypertrophy
6. Multisystem diseases like systemic lupus erythematous
7. Family history of end-stage renal disease (ESRD) or hereditary kidney disease
8. Incidental hematuria
9. Medications such as Lithium, non steroidal anti-inflammatory drugs, and aminoglycosides.

EVALUATION

IDENTIFICATION OF PATIENTS WHO HAVE OR ARE AT RISK OF DEVELOPING CKD

1. Offer screening, as below, for chronic kidney disease to patients with any of the above risk factors. Advanced age or obesity alone are not indications to screen for CKD
   a. Serum creatinine to estimate the GFR and assess kidney function
      - Advise patients not to eat any meat in the 12 hours before testing for serum creatinine.
      - Interpret GFR according to patient muscle mass, if :
        - Increased as in bodybuilders: GFR underestimated.
        - Reduced as with amputation or muscle wasting disorders: GFR overestimated
        - In people with GFR < 60 ml/min/1.73m^2 or albuminuria, review past history and previous measurements to check for chronicity (the 3 month duration criteria).
   b. Urine albumin to assess structural abnormalities:
      - Better on an early morning urine sample
      - Tests available:
        - Urine albumin-to-creatinine ratio (UACR) is most preferred

- Between 3 mg/mmol (30 mg/g) and 70 mg/mmol (700 mg/g) --> confirm with another sample. Confirmed UACR of 3 mg/mmol (30 mg/g) or more should be considered as clinically relevant proteinuria.
- 70 mg/mmol (700 mg/g) or more --> repeat measurement is not required. it is a clinically relevant proteinuria

o Urine protein-to-creatinine ratio (UP/C)
o Reagent strip urinalysis for total protein with automated or manual reading

IDENTIFICATION OF THE CAUSE OF CKD

1. It is important to identify the cause of CKD for management and prognosis.
2. Complete work-up is not required for all patients, and should be directed by the findings from history, physical examination and preliminary lab tests.
3. For most patients, the following tests are indicated:
   - Reagent strip urinalysis to detect hematuria or pyuria. If positive, check urine microscopy for RBC casts or WBC casts
   - Ultrasound to assess kidney structure (i.e., kidney shape, size, symmetry and evidence of obstruction) as clinically indicated
   - Serum and urine electrolytes to assess renal tubular disorders, as clinically indicated i.e. in case of polyuria and polydypsia with a suspicion of nephrogenic diabetes insipidus serum sodium is measured along with the urine osmolality

CLASSIFICATION OF CKD

CKD is classified according to the Cause of CKD, the GFR and the UACR categories (table 4.1). This is known as CGA classification.

TABLE 4.1: CLASSIFICATION OF CKD

GFR category	GFR (ml/min/1.73 m2)	Terms
G1	≥ 90	Normal or high
G2	60-89	Mildly decreased
G3a	45-59	Mildly to moderately decreased
G3b	30-44	Moderately to severely decreased
G4	15-29	Severely decreased
G5	< 15	Kidney failure

Category	UACR (mg/mmol)	UACR (mg/g)	Terms
A1	< 3	< 30	Normal to mildly increased
A2	3-30	30-300	Moderately increased
A3	> 30	> 300	Severely increased

* Assess GFR and albuminuria at least annually to assess progression, i.e. a sustained decrease in GFR of ≥ 25% and a change in GFR category within 12 months.

MANAGEMENT

PREVENTION OF CKD PROGRESSION

BLOOD PRESSURE CONTROL

1. CKD without albuminuria: BP-lowering agents to maintain a BP ≤ 140/90 mmHg
2. CKD with albuminuria: BP-lowering agents to maintain a BP ≤ 130/80 mmHg
   a. If albuminuria > 30 mg/g: ACE or ARB in diabetic patients
   b. If albuminuria > 300 mg/g: ACE or ARB in non-diabetic patients

GLYCEMIC CONTROL

1. Target HbA1c of 7%
2. A HbA1c above 7% is acceptable in cases of limited life expectancy or elevated risk of hypoglycemia

PATIENT EDUCATION AND DIETARY MEASURES

1. Physical activity compatible with cardiovascular health (150 mn per week)
2. Healthy weight
3. Smoking cessation
4. Protein intake reduction to 0.8 g/kg/d if GFR is < 30 ml/mn/1.73 m2. Do not lower it further to avoid malnutrition
5. Salt intake reduction to < 2 g/day unless contraindicated
6. Dietary advice about phosphate and potassium intake in advanced stages

PREVENTION OF COMPLICATIONS

ANEMIA

1. Hemoglobin (Hgb) concentration should be measured:
    a. When clinically indicated in stages I&II or G1 & G2 categories
    b. At least annually in stage III or G3 category
    c. Twice per year in stages IV & V or G4 & G5 categories
2. Work up of anemia in CKD should include assessment of secondary causes including iron deficiency.
3. Erythropoietin Stimulating Agents (ESAs) should be used to increase the HB to the threshold of 11.5 in parallel with iron replacement therapy if iron deficiency is present

METABOLIC BONE DISEASE

1. Serum levels of calcium, phosphate, PTH, alkaline phosphatase and 25 OH vit D should be measured at least once if GFR < 45 ml/mn/1.73 m^2.
2. Subsequent frequency of testing depends on the clinical circumstances
3. No specific recommendations for bone mineral density testing in CKD

MALNUTRITION

1. Check for malnutrition using dietary history, weight and serum albumin:
    a. every 6 to 12 months in stage III or G3 category
    b. every 1 to 3 months in stage IV & V or G4 & G5 category

CARDIOVASCULAR DISEASE

1. Risk factor modification is crucial to reduce mortality. It should address:
    a. Lipid lowering with statin therapy
    b. Aspirin for secondary prevention
    c. Correction of anemia
    d. Optimal blood pressure control
    e. Optimal diabetes control

MEDICATION DOSAGE ADJUSTMENT

1. GFR should be taken into account to adjust dose before prescribing medications.
2. Advise patients to check with doctor before taking over-the-counter drugs or nutritional protein supplements and to avoid herbal remedies.

VACCINATION

1. Influenza vaccine: all stages of CKD
2. Pneumococcal vaccine and hepatitis B vaccine: G4 category or high risk of progression

CAUTION FOR IMAGING STUDIES

1. When GFR < 60 ml/mn/1.73m^2, for patients undergoing investigations with iodinated contrast media:
    a. Avoid high osmolar agents
    b. Use the lowest possible radiocontrast dose
    c. Withdrawal of potential nephrotoxic agents before and after the procedure
    d. Adequate hydration with saline before, during, and after the procedure
    e. Measurement of GFR 48-96 hours after the procedure
2. Gadolinium-containing contrast media should not be used in patients with
    a. GFR < 15 ml/mn/1.73 m^2.
    b. A macrocyclic chelate Gadolinium preparation is preferred in patients with GFR < 30 ml/mn/1.73 m^2

REFERRAL TO NEPHROLOGIST

1. Stage IV CKD
2. Acute kidney injury or abrupt sustained fall in GFR
3. Hereditary kidney disease
4. Refractory proteinuria (UACR > 300 mg/g)
5. Hypertension refractory to 4 or more antihypertensive agents
6. Progression of CKD
7. Recurrent or extensive nephrolithiasis
8. Persistent hyperkalemia
9. Bone and mineral disorders
10. Anemia of CKD
11. Difficulty to manage adverse effects of medications
12. Urinary red cell casts, RBC > 20 per high power field sustained and not readily explained
13. Suspected renal artery stenosis
14. Acute, complex or severe cardiovascular disease

RENAL CYSTS

1. There are 3 major criteria for simple renal cysts on ultrasound:
    a. Round and sharply demarcated mass with smooth walls
    b. No echoes within the mass
    c. Strong posterior wall echo
2. In the absence of these 3 criteria of a single cyst, a CT scan is recommended and referral to urologist is indicated to rule out malignancy

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CHAPTER 5.

HEMATURIA IN ADULTS

Grace Abi-Rizk, MD - Najla Lakkis, MD

EPIDEMIOLOGY

1. Hematuria is common, e.g. the prevalence of asymptomatic microscopic hematuria in adults varies from 0.19 to as high as 21%.
2. In general, urologic malignancy is subsequently found in 1% to 3% of those with asymptomatic microscopic hematuria. Most lesions are discovered within 3 years of the initially negative findings.

DEFINITION

1. Microscopic hematuria is defined as 3 or more red blood cells (RBC) per high-power field (HPF) (i.e. ≥ 3 RBC/HPF) in fresh, clean-caught urine.
2. It may be grossly visible as red or brown urine (macroscopic or gross hematuria) or nonvisible i.e. detectable only on urine examination (microscopic hematuria). It may be symptomatic or asymptomatic. A general approach to patients with hematuria is outlined in Algorithm 5.1.
3. Microscopic hematuria, unlike gross hematuria, is often an incidental finding. It may be transient and insignificant (e.g. menstrual contamination or for 24-48 hours after trauma, vigorous physical exercise, sexual intercourse, or digital rectal prostate examination), but may also be a sign of urologic malignancy particularly in patients > 35 years.

CAUSES

1. **Pseudo hematuria:** (Red or dark urine with negative microscopic examination for RBC; positive urine dipstick for blood is not indicative of hematuria)
    a. Exogenous sources as medications (e.g. Nitrofurantoin, Rifampin, Laxatives/Senna); vegetable dyes (beats, blackberries, food coloring); antiseptics (Betadine, Mercurochrome)
    b. Endogenous causes (myoglobin, hemoglobin). Bilirubin and porphyrin in the urine can make it brown
2. **True Hematuria:** may be classified by its source:
    a. Extra-renal hematuria (> 60%):
        - Urinary tract origin: infections (cystitis, prostatitis, urethritis), urolithiasis, bladder tumor, prostate cancer, benign prostate hypertrophy (BPH), trauma (foley, sexual activity)
        - Non-urinary tract origin such as menstruation
    b. Renal:
        - Nonglomerular (tubulointerstitial) renal hematuria, commonly caused by:
            - o Nephrolithiasis or Crystalluria
            - o Pyelonephritis
            - o Trauma/contusion or exercise
            - o Vascular: renal infarcts, renal vein thrombosis, sickle cell disease and trait
            - o Polycystic kidney disease (PKD)
        - Glomerular hematuria, commonly caused by:
            - o IgA nephropathy
            - o Thin basement membrane disease (Thin BM, benign familial hematuria)
            - o Hereditary nephritis (Alport's syndrome)
            - o Mild focal glomerulonephritis of other causes.

HISTORY

There are often clues from the history that point toward a specific diagnosis. These include:

1. Urinary symptoms
    a. Dysuria, urgency, frequency, and ± fever/chills: infection.
    b. Dark cola-colored urine: glomerular origin

   c. Clots: extra-glomerular bleed
   d. Hesitancy and dribbling: prostatic obstruction (the presence of a benign prostate hypertrophy should not dissuade the clinician from evaluation of hematuria)
2. Recent upper respiratory tract infection (URTI): glomerulonephritis (post infectious, membrano-proliferative glomerulonephritis); Concurrent URTI: IgA nephropathy.
3. Arthritis/arthralgias/rash: Lupus, vasculitis, Henoch-Shönlein purpura.
4. Pain
   a. Unilateral flank pain radiating to the groin: stones or blood clot, infarction, pyelonephritis, and occasionally malignancy
   b. Flank pain that is persistent or recurrent can also occur in the rare loin pain-hematuria syndrome
   c. Painless hematuria and/or anorexia/weight loss: malignancy or chronic infection (e.g. tuberculosis)
5. Recent trauma or vigorous physical exercise: traumatic or rhabdomyolysis.
6. Recent urinary catheterization/foley.
7. History of a bleeding disorder or bleeding from multiple sites due to excessive anticoagulant therapy. However, Warfarin therapy should not cause hematuria unless there is an underlying urologic abnormality.
8. Medications: anticoagulation or antiplatelet therapy, methicillin, nafcillin and analgesics (e.g. phenacetin), extended-spectrum penicillins abuse, alkylating chemotherapeutic agents (e.g. cyclophosphamide), herbal weight loss preparations containing aristolochic acid etc.
9. Excessive vitamin use (particularly vitamin C): stones.
10. Travel or residence in areas endemic with Schistosoma haematobium or tuberculosis.
11. Social history: smoking (malignancy), exposures to lead or mercury.
12. Occupational exposures (benzene, leather, dye, rubber, or tire manufacturing): urothelial cancer.
13. Past medical history: renovascular or peripheral vascular disease, previously diagnosed abdominal aortic aneurysm, accelerating or poorly controlled hypertension, and atrial fibrillation or palpitations may indicate renal infarction. Past hematuria, urinary tract infection, nephrolithiasis or pelvic irradiation.
14. Family history of urolithiasis, deafness, or renal disease (e.g. sickle cell disease, polycystic kidney disease, hereditary nephritis, benign familial hematuria or thin basement membrane).

PHYSICAL EXAMINATION

1. Vital signs to assess hemodynamic stability.
2. Skin and mucosal membranes: for signs of bleeding disorders, such as petechiae, purpura, ecchymoses, and gingival bleeding.
3. Cardiovascular examination.
4. Abdomen signs of trauma, masses or tenderness: renal malignancy, hydronephrosis, or abdominal aortic aneurysm.
5. Musculoskeletal examination: tender costovertebral angles indicate ureteral stones, pyelonephritis, or polycystic kidney disease.
6. Genital examination for meatal erosion, genital lesions or scrotal fistula.
7. Rectal examination in men to assess the size and symmetry of the prostate.

LABORATORY TESTS

1. Urine microscopy (mandatory 1st step):
   a. The presence of ≥ 3 RBC/HPF confirm hematuria - if hematuria is confirmed even once, evaluation is necessary (even in patients on anticoagulants and antiplatelet agents).
   b. Pyuria and WBC casts suggest infection - start antibiotic therapy as soon as possible after a clean midstream sample sent for urine culture.
   c. RBC casts, dysmorphic RBC or proteinuria suggest glomerular disease - refer to a nephrologist.
2. Urine culture and gram stain (mandatory 2nd step): all patients should have a urine culture to exclude infection prior to evaluation of hematuria.
3. Plasma creatinine and estimated glomerular filtration rate (eGFR) and BUN.
4. Further lab tests depend on the suspected etiology:
   a. Complete blood count (CBC) to evaluate for systemic involvement (e.g. anemia secondary to bleeding, leucocytosis suggestive of infection)
   b. Serum creatinine, blood glucose, electrolytes; calcium and uric acid
   c. Coagulation tests; INR (PT) for patients on Warfarin

d. PSA levels if suspected prostate cancer
e. Hemoglobin electrophoresis if suspected sickle cell trait or disease (positive family history).

5. Urine cytology in patients at increased risk for urothelial cancers (Box 5.1) (first void morning urine on 3 consecutive days to optimize its sensitivity), however negative results cannot rule out malignancy.

BOX 5.1: WHEN TO INVESTIGATE HEMATURIA

Significant hematuria that require investigation to exclude serious underlying conditions:

1. Any single episode of visible/macroscopic hematuria.
2. Any single episode of symptomatic non-visible/microscopic hematuria (in absence of urinary tract infection (UTI) or other transient causes).

IMAGING TESTS

1. Multidetector or multiphasic CT urography (CTU) without contrast (for suspected urolithiasis), and with intravenous contrast (for suspected mass especially > 1 cm) is the preferred imaging study. However it is contraindicated in pregnant women. CTU with contrast should be done only in patients not allergic to contrast and with normal serum creatinine (≤ 1.2 mg/dl).
2. If multiphasic CTU is not available or contraindicated the following tests can be requested; however, even when performed together, these tests have limited sensitivity in detecting urolithiasis (particularly < 3mm), small renal masses (< 3 cm) compared to CTU.
   a. Renal and urinary tract ultrasound: to detect obstruction or parenchymal disease, radiolucent stones, and cystic or solid masses. It is very good in the evaluation of renal parenchyma. No contraindications. It can complement CTU, whenever there is need to differentiate cystic from solid masses
   b. Abdomen plain supine X-Rays (KUB): can be used in addition to ultrasound to detect radioopaque stones
   c. Intravenous Urography/Pyelography (IVU or IVP) is indicated in the absence of CTU when urinary tract stones are suspected but not detected on KUB+Ultrasound. However, it is less sensitive in detecting urolithiasis when compared to CTU, and has a limited sensitivity for small renal masses and for differentiating cystic from solid masses. Its contraindications are similar to CTU with contrast (i.e. pregnancy, allergy to contrast, elevated serum creatinine).

DIAGNOSTIC PROCEDURES

1. Renal biopsy may be necessary for evaluation of patients suspected to have progressive glomerular disease, such as proteinuria and/or an elevation in the serum creatinine concentration, presence of RBC casts, or dysmorphic RBC in urine microscopy.
2. Retrograde pyelogram, which requires cystoscopy, is used to better evaluate bladder, ureteral or renal filling defects detected on other modalities. Moreover, in patients with relative or absolute contraindications to multidetector CT urography (e.g., renal insufficiency, contrast allergy, pregnancy), retrograge pyelogram should be combined with MRI, or noncontrast CT, or renal ultrasound to evaluate the entire urinary tract.
3. Cystoscopy is recommended for evaluation of bladder pathology in all patients:
   a. at increased risk for urothelial cancers (Box 5.1)
   b. with an abnormal cytology.

MANAGEMENT AND FOLLOW UP

1. Treatment should focus on the underlying cause.
2. If visible/gross hematuria + inability to urinate: refer to the emergency room (ER) to evaluate for and evacuate blood clots in the bladder.
3. Indications for urological or nephrological referrals (Table 5.1).
4. Initial workup often fails to reveal the underlying cause, mainly in microscopic hematuria. Follow-up is necessary in patients at high risk for urologic cancer. Patients, at any age, with a negative initial workup require follow-up with annual cytology, urinalysis and blood pressure monitoring and in some cases with repeat imaging and cystoscopy.

a. Patients who have even one episode of unexplained hematuria and are at high risk for malignancy require close follow-up (annual urinalysis) following a negative evaluation. If urinalysis is negative in the following 2 years, further evaluation can be stopped
b. Patients with persistent unexplained microscopic hematuria and risk factors for malignancy should be monitored with an annual urinalysis if asymptomatic. In case of persisting hematuria for 3-5 years, another complete urologic evaluation including CT urogram, cytology, and cystoscopy should be considered. Some physicians also recommend repeat ultrasonography and cystoscopy at one year in high-risk patients (Box 5.2 depicting characteristics of patients with high risk for malignancy).

BOX 5.2: HIGH RISK FOR MALIGNANCY IN PATIENTS WITH HEMATURIA

1. Age > 35 years.
2. Male sex.
3. Smoking.
4. Analgesic abuse (Phenacetin).
5. Exposure to benzene, chemicals used in leather, dye, rubber, or tire manufacturing.
6. Exposure to alkylating chemotherapeutic agents e.g. Cyclophosphamide.
7. Chronic irritative voiding symptoms.
8. Chronic indwelling foreign body.
9. History of pelvic irradiation.

TABLE 5.1: INDICATIONS FOR REFERRAL IN CASE OF HEMATURIA

Referral to Urologist
1. Patients of any age with painless macroscopic hematuria and who have no evidence of glomerular bleeding or infection.
2. Patients who have blood clots even if they have evidence of a glomerular lesion since blood clots are virtually never associated with glomerular bleeding and would suggest the presence of two separate lesions in the glomerulus and in the collecting system.
3. Patients where direct visualization of the lower urinary tract is necessary for diagnosis e.g. patients at increased risk for urothelial cancers mentioned in the table before and patients with an abnormal cytology.
4. Patients with an abdominal mass identified clinically or on imaging, whichis thought to arise from the urinary tract.
5. Patients with a urolithiasis > 5 mm or with any non-resolving urolithiasis.
Referral to Nephrologist
1. Acute renal failure.
2. Significantly diminished renal function (GFR < 60 ml/min per 1.73 m^2 Body Surface Area) of chronic or unknown duration; or evidence of declining GFR (by > 10 ml/minute at any stage within the previous 5 years or by > 5 ml/minute within the previous 1 year).
3. Significant proteinuria (albumin: creatinine ratio (UACR) ≥ 30 mg/mmol or protein: creatinine ratio (UP/C) ≥ 50 mg/mmol).
4. Isolated hematuria (i.e. in the absence of significant proteinuria) with hypertension in those aged younger than 40 years.
5. Visible/macroscopic hematuria coinciding with intercurrent (usually upper respiratory tract) infection.
6. Red blood cell casts or dysmorphic red blood cells on urine microscopy.
7. Possible indication for renal biopsy, including persistent proteinuria, hematuria with persistent proteinuria, or persistent isolated glomerular hematuria for over 1 year with negative urologic workup.
8. Underlying cause of hematuria unclear even after a thorough urology workup.

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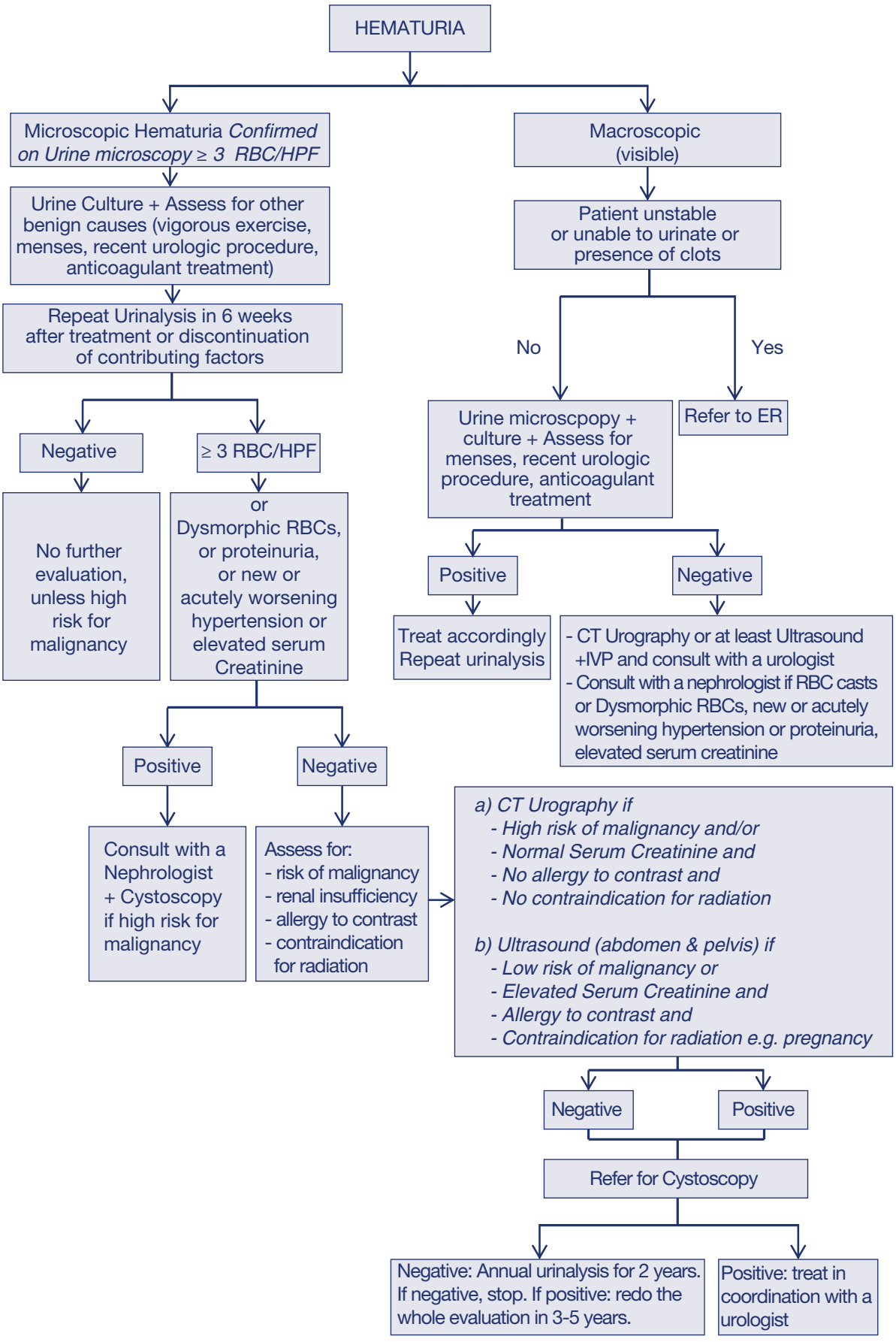
ALGORITHM 5.1: APPROACH TO HEMATURIA



CHAPTER 6.

CHRONIC OBSTRUCTIVE PULMONARY DISEASE

Rania Sakr, MD - Najla Lakkis, MD

EPIDEMIOLOGY

1. Chronic Obstructive Pulmonary Disease (COPD) is the 4th leading cause of death in the world and is expected to be the 3rd one in 2020 because of continued exposure to COPD risk factors and increased life expectancy overtime.
2. It is responsible for early mortality, high death rates and significant cost to the health system.
3. In Lebanon, a cross sectional study found a COPD prevalence of 9.7% in 2009-2010. In this study, only 20% of COPD patients were diagnosed and treated.

DEFINITION

1. COPD is a chronic and progressive airflow obstruction that is not fully reversible. It is due to an inflammatory reaction of airways to noxious particles or gases leading to emphysema and chronic bronchitis. The severity of the disease is related to the frequency of exacerbations and comorbidities.

HISTORY

1. Check for presence and day to day variability of:
    a. Dyspnea: usually progressive, persistent and worse with exercise.
    b. Cough: may be intermittent and/or non-productive.
    c. Sputum production: chronic in general.
2. Symptom questionnaires *(e.g., CAT: refer to table 6.1)*
3. Other symptoms: wheezing, hemoptysis, morning headache, leg edema, activity limitation, impaired quality of sleep and lack of energy.
4. Risk factors:
    a. Tobacco smoke *(active or passive)*
    b. Indoor *(biomass fuels for cooking and heating)* and outdoor air pollution
    c. Occupational exposure to pollutants/dusts *(e.g., cadmium, silica)* and chemicals *(e.g., firefighters)*
    d. Recurrent airway infections
    e. Low socioeconomic status *(low birth weight, crowding, poor nutrition, infection, etc.)*
5. Exacerbations: numbers per year, admission to hospital per year, and precipitating factors *(e.g., recent infection)*.
6. Recent weight gain/loss.
7. Comorbidities: COPD patients are at increased risk for:
    a. Cardio-vascular diseases *(ischemic heart disease, heart failure, atrial fibrillation, hypertension and thromboembolic disorders).*
    b. Osteoporosis *(inflammation, poor diet, inactivity, hypoxia)*
    c. Respiratory: Recurrent Respiratory infections; Lung cancer; Bronchiectasis; Asthma
    d. Diabetes Mellitus
    e. Gastritis; Gastroduodenal ulcer
    f. Anxiety; Depression

PHYSICAL EXAMINATION

1. Weight: weight gain is suggestive of chronic bronchitis; weight loss is suggestive of emphysema.
2. Inspection: cyanosis, pursed lip breathing, barrel chest *(increased antero-posterior chest diameter)*, and use of accessory muscles.
3. Lung exam: tachypnea, diminished breath sounds, wheezing, rhonchi.
4. Heart exam: distant heart sounds.

DIAGNOSTIC TESTS

1. Pulmonary Function Tests:
   Spirometry is required to confirm COPD diagnosis *(when a post-bronchodilator FEV1/FVC is < 0.70 with less than 12% change after bronchdilation)*; however, it is useful only in stable patients *(i.e., those not experiencing an acute exacerbation of symptoms)*. It is useful for classification of airflow limitation *(according to the FEV1; refer to Box 6.1)*, to track the progression of the disease and to monitor response to treatment.
2. Chest X-ray *(CXR)*: can show emphysema *(hyperinflation, flattened diaphragms, interstitial markings ± bullae)*, helps to rule out other suspected alternative diagnoses or to identify comorbidities like heart failure.
3. Chest CT scan can detect emphysema and helps to rule out lung cancer *(if clinically suspected and in adults aged 55 to 80 years who have a 30 pack-year smoking history and currently smoke or have quit within the past 15 years)*.
4. Pulse Oxymetry in:
   a. Stable COPD patients with FEV1 < 50%
   b. Patients with worsening symptoms or other signs of an acute exacerbation.
   c. Patients with clinical signs suggestive of respiratory failure *(cyanosis)* or right heart failure *(increase in the venous jugular pressure and lower limbs edema)*.
   N.B. Acceptable if oxygen saturation 92%
5. Arterial Blood Gas (ABGs) if oxygen saturation < 92% on pulse oxymetry, FEV1 < 35% and when patient presents clinical signs of respiratory failure (cyanosis) or congestive heart failure *(increase in the venous jugular pressure and lower limbs edema)*.
6. Alpha-1 Antitrypsin Deficiency Screening *(by dosing serum alpha1-antitrypsin level)*: if COPD develops in young patients *(< 45years)* of Caucasian descent or with a strong family history of COPD.

DIAGNOSIS

It should be considered in patients with progressive shortness of breath or dyspnea, chronic cough, or increased sputum production with risk factors *(e.g., smoking)* and confirmed by spirometry.

MANAGEMENT

PHARMACOLOGIC THERAPEUTIC OPTIONS

1. Management of COPD depends on the classification of the patients (Table 6.1). The classification of the patient depends on the number and severity of exacerbations, GOLD classes (airflow limitation by spirometry done at least 6 weeks after an exacerbation resolution) (Box 6.1) and CAT score (Box 6.2).
2. The step up or step down of the medications depends on the new classification because the patients may not fit the class they were in initially.

BOX 6.1: GOLD CLASSES BASED ON POST-BRONCHODILATOR FEV1 SPIROMETRY VALUE

a. GOLD1: mild; FEV1 80% or more of predicted
b. GOLD2: moderate; FEV1 between 50 and 80%
c. GOLD3: severe; FEV1 between 30 and 50%
d. GOLD4: very severe; FEV1 less than 30%

BOX 6.2: COPD ASSESSMENT TEST (CAT)							
For each item below, place a mark (X) in the box that best describes you currently. Be sure to only select one response for each question.							Score
Example: I am very happy	*1*	*2*	*3*	*4*	*5*	*I am very sad*	
I never cough	1	2	3	4	5	I cough all the time	
I have no phlegm (mucus)	1	2	3	4	5	My chest is completely full of phlegm (mucus)	
My chest does not feel tight at all	1	2	3	4	5	My chest feels very tight	
When I walk up a hill or one flight of stairs I am not breathless	1	2	3	4	5	When I walk up a hill or one flight of stairs I am very breathless	
I am not limited doing any activities at home	1	2	3	4	5	I am very limited doing activities at home	
I am confident leaving my home despite my lung condition	1	2	3	4	5	I am not at all confident leaving my home because of my lung condition	
I sleep soundly	1	2	3	4	5	I don't sleep soundly because of my lung condition	
I have lots of energy	1	2	3	4	5	I have no energy at all	
						Total Score	

Ref.: COPD Assessment Test (CAT). http://www.catestonline.org/

TABLE 6.1: PHARMACOLOGIC THERAPEUTIC OPTIONS BASED ON COMBINED ASSESSMENT OF COPD USING SYMPTOMS, BREATHLESSNESS, SPIROMETRIC CLASSIFICATION AND RISK OF EXACERBATIONS

Pharmacologic Therapeutic Options based on Combined Assessment of COPD using symptoms, breathlessness, spirometric classification and risk of exacerbations			
GOLD4 (FEV1 < 30) GOLD3 (FEV1 30-49) GOLD2 (FEV1 50-79) GOLD1 (FEV1 ≥ 80)	**C** ICS + LABA or LAMA	**D** ICS + LABA and/or LAMA	≥ 2 exacerbations or ≥1 exacerbation leading to hospital admissions ≤ 1 exacerbation (not leading to hospital admission)
	A SAMA as needed or SABA as needed	**B** LABA or LAMA	
	CAT < 10 Symptoms	CAT ≥ 10	
Group*	**First choice**	**Second choice**	**Alternatives**
A	SAMA or SABA as needed	LAMA or LABA or SAMA + SABA	Theophylline^
B	LAMA or LABA	LABA + LAMA	SABA and/or SAMA as needed Theophylline^
C	ICS + LABA or LAMA	LABA+LAMA or LABA + PDE4-inh.* or LAMA + PDE4-inh.*	SABA and/or SAMA as needed Theophylline
D	ICS + LABA or LAMA	ICS + LAMA Or ICS + LABA + LAMA Or ICS + LABA + PDE4-inh.* Or LABA + LAMA Or LAMA + PDE4-inh.*	Carbocysteine SABA and/or SAMA as needed Theophylline^

Abbreviations and COPD Medications:
ICS: Inhaled Corticosteroids
SABA: Short-Acting BetaAgonist e.g. Albuterol
SAMA: Short-Acting Muscarinic Antagonist e.g. Ipratropium
LABA: Long-Acting BetaAgonist e.g. Indacaterol or Formoterol twice daily
LAMA: Long-Acting Muscarinic Antagonist e.g. Glycopyrronium
Tiotropium bromide
ICS+LABA e.g Formoterol+Budesonide ; Salmeterol+Fluticasone
^Theophylline requires drug level monitoring. Can be added or used as alternative in patients with uncontrolled symptoms with triple therapy or who cannot afford inhaler therapy (but theophylline is less effective and less well tolerated).

** PDE4-inh: Phosphodiesterase-4 Inhibitor e.g. Roflumilast:* reduce exacerbations in patients with FEV1<50% of predicted, chronic bronchitis and frequent exacerbations

Ref. Global Strategy for the Diagnosis, Management and Prevention of COPD. http://www.goldcopd.org/other-resources-gold-teaching-slide-set.html. Accessed October 16, 2014.

LONG-TERM OXYGEN THERAPY

1. Oxygen therapy > *15 hours per day* is recommended for patients with COPD and severe hypoxemia.
2. The goal oxygen saturation should be approximately 90% to avoid respiratory acidosis.
3. It is indicated when:
    a. PaO2 at or below 55 mmHg or SaO2 at or below 88% *(confirmed twice over a 3-week period)*.
    b. 55 mmHg < PaO2 < 60 mmHg or SaO2 = 88% if associated with pulmonary hypertension, peripheral edema *(congestive heart failure)* or polycythemia *(Hematocrit > 55%)*.

ORAL CORTICOSTEROIDS

Oral corticosteroids are only indicated for a short period of time in case of exacerbation.

PROPHYLACTIC ANTIBIOTIC THERAPY

It is not recommended to prevent COPD exacerbations.

MUCOLYTIC AGENTS

It carries a small benefit in patients with viscous sputum. Antitussives are not recommended.

MANAGEMENT AND CONTROL OF CO-MORBIDITIES

1. Avoidance of Risk Factors
    a. Smoking Cessation *(strongly recommended)*
        - Has the greatest capacity to influence the natural history of COPD.
        - All patients who smoke should be encouraged and counseled to quit even for a brief period *(3 minutes)* from time to time, using the strategy *(ask, advise, assess, assist, and arrange)*.
        - Pharmacotherapy *(varenicline, bupropion, nortriptyline)* and nicotine replacement therapy increase long-term smoking abstinence rates.
    b. Reductions of indoor pollution *(i.e. avoid indoor biomass fuels for cooking and heating and avoid exercise outdoors during pollution episodes)*.
    c. Reduction of occupational exposure
2. Rehabilitation (strongly recommended)
    a. All COPD patients benefit from regular physical activity and should be encouraged to remain active.
    b. The rehabilitation program reduces symptoms, improves quality of life and increases participation in everyday activities.
    c. The minimum duration of an effective pulmonary rehab program is 6 weeks *(the longer the program continues, the more effective the results)*. If exercise training is maintained at home, the patient's health remains above pre-rehab levels.

VACCINATION

1. Influenza vaccine: once per year if no contraindications *(it reduces serious illness and death in COPD patients by 50%)*. Vaccination optimally should occur before onset of influenza activity in the community *(by September-October, if possible)*.
2. Pneumococcal polysaccharide vaccine *(PPSV23)* for all adults with COPD and can be repeated at or after the age of 65 years at the condition that 5 years have already elapsed.

FOLLOW-UP VISITS

1. Patients with COPD should be reassessed every 2-3 months.
2. Symptom questionnaires (e.g., CAT), smoking cessation (if applicable), and exacer¬bation history should be reviewed every visit.
3. Repeat spirometry is recommended on a yearly basis *(2-3 months away from exacerbation)*.

INDICATIONS FOR REFERRAL TO SPECIALIST

1. Severe exacerbation; frequent exacerbations and/or hospitalizations.
2. Age of onset < 40 years (i.e. suspicion of Alpha-1-antitrypsin deficiency).
3. Rapid progression of COPD.
4. Weight loss.
5. Concurrent cardiac disease, suspected asthma or another pulmonary disease complicating diagnosis or management.
6. Suspicion of upper airway obstruction.
7. Requirement of Oxygen therapy.
8. Requirement of intensive care pulmonary hospitalization or mechanical ventilation.
9. Surgical consideration in selected cases *(lung reduction surgery or lung transplantation)*.

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CHAPTER 7.

ASTHMA IN ADULTS

Jihad Irani, MD

EPIDEMIOLOGY

1. Prevalence is estimated at 10-12% of the population.
2. Only 6% are labeled asthmatics and 20% are treated adequately.
3. 20% of patients have severe disease and 20% have mild disease.

DEFINITION

Asthma is a chronic inflammatory disease of the airways, characterized by recurrent attacks of cough, dyspnea and wheezing due to variable and reversible degrees of airway obstruction related to hypersensitivity.

HISTORY

1. Recurrent symptoms of airflow obstruction or airway hyperresponsiveness: dyspnea, cough, wheezing, chest tightness (worse at night or early morning).
2. Severity, frequency, and duration of symptoms (Table 7.1), Emergency Room visits and hospitalization.
3. Triggers: viral infections, animals with fur or hair, allergens (pollen, dust mites, molds, cockroaches…), non-allergic (smoke, exercise, cold air, stress, heartburn, postnasal drip suggestive of sinusitis, drugs e.g. Aspirin, NSAIDs, beta-blocker).
4. Asthma exacerbation at work and better when away from work (e.g. during weekends): suggestive of occupational or work-aggravated asthma.
   Confirm the diagnosis of asthma early on, since it is more difficult once treatment is initiated.

PHYSICAL EXAMINATION

1. Often normal between exacerbations.
2. Possible nasal polyps, rhinitis (mucosal swelling).
3. Prolonged expiration; diffuse bilateral wheezes; hyper-inflation of the thorax; respiratory distress.
4. Skin: fingers clubbing, atopic dermatitis.

EVALUATION

1. Spirometry in patients (FEV1, FVC, FEV1/FVC before and after short-acting ß agonist [SABA])
   a. Obstructive pattern: reduced FEV1 < 80% and reduced FEV1/FVC < 70%
   b. Reversibility – after SABA (very important to make the diagnosis, otherwise refer to a pulmonologist):
      - FEV1 increase ≥ 10% of predicted FEV1, or
      - FEV1 increase > 200 ml and ≥ 12% from baseline
   c. It is recommended, whenever possible, at baseline before starting treatment, 3-6 months after treatment, then periodically e.g. yearly
2. Peak expiratory flow (PEF): more useful for monitoring than diagnosis
   a. Best done in the morning
   b. Average daily diurnal variability > 10% in asthma
3. Pulse oxymetry, ABG if respiratory distress/failure.
4. Allergy testing, allergen specific IgE (RAST) if allergic triggers exist.
5. Chest X-Ray may help exclude some causes of asthma or alternative diagnosis such as pneumonia or pneumothorax or heart failure.
6. Sputum eosinophil counts can be used to guide treatment.

MANAGEMENT

1. Three components:
    a. Medications: every patient with asthma should have a reliever medication, and mainly a controller medication. Manage according to asthma severity classification (Tables-7.1, 7.2 and 7.3).
    b. Identify and treat/control modifiable risk/precipitating factors and triggers.
    c. Identify and control co-morbidities that may aggravate asthma: smoking; obesity; allergic rhinitis; sinusitis; heartburn/GERD; COPD (e.g. chronic bronchitis or emphysema); Heart Failure; drug sensitivities (Beta Blockers; Aspirin; NSAIDs); psychiatric illness (e.g. anxiety).
2. Patient education: asthma disease; symptoms; triggers; self-monitoring; self-management; written action plan; inhaler skills and adherence; regular follow-up visits.
3. Immunization: annual Influenza vaccine in September/October; Pneumococcal vaccine once before and once after age 65.
4. Asthma exacerbation: refer to algorithm 7.1.

INDICATIONS FOR REFERRAL

1. Life-threatening exacerbations or initial diagnosis of severe persistent asthma.
2. Poor response to treatment, need for continuous oral corticosteroids (OCS), or more than 2 courses of oral corticosteroids/year.
3. Unclear diagnosis or need for additional testing (ex: allergy testing).

FOLLOW-UP

1. Follow-up visit to review response after 2-3 months or according to clinical response; then routine visits at least once a year when under control.
2. Assess asthma severity (Table 7.1) and symptom control over the last 4 weeks (Table 7.3).
3. Identify risk factors for poor outcomes (Box 7.1) and comorbidities.
4. Lung function, whenever possible, periodically (e.g. yearly).
5. Assess treatment adherence and check technique of inhaler use.
6. Step up if: uncontrolled symptoms, exacerbations or risks (but check inhaler technique and adherence first).
7. Step down when good control for 3 months and low risk of exacerbations.

PEAK FLOW METER USE

1. Indicator at “zero”.
2. Upright position, deep breath.
3. Put lips around the mouthpiece and blow out as hard and fast.
4. Record the number.
5. Repeat for a total of 3 times and retain the highest score.

TABLE 7.1: ASTHMA SEVERITY CLASSIFICATION (PATIENTS NOT TAKING LONG-TERM CONTROL MEDICATIONS

Classification of Asthma Severity				
Components of severity	**Intermittent**	**Persistent**		
		Mild	**Moderate**	**Severe**
Symptom frequency	≤ 2days/week	> 2 days/week (not daily)	Daily	Throughout the day
Nighttime awakenings	≤ 2days/month	3-4 times/month	> 1 time/week but not nightly	Often 7 times/week
SABA use for symptom control (not prevention of exercise-induced asthma)	≤ 2days/week	> 2 days/week not daily + no more than once/day	Daily	Several times daily
Interference with normal activity	None	Minor	Some	Extreme
Lung function Normal FEV1/FVC: 20-39 years 80% 40-59 years 75% 60-80 years 70%	Normal FEV1 between exacerbations FEV1 > 80% FEV1/FVC normal	FEV1 > 80% FEV1/FVC normal	FEV1 60-80% FEV1/FVC reduced by 5%	FEV1 < 60% FEV1/FVC reduced by > 5%
Exacerbations requiring oral systemic steroids	0-1 times/year	≥ 2 times/year		
	Consider severity and interval since last exacerbation			
Recommended steps for initiating therapy	*Step 1*	*Step 2*	*Step 3*	*Step 4 or 5*
Consider short course of oral corticosteroids			*Yes*	*Yes*

SABA: Short Acting Beta Agonist; FEV1: forced expiratory volume in 1 second; FVC: forced vital capacity
Adapted from National Heart, Lung and Blood Institute, National Asthma Education and Prevention Program, Expert Panel Report 3 (2007)

TABLE 7.2: STEPWISE APPROACH TO ASTHMA MANAGEMENT

	Step 1	Step 2	Step 3	Step 4	Step 5
Reliever	As needed SABA		As needed SABA or low dose ICS/Formoterol		
Preferred controller choice		Low dose ICS	Low dose ICS/ LABA	Medium/ high dose ICS/ LABA	Refer for add-on treatment (e.g: anti IgE)
Other controller options	Consider low dose ICS	Leukotriene receptor antagonists (LTRA)	Medium/ high dose ICS	High dose ICS + LTRA or + theophylline	Add low dose OCS
		Low dose theophylline	Low dose ICS + LTRA or + theophylline		
	Consider allergen immunotherapy if allergic asthma				
ICS; Inhaled Corticosteroid; LABA: Long Acting Beta Agonist; Leukotriene Receptor Antagonists: LTRA; OCS: Oral Corticosteroid; SABA: Short Acting Beta Agonist (e.g. Salbutamol)					
Preferred Step 3 is medium dose ICS- Consult with asthma specialist if step 4 or 5 (Adapted from GINA 2014)					

TABLE 7.3: ASSESSMENT OF SYMPTOMS AND RECOMMENDED ACTION

In the past 4 weeks, patient had:	Well controlled	Partly controlled	Uncontrolled
Daytime symptoms > 2/week	**None**	**1 – 2 of these**	**3 – 4 of these**
Any night waking due to asthma			
Reliever needed > 2/week			
Any activity limitation due to asthma			
Recommended action	Maintain current step F/U in 1-6 months	Step up one step Reevaluate in 2-6 weeks	Consider short course of oral corticosteroids Step up 1 or 2 steps Reevaluate in 2 weeks
Adapted from National Heart, Lung and Blood Institute, National Asthma Education and Prevention Program, Expert Panel Report 3 (2007)			

TABLE 7.4: COMMON MEDICATIONS IN ASTHMA (WHO ESSENTIAL DRUGS)

	Dose	Frequency	Class
Salbutamol inhaler 100 mcg/puff	2 puffs	5 min before exercise Every 4-6 hours as needed	Short Acting Beta Agonist (SABA)
Ipratropium inhaler 20 mcg/puff	2 puffs	Every 6 hours	Short Acting Anti cholinergic (SAMA)
Beclomethasone inhaler 50 µg/dose	Daily dose: Low: 80-240 µg Moderate: 240-480 µg High: > 480 (>11)		Inhaled corticosteroids
Beclomethasone 250 µg/dose			
Montelukast 10 mg	1 tab	10 mg daily	Leukotriene receptor antagonists (LTRA)
Aminophylline 100 mg tablets	Age ≥ 12 years starting dose 10 mg/kg/day up to 300 mg maximum Usual maximum 800 mg/day		Methylxanthines

BOX 7.1: RISK FACTORS FOR ASTHMA EXACERBATION

1. Uncontrolled asthma symptoms.
2. Inhaled corticosteroids (ICS) not prescribed or poor adherence/inhaler technique.
3. Excessive short acting beta agonists (SABA) use (> 1 x 200-dose canister/month).
4. Low Forced Expiratory Volume in 1 second (FEV1).
5. Psychological or socioeconomical problems.
6. Exposures to smoke, allergens.
7. Comorbidities: obesity, rhinosinusitis.
8. Sputum or blood eosinophilia.
9. Pregnancy.
10. Ever being intubated or in Intensive Care Unit (ICU) for asthma.
11. Having one or more severe exacerbation(s) in the last 12 months.

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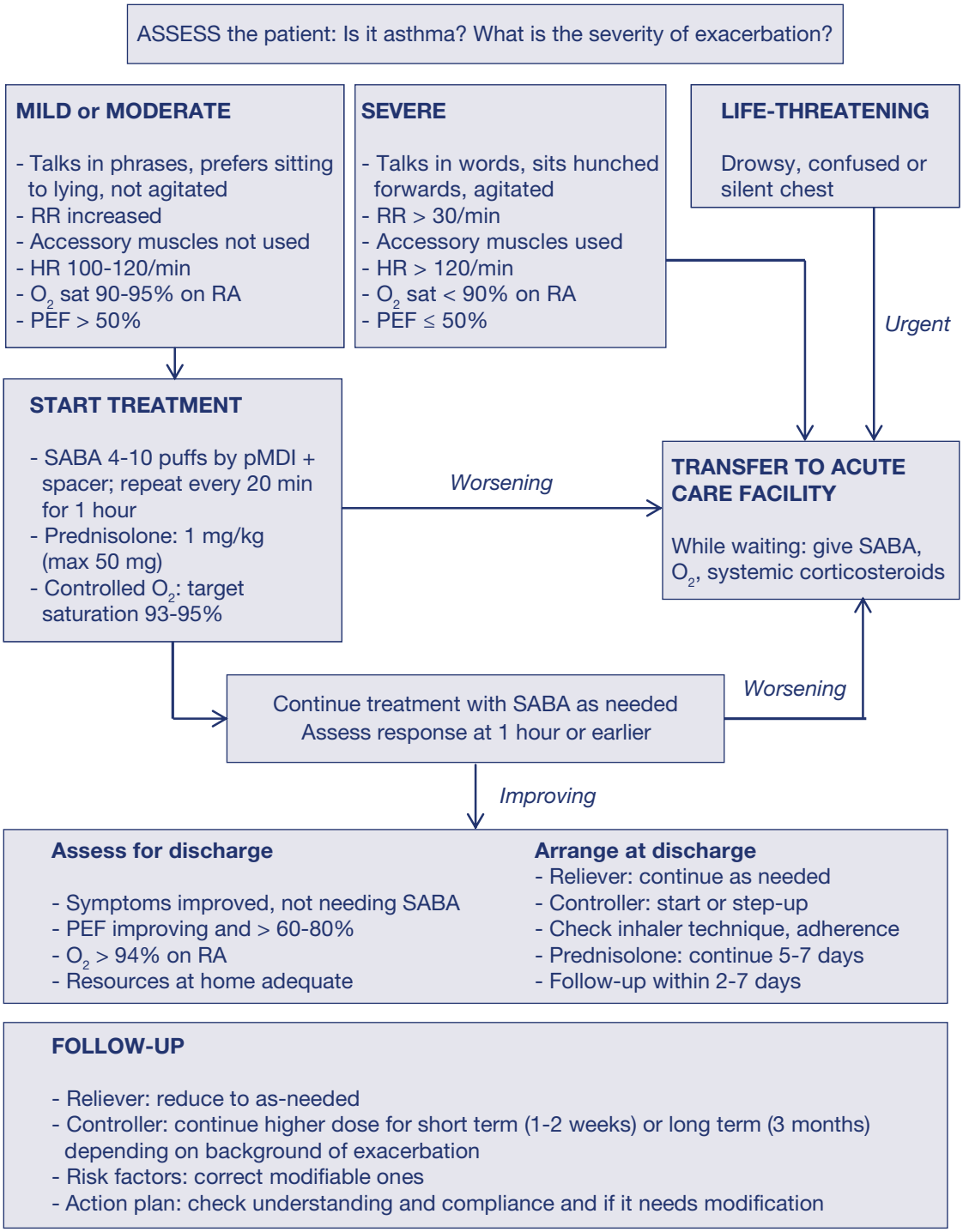
ALGORITHM 7.1: MANAGEMENT OF ASTHMA EXACERBATION



HR: Heart Rate; PEF: Peak Expiratory Flow; RR: Respiratory Rate; SABA: Short Acting Beta Agonist (e.g. Salbutamol)

Adapted from GINA 2014

CHAPTER 8.

COMMUNITY ACQUIRED PNEUMONIA AND ACUTE BRONCHITIS IN ADULTS

Najla Lakkis, MD

I. COMMUNITY ACQUIRED PNEUMONIA

EPIDEMIOLOGY

1. Annual incidence: 5-11 cases per 1000 adult persons. Of these, around 20% are admitted to the hospital for treatment.
2. Mortality rates from Community acquired pneumonia (CAP) are higher in case of comorbidities and increased age and are lower among vaccinated people.

DEFINITION

Community acquired pneumonia (CAP) is defined as an acute infection of the lung parenchyma and pulmonary system not acquired in a hospital or in a long-term care facility, or from a recent contact with the health care system. CAP can be either:

1. **Typical** most commonly caused by Streptococcus pneumonia, followed by Hemophilus influenza and Moraxella catarrhalis.
2. **Atypical** caused by Mycoplasma pneumonia, Chlamydia species, Legionella species, and Respiratory viruses (most common: Influenza virus A and B).

HISTORY

1. Related to the current sickness

a. Triad of the most common symptoms: fever **(+/- chills), shortness of breath, and cough**
- Rapid onset of high fever, productive cough (mucopurulent sputum, sometimes rust colored) and chest pain (usually pleuritic) is suggestive of typical CAP. In patients with COPD there may be a change in quantity and character of sputum
- Insidious low-grade fever, mildly or non-productive cough (scant or watery sputum production), and absence of chest pain or extra pulmonary symptoms is suggestive of atypical or viral

b. Extrapulmonary symptoms include:
- Upper respiratory tract symptoms (sore throat, runny nose, etc) or gastrointestinal symptoms (nausea/vomiting, diarrhea, abdominal pain) is suggestive of viral pneumonia
- Myalgias, headaches and gastrointestinal symptoms is suggestive of Legionella
- Generalized weakness, deterioration in functional and mental status can be the presenting symptoms of pneumonia particularly in older patients

2. Not related to the current sickness

a. Presence of other comorbidities (listed in the paragraph titled ‘Decision for admission to hospital’)
b. Use of antimicrobials in the past 3 months

PHYSICAL EXAMINATION

1. Fever T > 38.5 °C (can be absent in older patients)
2. Tachycardia (HR > 100/min) or bradycardia (HR < 60/min) can occur
3. Tachypnea (RR > 20/min), cyanosis (signs of respiratory distress). Pulse oximetry measurement, when available, should be performed.
4. Lung exam:
   a. Audible rales.
   b. Breath sounds decreased in consolidation and pleural effusion.
   c. Egophony (when the patient says “E”, the physician hears it as “A” upon auscultation).

d. Tactile fremitus increased in consolidation, decreased in pleural effusion.
e. Dullness to percussion occurs in consolidation and pleural effusion.

5. Abdominal exam: presence of abdominal tenderness or pain may indicate lower lobe pneumonia.

EVALUATION

Pneumonia is a clinical diagnosis. Chest x-ray and lab tests are NOT ROUTINELY needed.

IMAGING TESTS

1. Chest X-Ray (CXR) PA and lateral, with lateral decubitus views if suspecting pleural effusion or in doubt. It can be negative when done early in the course of the disease: repeat after 24 hours if the diagnosis of pneumonia is highly suspected.
2. Findings on CXR:
    a. Focal segmental or lobar pulmonary consolidation or infiltrates (with or without pleural effusion): typical CAP
    b. Diffuse bilateral infiltrates / interstitial pattern: atypical or viral CAP
    c. Cavities with air-fluid levels in severe CAP with abscess formation (most likely staphylococci, anaerobes, or gram-negative bacilli)
    d. Cavities without air-fluid levels in tuberculosis or fungal infection
    e. Enlargement of mediastinal or hilar lymph nodes suggests fungal or mycobacterial infection
3. Chest CT Scan: considered if failing to respond to appropriate therapy.

LABORATORY TESTS

1. Requested ONLY in patients who need in-hospital treatment: CBC, electrolytes, BUN, Cr, Liver Function Tests (LFTs), ABGS, sputum gram stain and culture, blood culture, etc.

DECISION FOR ADMISSION TO HOSPITAL

Decision to treat in-hospital should be based on any of the following three-step process:

FIRST. Presence of pre-existing conditions:

1. Age 65 year or older.
2. Use of antimicrobials within the previous 3 months or resistance to antibiotics.
3. Comorbidities:
    a. Immune suppressing conditions (e.g. HIV infection) or use of immunosuppressing drugs including corticosteroids
    b. Lung disease (asthma, COPD)
    c. Malignancy
    d. Circulatory disease (chronic heart failure, cerebrovascular disease)
    e. Diabetes mellitus
    f. Liver disease
    g. Chronic kidney disease
    h. Asplenia
    i. Alcoholism
    j. Pleural effusion > 5cm on lateral CXR

SECOND. Severity Index Score (refer to Table 8.I.1): CURB-65 (Confusion, Uremia, Respiratory rate, low Blood pressure, and age ≥ 65 years) or CRB-65 i.e. without Uremia (BUN) can also be used.

N.B. They do not account for decompensated chronic illness that occurs with CAP.

A CURB-65 score of ≥ 2 or CRB-65 score of ≥ 1 is indicative of in-hospital therapy.

THIRD. Clinical Judgment:

1. The ability to safely and reliably take oral medication
2. The availability of outpatient support resources.

TABLE 8.I.1: CURB-65 MORTALITY PREDICTION TOOL FOR CAP

Prognostic Factors		
Confusion		1 point
Blood urea nitrogen (BUN) level > 20 mg/dL		1 point
Respiratory rate ≥ 30 breaths per minute		1 point
Blood pressure (systolic < 90 mm Hg or diastolic ≤ 60 mm Hg)		1 point
Age ≥ 65 years		1 point
CURB-65 Score	**CRB-65 (without BUN)**	**Inpatient vs. outpatient**
0 or 1 point	0 point	Treat as outpatient
2 points	1-2 points	Treat as inpatient
3-5 points	3-4 points	Treat in intensive care unit

Reference: Lim et al. Thorax. 2009;64(suppl 3):1-55.
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MANAGEMENT

Because overuse of antibiotics for treatment of upper respiratory tract infections promotes drug resistance and can have adverse effects (e.g. Infection with Clostridium Difficile), identifying patients who have CAP and will benefit from antimicrobial therapy is important.

TREATMENT

1. It should be started as soon as possible (i.e. 4-8h) after the diagnosis is made.
2. Empiric therapy (Table 8.I.2) is based depending on: the severity of the illness, the local prevalence of pathogens, the resistance pattern of Streptococcus pneumonia in the community, and the presence of co-morbidities or of influenza season.
3. Antibiotics therapy is given for a minimum of 5 days (traditionally for 10 to 14 days). Patients should be clinically stable and afebrile for 48-72 hours before discontinuation of antibiotic therapy. Analgesics such as paracetamol for pleuritic pain.
4. Patients with suspected CAP should be advised not to smoke, to rest, and to drink plenty of fluids unless contraindicated.

TABLE 8.I.2: EMPIRIC ANTIMICROBIAL THERAPIES FOR CAP

CAP	Risk Class and Site of Care and Preferred Empiric Antibiotics
Without co-morbidities and have not received antibiotic therapy in the previous 3 months	**Low risk (Outpatient):** 1st line: Macrolide[1] (e.g. Azithromycin) 2nd line: Doxycycline[2]
With co-morbidities or have received antibiotic therapy in the previous 3 months *(in which case an alternative from a different class should be selected)*	**Low risk (Outpatient):** 1st line: ß-lactam[3] (e.g. Amoxicillin-Clavulanic acid) +Macrolide[1] (e.g. Azithromycin) 1st line: Fluoroquinolone[4] when available can also be used. 2nd line: ß-lactam[3] (e.g. Amoxicillin-Clavulanic acid) + Doxycycline[2]

Dosages and Notes:
[1] Macrolide: Azithromycin 500 mg orally for one dose, then 250 mg once per day for 4 days or 500 mg daily for 3 days as it has a long half-life in blood. Clarithromycin is an alternative: Clarithromycin 500 mg orally twice per day for 5 days or Clarithromycin XL 2 500 mg tablets once daily for at least 5 days.
[2] Doxycyclin 200 mg loading dose then 100 mg twice per day with meal for at least 5 days.
[3] ß-lactam: Amoxicillin-Clavulanate 2 grams orally twice per day for at least 5 days. A Cephalosporin (Ceftriaxone, Cefpodoxime, or Cefuroxime) is another option, e.g. in case of allergy to Penicillin.
[4] Levofloxacin 750 mg orally per day OR Moxifloxacin 500-750 mg orally per day for at least 5 days.

N.B. For non-pregnant patients at high risk for QT interval prolongation, Doxycycline is preferred over Macrolides and the combination of Doxycycline+Betalactam (e.g. Amoxicillin-Clavulanate) is preferred over a Fluoroquinone + a Macrolide.

FOLLOW UP

1. If no improvement within 48-72 hours, consider hospital admission.
2. CXR NOT recommended for monitoring response: it lags behind the clinical picture and may not clear up before 4-8 weeks after illness.
3. A repeat CXR is indicated
    a. ONLY when complications are suspected (e.g. ongoing fever, hypoxia, and clinical deterioration).
    b. As follow-up, 7-12 weeks after treatment, in smokers and patients over 40 years to document clearing of pneumonia. If not cleared, have to exclude underlying diseases.

GENERAL PREVENTION

1. Smoking Cessation.
2. Annual Influenza vaccination for all persons aged ≥ 6 months who do not have contraindications. Vaccination is better done before onset of influenza activity in the community (by September-October, if possible).
3. Pneumococcal polysaccharide vaccine (PPSV23) for all adults age 65 and older, or with other indications for vaccination such as presence of comorbidity or smoking.

II. ACUTE BRONCHITIS

DEFINITION

1. It is an acute respiratory infection, usually due to viruses.

DIAGNOSIS

1. Purely clinical:
    a. Cough (nonproductive or minimally productive) lasting less than 2-3 weeks accompanied or preceded by upper respiratory tract symptoms
    b. NOT due to pneumonia, acute asthma or an exacerbation of COPD
    c. Fever is absent usually

PHYSICAL EXAMINATION

1. Head and neck: rhinorrhea, normal or red pharynx, localized submandibular and cervical lymphadenopathy.
2. Lung exam: coarse rhonchi and wheezes that change in location and intensity after a deep and productive cough.

MANAGEMENT

1. Acute bronchitis is usually a self-limiting condition. SYMPTOMATIC management is recommended:
    a. Acetaminophene and/or non-steroidal anti-inflammatory drugs (NSAIDs) e.g. Ibuprofen, Naproxen or Diclofenac can reduce pain, inflammation, and lower fever
    b. Beta2-agonist bronchodilators (Salbutamol) can help in patients who have wheezing or a history of underlying pulmonary disease, hyper reactive airways or asthma. They are NOT to be routinely used to alleviate cough
    c. Cough medications (mucolytics and expectorants) and Zinc lozenges have not been shown to be helpful in alleviating cough, thus they are not recommended
    d. Antitussive agents (such as dextromethorphan, codeine, or hydrocodone) are used ONLY for dry cough without any sputum production
    e. First-generation antihistamine (e.g. Dexchlorpheniramine, Chlorpheniramine, Diphenhydramine) with or without decongestant can be helpful in cough persisting 3 weeks post a viral illness
    f. General measures:
        • Stop smoking, increase non-caffeinated fluid intake, and bed rest
        • Preventive measures such as hand washing to reduce the spread in the household

2. Follow-up if no improvement in 5 days or in case of dyspnea, wheezing, or systemic symptoms such as fever and chills for further evaluation.
3. Antibiotics may ONLY be indicated in:
    a. Patients more than 65 years old
    b. Patients with comorbid diseases
    c. Patients with suspected pneumonia (refer to Algorithm 8.II.1)
4. Patients with suspected pertussis (history of contact with a person with pertussis or persistent cough > 2 weeks, or if there is whooping or post-tussive vomiting). Macrolide e.g.Azithromycin (or Trimethoprim-sulfamethoxasole) should be initiated as soon as possible to reduce transmission. Antibiotics do not reduce duration of symptoms.

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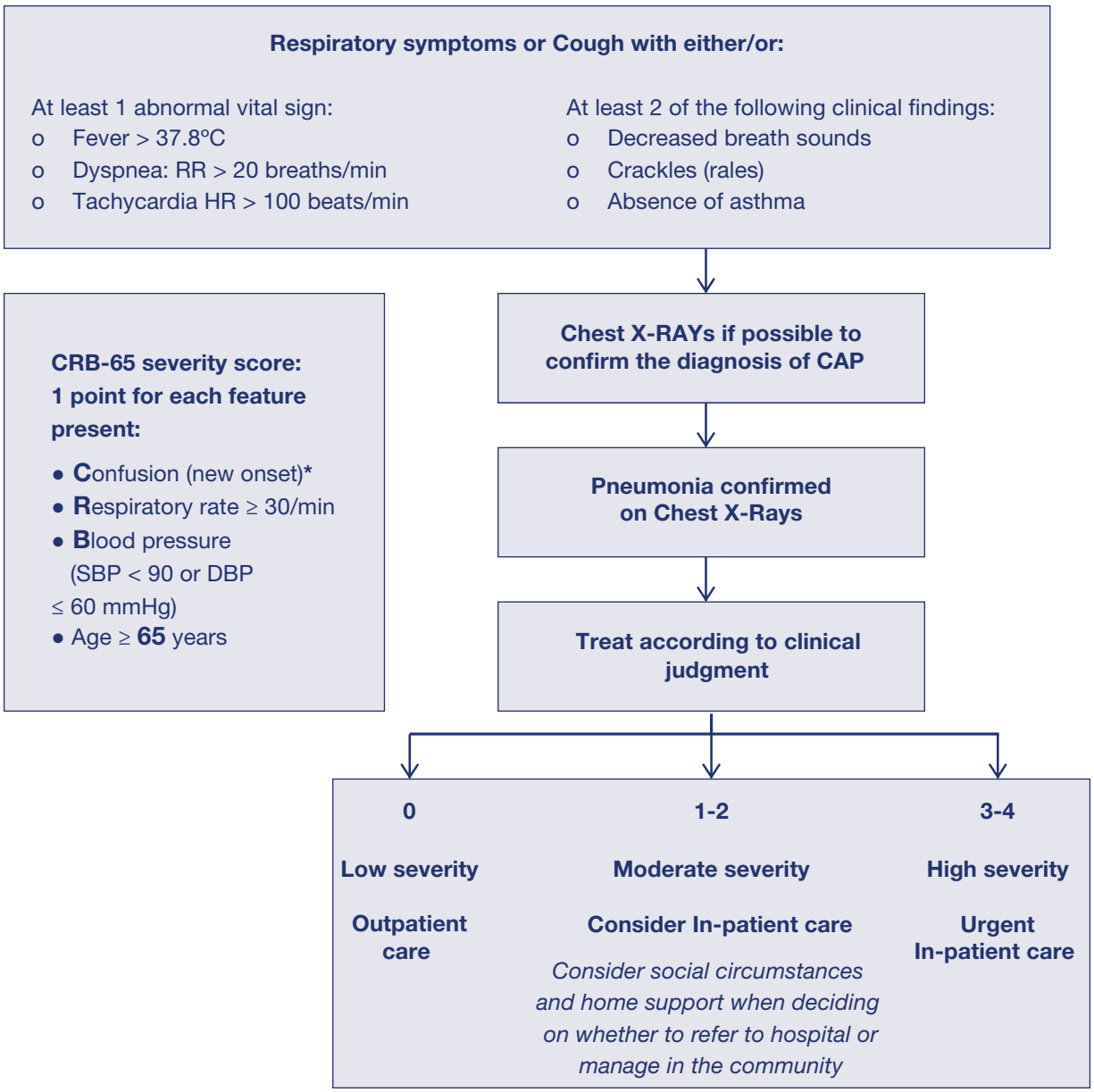
ALGORITHM 8.II.1: A PRACTICAL APPROACH TO DIAGNOSIS AND MANAGEMENT OF CAP



*Mental Confusion is defined as disorientation with regard to person, place or time that is not known to be chronic. It is an indication for in-hospital management and therapy.

CHAPTER 9.

COMMON UPPER RESPIRATORY TRACT INFECTIONS IN ADULTS

Dany Daham, MD

I. COMMON COLD AND FLU/INFLUENZA

DEFINITION

1. Common cold is the most common upper respiratory tract infection (URTI). It is a benign, mild, self-limited URTI, caused by viruses (> 100 serotypes, most common are rhinovirus 50%, followed by coronavirus, parainfluenza viruses, adenovirus, coxsackievirus, and RSV).
2. Influenza: a highly contagious orthomyxovirus transmitted by respiratory droplets (Box 9.I.1). There are 3 types of influenza: A, B, and C. Subtypes of influenza A (e.g., H 5N1, I-II N 1) are classified on the basis of glycoproteins (hemagglutinin and neuraminidase).

BOX 9.I.1: VIRUS TRANSMISSION

1. Symptoms of cold and flu usually occur 1-4 days (average 2 days) after inoculation with the virus through inhalation of coughed or sneezed material or hand to hand contact (i.e. after exposure to infected people). Symptoms typically last 7-14 days.
2. Adults shed the virus from the day before symptoms begin through 5-10 days after illness onset. Droplets carrying the viruses do not remain suspended in the air and generally travel only a short distance (≤ 1 meter) through the air.

HISTORY

COMMON COLD

1. Sore throat, followed by nasal congestion and/or obstruction, sneezing and rhinorrhea (clear watery or mucoid then purulent at a later stage in the absence of secondary bacterial infection), and followed by dry or slightly productive cough that can persist up to 14-21 days.
2. Constitutional symptoms can be present but are rarely severe: fever < 39°C for < 72 hours (uncommon in adults), malaise, headache, and weakness.

FLU/INFLUENZA

1. Abrupt onset of systemic symptoms: high grade fever, chills, malaise, myalgias, headache, weakness, cough, coryza (rhinorrhea, lacrimation), that overshadow respiratory complaints. Gastrointestinal symptoms may be present.
2. Elderly patients may have atypical presentations characterized only by confusion.

PHYSICAL EXAMINATION

1. Fever: high grade in case of flu and low grade or no fever in common cold.
2. Coryza (rhinorrhea, lacrimation) more prominent in flu ±Erythematous pharyngitis without exudates.
3. Check for complications (refer to related chapters/sections): pneumonia viral or bacteria, acute bronchitis, acute sinusitis, and exacerbation of COPD and asthma.

EVALUATION

1. Not recommended, unless high grade fever with suspected bacterial pharyngitis or flu/ influenza or other complications. Symptoms that help in the differential diagnosis are outlined in Box 9.I.2.
2. Diagnostic tests in case of high grade fever and suspected flu
    a. Leucopenia is a common finding

b. Rapid influenza test of viral antigens from nasopharyngeal swabs (when available)
c. More definitive diagnosis can be made with Direct Fluorescent Antibody (DFA) tests, viral culture, or Polymerase Chain Reaction (PCR) assays.

TREATMENT

The treatment is mainly supportive. Common cold and Flu/Influenza are usually a self-limited diseases and the treatment is directed more to alleviate symptoms than to cure the disease. Avoid inappropriate antibiotics prescription.

1. Adequate hydration: loosens secretions and prevents airway obstruction. It can be achieved by increasing fluid intake and inhaling steam.
2. Rest and analgesics (Acetaminophen, Ibuprofen or Naproxen)—for relief of malaise, headache, fever, aches.
3. Nasal decongestant sprays or drops for less than 5 days with or without oral first-generation antihistamines (Dexchlorpheniramine, Chlorpheniramine, Diphenhydramine) for rhinorrhea/sneezing. Alternatively, a combination of oral OTC antihistamines with decongestant for a maximum of 5 days.
4. Cough suppressant (Dextromethorphan, Codeine): questionable effect (mixed results).
5. Antivirals: neuraminidase inhibitor such as Oseltamivir or Zanamivir in patients with severe influenza (e.g. requiring hospitalization). They are most effective when used within 2 days of onset and may shorten the duration of infection by 1-2 days.

FOLLOW-UP

1. Ask previously healthy patient to follow-up in one week if symptoms do not improve and before that period if symptoms deteriorate/exacerbate after initial improvement and in case of new symptoms (breathlessness, earache, etc.).

BOX 9.I.2: SYMPTOMS THAT HELP IN DIFFERENTIAL DIAGNOSIS

- The recent onset of body aches±fever can differentiate between cold and other non-infectious rhinitis (allergic and vasomotor).
- A prolonged period of persistent discharge with nasal obstructive symptoms in a patient with allergic rhinitis is suggestive of nasal polyps.
- A history of prolonged use of topical decongestants, symptoms of nasal pain, purulent discharge and inflamed nasal mucosa are suggestive Rhinitis Medicamentosa.

PATIENT EDUCATION AND PREVENTIVE MEASURES

1. Explain the etiology and course of the disease.
2. Educate about inefficacy and risks of inappropriate antibiotics, cough and cold medicines.
3. Educate about preventive measures to limit its spreading to contacts i.e. hand washing, protective masks, limited isolation, hygienic tissues disposal, limiting handshakes etc.
4. Flu/Influenza vaccine annually and pneumococcal vaccine as indicated.

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II. ACUTE PHARYNGITIS IN ADULTS

DEFINITION

1. Pharyngitis (also called tonsillitis) is an inflammation of the pharyngeal region (pharynx or/and tonsils) that can be of viral or bacterial origin.
    a. Viral: most frequent etiology with numerous types of viruses; of relevant importance are Influenza, Epstein-Barr virus and primary HIV that cause the mononucleosic syndrome
    b. Bacterial: the most frequent bacteria are Group A Streptococcus (GAS) with 5-15% of isolates in cases of pharyngitis, and they are also the main treatable agents

HISTORY

1. Sore throat specially upon swallowing is the main common symptom of pharyngitis.
2. Cough, hoarseness, lower respiratory symptoms.
3. Constitutional symptoms: fever and/or chills; anorexia; malaise; headache; myalgia.
4. Gastro-intestinal symptoms: diarrhea; nausea/vomiting; abdominal pain.
5. Contacts with similar symptoms or diagnosed Streptococcal infection in past 2 weeks.

PHYSICAL EXAMINATION

1. Fever.
2. Pharyngeal erythema ± enlarged tonsils ± exudates ± palatal petechiae.
3. Cervical adenopathy (swollen and enlarged): anterior cervical lymphadenopathies in Strep pharyngitis; posterior lymphadenopathies in infectious mononucleosis.
4. Scarlet fever rash: punctate erythematous macules with reddened flexor creases and circumoral pallor (Streptococcal pharyngitis).
5. Gray pseudomembrane: diphtheria and occasionally mononucleosis.
6. Characteristic erythematous-based clear vesicles: herpes stomatitis.
7. Conjunctivitis: more commonly with adenovirus infections.
8. Hepatosplenomegaly: suggestive of mononucleosis.
9. Check for other respiratory tract infections: otitis media; rhinosinusitis; acute Bronchitis; pneumonia and peritonsillar abcess.

EVALUATION

1. Streptococcal score (modified Centor score): a clinical score permitting to estimate the likelihood of GAS pharyngitis and further need to investigate or treat (Table 9.II.1).
   If the total score is 2 to 3, the patient should undergo the following test(s):
    a. Rapid Antigen Detection Testing (RADT): expensive, and not frequently available in polyclinics in Lebanon; antibiotherapy if positive, and do a throat culture if negative
    b. Throat culture when RADT is unavailable or negative in patients
2. Patients with suspected mononucleosis can undergo the following tests to confirm the diagnosis (rarely needed):
    a. Monospot test (may be negative in the 1st few weeks after symptoms begin)
    b. EBV-specific antibodies can be ordered in patients with suspected mononucleosis and a negative Monospot test
    c. Infectious mononucleosis syndromes that are Monospot and EBV-antibody negative are most often due to CMV infection or other viruses e.g. HIV

BOX 9.II.1: ABOUT STREPTOCOCCAL INFECTION

The major issue in pharyngitis is to identify Streptococcal pharyngitis that should be promptly treated with antibiotics owing to its potential for preventable rheumatic sequelae. Adults with strep throat may develop rheumatic fever, but the chance is extremely low. At the same time, ruling out the viral etiologies will also permit limiting the inappropriate use of antibiotics in this context.

TREATMENT

1. Fever lowering treatments and analgesics: acetaminophen with or without NSAIDs (e.g., Ibuprofen) when needed depending on the severity of the symptoms.
2. Antibiotic for streptococcal pharyngitis (Table 9.II.2).
   N.B. Most patients with mononucleosis who are given an antibiotic containing amoxicillin for suspected streptococcal pharyngitis develop a prolonged, pruritic maculopapular rash.

FOLLOW-UP AND REFERRAL

1. Work should be avoided for 24 hours.
2. Patients should be referred when a complication arises.

PATIENT EDUCATION

1. Convince the patient not to take antibiotic when it is not necessary.
2. Convince the patient to take the full course when antibiotic is necessary.
3. Educate about measures limiting contagiosity.

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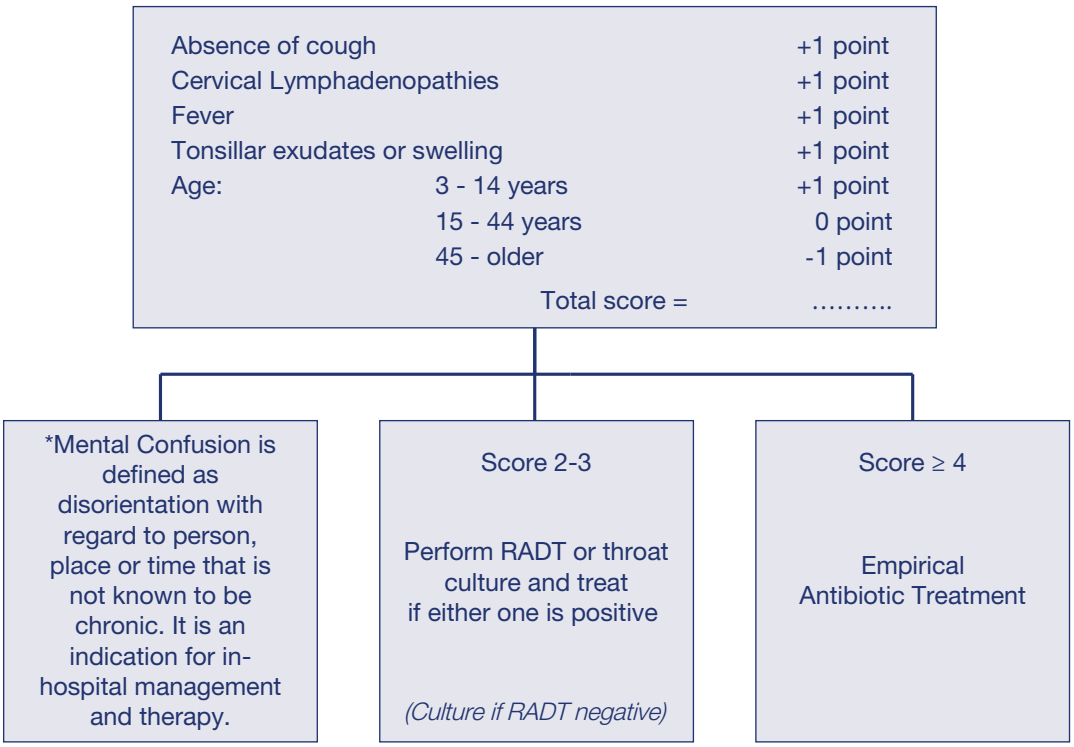
TABLE 9.II.1: STREPTOCOCCAL SCORE FOR SORE THROAT



Ref. McIsaac WJ, White D, Tannenbaum D, Low DE. CMAJ. 1998;158(1):79.

TABLE 9.II.2: ANTIBIOTICS CHOICES FOR STREPTOCOCCAL PHARYNGITIS

Antibiotic	Dosage in Adults
Penicillin V	250 mg orally 3-4 times daily or 500 mg orally twice daily for 10 days
Amoxicilin *It can induce rash if Epstein-Barr virus (mononuclesosis)*	500 mg orally twice daily for 10 days or 1000 mg orally twice daily for 10 days in severe cases
Penicillin Benzathin	$1.2x10^6$ units intramuscularly if weight >27 kg
Cephalexin*	500 mg orally twice daily for 10 days
Cefadroxil*	1 g 1-2 times daily for 10 days
Azithromycin*^	500 mg on the first day then 250 mg daily for 4 days
Erythromycin Ethylsuccinate*	400 mg 4 times daily or 800 mg twice daily orally for 10 days
**Allergy to Penicillin*	
^Azithromycin, Clarithromycin, Cefdinir, Cefprozil, Cefpodoxime, and Ceftibuten are FDA approved, but not recommended by guidelines for primary GAS therapy	

III. ACUTE LARYNGITIS

1. Typically self-limiting in less than 3 weeks, but patient should:
    a. Rest voice until laryngitis resolves to avoid formation of vocal nodules
    b. Avoid tobacco smoke
    c. Inhale humidified air
2. Antibiotics, steroids, and antihistamines have not been shown to be beneficial.
3. Refer to an otolaryngologist if hoarseness persists for > 3 weeks.

IV. ACUTE SINUSITIS IN ADULTS

EPIDEMIOLOGY

1. It is more frequent in adults (annual incidence: 13%).
2. It is the 5th most frequent cause of antibiotic prescriptions. Many of these diagnoses are inaccurate, and antibiotics are probably not necessary.

DEFINITION

1. Acute rhinosinusitis (also called sinusitis) is an inflammation of the paranasal sinuses and the nasal cavity of < 4 weeks duration resulting from impaired drainage and retained secretions.
2. It is usually viral (most common) but can be complicated with bacteria in up to 2.0% of cases (Streptococcus pneumoniae, Haemophilus influenzae, and Moraxella catarrhalis).

HISTORY

1. Symptoms predictive of bacterial sinusitis (refer to Box 9.IV.1).
2. Associated symptoms: headache; facial pain on bending forward; nasal congestion/ obstruction; retro-orbital pain; otalgia; hyposomia; halitosis; cough (sometimes chronic).
3. Symptoms requiring urgent attention:
    a. Visual disturbances, especially diplopia
    b. Periorbital swelling or erythema
    c. Altered mental status
4. Risk Factors: viral URTI; allergic rhinitis; nasal anatomical abnormalities (e.g. deviated septum, turbinate hypertrophy, nasal polyps); tonsillar and adenoid hypertrophy; cleft palate; gatroesophageal reflux; tobacco smoke exposure; asthma; dental infections and procedures; Immunodeficiency (e.g., HIV); cystic fibrosis.

PHYSICAL EXAMINATION

1. Fever.
2. Edema and erythema of nasal mucosa.
3. Purulent postnasal drip/discharge.
4. Facial tenderness to palpation (over sinus(es)).
5. Painful tooth percussion.
6. Negative transillumination test (helpful if asymmetric, not helpful if symmetric exam).

EVALUATION

1. Routine radiology exploration is not recommended at initial diagnosis because:
    a. ≥ 3 clinical findings have similar diagnostic accuracy as imaging
    b. Imaging does not distinguish viral from bacterial etiology
2. Limited coronal CT scan can be useful in recurrent infection or failure to respond to medical therapy.

BOX 9.IV.1: CRITERIA FOR DIAGNOSIS OF BACTERIAL RHINOSINUSITIS

The following clinical presentations (any of 3) are recommended for identifying patients with acute bacterial versus viral rhinosinusitis:

1. Onset with persistent symptoms or signs compatible with acute rhinosinusitis, lasting for ≥ 10 days without any evidence of clinical improvement.
2. Onset with severe symptoms or signs of high fever (≥39°C) and purulent nasal discharge or facial pain lasting for at least 3-4 consecutive days at the beginning of illness.
3. Onset with worsening symptoms or signs characterized by the new onset of fever, headache, or increase in nasal discharge following a typical viral upper respiratory tract infection (URTI) that lasted 5-7 days and were initially improving ("double sickening").

TREATMENT

ANTIBIOTIC THERAPY OPTIONS IN ACUTE BACTERIAL RHINOSINUSITIS

TABLE 9.IV.1: SUMMARY THERAPEUTIC OPTIONS FOR ACUTE RHINOSINUSITIS

	First Line	Alternatives
Basic	- Amoxicillin orally (500 mg every 8 hours or 1000 mg every 12 hours) for 10 days	- Trimethoprim/sulfamethoxazole 800 mg/160 mg twice per day for 10 days - Azithromycin 500 mg per day for 3 days - Clarithromycin regular or XR 500 mg twice per day or 1000 mg XR every day for 14 days
For possible Streptococcus pneumoniae resistance	- Amoxicillin orally (1000 mg every 6-8 hours) for 10 days	
If suspected beta-lactamase producing Moraxella catarrhalis and Haemophilus influenza	- Amoxicillin-Clavulanate orally (625 mg every 8 hours or 1 g every 12 hours) for 10 days	- Cefdinir orally 300 mg twice per day for 10 days - Cefpodoxime oally 200 mg twice per day for 10 days - Cefuroxime Axetil orally 250 mg twice per day for 10 days
For moderate disease, recent antibiotic use, or treatment failure	- Amoxicillin-Clavulanate XR 2,000 mg/125 mg twice per day for 10 days	- Levofloxacin 500 mg/day for 10-14 days or 750 mg/day for 5 days - Moxifloxacin 400 mg/day for 10 days

ADJUNCTIVE THERAPIES

1. Nasal irrigation with saline: (If home prepared, do NOT use salt table because it contains iodine: ¼ tablespoon of salt in a cup of water).
2. Nasal inhaled corticosteroids, particularly but not only in patients with history of allergic rhinitis.
3. Antihistamines may over-dry the nasal mucosa and increase discomfort, thus should be used only in patients with symptoms of allergy (e.g. itching).
4. Topical and oral decongestants can temporarily relieve nasal congestion, but their effects do not extend to the paranasal sinuses. They should not be used for > 5-7 days because of the risk of rebound nasal congestion. They should be avoided in patients with heart problems, high blood pressure, kidney problems, diabetes, glaucoma, an overactive thyroid, prostate problems or taking a Monoamine Oxidase Inhibitor (MAOI) antidepressant.

FOLLOW-UP

1. If the patient does not show signs of improvement on antibiotics within 3-5 days or if s/he worsens after 2-3 days, s/he should be re-evaluated clinically to exclude other causes of illness, and detect complications. If the diagnosis of acute sinusitis is reconfirmed, an alternative therapy should be suggested i.e. high-dose amoxicillin-clavulanate, or Levofloxacin (if history of anaphylactic reaction), or third generation penicillin combined with Clindamycin.
2. And if yet another failure is encountered, referral for radiological studies (CTscan) and culture should be done, to rule out other diagnosis, resistant bacteria or sinusitis complications.
3. Simple x-rays are not useful.

PATIENT EDUCATION

1. Importance of waiting for determined periods to evaluate treatment success or failure.
2. Importance of taking the complete course of antibiotic.
3. Importance of recognizing a complicated course.

REFERRAL TO A SPECIALIST (OTOLARYNGOLOGIST)

1. Failure to treat or worsening of symptoms, after a trial of 2 antibiotics courses as mentioned before.
2. Recurrent acute sinusitis (≥ 4 episodes/year with complete resolution between episodes; each episode lasting at least seven days).
3. Chronic sinusitis when symptoms persist for >12 weeks.
4. Suspected complications (incidence: 1/1000 cases) i.e. orbital, intracranial, and bony involvement, including meningitis, acute orbital cellulitis or orbital osteitis. They should be suspected when there are visual symptoms (signs of diplopia, decreased visual acuity, disconjugate gaze, or difficulty opening the eye), severe headache, somnolence or failure of improvement.
   N.B. Neurologic and neurosurgical consultation are advised for patients with intracranial complications. Ophthalmology consultation is required for patients with orbital complications.

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V. ACUTE OTITIS MEDIA IN ADULTS

EPIDEMIOLOGY

1. Acute Otitis Media (AOM) can occur at any age but it is much less common in adults than in children.

DEFINITION

1. **Acute otitis media (AOM)** is an infection of the middle ear, due to viral or bacterial infection mainly by Streptococcus pneumoniae, Haemophilus influenzae, Staphylococcus aureus, or Moraxella catarrhalis.
2. **Otitis media with effusion (OME)** is an effusion of the middle ear that is not of infectious origin and that can mimic AOM on otoscopy.
3. **Persistent/Refractory otitis media (POM):** unresolved otitis media for ≥ 6 weeks.
4. **Recurrent otitis media (ROM):** ≥ 2 attacks in the preceding 12 months.

HISTORY

1. Acute onset of earache; fever; decreased hearing; otorrhea.
2. Preceding or accompanying upper respiratory tract infection (URTI) symptoms (mainly viral) or allergic rhinitis exacerbation.
3. Risk factors facilitating Eustachian Tube Dysfunction i.e. allergic rhinitis.

PHYSICAL EXAMINATION (OTOSCOPY + PNEUMATIC)

1. Check the tympanic membrane (TM) for any of the following abnormalities:
    a. Discharge or otorrhea (serous, pus)
    b. Color (red, cloudy/opaque, normal). N.B. Redness alone is not a reliable sign
    c. Position (bulging, retracted, normal) and presence of air–fluid level behind it
    d. Mobility checked with with pneumatic otoscopy (impaired, normal)
2. Otitis media (unlike otitis externa) should not cause pain with movement of the tragus/pinna.
3. Check for complications: conductive hearing loss, tympanic membrane perforation/otorrhea, acute mastoiditis, acute labyrinthitis, and rarely acute meningitis, brain abscess, facial nerve paralysis, and lateral sinus thrombosis.

EVALUATION

1. Culture of ear discharge in case of failure to treatment, refractory or recurrent (AOM).
2. Audiogram+Tympanogram in case of hearing loss.
3. Other tests if suspected complications.

DIAGNOSIS

1. A diagnosis of AOM is made with one of these criteria:
    a. Moderate to severe bulging of the tympanic membrane (TM)
    b. Mild bulging of the TM + Earache of recent onset (< 48 hours)
    c. Mild bulging of the TM + Intense Erythema of the TM
    d. Otorrhea (new onset) not due to Otitis Externa
2. A diagnosis of AOM should NOT be made when there is NO middle ear effusion based on pneumatic otoscopy. (Please check the following link to familiarize with pneumatic otoscopy: http://www2.aap.org/sections/infectdis/video.cfm).

TREATMENT OF AOM

1. Acetaminophen or NSAIDs (e.g. Ibuprofen, Diclofenac or Naproxen). Topical pain treatments (e.g. Benzocaine ear drops if age >5 yr) are effective for a very brief duration.

2. Decongestants and antihistamines are not recommended.
3. Antibiotic therapy options in Acute Otitis Media (table 9.V.1).

TABLE 9.V.1: ANTIBIOTIC THERAPY OPTIONS IN ACUTE OTITIS MEDIA

First Line Antibiotics
Basic: • Amoxicillin orally 500 mg three times per day for 10 days. • Amoxicillin-Clavulanate orally 625 mg three times per day or 1 g twice daily for 10 days, if Amoxicillin taken in the preceding 30 days or concurrent purulent conjunctivitis.
Penicillin Allergy (Non-urticarial / anaphylactic): • Cefuroxime Axetil orally 500 mg twice daily for 10 days. • Cefpodoxime orally 200 mg twice daily for 10 days. • Cefdinir orally 300 mg twice daily for 10 days.
Penicillin Allergy (urticarial / anaphylactic): • Azithromycin orally (500 mg as a single dose on day 1 and 250 mg/day for days 2–5. • Clarithromycin orally 500 mg twice daily for 10 days. • Trimethoprim-Sulfamethoxazole orally 160 mg/800 mg twice daily for 10 days. • Levofloxacin 500 mg once daily for 10 days.
Second Line Antibiotics
After 48-72 h of failure of initial antibiotic treatment, reassess diagnosis. • Amoxicillin-Clavulanate orally 625 mg three times per day or 1g twice daily for 10 days if the patient was initially treated with Amoxicillin. • Ceftriaxone intramuscular or intravenous 2 g in one dose IM or IV for 1-3 days, if the patient was initially treated with Amoxicillin-Clavulanate or oral Cephalosporin.

FOLLOW-UP AND REFERRAL

1. Follow-up in 48-72 hours.
2. Refer to specialist otolaryngologist (ENT) for investigations and to rule out a tumor when the second-line antibiotic therapy fails (i.e. refractory AOM), AOM recurs, or complications arise.

PATIENT EDUCATION

1. Educate about signs of improvement and signs of deterioration.

PREVENTIVE MEASURES

1. Check for allergic rhinitis with secondary chronic rhinorrhea.
2. Avoidance of tobacco smoke exposure.

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VI. OTITIS EXTERNA

1. Sudden onset of ear pain (intensified by jaw motion), pruritus, fullness ± hearing loss, and possible purulent discharge.
2. Pain with movement of the tragus/pinna **(unlike otitis media)** and an edematous and erythematous ear canal ±otorrhea. Erythema of the tympanic membrane (TM) can occur; however, pneumatic otoscopy shows good TM mobility **(unlike otitis media)**.
3. Treatment
    a. Clean the ear (curette or aspiration), and give antibiotic and steroid ear drops *(e.g. Ciprofloxacin/ Fluocinolone Acetonide ear drops twice daily for 7 days)*.
    Gentamycin/Dexamethasone 2-3 drops twice daily for 7 days is a possibility in patients with intact TM.
    b. Systemic antibiotics increase the risks of side effects, generation of resistant bacteria, and recurrence. They also increase time to clinical cure and do not improve outcomes compared with a topical agent alone in uncomplicated otitis externa.
    c. Fluoroquinolones orally to cover Pseudomonas aeruginosa and Staphylococcus aureus should be used only if the infection has spread beyond the ear canal or the patient has immunodeficiency, diabetes mellitus, a history of radiation to the ear, or occlusion of the ear canal precluding delivery of topical medication.
4. Refer to an otolarryngologist:
    a. If the patient's ear canal is obstructed and aspiration is needed.
    b. If the patient is toxic appearing. The diagnosis of necrotizing or malignant otitis externa may require confirmation with CT or MRI.

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CHAPTER 10.

LATENT TUBERCULOSIS INFECTION

Rania Sakr, MD - Najla Lakkis, MD

EPIDEMIOLOGY

1. If untreated, latent tuberculosis (TB) has 5-10% lifetime risk of progression to active disease; the greatest risk occurs in the first 2 years after acquiring the infection (50% of cases).
2. The World Health Organization (WHO) estimates that there are approximately 2 million deaths worldwide from TB annually with the disease ranking second only to HIV as an infectious cause of death. Around 1/3 of the world's population is infected with Mycobacterium Tuberculosis.
3. In Lebanon, the 3-year average incidence rate of TB was 15/100000 population between 2008 and 2010.

DEFINITION

1. Latent Tuberculosis Infection (LTBI) is a condition in which a person is infected with Mycobacterium Tuberculosis but does not currently have active disease.

TUBERCULOSIS SCREENING

Screening is recommended in:

1. **High-prevalence populations** (more likely to get exposed and infected):
   a. Persons who have been, in the past 5 years, in countries endemic with TB
   b. Infants, children, and adolescents who have close contact with high-risk adults
   c. Residents/employees of high risk congregate settings (military, prisons, long term facilities e.g. nursing homes and mental institutions, shelters, refugee camps, etc), low income population, and medically underserved (homeless, etc).
   d. Health care workers (HCW), including personnel in mycobacteriology laboratories
   e. Close contacts of a patient with active TB

2. **High-risk populations** (more likely to progress to active tuberculosis once infected):
   a. Elderly and children less than 5 years of age
   b. Immunosuppressed persons: HIV infection, treatment with corticosteroids (e.g. prednisone or equivalent at the daily dose ≥ 15 mg for ≥ 1 month), anti-tumor necrosis factor (anti-TNF) therapy for rheumatologic conditions, chemotherapy, etc).
   c. People living with HIV and immunocompromised persons
   d. Workers in Silica exposed workplaces
   e. Fibrotic changes on chest X-Ray (CXR) consistent with previous TB infection with no history of TB treatment
   f. Close contacts of a patient with active TB
   g. Alcohol, or illicit drug abusers particularly intravenously
   h. Chronic medical conditions: uncontrolled diabetes mellitus and smoking, malignancies, chronic renal failure, organ transplant, chronic malabsorption (gastrectomy, intestinal bypass, etc), malnourishment, underweight (weight that is 10% or more below ideal body weight) and silicosis.

SCREENING TESTS

TUBERCULIN SKIN TEST (TST)

Formerly called Purified Protein Derivative (PPD)

TST technique

1. PPD: 5U (0.1 ml) intermediate strength intradermal volar forearm.
2. Alcohol, acetone, ether, or soap and water may be used to cleanse the skin. The area must be clean and thoroughly dry before injecting PPD.

TST reading

1. Reading after 48-72 hours.
2. Measure the diameter of induration (NOT THE ERYTHEMA) transversely to the long axis of the forearm and record the measurement in millimeters (including 0 mm). Using the tip of a ballpoint pen, gently pushed at a 45° angle toward the site of injection, will stop at the edge of induration.
3. Record presence and size (if present) of necrosis and edema, although these are not used in the interpretation of the test.

TST interpretation

1. It varies with TB risk and health status:
    a. Induration ≥ 5 mm is classified as positive in immunocompromised patients (e.g. HIV infection, steroid users), organ transplant recipients, close contacts of someone with active TB, and those who have fibrotic changes (mainly apical) on CXR (i.e. radiographic evidence of primary TB)
    b. Induration ≥ 10 mm is classified as positive in the other high risk groups (e.g., those who live in high-prevalence areas, immigrants in the last 5 years, the homeless, prisoners, health care workers, nursing home residents, close contact of someone with TB, alcoholics, diabetics); and in case of recent conversion (increase induration to ≥ 10 mm in the last 2 years)
    c. Induration of ≥ 15 mm is considered positive in persons with no risk factors for TB
    d. Induration < 5 mm on initial test and, if indicated, on 2nd test is considered negative (refer to 2-step Test)

Practical issues concerning TST

1. TST induces delayed hypersensitivity reaction that is detectable 2-12 weeks after infection (incubation period) with Mycobacterium Tuberculosis --> if seeing a patient immediately after exposure to TB, do baseline test and if negative, repeat after 3 months.
2. The test should be read after 48-72 hours; if the patient returns after 72 hours, negative results are unreliable while positive reactions remain for up to one week.
3. Rubbing, scratching or applying a sticking plaster/bandage or an ointment/cream/lotion to the TST spot should be avoided (possible false positive interpretation). If it itches, an ice cube or cold water compressor can be applied. The test result is not affected if the test spot got wet e.g. while taking a bath or shower.
4. No conclusive evidence that repeat TST causes positive TST.
5. Once the test is positive, it remains positive and repeating it is not advisable as it has some risk of severe reaction.
6. A TST conversion is defined as an increase of ≥ 10 mm of induration within a 2-year period, regardless of age.

2-Step-Testing

1. If the initial TST is negative, a 2nd TST in 1-4 weeks is indicated as baseline in:
    a. Persons supposed to have, in the following years, TST at regular intervals like health-care workers, nursing home residents or prison workers and inmates.
    b. Individuals suspected of having acquired TB (e.g. close contact with TB disease or old TB) or have already received Bacillus Calmette-Guerin (BCG) vaccine.
2. The 2nd test is measured and interpreted as above. If positive, the individual should be checked for prior BCG vaccination or evaluated for latent TB.
3. The 2-step protocol detects boosting phenomenon (old TB infection or previous BCG vaccination) and avoid misclassifying those who turn TST positive as converters (when TST is repeated regularly)
4. The 2-step protocol needs to be performed only ONCE if properly performed and documented. Subsequent TST can be one step, regardless of the last TST.

Contraindications to TST

1. Allergy to any component of PPD or an anaphylactic or other allergic reaction to a previous TST.
2. Persons who have had a severe reaction (e.g., necrosis, blistering, anaphylactic shock or ulcerations) to a previous TST.
3. Persons with documented active TB or a clear history of treatment for TB infection or disease.
4. Persons with extensive burns or eczema.
5. Persons already having previous positive TST.

TABLE 10.1: CAUSES OF FALSE INTERPRETATION OF THE TST

Causes of False Positive TST	Causes of False Negative TST
- Misinterpretation of erythema for induration. - Cross reaction with non TB mycobacteria. - Previous BCG vaccination particularly within the past 10 years (may cause an induration of < 20 mm). - Booster phenomenon due to old TB infection. *N.B. False positive testing is less likely with larger induration.*	- Mishandling of TST solution: e.g. Improper storage (exposure to light or heat); improper dilution, or chemical denaturation. - Error in administering the test e.g. too deep injection, too little tuberculin, or administration > 20 minutes after drawing up into the syringe. - Inadequate interpretation of TST result (i.e. reading or measuring of the induration). -Test done during the incubation period (< 10 weeks after exposure). - Elderly or those who are being tested for the first time, reactions may develop slowly and may not peak until after 72 hours. - Immunodeficiency: HIV, malignancies, alcoholism, malabsorption, malnutrition, Zinc deficiency, renal failure, sarcoidosis, and immunosuppressant therapy including corticosteroids treatment (e.g. Prednisone ≥ 15mg/day for > 2 weeks) or therapy with tumor necrosis factor (TNF) inhibitors). - Overwhelming active TB (Advanced or Miliary TB). - Systemic viral, bacterial and fungal infections. - Live virus vaccines within 6 weeks* (e.g. measles, mumps, rubella, oral polio, varicella, and yellow fever).
* When live virus vaccines are administered, TST can be done in the same day but a different site, or postponed until 4-8 weeks after live vaccines.	
Storage: Store at 2° to 8°C. Do not freeze. Discard product if exposed to freezing. *Protect from light. The product should be stored in the dark except when doses are actually being withdrawn from the vial.* *A multidoses vial of PPD which has been in use for 30 days should be discarded.* *Do not use after the expiration date.*	

INTERFERON GAMMA RELEASE ASSAYS (IGRAS)

1. Two IGRAs are commercially available:
    a. QuantiFERON®-TB Gold-in-Tube test (QFT-GIT)
    b. T-SPOT®TB test
2. Advised in specific conditions:
    a. Patients who will be on iatrogenic immunosuppression (e.g., anti-TNF therapy for rheumatologic conditions) where the identification of LTBI prior to therapy may help prevent subsequent TB disease
    b. Persons who have received the BCG vaccine, have a positive TST, and had a contact with a TB patient
3. It is more specific but less sensitive than TST, so it helps ruling out false positive TST. It is unaffected by prior BCG vaccination, requires only 1 patient visit, BUT it is expensive.
4. It can be done 3 days after TST. Boosting is rare to occur.

TABLE 10.2: CAUSES OF FALSE INTERPRETATION OF THE IGRA

Conditions with False Positive IGRA	Conditions with False Negative IGRA
- Booster effect from Mycobacterium TB-Specific Antigens: ESAT-6 and CFP-10* e.g. when IGRAs performed years after the initial TB infection.	- Period from exposure to testing too short. - Anergy from advanced disease, malnourishment, immunosuppression disease or medication including steroids, or low CD4 cell count. - Delay in time from blood draw to lab testing. - Inadequate handling or transportation temperature of blood sample.
* Maximal effect occurs 1-5 weeks after testing; minimal effect within 48 hours or after 60 days. The Quantiferon-TB Gold In-Tube test contains TB 7.7 antigen and may be safer. The booster effect may not occur with the T-Spot.TB test.	
N.B. Screening Tests (IGRAs and the TST) are designed to detect latent TB infection. They are indirect tests, and they do not detect the actual TB bacilli but instead an immune response that suggests past or present exposure to TB bacilli. *N.B. CXR (posteroanterior view) is required in asymptomatic persons (no cough, hemoptysis, fever, night sweats, anorexia and weight loss) with positive screening test (TST and/or IGRA) to rule out active TB.*	

TREATMENT OF LATENT TUBERCULOSIS INFECTION

1. All persons who screen positive with TST or IGRA should have a chest x-ray. They are to be referred to any of the eight tuberculosis control center across the country where chest x-rays can be performed at nominal fees and TB medications are provided for free.
2. Persons at high risk for TB (refer to the paragraph “indications for screening”) and found to have LTBI should be offered treatment regardless of age and BCG vaccination status, in order to decrease the incidence of active TB.
3. Therapeutic regimens.

TABLE 10.3: THERAPEUTIC OPTIONS OF LATENT TUBERCULOSIS INFECTION

Drug	Treatment Duration	Adult Dosage	Total Doses
Isoniazid (INH)	9 months	once daily 5 mg/kg (max: 300 mg)	270 doses
		twice weekly 15 mg/kg (max: 900 mg)	76 doses
	6 months	once daily 5 mg/kg (max: 300 mg)	180 doses
		twice weekly 15 mg/kg (max: 900 mg)	52 doses
Rifampin	4 months	once daily 10 mg/kg (max: 600 mg)	120 doses
INH + Rifapentin	3 months	not available yet in Lebanon	12 doses

Notes:

- INH for 9 months is the preferred therapeutic option
- Completion of Latent TB treatment is based not only on duration but also on total number of doses.
- For INH, treatment may be resumed where it was left off if less than 3 months were missed and should be reinitiated from the beginning if more than 3 months have passed since last dose. For Rifampin, the cutoff point is 2 months.
- Patients given TB treatment should be carefully monitored and interviewed at monthly intervals for treatment compliance and adverse effects like hepatotoxicity.
- For patients exposed to multidrug-resistant TB, treatment should be individualized based on the susceptibility profile of the index case:
  - o 2 drugs to which the organism is sensitive.
  - o Duration: not studied (6-12 months is reasonable).

TABLE 10.4: LATENT TB MEDICATIONS: ADVERSE EFFECTS, PRECAUTIONS AND CONTRAINDICATIONS

Isoniazid (INH)
ADVERSE EFFECTS 1. Hypersensitivity reactions/skin rash. 2. Hepatitis or Hepatotoxicity i.e Hepatic enzyme elevation (major side effect), particularly in patients with the following risk factors: age (> 35 years), alcoholism (substance should be advised), chronic liver disease, concurrent use of potentially hepatotoxic drugs such as Acetaminophen, HIV infection, pregnant woman up to 3 months post partum. 3. Neurotoxicity (peripheral neuropathy, mild central nervous system effects). 4. Anemia. 5. Potential drug interactions with Phenytoin and Disulfiram.
PRECAUTIONS: 1. Adding Pyridoxine (Vit B6) 10-50 mg/day to decrease the risk of peripheral neuropathy is recommended to all adults when INH is given. 2. Measure baseline liver function tests (LFTs) before treatment initiation. If baseline LFTs > 3 times the upper normal limit -> delay treatment pending evaluation of the underlying cause. Subsequent LFTs measurements are recommended if: increased baseline LFTs, increased risk of hepatotoxicity (e.g. advanced age, poor nutritional status, liver disease, inappropriate or chronic use of lever metabolized drugs (e.g. Acetaminophene and anti-epileptic), viral hepatitis B or C and human immunodeficiency virus (HIV), acetylator status, and high alcohol intake), or if signs and symptoms of hepatotoxicity occur during treatment (anorexia, nausea, vomiting, dark urine, abdominal pain, fever, etc). 3. Patients should be educated about worrisome symptoms of allergy or hepatoxicity and instructed to stop taking INH and seek medical attention promptly when such symptoms occur. 4. Treatment should be discontinued only if transaminases levels become > 3 times the upper limit of normal in symptomatic patients or ≥ 5 times the upper limit in asymptomatic patients. 5. Treatment with the offending agent should not be resumed, even after LFTs have improved.
CONTRAINDICATIONS: 1. Active hepatitis. 2. End-stage liver disease. 3. Severe hypersensitivity reactions, including drug-induced hepatitis.
Rifampicin
ADVERSE EFFECTS 1. Hypersensitivity reactions/skin rash. 2. Hepatitis or Hepatotoxicity i.e. Hepatic enzyme elevation. 3. Gastro-intestinal upset (more common). 4. Hematopoietic reactions including Thrombocytopenia. 5. Fever. 6. Flu-like symptoms. 7. Orange discoloration of body fluids and can permanently discolor contact lenses. 8. Increased metabolism of drugs metabolized in liver, like oral contraceptive pills, interfering with their effectiveness.
PRECAUTIONS 1. Complete blood count platelets count, and liver function testing at baseline; repeat if abnormal or if patient has signs or symptoms of adverse effects e.g. fever, purpura, hepatoxicity (anorexia, nausea, vomiting, dark urine, abdominal pain, fever, etc), etc during treatment. 2. Close monitoring every month to check for treatment compliance and adverse effects.
CONTRAINDICATIONS 1. Contraindicated or should be used with caution in HIV-positive patients receiving protease inhibitors or nonnucleoside reverse transcriptase inhibitors as it decreases many drug levels.

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CHAPTER 11.

INTESTINAL PARASITES

Nina Brax, MD

EPIDEMIOLOGY

1. They are responsible for significant morbidity and mortality throughout the world, particularly in developing countries, among children and in individuals with comorbidities.
2. Soil-transmitted helminths are among the most common infections worldwide with an estimated rate of 24%. The main species are Ascaris lumbricoides (roundworm), Trichuris trichiura (whipworm) Ankylostoma duodenale and Necator americanus (hookworm).
3. Giardia lamblia, a pathogenic flagellated protozoan, is the most commonly isolated intestinal parasite throughout the world. Entamoeba histolytica, a pathogenic amoeba protozoan, is the world's second leading protozoan cause of death, after malaria.

DEFINITION

1. Defined as intestinal infestation caused by helminthes or protozoa.
2. Some are nonpathogenic; they can be found in the stool without causing illness and they don't need treatment; examples: Entamoeba coli, Endolinax nana, and Chilomastix mesnili.
3. Transmission to humans occurs through:
    a. Ingesting contaminated food, or through contaminated water, hands or utensils (A. lumbricoides, T. trichiura, hookworms, E. histolytica and G. lamblia)
    b. Penetration of the skin by infective hookworm larvae (N. americanus and A. duodenale), primarily by walking barefoot in contaminated soil
    c. Contact with contaminated surfaces furniture, bedclothes, towels, toilets, doorknobs, or other objects resulting in the infection of all family members (Enterobius vermicularis)
    d. Oral-anal sexual practices (E. vermicularis, E. histolytica and G. lamblia)
    e. Contaminated undercooked beef or pork meat (Taenia saginata or solium)
4. The larval cysts (cysticerci) can develop in a number of human tissues such as the central nervous system.

HISTORY

People with light infections usually have no symptoms. Severe infections can cause various symptoms.

1. Abdominal pain, diarrhea (all parasites). If symptoms last 2 -4 weeks with significant weight loss, this may indicate giardiasis or "backpacker's diarrhea" (G. lamblia).
2. Dysentery (T trichiura).
3. Colitis, bloody diarrhea +/- fever (E. histolytica). In chronic cases of amebiasis, inflammatory bowel disease (ulcerative colitis) can be misdiagnosed and treatment with steroids only exacerbates the infection.
4. Nocturnal stooling (T trichiura).
5. Nausea, flatulence (G. lamblia, Taenia), diarrhea or constipation (Taenia).
6. Irritation in the perianal, and vaginal area resulting in itching usually at nighttime which can lead to sleep disturbance (Enterobius Vermicularis).
7. Pruritic erythema usually feet and hands (A. duodenale or N. americanus).
8. Pulmonary symptoms like cough, wheezing (Ascaris lumbricoides, A. duodenale or N. americanus).
9. Weight loss (G. lamblia, E. hisolytica).
10. Lactose intolerance (G. lamblia).
11. Growth retardation in children.
12. If untreated, some infections can lead to protein and Vitamin A deficiency (A.lumbricoides, T. trichiura), intestinal or pancreatic obstruction (A. lumbricoides, E.hystoytica), hepatobiliary injury (A. lumbricoides) or abscess (E. hystolytica).
13. Rarely, reactive arthritis or asymmetric synovitis usually of the lower extremities, rashes and urticaria (G. lamblia).
14. Neurocysticercosis, the main preventable cause of epilepsy in many developing countries (T. solium).

PHYSICAL EXAMINATION

1. Usually non specific
2. Rectal prolapse may occur in severely infected hosts (T trichiura)

EVALUATION

1. Stool test:
    a. Ova and parasite (O&P) examination (3 samples for 3 consecutive days is the best diagnostic test) is the mainstay of diagnosis. If the results from 3 O&P tests are negative and giardiasis is still suspected, stool antigen enzyme-linked immunosorbent assay (ELISA) may be helpful for the diagnosis.
    b. Fat content: Increased fat content in stool to check for steatorrhea (G. lamblia)
2. Complete blood count:
    a. Anemia (hypochromic) in A. duodenale, N. americanus or T trichiura.
    b. Leukocytosis occurs in 75% of patients (E. histolytica)
    c. Eosinophilia may be present in Ascaris lumbricoides, A. duodenale, N. americanus or E. vermicularis.
3. "Cellophane tape test":
    a. Tape applied to anus, better right after awakening
    b. It may provide direct visualization of the adult Enterobius vermicularis worm (small, white and thread-like) or microscopic detection of eggs.
    c. Can be repeated on at least three consecutive days.
4. Visualization of white rings (proglottids) in the beddings, laundry, stools or toilet paper may be enough for the diagnosis of Taenia.
5. E. histolytica stool antigen and PCR tests with high accuracy are available but with no widespread use due to their cost comparing to the traditional O&P stool exam. Serologic tests such as ELISA are more than 90% sensitive but they often become negative within one year of the infection with E. histolytica.
6. Endoscopic retrograde cholangiopancreatography may be used in Ascaris lumbricoides to diagnose and treat infection of the biliary system.
7. Duodenal aspirates and biopsies are invasive and not recommended to diagnose G. lamblia or other infestations
8. Barium studies with biopsy may be useful to identify amebomas. Liver imaging if amebic abscess is suspected: oval or round hypo echoic cysts usually in the right lobe.

TREATMENT

1. WHO recommends periodic treatment with antihelminthic (deworming) medicines, without prior workup, to all at-risk people living in endemic areas:
    a. Preschool and school aged children
    b. Women of childbearing age (including pregnant women in the second and third trimesters and breast-feeding women)
    c. Adults in certain high-risk occupations (butchers, food handlers, cooks.).
2. Refer to table 11.1 for treatment of specific intestinal parasites.
3. Treat household contacts simultaneously (E. vermicularis).
4. Infected people should shower every morning to help remove a large amount of the eggs on the skin (E. vermicularis).
5. Treat asymptomatic carriers of Giardia in developed countries. Treating carriers in developing countries is not cost-effective because of high reinfection.

PREVENTION MEASURES/ PATIENT EDUCATION

1. Continued use of proper shoe wear (A. duodenale, N. americanus).
2. Clean bedrooms, bedding, toys every 3-7 days for 3 weeks. Focus on washing hands especially before eating with warm water (E. vermicularis).
3. Consumption of only bottled water or use of iodine disinfection of non bottled water (E. histolytica) .
4. Proper and frequent hand washing especially after using toilet, before eating and handling foods.
5. Drink bottled water or treat water by boiling drinking water for 1 min or heating water to 70°C for 10 min (G. lamblia).
6. Avoid eating unpeeled fruits and vegetables.
7. Adequate cooking of meat (Teania).

TABLE 11.1: SYMPTOMS, TREATMENT AND PREVENTION OF COMMON INTESTINAL PARASITES

Parasite	Symptoms	Treatment	Prevention
Ascaris lumbricoides	• Abdominal pain, diarrhea • Proteins and vitamin A deficiency (children) • Growth retardation • Intestinal and pancreatic obstruction • Hepato-biliary injury • Pulmonary manifesta-tions (early symptoms)	• Mebendazole 500 mg orally, single dose or 100 mg orally twice a day for 3 days • Albendazole 400 mg orally, single dose	• Public health education (proper sanitation and hygiene) • Periodic deworming to all at-risk people living in endemic areas.
Trichuris trichiura	• Vague abdominal pain • Dysentery • Nocturnal loose stool, • Failure to thrive • Rectal prolapse and anemia (if massive infection)	• Mebendazole 500 mg orally, single dose or 100 mg orally twice a day for 3 days • Albendazole alternative drug with slightly lower efficacy (400 mg orally for 3 days)	• Public health education (proper sanitation and hygiene) • Periodic deworming to all at-risk people living in endemic areas.
Hookworms (Ankylostoma duodenale, Necator americanus)	• Abdominal pain • Diarrhea • Iron-deficiency anemia • Physical and mental retardation (children) • Pruritic erythema and pulmonary symptoms (occasionally)	• Mebendazole 100 mg orally twice a day for 3 days (more effective) or 500 mg orally single dose • Albendazole 400 mg orally, single dose • Pyrantel pamoate 11 mg/ kg, maximum 1 g, orally, daily for 3 days • Iron supplementation • Packed red blood cells (as needed)	• Public health education • Use proper and continued shoe wear. • Use proper sewage disposal • Periodic deworming to all at-risk people living in endemic areas.
Enterobius vermicularis	• Nighttime perianal pruritus • Sleep disturbances • Diarrhea (possible in acute infection)	• Mebendazole 100 mg orally, single dose • Albendazole 400 mg orally, single dose • Pyrantel pamoate 11 mg/ kg, maximum 1 g, orally, single dose. *N.B: A second single dose is recommended 2 weeks later to prevent reinfection by adult worms that hatch from any eggs not killed by the first treatment*	• Treat household contact • Clean bedrooms, beddings, toys with warm to hot water. • Frequent changing of bed linens in the morning and directly washing them in hot water. • Wash hands before and after eating

Tapeworms (Taenia saginata, Taenia solium)	• Abdominal pain • Nausea • Diarrhea or constipation • Anorexia, Weight loss • Epilepsy (Neurocysticercosis caused by T. solium)	• Niclosamide adults and children over 6 years: 2 g, single dose; children 2-6 years: 1 g; children < 2 years: 500 mg • Praziquantel 5-10 mg/kg, single dose.	• Identify and treat taeniasis cases • Improve sanitation • Improve pig husbandry • Administer vaccines and anthelmintic treatment for pigs • Improve meat inspection and processing of meat products • Adequate cooking of meat
Giardia lamblia	• Nausea, vomiting • Bloating • Diarrhea • Steatorrhea • Weight loss • Reactive arthritis and urticaria (rarely)	• Metronidazole adults: 250 mg orally three times daily for 5-7 days • Albendazole children: 400 mg orally for 5 days. • Fluid and electrolyte replacement	• Treat asymptomatic carriers in developed countries. • Use proper sewage disposal and water treatment. • Consume only bottled water in endemic regions • Boil drinking water for 1 mn or heat water to 70°C for 10 mn • Wash hands properly and frequently
Entamoeba histolytica	• Severe abdominal pain • Colitis • Bloody diarrhea • Weight loss • Fever (may occur) • Intestinal obstruction (ameboma) • Liver abscess and other extra-intestinal diseases (lungs, brain)	• Luminal amebicides (for cysts): Iodoquinol 650 mg orally 3 times daily for 20 days Paromomycin 500 mg orally 3 times daily for 7 days • Tissue amebicide (for trophozoites): Metronidazole 750 mg orally three times daily for 10 days • Liver abscess: Metronidazole 750 mg orally 3 times daily for 5 days followed by Paromomycin 500 mg 3 times daily for 7 days or Chloroquine 600 mg orally per day for 2 days then 200 mg per day for 2 to 3 weeks • Drainage if needed	• Use proper sanitation to eradicate cyst carriage • Avoid eating unpeeled fruits and vegetables • Drink bottled water • Use iodine disinfection of nonbottled water

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CHAPTER 12.

ABDOMINAL PAIN

Marouan Zoghbi, MD

EPIDEMIOLOGY

1. 1.5% of office based visits.
2. 10% of abdominal pain in emergency department have severe, life threatening conditions or needs surgery.
3. High impact on quality of life and loss of work productivity.
4. About 25% of severe cases are older than 50 years of age.
5. Older patients present later in the course of disease raising the rate of hospitalization need.
6. Surgical interventions occur twice as often in older patients compared to younger population.

CAUSES

Depending on the specific location of the abdominal pain:

Right upper quadrant

1. Biliary: cholecystitis, cholangitis, cholelithiasis.
2. Hepatic: mass, hepatitis, abscess.
3. Colonic: colitis, diverticulitis.
4. Pulmonary: pneumonia, tumor, embolism.
5. Renal: pyelonephritis, nephrolithiasis.

Epigastric

1. Biliary: cholecystitis, cholangitis, cholelithiasis.
2. Cardiac: angina, infarction, pericarditis.
3. Gastric: gastritis, peptic ulcer disease, esophagitis.
4. Pancreatic: pancreatitis, mass.
5. Vascular : aortic dissection, mesenteric ischemia, aneurysm.

Left upper quadrant

1. Cardiac: angina, infarction, pericarditis.
2. Gastric: gastritis, peptic ulcer disease, esophagitis.
3. Pancreatic: pancreatitis, mass.
4. Splenic: abcess, splenomegaly, rupture.
5. Renal : nephrolithiasis, pyelonephritis.
6. Vascular: aortic dissection, mesenteric ischemia, aneurysm.

Periumbilical

1. Colonic : early appendicitis.
2. Small bowel obstruction or mass, enteritis.
3. Gastric: gastritis, peptic ulcer disease, esophagitis.
4. Vascular: aortic dissection, mesenteric ischemia, aneurysm.

Right lower quadrant

1. Colonic: appendicitis, colitis, diverticulitis, inflammatory bowel disease (IBD), Irritable bowel syndrome (IBS).
2. Gynecologic: ovarian cyst, mass, torsion, fibroids, mittelschmerz (ovulation), ectopic pregnancy, pelvic inflammatory disease (PID).
3. Renal : nephrolithiasis, pyelonephritis.

Suprapubic

1. Colonic : appendicitis, colitis, diverticulitis, inflammatory bowel disease (IBD), Irritable bowel syndrome (IBS).
2. Gynecologic: ovarian cyst, mass, torsion, fibroids, mittelschmerz, ectopic pregnancy, pelvic inflammatory disease (PID).
3. Renal: lithiasis, pyelonephritis, cystitis.

Left lower quadrant

1. Colonic: colitis, diverticulitis, inflammatory bowel disease (IBD), Irritable bowel syndrome (IBS).
2. Gynecologic: ovarian cyst, mass, torsion, fibroids, mittelschmerz, ectopic pregnancy, pelvic inflammatory disease (PID).
3. Renal : nephrolithiasis, pyelonephritis.

No specific location

1. Abdominal wall: herpes zoster, muscle strain, hernia.
2. Other: bowel obstruction, mesenteric ischemia, narcotic withdrawal, sickle cell crisis, porphyria, IBD, heavy metal poisoning.

HISTORY

1. Onset
    a. Rapid onset would suggest dissection, perforated ulcer, biliary colic, renal colic, intestinal obstruction, ruptured aneurysm, ruptured ectopic gestation
2. Duration, severity
    a. Rating the pain on a Verbal Numerical Rating Scale (VNRS) where the patient is asked to rate his pain on a scale from 1 to 10 (1 is the least severe pain and 10 is the worst pain).
3. Quality and type of pain
    a. Poorly localized pain is suggestive of visceral origin. Localized pain is a sign of parietal peritoneum involvement.
    b. Colics are suggestive of muscle contraction proximal to a complete or partial obstruction like pain generating in the biliary tract (biliary colics), urinary tract (renal colics) or intestines (diarrhea, enteritis)
    c. Absence of colics has a high negative predictive value for cholecystitis
    d. Episodic gnawing or burning pain are suggestive of peptic ulcer disease (PUD)
4. Relieving factors
    a. Antacids, food: duodenal ulcer
    b. Sitting up, leaning forward: pancreatitis
    c. Vomiting, antacids: gastric ulcer
5. Pain location suggests the origin of the pain: Refer to previous paragraph for common causes and locations.
6. Radiation and location change
    a. Appendicitis pain typically starts in periumbilical area and localizes later to the right lower quadrant
    b. Ureteral obstruction may cause testicular or groin pain
    c. Subdiaphragmatic irritation causes shoulder pain
    d. Biliary disease causes right infrascapular pain
    e. Aortic dissection in elderly may present as acute low back pain
7. Urinary symptoms.
8. Gastrointestinal symptoms.
9. Gynecologic history
    a. Sexual practices: Multiple partners (PID)
    b. Date of last menses (ectopic pregnancy)
10. Drug intake: anti-inflammatory drugs (ulcer).

PHYSICAL EXAMINATION

1. Patient general appearance
    a. Pallor, sweating (hemorrhage or septicemia); jaundice (liver or biliary disease)
    b. Position: patients with peritonitis are unwilling to change posture whereas those with renal colic keep moving looking for a comfortable posture
2. Vital signs
    a. Low blood pressure, increased heart rate (septicemia, dehydration, hypovolemia)
    b. Respiratory rate, oxygen saturation : pulmonary causes
    c. Temperature: fever suggests infection or septicemia, but its absence does not rule them out
3. Cardiovascular and respiratory examination
    a. Peripheral pulses : asymmetric in aortic dissection
    b. Crackles suggestive of pulmonary infection

4. Ausculttion of abdomen
    a. Exaggerated peristalsis in case of gastroenteritis
    b. Aortic or renal arteries bruits may be heard but are not specific
5. Guarding is the reflex tensing of the abdominal muscles over the painful area when applying a pressure by the examiner: it suggests peritoneal inflammation and helps narrowing the differential diagnosis.
6. Rebound tenderness is found when initial pressure does not cause pain but when the examining hand is released, pain is felt. Rebound tenderness suggests peritoneal irritation.
7. Special maneuvers: Remember that all these signs may be absent in older patients in the presence of severe intra-abdominal infectious process or a surgical condition.
    a. Carnett's sign: ask patient to lift his head and shoulders while in supine position; an increase in pain denotes abdominal wall (hematoma, muscle tear) as cause of pain. If the pain decreases, then the origin of the pain is in the abdominal cavity.
    b. Murphy's sign: cessation of inspiration during right upper quadrant examination; reflects cholecystitis. Not reliable in older patients.
    c. Psoas sign: pain when raising a straight leg against resistance; reflects appendicitis
    d. Obturator sign: pain with flexed right hip rotation; occurs in appendicitis
    e. Mc Burneys sign: tenderness located midway between the anterior superior iliac spine and umbilicus
    f. Cullen's sign: periumbillical bluish discoloration; reflects retroperitoneal hemorrhage, pancreatic hemorrhage, or abdominal aortic anneurysm
    g. Pain worse when hip and knee are flexed; consider peritonitis
8. Rectal and pelvic exam: fecal impaction, mass, blood in the stools, vaginal discharge.

LABORATORY TESTS

1. CBC
    a. Leukocytosis is suggestive of infection or septicemia (can present with leukopenia)
    b. WBC > 10000 per mm^3 is 77% sensitive and 63% specific (LR + = 2.1, LR - = 0.37) for the diagnosis of appendicitis
2. Amylase and lipase: elevated in pancreatitis.
3. Liver profile: abnormal in hepatic and biliary causes of pain; but normal results do not rule out hepatic causes.
4. Urinalysis in patients with hematuria, dysuria or flank pain.
5. Pregnancy test : performed to each child bearing age woman with lower abdominal pain to rule out pregnancy.

IMAGING TESTS

1. Plain radiograph can detect bowel obstruction and perforation. Look for: pneumoperitoneum, gas fluid level; can also show fecalith, gallstones, and urinary stones.
2. Ultrasonography better than CT for evaluation of right upper quadrant or suprapubic pain.
3. Radionuclide study more sensitive for cholecystitis but more expensive.
4. CT scan with intravenous contrast for right lower quadrant pain, superior to ultrasonography for appendicitis
5. CT with oral and intravenous contrast for left lower quadrant pain.
6. CT is useful for diffuse and non-specific pain to detect urgent causes needing hospitalization or surgery.

WARNING SIGNS (Immediate referral)

1. Abdominal pain during pregnancy.
2. Signs of bleeding: melena, hematochezia.
3. Dyspnea or signs of respiratory distress.
4. Severe abdominal pain.
5. High grade fever.
6. Hemodynamic instability.
7. Coffee ground vomiting.
8. Inability to eliminate gas and stool.
9. Elderly with migrating low back pain suggestive of aortic dissection or aneurysm rupture.
10. Atrial fibrillation with abdominal pain suggestive of mesenteric ischemia.
11. Gross and massive hematuria or inability to urinate.

12. Clinical suspicion of appendicitis or any abdominal infection needing urgent surgery.
13. In older individuals, presence of free air on plain film radiographs, leukocytosis and age older than 84 years are associated with increased risk of death; better refer to emergency room.

TREATMENT

1. Treatment depends on diagnosis and etiology.
2. NSAIDs are used for renal colics.
3. Analgesics are used as first line before reaching positive diagnosis
    a. Using opioids early in the management of abdominal pain has been shown to alleviate pain without affecting decisions or delaying diagnosis
    b. Patients with pain score on VNRS < 7 are treated with minor analgesics:
        - Acetaminophen 1g IV or per mouth
        - Hyoscine may help alleviate colicky pain. Avoid using hyoscine in patients with known prostatic hyperplasia, glaucoma, myasthenia gravis
    c. Patients with VNRS > 7 must be transferred to the emergency care for opioids management.

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CHAPTER13.

DYSPEPSIA

Marouan Zoghbi, MD

EPIDEMIOLOGY

1. 25% to 40% of general population are affected with Dyspepsia.
2. Less than 10% of those affected seek medical care.
3. High comorbidity rate with irritable bowel syndrome.
4. Affects health related quality of life scores negatively.
5. Account for the vast majority of normal endoscopies, hence incurring a high cost.

DEFINITION

1. The Rome Working Teams defines dyspepsia as chronic or recurrent pain or discomfort localized to the upper abdomen.
2. Functional dyspepsia refers to this condition without an endoscopically proven underlying organic disease. Makes up more than 70% of dyspepsia cases.
3. The adopted definition does not include gastroesophageal reflux disease (GERD) where heartburn and acid regurgitation are the main complaints.

DIFFERENTIAL DIAGNOSIS

1. Peptic ulcer disease.
2. GERD.
3. Gastric or esophageal malignancies.
4. Life-threatening conditions like coronary artery disease, cholelithiasis and pancreatitis.

HISTORY

1. Nature: radiation to the back or shoulder in pancreatitis, oppressive pain suggest coronary causes, colics in the right upper quadrant suggest biliary colics.
2. Intensity: high intensity pain is suggestive of aortic dissection.
3. Rhythm of the discomfort: exercise induced pain is suggestive of coronary disease. Pain exacerbated after food intake is suggestive of biliary colics or gastritis.
4. Inquire about GERD symptoms: heartburn, acid reflux, pain generating in the epigastrium and irradiating to the thorax, regurgitation, painful swelling.
5. Progressive dysphagia, significant weight loss can be indicative of malignancy.
6. Exacerbating factors and relation to food intake: alcohol, smoking. Check if specific food exaggerates symptoms. Early satiety is suggestive of peptic ulcer disease.
7. Drug intake: medications known to cause dyspepsia: calcium antagonist, nitrates, theophylline, bisphosphonates, corticosteroids, and non-steroidal anti-inflammatory drugs (NSAIDs).

PHYSICAL EXAMINATION

1. A routine physical exam is performed but there are no specific signs to help differentiate organic from functional causes.
2. Assess the vital signs and look for orthostatic hypotension revealing a gastrointestinal (GI) bleeding.
3. Look for other signs of GI bleeding: blood or melena on rectal exam, palor.

MANAGEMENT

1. In patients younger than 55 years with no alarm features (see warning signs below), consider one of two options:

a. Test and treat for Helicobacter Pylori (H. pylori) using a validated test. Urea breath test and stool antigens are preferred. A 2-week wash-out period is required after proton pump inhibitor (PPI) use or antibiotics use before urea breath test or stool antigen testing. Retesting for H pylori is usually not recommended
b. Offer an empiric PPI treatment for 4 to 8 weeks

2. The test and treat strategy is preferred in high prevalence settings such as observed in Lebanon.
3. If symptoms persist, perform H.pylori testing if not done.
4. If symptoms continue or recur after initial improvement, offer PPI or H2 receptor antagonists (H2RA) at the lowest dose needed to control symptoms. Discuss PPI use on an as needed basis to control symptoms.
5. Avoid long-term antacid therapy .
6. Prokinetic use is NOT recommended because of insufficient evidence on efficacy and concerns about the safety of this class but can be used in specific cases at the discretion of the treating physician.
7. Endoscopy is indicated in patients more than 55 years old.

WARNING SIGNS

1. Bleeding, anemia, early satiety, unexplained weight loss of more than 10%, progressive dysphagia, odynophagia, persistent vomiting.
2. Family history of gastrointestinal cancer, previous esophagus or gastric malignancy.
3. Previous documented peptic ulcer disease.
4. Abdominal lymphadenopathy or mass.

WHEN GERD IS SUSPECTED

1. A full dose PPI for 4 to 8 weeks is recommended.
2. If symptoms recur after initial treatment, offer the lowest possible dose to control symptoms.Offer H2RA if inadequate response to PPI.
3. A full dose of long term PPI is recommended for maintenance in case of severe esophagitis.
4. Barrett's oesophagus screening is indicated according to risk factors such as long duration of GERD symptoms, increased frequency, previous esophagitis, previous hiatal hernia, esophageal stricture or ulcers and male gender.

WHEN PEPTIC ULCER DISEASE IS DIAGNOSED

1. Offer H pylori eradication for patients who tested positive. Retest H. pylori 6 to 8 weeks after beginning treatment.
2. For NSAIDs users, stop NSAIDs if possible and treat with full dose PPI or H2 receptor antagonists (H2RA) for 8 weeks. Treat H. pylori if positive subsequently.
3. Treat with a full dose PPI or H2RA for 4 to 8 weeks for patients testing negative for H. pylori and not taking NSAIDs.
4. For cases with unhealed ulcer, exclude non-adherence, malignancy, failure to detect H. pylori, inadvertent NSAIDs use and rare cases of zollinger-Ellison syndrome or crohn's disease.

MEDICATIONS

H. PYLORI ERADICATION THERAPY

First line:

7 day twice daily course of:

1. PPI + amoxicillin + metronidazole (or clarithromycin)

In case of penicillin allergy:

2. PPI + **metronidazole** + clarithromycin if no previous exposure to clarithromycine
3. PPI + bismuth + **metronidazole** + tetracycline if previous exposure.

Second line:

7 day twice daily course of:

1. PPI + **amoxicillin** + clarithromycin or **metronidazole** (whichever was not used first)
2. PPI + **amoxicillin** + quinolone or tetracycline if previous exposure to both.
3. PPI + **metronidazole** + levofloxacin
4. PPI + bismuth + **metronidazole** + tetracycline if previous exposure to quinolones

Class	Brand name	Standard Dosage	Low dose	Double dose
PPI	**Lansoprazole**	30 mg QD	15 mg QD	30 mg BID
PPI	**Omeprazole**	20 mg QD	10 mg QD	40 mg QD
H2RA	**Ranitidine**	150 mg QD	75 mg QD	
Antibiotic (H pylori eradication)	**Metronidazole**	500 mg BID		
Antibiotic (H pylori eradication)	**Amoxicillin**	500 mg BID		
Prokinetics	**Domperidone**	10 mg TID		
Prokinetics	**Hyoscine**	10 mg TID		

PATIENT EDUCATION

1. Explain that functional dyspepsia (pain of unknown organic cause) is the most common cause of epigastric pain. Occasionally, drugs such as NSAIDs, gallstones or rarely cancer can cause dyspepsia.
2. Alarming signs include unplanned weight loss, anemia, loss of appetite, trouble swallowing, frequent vomiting or symptoms beginning after the age of 55 years.
3. Link smoking to dyspepsia symptoms and counsel about smoking cessation.
4. Advise to observe symptoms and avoid foods that are suspected to exacerbate symptoms.
5. Stress management counseling.
6. In case of GERD, avoid eating late before bedtime. Raise the head of the bed with blocks. Avoid heavy and fatty meals.
7. Use NSAIDs only when necessary and educate about different brand names.

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CHAPTER 14.

ACUTE DIARRHEA

Sani Hlais, MD, MPH

EPIDEMIOLOGY

1. Most cases are viral (50-70%), less frequently bacterial (15-20%), or parasitic (10-15%).
2. Foodborne bacterial diarrhea is considered an emerging health threat. 80% of bacterial diarrhea cases are acquired through food. More than half of bacterial cases are caused by diarrhea- producing Esterichiae Coli (E. Coli). Person to person transmission is also possible.
3. The 4 most commonly reported bacterial enteropathogens in industrialized countries are: Campylobacter, Nontyphoid salmonella, Shiga toxin–producing E. coli (or E Coli O157:H7), and shigella.
4. Traveler's diarrhea is bacterial in 80% of cases.

DEFINITION

1. Increase in the frequency and decrease in the consistency of stools that become more watery.
2. Usually resolves within a week; if it lasts for more than 3 weeks, it is considered chronic diarrhea.

HISTORY

Not specific for viral, bacterial or other causes of acute diarrhea although some clues may help differentiating:

1. Relation of symptoms to ingestion of incriminated food:
    a. If symptoms start within hours of food ingestion, consider diagnosis of food poisoning or toxin-induced diarrhea mainly caused by Staphylococcus aureus, Clostridium Perfringens, or Bacillus cereus.
    b. If symptoms start within 1-5 days, consider viral and bacterial causes of enteritis. Watery diarrhea that becomes bloody in 1 to 5 days with severe abdominal pain, cramps and passage of five or more unformed stools per 24 hours in the absence of fever is suggestive of Shiga toxin producing E coli. It characteristically causes hemorrhagic colitis, but may also cause ischemic colitis.
2. Fever, blood in stools and dysentery are more common in bacterial diarrhea, although not specific.
3. Keep in the differential diagnosis of acute diarrhea many medical and surgical conditions and all causes of chronic diarrhea: appendicitis, diverticulitis, medication use (laxatives, cholinergic agents, metformin, and magnesium containing antacids), stool impaction (or false diarrhea especially in elderly), irritable bowel syndrome, inflammatory bowel diseases (Crohn and ulcerative rectocolitis), ischemic colitis, hyperthyroidism and malignancy.

PHYSICAL EXAMINATION

1. Check for signs of dehydration: orthostatic hypotension, and increase in heart rate.
2. Examine the abdomen: Bowel sounds most likely to be hyperactive in infectious diarrhea, localized tenderness in appendicitis and diverticulitis.

LABORATORY TESTS

1. Consider according to clinical evaluation: basic blood chemistry including blood urea nitrogen (BUN), Creatinine, electrolytes to assess for dehydration, and liver enzymes.
2. Stool culture is indicated in:
    a. Severe diarrhea (passage of six or more unformed stools per day)
    b. Diarrhea of any severity that persists for longer than a week
    c. Fever
    d. Dysentery
    e. Multiple cases of diarrheal illness that suggest an outbreak.

3. In most cases of infectious diarrhea, a single stool sample is satisfactory for the workup.
4. Inform the lab to look for: *Shiga toxin–producing E. coli* when suspected (bloody diarrhea, epidemiologic context, especially in children), *choleric and non-choleric vibrios* with seafood-associated diarrhea or dehydrating cholera-like diarrhea, or *Clostridium Difficile (C. difficile)* with diarrhea concomitant with or after antibiotic use.
5. Stool culture: is NOT indicated in most cases of watery diarrhea, in traveler's diarrhea, and cases of food poisoning due to toxin-infection.

MANAGEMENT

1. Diarrhea is frequently self limiting in most cases; fluid replacement is the mainstay of diarrhea management. Medical treatment is uncommonly needed.
2. Fluid replacement: Ensuring a good hydration is the mainstay treatment. Oral Rehydration Solution (ORS) can be life saving without the need for intravenous (IV) hydration. If not available, home made solution with 1 liter water, 1/2 teaspoon of salt and 6 teaspoon of sugar can be advised.
3. Diet: Start clear soup with rice, salted crackers, dry toast or bread. Add progressively baked potatoes, chicken soup. Avoid coffee, alcohol, most fruits and vegetables, and red meat.

PHARMACOLOGIC TREATMENT

Avoid overprescription of antimicrobials. Most cases are viral, self-limited.
1. Ciprofloxacin 500 mg bid for 3-5 days in case of bacterial diarrhea or traveler's diarrhea (Traveler's diarrhea should be empirically treated with antibiotics without stool culture).
2. Loperamide (antiperistaltic agent): 2 mg caps, initially take 4 mg, followed by 2-mg capsule for each unformed stool. *To use with caution in patients suspected of infectious diarrhea if not on antibiotic*.
3. For Clostridium difficile (mainly antibiotic induced diarrhea): Metronidazole 500 mg tid or Rifaximine 200 mg 2 tab up to 4 times daily for 10-14 days.
4. Complementary and alternative medicine: Probiotics are to be considered, they have shown good and growing evidence in traveler's diarrhea, antibiotic induced diarrhea and other infectious diarrhea.

PREVENTION

1. Non pharmacological prevention: drink clean water; avoid raw meat, unpasteurized milk, raw eggs, mayonnaise based salads or sandwiches, ice cubes if water source is questionable, and sick contacts.
2. The indication for prophylaxis for traveler's diarrhea include:
    a. Important trip to endemic area
    b. Underlying illness that might be worsened by diarrhea (e.g., congestive heart failure)
    c. Underlying illness that might make persons more susceptible to diarrhea (e.g.use of daily proton-pump inhibitor therapy), immunocompromised individuals
    d. Previous bouts of traveler's diarrhea that suggest increased personal susceptibility to illness
3. Pharmacologic prophylaxis for traveler's diarrhea include:
    a. Rifaximine 200 mg 1 or 2 tab/d with major meals (while the patient is in high risk area)
    b. Bismuth subsalicylate (if available, but has more side effects)

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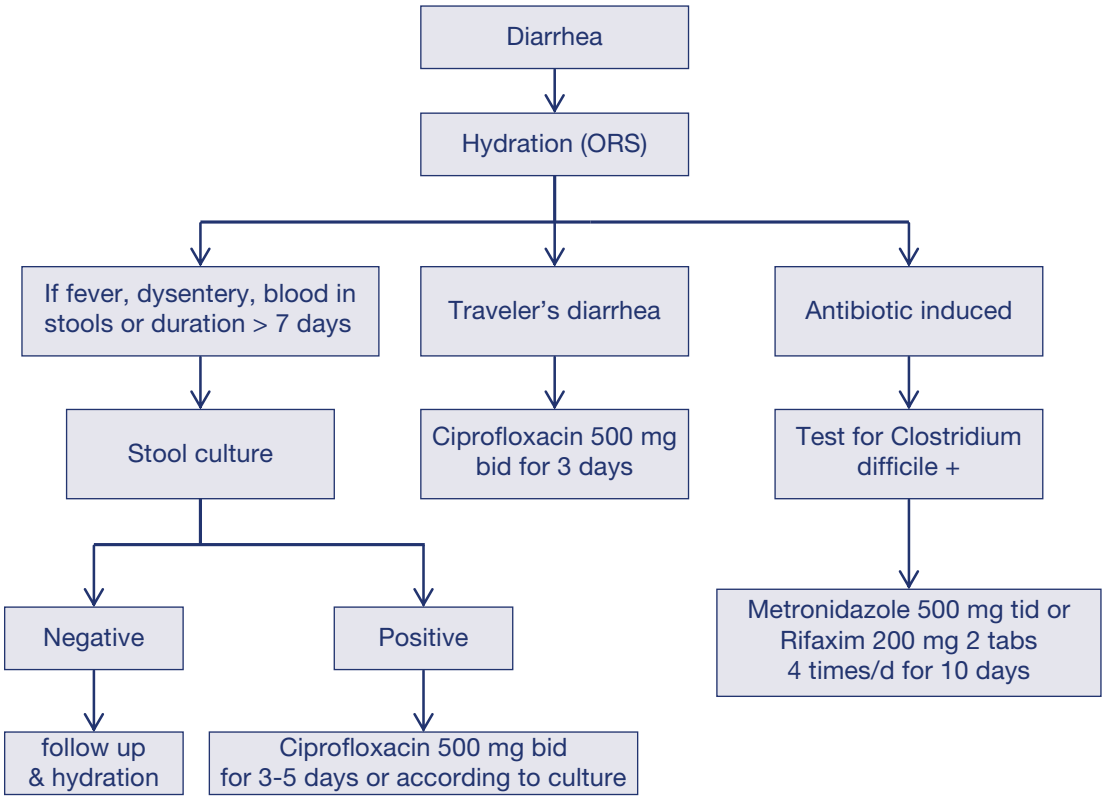
ALGORITHM 14.1: APPROACH TO ACUTE DIARRHEA



CHAPTER 15.

ANXIETY

Issam Shaarani, MD

EPIDEMIOLOGY

1. Anxiety disorders are among the commonest psychiatric illnesses.
2. Their global prevalence is estimated to be 7.3%, and they are usually underdiagnosed.
3. The lifetime prevalence of anxiety disorders in Lebanon is 16.7%.

DEFINITION

1. Anxiety is the feeling of fear, worry or nervousness.
2. Anxiety disorders are a group of psychiatric illnesses that share the presence of anxiety as a main symptom.

CLASSIFICATION

1. Anxiety disorders are classified into three major groups according to the Diagnostic and Statistical Manual of Mental Disorders, fifth edition (DSM-5):
    a. Anxiety disorder- e.g. panic disorder, generalized anxiety disorder (GAD), social anxiety disorder
    b. Obsessive-compulsive and other related disorders- e.g. obsessive-compulsive disorder
    c. Trauma- and stressor-related disorders- e.g. posttraumatic stress disorder (PTSD)

EVALUATION

1. History
    a. Take focused history about the presenting symptoms in order to rule out other medical causes (i.e. in patient with palpitations, ask about the onset, duration, association with exertion, associated fainting or syncope to rule out cardiac arrhythmia)
    b. A good screening question for all types of anxiety is, “Do you tend to be an anxious or nervous person?”
2. Physical Examination
    a. Perform mental status exam (MSE): assess general appearance, psychomotor behavior, mood and affect, speech, cognition, thought patterns, and the level of consciousness
    b. Targeted physical exam based on the presenting symptoms (i.e. measure the pulse and examine the thyroid when suspecting a thyroid disorder, auscultate the heart when looking for a mitral valve prolapse, do a full neurologic exam when suspecting a neurologic disorder)
3. Diagnostic Tests
    a. CBC, electrolytes, TSH, urine analysis and urine drug screen when clinically indicated
    b. ECG if cardiac symptoms are present, especially in those with family history of cardiac diseases
    c. Brain imaging and Electroencephalogram (EEG) are indicated when there is suspicion of an underlying neurologic disease such as brain tumor or epilepsy

DIAGNOSIS

1. The diagnostic criteria are based on DSM-5.
2. The disturbance should not be attributable to an underlying medical condition or better explained by another mental disorder.

PANIC DISORDER

1. **Repeated episodes of abrupt intense fear for one month.**
2. Associated with at least four of these symptoms: palpitations, trembling, nausea, sweating, chest pain, dizziness, numbness, hot flushes, derealization or depersonalization, fear of death, and fear of going crazy.
3. At least one episode is followed by **fear of recurrence** and **maladaptive behavioral change.**
4. It is essential to rule out some serious medical conditions such as arrhythmias, myocardial infarction, hypoglycemia, COPD, seizures, transient ischemic attacks, or other conditions based on the presenting symptoms.

GENERALIZED ANXIETY DISORDER (GAD)

1. Excess worry that is difficult to control is pathognomonic for GAD.
2. Consider GAD if at least three of the following symptoms are present: **restlessness, easy fatigability, difficulty concentrating, irritability, muscle tension, disturbed sleep** and possible **suicidal ideations** or attempts.
3. The symptoms should cause clinically significant distress or impairment in important areas of functioning.
4. GAD-7 is a screening tool that can be used also to assess the severity of GAD.

TABLE 15.1: SUMMARY GAD SCALE

GAD-7 Anxiety Scale	Not at all	Several days	More than half the days	Nearly every day
Over the last two weeks, how often have you been bothered by the following problems?				
1. Feeling nervous, anxious, or on edge	0	1	2	3
2. Not being able to stop or control worrying	0	1	2	3
3. Worrying too much about different things	0	1	2	3
4. Trouble relaxing	0	1	2	3
5. Being so restless that it is hard to sit still	0	1	2	3
6. Becoming easily annoyed or irritable	0	1	2	3
7. Feeling afraid as if something awful might happen	0	1	2	3

* Score: 5 to 9 = mild anxiety; 10 to 14 = moderate anxiety; 15 to 21 = severe anxiety.

SOCIAL ANXIETY DISORDER

1. **Marked fear** of one or more **social situation**, like meeting unfamiliar people or giving a speech.
2. The fear is of acting in a way that will be negatively evaluated; hence these situations almost always induce anxiety and are avoided by patients.
3. The anxiety is **out of proportion to the situation**, persistent for **6 months or more**, and causing significant clinical distress.

OBSESSIVE- COMPULSIVE DISORDER (OCD)

1. The criteria required for the diagnosis of OCD are the presence of obsessions, compulsions, or both.
2. Obsessions are thoughts by which the patient is preoccupied, such as feeling contaminated when touched by another person, fearing of religious sinning unknowingly, feeling excessively annoyed by disorganized objects.
3. Compulsions are characterized by repetitive behavior that the patients cannot resist doing, like checking locks and appliances repeatedly, putting objects always in a symmetrical way, or washing hands very frequently.
4. Ask the patient about the frequency and duration of these thoughts or acts, and if s/he is annoyed by these thoughts or not.

POSTTRAUMATIC STRESS DISORDER (PTSD)

1. The diagnostic criteria for PTSD are
    a. **Exposure** to actual threatened death, serious injury or sexual assault.
    b. Presence of one or more **recurrent intrusion symptoms**, manifested as intrusive memories, distressing dreams, flashbacks, intense psychological or physiological distress in reaction to any cues resembling the traumatic event.
    c. Persistent **avoidance of stimuli** associated with the event, manifested by avoidance of distressing memories related to the event, or avoidance of external reminders (persons, places) that arouse these memories.
    d. Negative **alteration in cognition and mood** after the traumatic event, manifested by inability to remember aspects of the event, persistent negative believes about oneself, blaming self, negative emotional state decreased interest in activities, feelings of detachment from others, and inability to experience positive emotions.
    e. **Alteration in arousal and reactivity** after the event, manifested as irritable behavior, self-destructive behavior, hypervigilance, exaggerated startle response, problems with concentration or sleep disturbance.
2. The duration of the above disturbance should be for **more than 1 month**.

MANAGEMENT

PANIC DISORDER

1. Reassure and instruct the patient to breathe slowly in cases of hyperventilation
    a. Selective Serotonin Reuptake Inhibitors (SSRIs) are the first-line treatment. Fluoxetine (the available SSRI in the primary health care centers in the Ministry of Public Health network) starting dose is 10 mg orally once daily, then increase as needed by 10 mg/day every 4 weeks to a maximum dose of 60 mg per day.
2. Benzodiazepines are indicated as adjunct therapy to control the symptoms in acute attacks until the SSRIs effect kicks off (at least two weeks).
    a. Alprazolam 0.25 mg orally four times daily is a good starting dose. Maximum daily dose is 6 mg. Taper down gradually to stop it.
3. Cognitive behavioral therapy is also proven to be beneficial as an adjunct therapy, especially needed when stopping benzodiazepines.
4. Tricyclic antidepressants (TCAs) are also effective in panic disorder, but they are less tolerated than SSRIs.

GENERALIZED ANXIETY DISORDER (GAD)

1. SSRIs (namely escitalopram, paroxetine) and Serotonin-Norepinephrine Reuptake Inhibitors (SNRIs) such as venlafaxine and duloxetine are the first-line treatment. High doses are usually required.
2. Benzodiazepines may also be prescribed together with the SSRI/SNRI at the initiation of the treatment in order to decrease the possible side effects of SSRI/SNRI.
3. Cognitive behavioral therapy can also be used as an adjunct therapy if pharmacologic treatment alone fails. It stresses mainly on training patients on coping with their worries and stressors using different coping mechanisms.

SOCIAL ANXIETY DISORDER

1. Cognitive Behavioral Therapy (CBT) or pharmacotherapy is useful as first line treatment.
2. CBT course should be at least 12 weeks, and it is better to be done by a psychotherapist.
3. SSRIs (namely sertraline, paroxetine, escitalopram) and SNRIs (venlafaxine) are the first line pharmacotherapy. Fluoxetine can also be used as a second option.
4. Benzodiazepines may be useful in severe cases or in patients intolerant to SSRIs, but their use should be monitored and preferably for short periods.

OBSESSIVE- COMPULSIVE DISORDER (OCD)

1. CBT or pharmacotherapy is the first line treatment.
2. Combine both modalities if there is no improvement.
3. CBT focuses on exposure and response prevention.
4. SSRIs are first-line pharmacotherapy, namely fluoxetine, fluvoxamine paroxetine, and sertraline.

POSTTRAUMATIC STRESS DISORDER (PTSD)

1. Mild to moderate symptoms lasting for less than 3 months require watchful waiting and follow-up in a month.
2. Severe symptoms or persistent symptoms beyond 3 months necessitate the initiation of trauma focused cognitive behavioral therapy Pharmacotherapy is initiated as an adjunct therapy in symptoms lasting more than 3 months.
3. SSRIs or SNRIs can be used namely paroxetine, fluoxetine, and venlafaxine.

TABLE 15.2: FLUOXETINE DOSAGE IN VARIOUS TYPES OF ANXIETY DISORDERS

Disorder	OCD	Panic Disorder	Social Anxiety Disorder	PTSD
Recommended Daily Dosage of Fluoxetine	20-60 mg (max 80 mg/day)	20-60 mg	40 mg	20-40

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CHAPTER 16.

DEPRESSION

Edwina Zoghbi, WHO

EPIDEMIOLOGY

1. In Lebanon major depression is a common mental disorder with a lifetime prevalence of 9.9%.
2. Unipolar depression is expected to become the second-ranked cause of disease burden in 2020 globally, accounting for 5.7% of Disability Adjusted Life Years (DALYS).

DEFINITION

1. A common mental disorder characterized by depressed mood, loss of interest or pleasure, decreased energy, sadness, feelings of guilt or low self-worth, disturbed sleep or appetite, feelings of tiredness, and poor concentration.
2. Depression often comes with symptoms of anxiety.

SYMPTOMS OF UNIPOLAR DEPRESSION

1. Core symptoms
    a. Depressed mood
    b. Loss of interest and enjoyment
    c. Reduced energy leading to diminished activity.
2. Other symptoms of depression
    a. Persistent sad, anxious, or “empty” feelings
    b. Feelings of hopelessness or pessimism
    c. Feelings of guilt, worthlessness, or helplessness
    d. Irritability, restlessness
    e. Loss of interest in activities or hobbies once pleasurable, including sexual activity
    f. Fatigue and decreased energy
    g. Difficulty concentrating, remembering details, and making decisions
    h. Insomnia, early-morning wakefulness, or excessive sleeping
    i. Overeating, or appetite loss
    j. Thoughts of suicide, suicide attempts
    k. Aches or pains, headaches, cramps, or digestive problems that do not ease even with treatment

DIAGNOSIS OF MODERATE-SEVERE DEPRESSION

Based on the concomitant presence of the following:
1. Presence for **at least 2 weeks** of **at least 2 core depression symptoms.**
2. Presence for **at least 2 weeks** of **at least 3 other features of depression symptoms.**
3. Difficulties carrying out usual work, school, domestic, or social activities
    a. Categories of a single depressive episode
        - Mild: If the individual has some difficulties continuing with ordinary work and social activities, but will probably not cease to function completely.
        - Moderate-Severe: when the individual is unable to continue with social, work, or domestic activities.
4. Absence of recent bereavement or other major loss in prior 2 months.

EVALUATION OF A DEPRESSIVE EPISODE

1. Assess risk of suicide/ self-harm.
2. Ask about alcohol use or other substance use disorder.
3. Check the presence of concurrent medical illness: hypothyroidism, anemia, tumors, stroke, hypertension, diabetes, HIV/AIDS, obesity or medication use.
4. For females of child bearing age, check if she is breastfeeding or pregnant.

5. **Systematically assess for bipolarity:** ask about manic symptoms such as extremely elevated, expansive or irritable mood, increased activity and extreme talkativeness, flight of ideas, extreme decreased need for sleep, grandiosity, extreme distractibility or reckless behavior. Refer to psychiatrist when bipolar depression is more likely, that is if the person had:
   a. 3 or more manic symptoms lasting for at least 1 week
   OR
   b. A previously established diagnosis of bipolar disorder.

TREATMENT

PHARMACOLOGIC THERAPY

1. Duration of symptoms for at least 6 months.

2. Educate patients that treatment's effect starts within 1- 2 weeks, the maximum effect is generally reached in 2 months to make remission, any increase in dose will not generally be made before 2 weeks intervals in case of no or small response, and that the effective dose will be maintained for a maintenance period of at least 4 months.

3. Medications used:
   a. **Fluoxetine** initially 10 mg/ day in the morning, increase in 1 week to 20 mg/day, maximum dose 60 mg /day (or other serotonin reuptake inhibitor (SSRI or SNRI)
   b. **Amitriptyline** initially 75 mg/d in divided doses or 50- 75 mg/day at bedtime (or other tricyclic antidepressants (TCAs)

4. Antidepressant use in special populations
   a. People with ideas, plans or acts of self-harm or suicide
   - SSRIs are first choice
   - Monitor frequently (e.g.at least once a week)
   - To avoid overdoses in people at imminent risk of self-harm/ suicide, ensure that such people have access to a limited supply of antidepressants only (e.g. dispense for one week at a time)

   b. Older people
   - SSRIs are first choice
   - TCAs should be avoided, if possible. Monitor side-effects when given
   - Consider the increased risk of drug interactions, and give greater time for response (a minimum of 6-12 weeks before considering that medication is ineffective, and 12 weeks if there is a partial response within this period)

   c. People with cardiovascular diseases
   - SSRIs are first choice
   - DO NOT prescribe TCAs to people at risk of serious cardiac arrhythmias or with recent myocardial infarction

NON PHARMACOLOGIC THERAPY

1. Psychoeducation
   a. Depression is a very common problem that can happen to anybody
   b. Depressed people tend to have unrealistic negative opinions about themselves, their life and their future
   c. Effective treatment is possible. It tends to take at least a few weeks before treatment reduces the depression. Adherence to any prescribed treatment is important
   d. Important to emphasize:
   - Continuing, as far as possible, activities that used to be interesting or give pleasure, regardless of whether these currently seem interesting or give pleasure
   - Trying to maintain a regular sleep cycle (i.e. going to bed at the same time every night, trying to sleep the same amount as before, avoiding sleeping too much)
   - The benefit of regular physical activity, as far as possible
   - The benefit of regular social activity, including participation in communal social activities, as far as possible
   - Recognizing thoughts of self-harm or suicide and seeking help when these occur
   - The importance of continuing to seek help for physical health problems (more for older people)

2. Addressing current psychosocial stressors

a. Offer the patient an opportunity to talk about current psychosocial stressors in private
b. Assess and manage any situation of maltreatment, abuse (e.g. domestic violence) and neglect (e.g. of children or older people)
c. Identify supportive family members and involve them as much as possible and as appropriate

3. Reactivate social networks

a. Identify the person's prior social activities that, if reinitiated, would have the potential of providing direct or indirect psychosocial support (e.g. family gatherings, outings with friends, visiting neighbors, social activities at work sites, sports, community activities)
b. Encourage the patient to resume prior social activities as far as possible

4. Structured physical activity program

a. Moderate duration (e.g. 45 minutes) 3 times per week
b. Explore with the patient what kind of physical activity is more appealing, and support him or her to gradually increase the amount of physical activity, starting for example with 5 minutes of physical activity and increasing frequency as tolerated.

PREVENTION OF DEPRESSION

1. It is possible to reduce the incidence of new episodes of major depressive disorder by about 25% through
   a. Physical activity
   b. Healthy eating
   c. Stress management
   d. Social support of family and friends

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CHAPTER 17.

PSYCHOSOMATIC DISORDERS

Joumana Zeineddine, MD

I. SOMATIC SYMPTOM DISORDER

EPIDEMIOLOGY

1. The prevalence of somatic symptom disorder in the general adult population may be around 5% to 7%. The prevalence is higher in females.

DEFINITION

1. Prominence of somatic symptoms associated with significant distress and impairment.

DSM-5 DIAGNOSTIC CRITERIA

1. **Criterion A:** One or more somatic symptoms that are distressing or result in significant disruption of daily life.
2. **Criterion B:** Excessive thoughts, feelings, or behaviors related to the somatic symptoms or associated health concerns as manifested by at least one of the following:
    a. Disproportionate and persistent thoughts about the seriousness of one's symptoms.
    b. Persistently high level of anxiety about health or symptoms.
    c. Excessive time and energy devoted to these symptoms or health concerns.
3. **Criterion C:** Although any one somatic symptom may not be continuously present, the state of being symptomatic is persistent (typically more than 6 months).

CLASSIFICATION

1. **Mild:** Only one of the symptoms specified in criterion B above is fulfilled.
2. **Moderate:** Two or more of the symptoms specified in criterion B above are fulfilled.
3. **Severe:** Two or more of the symptoms specified in criterion B above are fulfilled, plus there are multiple somatic complaints (or one very severe somatic symptom).

RISK AND PROGNOSTIC FACTORS

1. Demographic features (female sex, older age, fewer years of education, lower socioeconomic status, unemployment).
2. Reported history of sexual abuse, other childhood adversity or past stressful life events.
3. Concurrent chronic physical illness or psychiatric disorder (anxiety, depression).
4. Social stress.
5. Reinforcing social factors such as illness benefits.
6. Cognitive factors (sensitization to pain, heightened attention to bodily sensations…).

COMORBIDITY

1. Medical disorders.
2. Depression and anxiety disorders.
3. Alcohol and drug abuse.

PHYSICAL EXAMINATION

1. A comprehensive physical examination should be done to rule out physical causes for the patient's somatic complaints. A detailed focus on specific systems (eg, neurological) may be necessary based on the specific complaint.
2. A patient with somatic symptom disorder typically displays a normal physical examination.

II. ILLNESS ANXIETY DISORDER

DEFINITION

1. Heightened bodily sensations with or without medical illness.
2. Intensely anxious about the possibility of an undiagnosed illness (are not easily reassured).

DIAGNOSTIC CRITERIA

1. Preoccupation with having or acquiring a serious illness.
2. Somatic symptoms are not present or, if present, are only mild in intensity. If another medical condition is present or there is a high risk for developing a medical condition (e.g. strong family history is present), the preoccupation is clearly excessive or disproportionate.
3. There is a high level of anxiety about health, and the individual is easily alarmed about personal health status.
4. The individual performs excessive health-related behaviors (e.g. repeatedly checks his or her body for signs of illness) or exhibits maladaptive avoidance (e.g. avoids doctor appointments and hospitals).
5. Illness preoccupation has been present for at least 6 months, but the specific illness that is feared may change over that period of time.
6. The illness-related preoccupation is not better explained by another mental disorder, such as somatic symptom disorder, panic disorder, generalized anxiety disorder, body dysmorphic disorder, obsessive-compulsive disorder, or delusional disorder, somatic type.

MANAGEMENT OF SOMATIC SYMPTOM DISORDER AND ILLNESS ANXIETY DISORDER

1. The initial steps in treating these patients are to consider and discuss the possibility of the disorder with the patient early in the work-up.
2. Patient management has four major components:
    a. Patient education
        - Explain the disorder as for any medical condition, with information regarding etiology, epidemiology, and treatment
        - Explain that physical symptoms may be exacerbated by anxiety or other emotional problems
        - Reassure that grave medical diseases have been ruled out
        - Explicitly set the goal of treatment as functional improvement (Focus treatment on function, not symptom, and on management of the disorder, not cure)
        - Address lifestyle modifications and stress reduction, and include the patient's family if appropriate and possible
    b. A strong relationship between patient and primary care physician:
        - Acknowledge and legitimize symptoms
        - Accept that patients can have distressing, real physical symptoms and medical conditions with coexisting psychiatric disturbance without malingering or feigning symptoms
        - Maintain a high degree of empathy toward the patient during all encounters and avoid confrontation
        - Establish a collaborative, therapeutic alliance with the patient
        - Avoid unnecessary medical tests and specialty referrals, and be cautious when pursuing new symptoms with new tests and referrals
        - Schedule regular, brief follow-up office visits with the patient (five minutes each month may be sufficient) to provide attention and reassurance while limiting frequent telephone calls and "urgent" visits
    c. Psychosocial interventions:
        - Cognitive behavior therapy has been found to be an effective treatment
        - Other less effective psychotherapies include family therapy, psychoeducation, supportive therapy, stress management, and psychodynamic psychotherapy.
        - Can all be provided individually or in a group format, and may be provided in a primary care or psychiatric setting.
    d. Pharmacotherapy:
        - Treat psychiatric comorbidities when present
        - Evaluate for and treat diagnosable medical disease
        - Collaborate with mental health professionals as necessary to assist with the initial diagnosis or to provide treatment
        - Prescribe antidepressants: selective serotonin reuptake inhibitor or tricyclic antidepressant only

after trying all the above steps
3. Family members should not become preoccupied with the patients physical symptoms or medical care. Family members should direct the patient to report symptoms to their primary care physician.

III. FIBROMYALGIA

EPIDEMIOLOGY

1. Prevalence: 2-4%.
2. Disease of adult women: 20-50 years.
3. Female/Male = 10/1.
4. Associated factors: female sex, being divorced, failing to complete high school, low income, somatic disorder, anxiety, and personal or family history of depression.

HISTORY

1. Presence of musculoskeletal pain described as burning, tightness, stiffness, aching.
2. Multiple sites of pain.
3. Insomnia.
4. Fatigue.
5. Headache.
6. Memory problems, poor vocabulary.
7. Subjective swollen joint feeling.
8. Paresthesias without objective findings.
9. Aggravation of symptoms with cold and anxiety.
10. Ask for symptoms of depression and anxiety.
11. Ask for comorbidities (Sleep disorders, anxiety, depression, migraine/tension headache ,irritable bowel syndrome, premenstrual syndrome/ dysmenorrhea, restless leg syndrome, temporomandibular joint pain).
12. Ask about family history of fibromyalgia.
13. Symptoms of other diseases causing articular pain (see differential diagnosis below).

PHYSICAL EXAMINATION

1. Perform a complete neurological and musculoskeletal exam.
2. Palpate the 18 sites of tender points (figure 17.III.1):
    a. Optional
    b. Use the thumb of the dominant hand; apply a force equivalent to 4kgs on the site of tender points (which should just blanch the examiner's thumbnail).

DIFFERENTIAL DIAGNOSIS

1. Myofascial pain syndrome (painful, tender areas in the muscles, without any systemic manifestations, affects the axial muscles, presence of trigger points on physical examination).
2. Chronic fatigue syndrome (low-grade fever, lymph node enlargement, acute onset of the illness).
3. Hypothyroidism.
4. Metabolic and inflammatory myopathies (proximal weakness++).
5. Polymyalgia rheumatica (aching and stiffness affecting the upper arms, neck, buttocks and thighs, and are most severe in the morning), and other rheumatic diseases (presence of red swollen articulations, morning stiffness > 30 min).
6. Medications (statins).

DIAGNOSTIC CRITERIA:

1. 2010 American College of Rheumatology (ACR) preliminary diagnostic criteria:
    a. A widespread pain index (WPI) ≥ 7 and a symptom severity (SS) scale ≥ 5 or WPI 3-6 and SS ≥ 9.

(Refer to tables 17.III.1 and 17.III.2 below for more explanation of WPI and SS)

b. Symptoms have been present at a similar level for at least 3 months

c. The patient does not have a disorder that would otherwise explain the pain

- Symptoms have been present at a similar level for at least 3 months
- The patient does not have a disorder that would otherwise explain the pain.

LABORATORY TESTS

The diagnosis is clinical. Laboratory tests are ordered in case any of the differential diagnosis is suspected by history and physical examination.

MANAGEMENT

1. It is a multidisciplinary clinical approach including education, cognitive behavior strategies, physical training, and medications.
2. Non pharmacologic measures should be offered to all patients. Many patients respond adequately to non-pharmacologic measures alone; such responses are more common among patients presenting initially to primary care clinicians.
3. Exercise: The major goal is to maintain function in everyday activities. It should include multiple dimensions: strength, aerobic (endurance) conditioning, flexibility, and balance.
4. Cognitive behavioral therapy.
5. Pharmacotherapy:
    a. Amitriptyline: begin with 10 mg, increase by 5 mg every 2 weeks, target dose: 25-50 mg
    b. Duloxetine: begin with 30 mg, target dose: 60-120 mg
    c. Pregabalin: start with 25-50 mg, target: 300-450 mg
    d. Fluoxetine: start with 20 mg, target dose: 20-80 mg

PATIENT EDUCATION

1. Explain the disorder similar to any medical condition, with information regarding etiology, epidemiology, and treatment.
2. Reassure that serious medical diseases have been ruled out.
3. Reassure that the disease will not progress with time and will not lead to paralysis nor to articular deformation.
4. Explicitly set the goal of treatment as functional improvement (Focus treatment on function, not symptom; and on management of the disorder, not cure).
5. Address lifestyle modifications and stress reduction, and include the patient's family if appropriate and possible.

FIGURE 17.III.1: SUMMARY PAIN POINTS

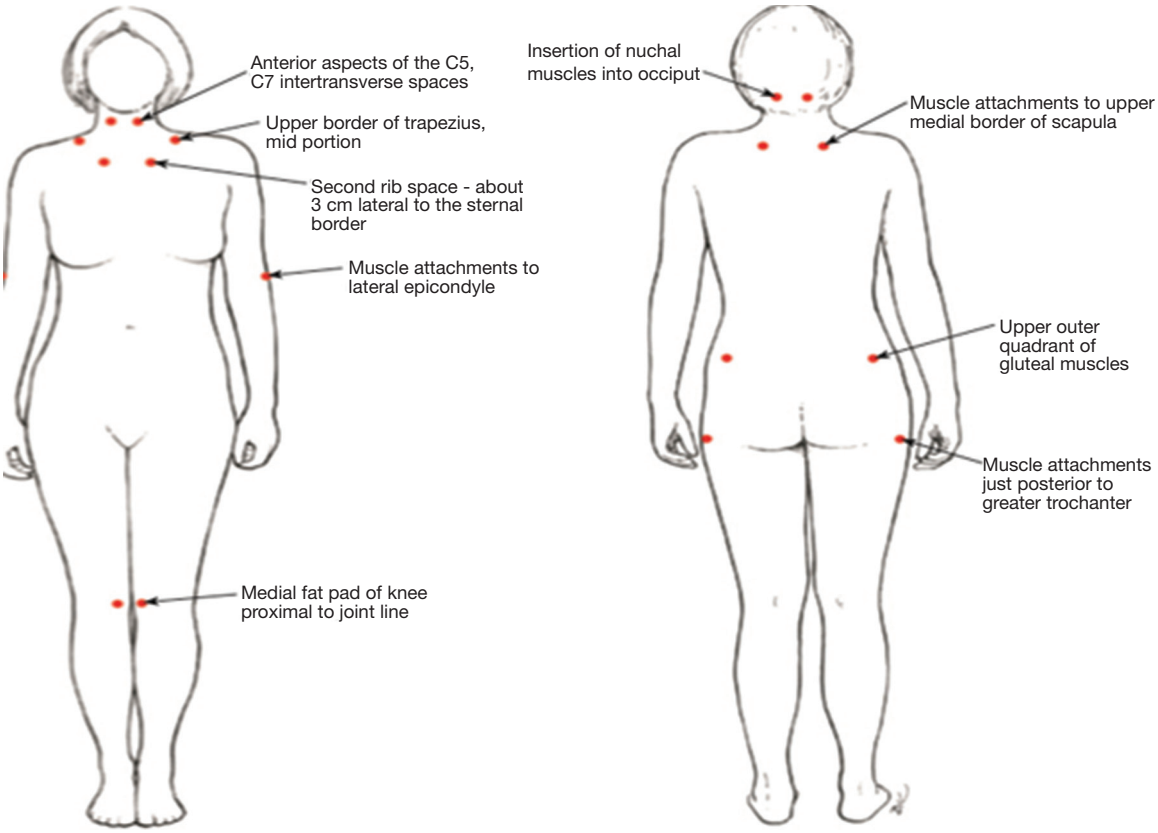

TABLE 17.III.1: SUMMARY OF WPI

WPI: the number areas in which the patient has had pain over the last week. One point for each item. Score between 0 and 19			
Neck		Abdomen	
Jaw left		Upper back	
Jaw right		Lower back	
Shoulder girdle left		Hip (buttock, trochanter) left	
Shoulder girdle right		Hip (buttock, trochanter) right	
Upper arm left		Upper leg left	
Upper arm right		Upper leg right	
Lower arm left		Lower leg left	
Lower arm right		Lower leg right	
Chest		Total	

TABLE 17.III.2: SUMMARY OF SS

• Severity of each of the 3 Symptoms: Fatigue - Waking unrefreshed - Cognitive symptoms › (0 = no problem, 1 = slight or mild problems, generally mild or intermittent, 2 = moderate, considerable problems, often present and/or at a moderate level, 3 = severe: pervasive, continuous, life-disturbing problems)
• Extent or severity of somatic symptoms › (0 = no symptoms, 1 = few symptoms, 2 = a moderate number of symptoms, 3 = a great deal of symptoms) › Somatic symptoms: muscle pain, irritable bowel syndrome, fatigue/tiredness, thinking or remembering problem, muscle weakness, headache, pain/cramps in the abdomen, numbness/tingling, dizziness, insomnia, depression, constipation, pain in the upper abdomen, nausea, nervousness, chest pain, blurred vision, fever, diarrhea, dry mouth, itching, wheezing, Raynaud's phenomenon, hives/welts, ringing in ears, vomiting, heartburn, oral ulcers, loss of/change in taste, seizures, dry eyes, shortness of breath, loss of appetite, rash, sun sensitivity, hearing difficulties, easy bruising, hair loss, frequent urination, painful urination, and bladder spasms.
• The SS scale score is the sum of the severity of the 3 symptoms plus the extent (severity) of somatic symptoms in general. The final score is between 0 and 12.

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CHAPTER 18.

COMMON SKIN INFECTION IN ADULTS

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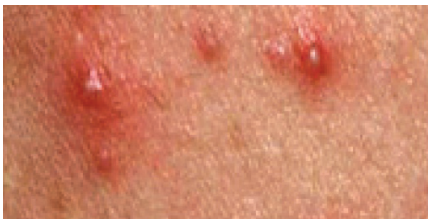
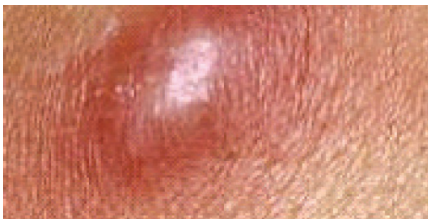
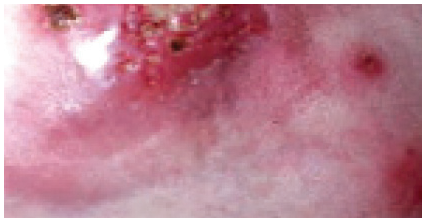
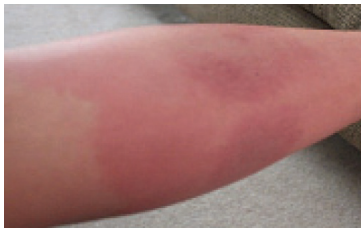
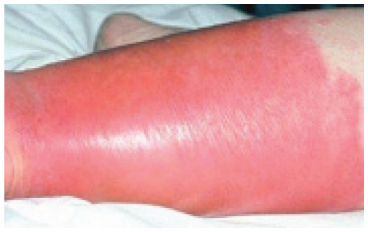
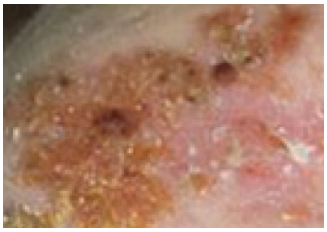
I. COMMON SKIN AND SOFT TISSUE BACTERIAL INFECTIONS (SSTBIS)

A- PURULENT SKIN AND SOFT TISSUE INFECTIONS

	Description	Distribution and Pathogens
Folliculitis	Superficial infection of the hair follicles Generally asymptomatic	- Common in body areas associated with friction and heavy perspiration (beard, posterior neck, occipital scalp, axillae, breasts and thighs). - Pathogens: usually Staphlylococcus Aureus, Pseudomonas aeruginosa in hot tubs or swimming pools
Furuncle	Painful deep infection of hair follicles that extends to subcutaneous tissue	
Carbuncle	A cluster of interconnected furuncles/nodules (i.e. larger and deeper) Sometimes with fever and regional adenopathy	
Abscess	Painful collection of pus within dermis (i.e. deeper than a furuncle)	Polymicrobial, commonly skin flora (staphylococci and streptococci).

B- NON-PURULENT SKIN AND SOFT TISSUE INFECTIONS

	Description	Distribution and Pathogens
Cellulitis	Deep skin infection that extends to the subcutaneous tissues. Skin is very red hot/warm, tender, erythematous, and edematous plaque **not well demarcated** that expands rapidly.	Pathogens: Streptococci without abscess formation; Staphylococci with abscess.
Erysipelas	**Well-demarcated**, painful plaque.	- More common with extremes of age (very young or old) - Occurs on the face or legs. - Pathogen: Group A ß-hemolytic Streptococci.
Impetigo and Echytyma	- Impetigo is a highly contagious superficial skin infection (i.e. localized to the epidermis): honey colored crusted exudates with flaccid pustules or vesicles. Usually non-bullous in adults.	- Rare in adults; associated with poor hygiene, humid or warm temperatures. - Occurs on the face (around the nose and mouth) or extremities or scalp (e.g. after trauma or scratching). - Pathogen: Staphylococci aureus and occasionally by Streptococcus pyogenes.

Erythrasma	- Infection of the superficial layers of the skin: irregularly shaped pink or brown patches and fine scaling. - Scaling, cracking and break-down of the skin may occur between the 4th and 5th toes. - Erythrasma unlike fungal infection, Corynebacterium glows coral-red under an ultraviolet light	- Mostly in adults with diabetes, obesity or those living in the tropics. - Affected areas: foot, groin (men), armpits, skinfolds under the breasts or on the abdomen, and the area between the vaginal opening and the anus (perineum). - Pathogen: Corynebacterium minutissimum
**Constitutional symptoms (fever and chills, tachycardia, hypotension, ± confusion)*		
		
Folliculitis	**Furuncle**	**Carbuncle**
		
Cellulitis	**Erysipelas**	**Impetigo**

MANAGEMENT

1. Topical antibiotics in case of limited skin infections
   a. Clean with antibacterial wash (e.g. Clorhexidine) or soap + water and dry then apply
      - Clindamycin 1% or Erythromycin 2% 2-3 times daily for 7 to 10 days in limited folliculitis and erythrasma
      - Mupirocin 2% ointment 2-3 times daily for 7 to 10 days in limited impetigo (< 3 non-ulcerated lesions on one area)
2. Warm compresses 3-4 times daily for 15 to 20 minutes for, cellulitis, erysipelas, non-fluctuant small furuncles, carbuncles, and abscesses.
3. Incision and drainage if fluctuant large furuncle or carbuncle, abscess. It can be curative in most of the cases.
4. *Gram stain and culture are only recommended in case of carbuncles, abscesses, and impetigo/echtyma but empiric therapy is reasonable in typical cases*.
5. Rest and elevation of the affected limb/area with cellulitis or erysipelas to reduce swelling and pain and help to expedite healing.
6. Drawing around the margins of infection may help to identify the spread/resolution.
7. Initiate empiric antimicrobial therapy for uncomplicated SSTBIs (Tables 18.I.1 and 18.I.2).
8. Treat pre-existing skin disease (e.g. eczema, dermatitis, herpes, varicella, lice, scabies, and tinea). So it is important to check for port of entry e.g. the interdigital toe spaces, and treat it.

TABLE 18.I.1: EMPIRICAL ORAL ANTIBIOTIC GUIDE FOR UNCOMPLICATED SKIN BACTERIAL INFECTION

Clinical condition	1st line / Oral options
Impetigo and Echytyma	*Cephalexin 1000 mg twice daily or 500 mg every 6 hours *AmoxiClav 625 mg every 8 hours or 1000 mg every 12 hours *Clindamycin[1] 450 mg every 6 hours *Erythromycin 250 mg 4 times daily *Penicillin V if culture yield streptococci alone
Erysipelas	*Cephalexin 1000 mg twice daily or 500 mg every 6 hours *Clindamycin[1] 450 mg every 6hours
Cellulitis (not With atypical organism)	
Cellulitis associated with human or pet bite	*AmoxiClav 625 mg every 8 hours or 1000 mg every 12 hours *Clindamycin 450 mg every 6hours
History of exposure to freshwater at the site of infection	*Consider adding Ciprofloxacin 750 mg twice daily.*
History of exposure to saltwater at the site of infection	*Consider adding Doxycycline 100 mg once a day.*
Intravenous Drug Abuser (with associated abscess)	*Clindamycin orally 450 mg every 6 hours
*Duration of treatment: 5 to 10 days (7 to 10 days in case of impetigo). Review antibiotics at day 5, can extend if not fully resolved. [1] Clindamycin is also an option in case of allergy to Penicillin.	

TABLE 18.I.2: EMPIRICAL ORAL ANTIBIOTIC GUIDE FOR UNCOMPLICATED SKIN BACTERIAL INFECTION WITH SUSPECTED COMMUNITY-ACQUIRED MRSA

*Trimethoprim / Sulfamethoxazole orally 1-2 double strength tablets twice daily
*Doxycycline orally 100 mg twice daily
*Clindamycin[1] orally 450 mg every 6 hours

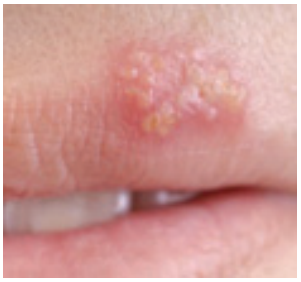
II. COMMON SKIN VIRAL INFECTION

A- HERPES SIMPLEX VIRUSES (HSV)

HISTORY

1. Primary HSV-1 infection occurs following exposure to the secretions (usually saliva) of infected persons while they are shedding the virus.
2. Predominantly affect the mouth (herpes labialis) or the genitals (genital herpes)
3. Reactivation and clinical recurrences may be spontaneous or triggered by various factors such as trauma or immune suppression.
4. Prodromal symptoms of pain, burning, or itching can precede the muco-cutaneous manifestations of herpes labialis and genital herpes infections.

PHYSICAL EXAMINATION



1. Primary oral HSV infection (herpes labialis): grouped vesicles or blisters on erythematous skin (usually the vermilion border of the lip) and/or erosions (shallow ulcerations) oral mucosa, palate, tongue, or lips (acute herpetic gingivostomatitis).
2. Primary genital HSV infection is painful ulcerations/erosions on an erythematous genital skin or mucosa that occurs about 7 to 10 days after exposure; intact vesicles are rare. Dysuria may occur. Recurrent genital disease in 40% of affected patients.

3. Fever, myalgias, and regional adenopathy may be present.
4. Recurrences of oral or genital herpes may appear similar to primary infection but are usually clinically less severe.

DIAGNOSIS

A clinical diagnosis of HSV-1 or HSV-2 lesions is usually based on the clinical appearance of the lesions and is easily made when recurrent lesions appear characteristic.

TREATMENT

1. Acyclovir cream to be started as early as possible 5 times daily for 4 days.
2. Systemic therapy (Table 18.II.1) alleviates symptoms of primary and recurrent HSV infections and reduces subsequent outbreaks and viral shedding.

B- VARICELLA (CHICKENPOX)

CLINICAL PRESENTATION

1. Varicella (chickenpox) causes a febrile illness associated with a diffuse, intensely pruritic, vesicular rash; the vesicles appear in crops in various stages of development (new, crusted and healed vesicles at the same time). Vesicles may be infrequent in immunized patients.
2. Scratching the lesions can lead to secondary bacterial skin infections. Other serious complications include invasive group A streptococcal infections (toxic shock syndrome and necrotizing fasciitis), cerebellar ataxia, severe encephalitis, and pneumonia.
3. Varicella is more likely to disseminate and cause complications in immunocompromised patients. However, varicella pneumonia can occur in immunocompetent persons. It occurs more often in adults than in children, develops with increased frequency in cigarette smokers and pregnant women, and is associated with high mortality rates.
4. Varicella is highly contagious and is transmitted by aerosolized droplets from respiratory secretions or by direct contact with the fluid from vesicular skin lesions. The incubation period is 10 to 21 days.

TREATMENT

1. Therapy is required for those at high risk for developing complications, including healthy adults, immunocompromised patients, and patients with pre-existing skin disorders or cardiopulmonary disease.
2. Acyclovir is currently the only antiviral agent recommended for treating varicella.
3. Oral Acyclovir (Table 18.II.1) should be given within the first 24 hours of the appearance of the rash. Immunocompromised patients or patients with complications such as pneumonia or encephalopathy should be given intravenous acyclovir.

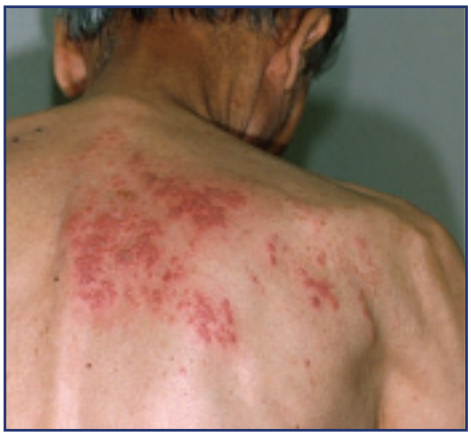
PREVENTION

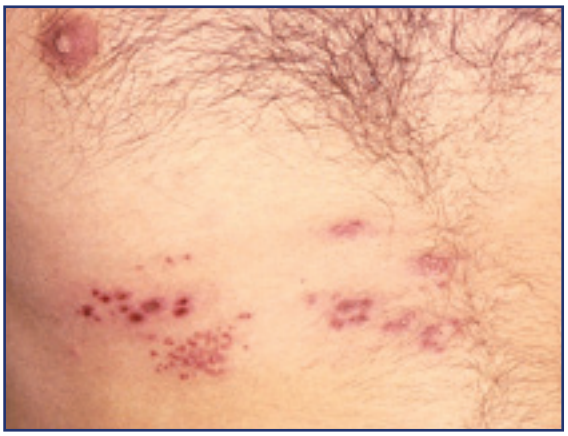
1. Varicella vaccine which is a live virus vaccine is recommended for:
    a. All immunocompetent children: 2 doses.
    b. All susceptible immunocompetent non-pregnant adults should receive 2 doses at 4 to 8 week intervals, in addition to persons with leukemia who are in remission and HIV-positive adults with a CD4 cell count > 200/μL
2. Immunocompetent non-pregnant adults who are susceptible and experience a close-contact exposure to the virus and are at high risk for developing complications of varicella should be considered for postexposure prophylaxis with varicella vaccine (given within 3 to 5 days of exposure followed by a 2nd dose in 4-8 weeks), or acyclovir at the first sign of skin lesions.
3. Susceptible persons who are immunocompromised or pregnant should receive varicella-zoster immune globulin within 96 hours of exposure.

C- HERPES ZOSTER (SHINGLES)

DEFINITION

Following varicella, the herpes zoster virus remains latent in the sensory dorsal root ganglia. Reactivation causes herpes zoster. It is primarily a disease of adults (rare before 10 years of age).





CLINICAL PRESENTATION

1. Acute onset of unilateral dermatomal neuretic paresthesia or pain (deep, throbbing, or stabbing) ± itching, followed by a painful ± prurigenous dermatomal skin vesicular rash/eruption (vesicules > papules / pustules > macules) in varying stages of evolution. Occasionally, fever and malaise occur.
2. The thoracic dermatomes are most often involved.
3. Reactivation of the virus within the trigeminal nerve ganglia (mainly V1 i.e. involving the tip and side of the nose) may cause herpes zoster ophthalmicus, and, possibly, blindness, if not treated appropriately.
4. Reactivation within the geniculate ganglion that affects the 8th cranial nerve and involves the ear may cause herpes zoster oticus (Ramsay Hunt syndrome).
5. In most immunocompetent patients, the lesions begin to crust within 7 to 10 days, and the acute pain syndrome resolves. If the pain persists, development of postherpetic neuralgia is likely. Risk factors include age > 60 years at the onset of herpes zoster and having an acute episode of herpes zoster with severe pain and an extensive vesicular rash.

TREATMENT

1. Antiviral therapy (Table 18.II.1) started within 72 hours can lessen acute herpes zoster pain severity, speed lesion healing, and decrease postherpetic neuralgia incidence and severity.
2. Oral Valacyclovir and Famciclovir have improved bioavailability compared with oral Acyclovir, which is poorly absorbed and requires a high pill burden.
3. Pain therapy: *the severity of pain during the acute attack is an important predictor for the development of postherpetic neuralgia*.
    a. Mild to moderate pain may be controlled with acetaminophen or nonsteroidal anti-inflammatory drugs, alone or in combination with a weak opioid or tramadol.
    b. If pain does not rapidly respond to opioid analgesics or if opioids are not tolerated, add Nortriptyline, Gabapentin , or Pregabalin , but they have not been extensively studied for pain relief in patients with acute herpes zoster.
4. Corticosteroids (e.g. Prednisone 50 mg daily for 1 week) may have a role in patients with severe acute herpes zoster who have no contraindications to these agents. They may help accelerate lesion healing, decrease the time to acute pain resolution, decrease insomnia incidence, facilitate quicker return to normal daily activities, and decrease the need for analgesic pain medicine. Unfortunately, they do not appear to reduce the incidence of postherpetic neuralgia.
5. For patients at risk for postherpetic neuralgia, early adjuvant therapy with a tricyclic antidepressant (e.g., amitriptyline, desipramine and nortriptylin) or an anticonvulsant (e.g., gabapentin or pregabalin) should also be considered, although side effects often limit their usefulness.

TABLE 18.II.1: ANTI-VIRAL MEDICATIONS

Treatment Options: Therapy should be initiated at the first sign or symptom (e.g., tingling, itching, burning, pain, or lesion) i.e. better within the first 24-48hours. *N.B. Therapy should be adjusted in patients with renal failure*			
Indication	**Acyclovir oral**	**Famciclovir oral**	**Valacyclovir oral**
Oral Herpes Simplex Virus (HSV)			
Primary HSV (i.e. initial episode)	200 mg 5×/day or 400 mg tid daily for 5 days	1500 mg once for one day	2000 mg bid for one day, taken 12 hours apart
Recurrent HSV			
Genital Herpes Simplex Virus (HSV)			
Primary HSV (i.e. initial episode)	200 mg 5×/day or 400 mg tid for 10 days	1000 mg bid for 1 day	1000 mg bid for 10 days 500 mg bid for 3 days
Recurrent HSV			
Suppression HSV *for frequent recurrences* If ≤ 9 recurrences / year	400 mg bid for up to 12 months		1000 mg per day 500 mg per day
Herpes Zoster (Shingles)	800 mg 5×/day for 7-10 days	500 mg tid for 7 days	1 g tid for 7 days
Varicella (Chickenpox)	800 mg 4×/day for 5 days		

bid: twice daily; tid: 3 times daily

D- WARTS


Condyloma Acuminata


Plantar Wart

DEFINITION

1. Warts are benign epithelial growths caused by human papillomavirus (HPV).
2. Anogenital warts are a sexually transmitted infection, and partners can transfer the virus with high efficiency.
3. HPV infection follows inoculation of the virus into the epidermis through direct contact with a broken or macerated skin (e.g. plantar warts in swimmers).

CLINICAL MANIFESTATION

1. The common wart is the most common type: It is a hyperkeratotic, flesh-colored papule or plaque studded with small black dots (thrombosed capillaries).
2. Other types of warts include flat warts (verruca plana), plantar warts, condyloma acuminatum (venereal warts).
3. A wart usually appears within 2 to 9 months after inoculation. The rough surface of a wart can disrupt adjacent skin and enable inoculation of virus into adjacent sites, leading to the development and spread of new warts.

DIAGNOSIS

1. The clinical appearance alone should suggest the diagnosis. Unlike corns and callus, warts bleed on any attempt to scale them down with a scalpel.

TREATMENT

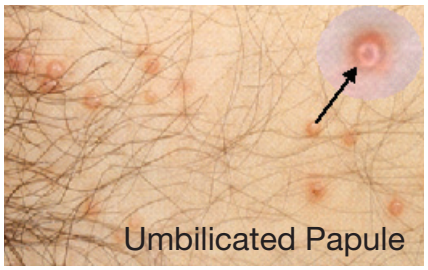
1. Application of various topical caustics and acids such as Salicylic acid (1st line therapy); or Trichloroacetic acid.
2. Topical chemotherapeutic Agents: 5-Fluorouracil, Podophyllin, or Cantharidin.

3. Destructive methods: cryosurgery; electrodesiccation; curettage; laser therapy.
4. The immunomodulator Imiquimod cream is a novel topical agent recently approved for treating condyloma acuminatum, and it might help with common warts as well, usually as adjunctive therapy. Sexual partners of patients with condyloma warrant examination and women require gynecologic examination.
5. Candida antigen may be injected in stubborn warts.

PREVENTION AND SCREENING

1. For common warts, no approaches have been documented to prevent transmission.
2. For genital warts (condyloma), the risk correlates with the number of sexual partners. A quadrivalent HPV vaccine is recommended for girls and women ages 9 to 26 years.

E- MOLLUSCUM CONTAGIOSUM


Umbilicated Papule

DEFINITION

1. Molluscum contagiosum is an infectious viral disease of the skin caused by the poxvirus.
2. Transmission can occur via direct skin or mucous membrane contact, or via fomites.

CLINICAL MANIFESTATION

Smooth pink, or flesh-colored, pearly, dome-shaped, umbilicated papules with a central keratotic plug (not pruritic or painful, and not vesicular). Most patients have many papules, often in intertriginous sites, such as the axillae, popliteal fossae, and groin. They usually resolve spontaneously, but they often persist in immuno-compromised patients.

TREATMENT

1. Treatment might not be necessary because the disease often resolves spontaneously in children.
2. Cryosurgery and Curettage are perhaps the easiest and most definitive approaches.
3. A medication composed of Cantharidin, Podophyllin and Salicylic Acid can be applied topically then washed off 2 to 6 hours later; it is well tolerated, and is very effective even in children.
4. A solution containing 5% Potassium Hydroxide can be applied topically 1-2 times daily (age > 3 years).

F- PITYRIASIS ROSEA

EPIDEMIOLOGY

1. Pityriasis rosea is usually harmless, and its rash is not contagious.
2. It commonly occurs at 10-35 years of age.

CLINICAL MANIFESTATION

1. A single, round or oval, pink patch that is scaly with a raised border (herald patch of 2-10 cm diameter) appears first.
2. Few days to weeks later, salmon-colored, 1-2 cm oval patches (± mild itching) appear mainly on the body trunk and upper parts of the extremities (in a Christmas tree distribution over the back). They usually spare the face.
3. The patches usually last 6 to 8 weeks and even to several months. They may leave post-inflammatory hypo or hypergimented macules that disappear with time.

DIAGNOSIS

1. The clinical appearance of the herald patch followed by other patches should suggest the diagnosis.
2. Refer to a dermatologist in case of uncertainty of diagnosis or non-response to appropriate standard therapy.

TREATMENT

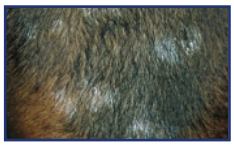
1. Just observation (self-limited).
2. In case of itching: avoid hot clothes or showers; Hydrocortisone cream 1% can be used for small itchy areas; A topically applied lotion containing calamine and zinc oxide and/or oral anti-histamines in case of wide itchy areas.

III. COMMON SKIN FUNGAL INFECTIONS: DERMATOPHYTES AND CANDIDIASIS

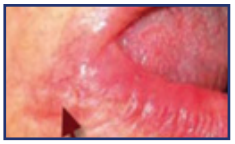
DEFINITION

1. Dermatophytosis implies infection with fungi, organisms with high affinity for keratinized tissue, such as the skin, nails, and hair. Fungal reservoirs: soil, animals, and infected humans.
2. Candidiasis refers to a diverse group of infections caused by Candida albicans (70-80%) or by other members of the genus Candida. These organisms typically infect the skin, nails, mucous membranes, and gastrointestinal tract, but they also cause systemic disease. Candida albicans commonly resides on skin and mucosal surfaces, and alterations in the host environment can lead to its proliferation and subsequent skin disease e.g. in immunocompromised patients, diabetics, old patients, and patients receiving antibiotics.

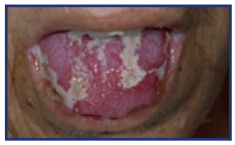
CLINICAL PRESENTATION



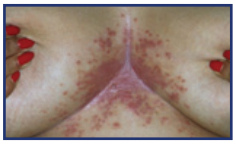
Tinea capitis (scalp): scaly, erythematous skin, often with hair loss. It can resemble seborrheic dermatitis.
Kerion celsi is an inflammatory form of tinea capitis, characterized by boggy nodules, usually with hair loss and regional lymphadenopathy.



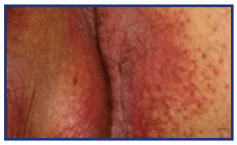
Angular cheilitis (Perleche)/ Candida: fissures and reddened scaly skin at the corner of the mouth, (more in diabetics and in those who drool or chronically lick their lips).



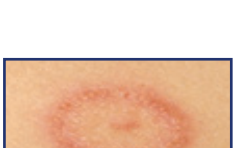
Thrush or oropharyngeal candidiasis: white nonadherent plaques on tongue and buccal mucosa.



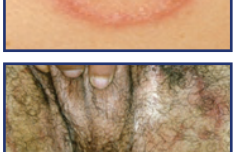
Cutaneous Candidiasis: red, itchy, inflamed skin/plaques + satellite pustules (yellow, fluid-filled lesions at the edge of the confluent red eruption). At sites of skin-to-skin contact, lesions have glazed, shiny, and at times eroded surfaces + burning > itching.



Candidal intertrigo: involves skin folds (axillae, groin), characterized by reddened itchy inflamed skin/plaques *without central clearing, often with satellite pustules*.



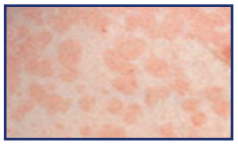
Balanitis: shiny reddish plaques on the glans penis, which can affect the scrotum. Balanitis occurs almost exclusively in uncircumcised men.



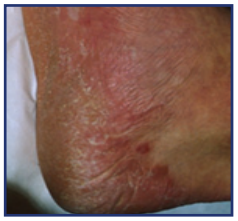
Tinea corporis (body), **faciei** (face), and **manuum** (hands) represent infections of different sites, each invariably with annular scaly plaques (an expanding, ringlike lesion with a slightly scaly, erythematous, advancing edge and central clearing without satellite pustules).

Tinea cruris (jock itch) occurs in the groin and on the upper, inner thighs and buttocks as scaling annular plaques *with central clearing without satellite pustules*; more common in men and typically spares the scrotum.

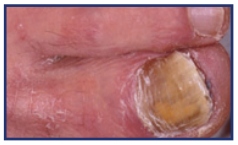
Tinea or Pytiriasis Versicolor: hyper - or hypopigmented, red or yellowish-brown (hence versicolor) macules that are well-defined and have fine, powdery, bran-like (pityriasiform) scales (hence pityriasis). Lesions may appear all over the body, with the upper trunk, neck and proximal parts of the upper limbs being most commonly affected. Pigmentary alterations will usually take weeks to resolve after successful therapy. It is a very benign condition, however, cosmetically unacceptable to the patient. Its course is chronic and subject to relapse.



Tinea pedis (athlete's foot): usually pruritic, with scaling plaques on the soles, extending to the lateral aspects of the feet and interdigital spaces, often with maceration.



Tinea unguium (onychomycosis): fungal nail disease, characterized by thickened yellow nails and subungual debris, and usually associated with tenia pedis. It may cause sububgual hyperteratosis and sometimes complete destruction of the nail.



Candidal Paronychia: acute or chronic infection of nail characterized by tender, edematous, and erythematous nail folds, often with purulent discharge; common in diabetics. It starts PROXIMALLY near the nail fold (the cuticle).

DIAGNOSIS

1. Diagnosis is mainly based on clinical presentation.
2. KOH examination and fungal culture may be done to confirm diagnosis.

MANAGEMENT

Refer to a dermatologist in case of uncertainty of diagnosis or non-response to appropriate standard therapy. Treatment of Dermatophyte skin infections and candidiasis is summarized in table 18.III.1.

TABLE 18.III.1: TREATMENT OF DERMATOPHYTOSIS, PITYRIASIS VERSICOLOR OR CANDIDA COMMON INFECTIONS

Tinea Capitis, Extensive Candida or Dermatophyte Disease
- Griseofulvin for 2-4 weeks in tinea corporis or cruris, 4-8 weeks in tinea pedis and 6-12 weeks in tinea capitis, but may be less effective than other oral antifungals and has more side effects. 250 mg 4 times daily (microsize formulation) or 250 mg 3 times daily (ultramicrosize formulation) - Fluconazole orally 150 mg daily or Fluconazole orally 150 mg once weekly for 2-4 weeks (2-6 weeks intinea pedis). - Itraconazole orally 200 mg twice daily for 1 week or 100 mg daily for 2 weeks in tinea corporis or cruris; or 200 mg twice daily for 1 week in tinea pedis; and Itraconazole orally 200 mg twice daily **for one week each month** for 1-3 months in tinea capitis. - Terbinafine[1] orally 250 mg daily for 2-4 weeks based on the indication. *N.B. Terbinafine can be used as 1st line therapy if Trichophyton species tinea capitis. If it is used for the treatment of Microsporum tinea capitis, longer courses of treatment (8 to 10 weeks) may be necessary.*
Limited Dermatophytes (Tenia pedis, cruris or corporis) or Candida Skin Infection including Angular Cheilitis and Balanitis
- Aeration+Any topical Azole[2] cream 1-2% or Cylopirox cream 1% or Terbinafine cream 1% applied twice daily: - For 1 to 4 weeks if limited tenia cruris or corporis, and for 4 weeks in case of tenia pedis. - For 1 to 4 weeks if limited skin Candida infection (N.B. Terbinafine 1% cream is less active against Candida). N.B. discontinuation of any aggravating factors in case of angular chelitis. *N.B. Topical Nystatin is ineffective due to its inactivity against dermatophytes.*

Tinea or Pytiriasis Versicolor
- Selenium sulfide 2.5% lotion applied either overnight or for 10 to 15 minutes once daily for 10-14 days, is efficacious and cost-effective. - Ketoconazole shampoo “lather, leave in place for 5 minutes every day” for 5 days, and the imidazole or triazole creams are also effective topically for 1 week. - Single-dose oral Ketoconazole[3], 400 mg (may repeat dose in 1 week) - Itraconazole 200 mg orally daily for 5-7 days or Fluconazole 300 mg orally once weekly dose for 2 weeks in case of widespread lesions that do not respond to topical therapy. *N.B. Oral therapy does not prevent the high rate of recurrence.* - Itraconazole 400 mg taken once orally a month (2 tablets of 100 mg taken 12 hours apart) for 6 consecutive months when recurrences are problematic.
Oropharyngeal Candidiasis
- Nystatin suspension or Miconazole oral gel 20 mg/g 4-6 times daily until symptoms resolve. - Fluconazole orally 200 mg on the first day, followed by 100 mg/day for 5 to 10 days, or Itraconazole orally 100 to 200 mg/day, for 5 to 10 days for severe or extensive disease.
Onychomycosis
Minimum Duration of Therapy: 6-8 weeks for fingernails; 12-16 weeks for toenails. - Itraconazole orally 200 mg/day - Itraconazole orally 200 mg twice daily for 1 week per month - Terbinafine[1] orally 250 mg/day - Fluconazole orally 150-300 mg once weekly In mild onychomycosis: a nail lacquer can be used: - Amorolfine 5% lacquer once to twice weekly or Ciclopirox 8% lacquer once daily for 48 weeks.
Candida Paronychia
Aeration + Any topical Azole[2] cream 1-2% or Cylopirox cream 1% twice daily for 2 to 4 weeks; oral antistaphylococcal antibiotics (e.g. Amoxicillin Clavulinate or Clindamycin) may be needed, coupled with incision and drainage for secondary bacterial infection. Minimize wet work.
[1] Terbinafine has few drug interactions and good oral bioavailability; however, severe skin reactions, leukopenia, hepatotoxicity, and taste disturbances can occur. [2] Topical Azole creams e.g., Miconazole 2%, Clotrimazole 1%, Econazole 1%. [3] Ketoconazole, while cheaper than Itraconazole, has greater liver and endocrine toxicity and carries the risk for many drug inter actions, mainly when used for a prolonged period of time.

IV. COMMON SKIN PARASITIC INFECTIONS

A- SCABIES

DEFINITION

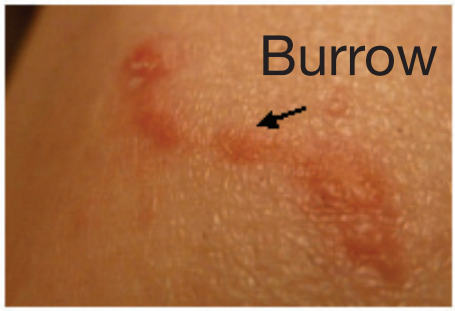
Ectoparasitic infestation caused by Sarcoptes scabiei var hominis. The mite burrows into the epidermis and lays eggs, leading to intense itching. It is more common with crowding or in institutional settings, as well as in temperate climates and in the winter.

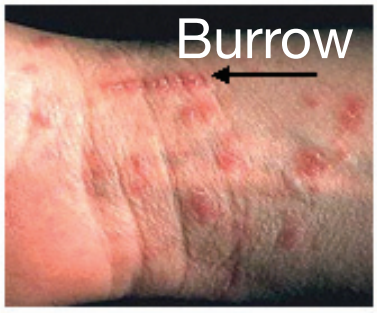
CLINICAL PRESENTATION

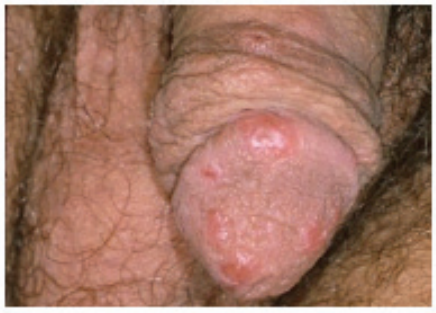
Incubation period: 3-6 weeks; can be 1-3 days after reinfestation in patients previously infested.

1. Itching, often severe and worse at night.
2. Small, erythematous, nondescript papules, often excoriated and tipped with hemorrhagic crusts.
3. Thread-like burrows are pathognomonic of scabies: thin, grayish, reddish, or brownish line that is 2-15 mm long.
4. Vesicles, pustules, and rarely bullae may also be present.
5. Nodular form occasionally develops, exhibiting firm, erythematous, extremely pruritic, dome-shaped lesions, 5 or 6 mm in diameter in groin, genitalia, buttocks, and axillary folds.

6. Distribution: sides and webs of the finger, flexor aspects of wrists, extensor aspects of elbows, anterior and posterior axillary folds, skin immediately adjacent to nipples (especially in women), periumbilical areas, waist, male genitalia (scrotum, penile shaft, and glans), extensor surface of knees, lower half of the buttocks and adjacent thighs, and the lateral and posterior aspects of the feet.
7. Scabies lesions can get infected with bacteria: impetigo, ecthyma, paronychia, and furunculosis, especially in the summer months consider Secondary staphylococcal infections.
8. Extensive eczematisation can occur secondary to constant scratching and application of irritating medications.
9. Crusted scabies: occur in elderly and immunocompromised patients; any area may be affected, but scalp, hands, and feet are particularly susceptible; if untreated, spread inexorably and may lead to sepsis. Itching may be minimal or absent.







DIAGNOSIS

1. Clinical: Based on history and distribution of lesions with widespread itching that is worse at night, spares the head (except in infants and very young children) and the back; other household members with similar symptoms. Burrows when seen increase the certainty of the diagnosis.
2. Skin scraping, dermoscopy (dark, triangular shape representing the head of the mite within a burrow - “delta wing” sign. Eggs may also be visible), and adhesive tape test (transparent tape with a strong adhesive firmly applied to a skin lesion, then rapidly pulled off and examined through a microscope for mites and eggs) can provide more definitive confirmation of diagnosis, but negative results do not exclude scabies.

MANAGEMENT

Treatment of Scabies is summarized in table 18.IV.1. Refer to a dermatologist in case of uncertainty of diagnosis or non-response to appropriate standard therapy.

TABLE 18.IV.1 TREATMENT OF SCABIES

First line	- Permethrin 5% cream: application to all areas of the body from the neck down and washed off after 8-14 hours; repeated in one week. - Ivermectin orally 200 mcg/kg (not available in Lebanon) repeated after 2 weeks.
Other Topical Options	- Benzyl Benzoate topical: 2 applications are usually sufficient. On the evening of the 1st day, apply the emulsion from the neck to the toes. 12 hours later, apply it again and again leave it for 12 hours. Wash the emulsion off 12 hours after the 2nd application (do not wash it off after the first 12 hours). - Crotamiton 10% cream: Apply from the neck down for 24 hours, rinse off, then reapply for an additional 24 hours, and then thoroughly wash off. It may be used on the lesions on the face and scalp in small children. - Lindane topical (toxic in children): Use WITH CAUTIONS if the previous mentioned options have failed or are not available. Apply to all skin surfaces from the neck down and wash off 6–8 hours later. 2 applications 1 week apart are recommended but may increase the risk of its side effects (neurotoxicity: seizures, muscle spasms; and aplastic anemia). It is contraindicated in case of uncontrolled seizure disorder, premature infants. - Sulfur in Petrolatum topical (not available in Lebanon).
Crusted scabies	Permethrin 5% cream or Benzyl Benzoate lotion or cream applied daily for 7 days, then twice weekly until cure **AND** Oral Ivermectin (200 mcg/kg/dose) on days 1, 2, 8, 9 and 15.

Itching	Antihistamines oral +/- Corticosteroids topical (medium or high potency); Corticosteroid oral taper over 1-2 weeks starting with 40-60 mg Prednisone daily (in severe cases).
Secondary infection	Appropriate systemic antibiotics that cover staphylococcus aureus.
Environment	Simultaneous treatment of the patient and close contacts. Clothing and linens used within the preceding few days should be washed in hot water (> 60°C) and dried in a hot dryer or bagged for several days.

B- PEDICULOSIS OR LICE

DEFINITION

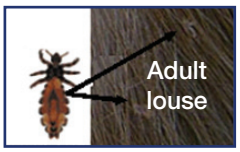
Infestation of the head (scalp), body or pubic region by site specific ectoparasites: respectively (Pediculus humanus var capitis), (Pediculus humanus var corporis), or (Phthirus pubis).
Transmission requires close contact, facilitated in case of poverty, crowding, and bad hygiene.

CLINICAL PRESENTATION

1. Pruritus may take 2-6 weeks to develop after the 1st exposure. Intense itching leads to scratching, with subsequent excoriations and secondary cellulitis. In longstanding infestation, the skin may become lichenified and hyperpigmented, particularly on the trunk.

DIAGNOSIS

1. Confirmed by finding at least one live adult louse on visual inspection (use of bright light, magnifying lens, and combing the hair with a “lice comb” - fine-toothed comb - and examining the comb teeth. Lice are com-monly found behind the ears and on the back of the neck, in the seams of clothing (body lice) or on the pubic hair (pubic lice).



2. Nits (louse eggs that may or may not be viable) can be confused with dandruff, hair spray debris, or dirt particles are not enough to indicate current infestation. They may remain on the hair for months after successful treatment. Hence, school- or day care–based “no nit” polices are not recommended.

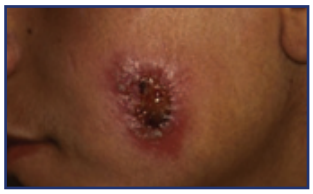
MANAGEMENT

1. Refer to a dermatologist in case of uncertainty of diagnosis or non-response to appropriate standard therapy
2. Pharmacologic and non-pharmalogic treatment:
    a. **Head Lice:** pediculicide is necessary (see table 18.IV.2) + wet combing the hair from root to tip with a lice comb; no adverse effects; often preferred by parents wanting to avoid a chemical treatment; however can time consuming depending on hair length and thickness; should be done every 3 days for 2 weeks. Cure rates (47 to 75%), but may be improved by increasing the duration of combing to 24 days. In case eyelids are infested: thick coat of petroleum jelly twice daily for 10 days applied to the eyelids is often curative.
    b. **Pubic Lice:** pediculicide is necessary + evaluation for other sexually transmitted infections.
    c. **Body Lice:** pediculicide is not always necessary; but laundering clothing and bedding in hot water, and regular bathing.
3. Other Precautions:
    a. The entire family should be examined and eventually accordingly treated.
    b. Fomite transmission of lice is controversial, but lice have been found on clothing, towels, and sheets. Washing these items in water that is at least 50-60°C provides effective lice eradication. Sprays, carpet treatments, and other chemical environmental decontamination measures are not necessary and can be harmful.

TABLE 18.IV.2: PHARMACOLOGIC TREATMENTS FOR HEAD LICE OR PUBIC LICE

Treatment	Ovicidal	Directions, Comments
Permethrin* 1% lotion *(1st line treatment)*	No	Apply to damp hair and leave on for 10 minutes, then rinse; repeat in 7 days (per package insert)
Pyrethrins 0.3% / Piperonyl butoxide 4% shampoo or mousse *(1st line treatment)*	No	Apply to dry hair, leave on for 10 minutes, then rinse Hair should be dry to avoid dilution Avoid in patients with chrysanthemum allergy
Benzyl alcohol 5% lotion	No	Apply to dry hair, leave on for 10 minutes, then rinse; repeat in 7 days (per package insert) Must be used in conjunction with nit combing. Approved for children ≥ 6 months; can be used in pregnant and lactating women
Ivermectin orally	Partial	Not FDA-approved for treatment of pediculosis; Used off label
Spinozad 0.9% topical suspension	Yes	Apply to dry hair and leave on for 10 minutes, then rinse. repeat in 7 days only if live lice are seen (per package insert) Safe fo use in children ≥ 4 years; may be used without nit combing; although best results occur with nit combing. Do not use in infants < 6 months because of benzyl alcohol content
Malathion 0.5% lotion	Partial	
Lindane* 1% shampoo (2nd line therapy for head lice if failure of 1st line agents)		Apply for 4 minutes, then wash (should not be repeated) Risk of neurotoxicity (seizures, muscle spasms), aplastic anemia. Do not use on excoriated skin, immunocompromised patients, conditions that increase seizure risk, medications that decrease seizure threshold
*Medications available in the Lebanese market		

C- CUTANEOUS LEISHMANIASIS



DEFINITION AND TRANSMISSION

1. Infection by protozoan parasites belonging to the genus Leishmania.
2. Transmitted to humans by the bites of infected female sandflies common in endemic areas (Syria, Iran, Afghanistan, Algeria, Brazil, and Columbia).
3. Incubation period: weeks to months (in general 2 to 24 months).

CLINICAL PRESENTATION

1. Pink-colored papule that appears on exposed areas of the skin then enlarges and develops into a nodule or plaque-like lesion (often with central softening).
2. Chronic painless ulceration of the papule with a well-defined indurated border often covered with a hyper-keratotic eschar or thick white-yellow fibrinous material.

DIAGNOSIS

1. Clinical presentation + history of exposure in an endemic area.
2. Definitive diagnosis requires demonstration of the parasite in the skin by histology, culture, or molecular analysis via polymerase chain reaction. This is important to pursue because of its implications on treatment.

MANAGEMENT

1. When suspected, cases are to be referred to one of the designated governmental hospitals for management and treatment.

PREVENTION IN ENDEMIC AREAS

1. Avoidance of being bitten by sandflies by staying indoors from dusk to dawn, when the insects are the most active.
2. Wearing long pants and long-sleeved shirts when outside.
3. Using insect repellent and bed nets as needed.

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CHAPTER 19.

ACNE VULGARIS

Issam Shaarani, MD; Najla Lakkis, MD

EPIDEMIOLOGY

1. Acne Vulgaris affects around 80–95% of adolescents and presents in moderate to severe form in about 20% of adolescents.
2. It is the most common skin disorder encountered in primary care centers.

DEFINITION

1. Acne vulgaris is a chronic inflammatory skin disorder of the pilosebaceous follicles.

CLASSIFICATION

1. Grading acne based on the type of predominant lesions and their severity can help in the therapeutic decision.
2. Acne is graded as follows:
    a. Comedonal: comedones only; closed (white heads) or open (black heads)
    b. Mild: comedones and few papules / pustules
    c. Moderate: papules predominate, with few nodules and rare cysts
    d. Severe: nodules and cysts predominate (can end up by scarring)

HISTORY

1. Initial visit
    a. Duration of the condition, location (mostly at areas of greatest concentration of sebaceous glands such as the face, neck, shoulders, chest and back), relationship to seasonal variation
    b. Previous use of acne therapies, response, compliance, and side effects
    c. Associated skin or other organ diseases
    d. Intake of any acne-promoting medications or supplements
    e. Menstrual history, use of oral contraception, and pregnancy status
    f. Abnormal hair growth and voice changes, temporal balding
    g. The use of cleansing products and cosmetics
2. Follow up visit
    a. Ask about response to treatment, adherence to therapy and side effects of medications

PHYSICAL EXAMINATION

Describe the number, location, morphology, and severity of lesions as follows:
1. Skin type (dry, oily)
2. Comedonal (non-inflammatory):
    a. Closed comedones: whitish, slightly palpable pinhead sized 1-3 mm in diameter
    b. Open comedones: flat or slightly raised, brownish or black measuring up to 5 mm in diameter
3. Inflammatory:
    a. Papules: red, may be tender, elevated lesions as large as 5 mm in diameter
    b. Pustules: superficial papules containing pus
    c. Nodules: solid, inflammatory lesions > 5 mm in diameter deep in the dermis
    d. Cysts: large suppurated nodules
4. Scars: atrophic or hypertrophic sequelae of inflammation
5. Postinflammatory hyperpigmentation

EVALUATION

1. The diagnosis of acne is usually based on the presence of comedones. In the absence of comedones, consider alternative diagnosis like acne rosacea and gram-negative folliculitis
2. If folliculitis is suspected, skin lesion culture can be taken
3. In females with severe acne and virilizing symptoms or irregular menses, refer to an endocrinologist or an obstetrician

MANAGEMENT

The treatment goal is to prevent new lesions and scarring, improve the physical appearance, and preserve the psychosocial well-being. The approach for the management of Acne is depicted in Algorithm 19.1.

PATIENT EDUCATION

1. Patient education is crucial in the approach to patients with acne, side by side with the pharmacologic treatment.
2. Acne is neither a sign of poor hygiene, nor an infection.
3. Diet including chocolate and soda does not affect acne.
4. Sunlight may affect acne, thus the application of sunscreen is advisable.
5. Acne lesions should not be scrubbed or picked to prevent scarring.
6. Alcohol-based astringents and oily cosmetic products should not be used. Water-based cosmetic products can be used if necessary, but should be washed off in the evening.
7. Washing the face two times daily and the other affected areas once daily using water and mild soap is important.

PSYCHOLOGICAL SUPPORT

1. Acne may have deleterious physical and psychological effects, including low self-esteem, anxiety and depression, especially with the possibility of permanent scarring.
2. Primary care physicians should address these conditions and screen for them.

CONTROL AGGRAVATING FACTORS

1. Medications like androgenic steroids, systemic corticosteroids, long-acting progestins, and some other medications.
2. Rubbing or occluding skin surface (e.g., sports equipment such as helmets and shoulder pads), telephone or hands against the skin.

PHARMACOLOGIC TREATMENT

Patients should be given realistic expectations regarding timelines for improvement (at least 8 weeks). Thus, therapy must be continued beyond this duration in order to assess efficacy.

1. Comedonal and mild acne

   a. Start with a topical retinoid at night
   b. If no improvement in 2 weeks, add topical benzoyl peroxide, topical antibiotic, or both
   c. Maintenance therapy: topical retinoid

2. Moderate acne

   a. Start with topical therapy; retinoid, benzoyl peroxide and topical antibiotic
   b. Failure of topical therapy after 6-8 weeks or in the presence of nodules: switch from topical to oral antibiotics in addition to topical retinoid at night and benzoyl peroxide in the morning. Response needs 6 to 8 weeks, and oral antibiotics should be continued until resolution of inflammation
   c. Maintenance therapy: topical retinoid+ benzoyl peroxide

3. Severe acne

   a. Refer for dermatology consultation for initiation of oral isotretinoin
   b. Maintenance therapy: topical retinoid + benzoyl peroxide + topical antibiotic

ADMINISTRATION AND DOSING OF MEDICATIONS

TOPICAL THERAPY

1. It should be always started using the lower potency/concentration, and escalated gradually if no significant skin irritation. More is not better.
2. Whenever topical acne medications are used for the first time, start by applying small amounts on part of

the affected area for 2-3 days, and if no adverse reaction is encountered, proceed with the usual dose.
3. Retinoid and benzoyl peroxide can cause local irritation, redness, drying, pruritis, stinging and peeling; so decrease topical frequency from twice daily to every day or every day to every other day for irritation. The use of a moisturizing soap and a moisturizer before treatment application is advisable.
4. Retinoid may cause an initial flare of lesions that may be eased by 14-day course of oral antibiotics.
5. Benzoyl peroxide may bleach clothes; and topical antibiotics may stain clothes.
6. All acne medications can cause photosensitivity; hence, patients should be advised to avoid sun exposure or to use sunscreen while on treatment.
7. All topical acne medications are to be used for patients 12 years of age and above, except for erythromycin that can be used at younger age.
8. Administer all topical preparations at bedtime to minimize exposure to day light and hence skin irritation. Topical retinoids are administered once daily in the evening, or every other day in case of significant skin irritation. Topical clindamycin and erythromycin are given twice daily. Benzoyl peroxide is given initially once daily in the evening, and can be increased to twice or three times daily as needed. When combining benzoyl peroxide and a retinoid, avoid applying both at the same time, as they might deactivate each other. Use benzoyl peroxide in the morning and retinoid at night. Benzoyl peroxide can be combined with Adapalene.
9. Avoid using topical antibiotic monotherapy, as this predisposes to bacterial resistance. Combination with benzoyl peroxide is the best, as the latter is not associated with the risk of bacterial resistance.
10. Instruct the patients to apply the medications on all the affected area (and not only the lesions), 30 minutes before going to bed.
11. Do not combine topical and oral antibiotic.

ORAL ANTIBIOTICS

1. Oral doxycycline is given 50-100 mg orally twice daily for 2-3 months, then once daily for 1-2 months.
2. Doxycycline pills can induce esophagitis, thus patients should be instructed to take it with meals, swallow it using sufficient amount of water and avoid lying down for at least one hour after taking it.
3. Erythromycin dosing is 500 mg orally twice daily for 2-3 months then once daily for 1-2 months.
4. Acne oral antibiotics can cause photosensitivity; hence, patients should be advised to avoid sun exposure or to use sunscreen while on treatment.

ORAL ISOTRETINOIN

1. The usual starting dose is 0.5 to 1 mg/kg/day (max 2 mg/kg/day) divided in 2 doses for a total of 15-20 weeks, or until reaching a cumulative dose of 120 mg/kg.
2. Lower doses can be used initially to avoid flare up, and can be increased gradually as tolerated.
3. Oral isotretinoin is a highly teratogenic medication, thus all sexually active women who can become pregnant should have a pregnancy test prior (Serum beta HCG) to starting the medication, and once monthly during the course. It is highly recommended to use two birth control methods at the same time, starting one month before the treatment course, and for at least one month after stopping it.
4. Patients should be counseled prior to initiation of isotretinoin about the multiple side effects of this medication, the most common of which are headaches, skin and mucous membranes dryness, gastrointestinal upset. Other side effects are cheilitis, decreased night vision, hair loss, arthralgias, tendinitis, hyperlipidemia, liver function abnormalities, poor wound healing, depression and suicidal ideation.
5. Patients should sign an informed consent before starting this therapy.
6. Avoid tetracyclines or vitamin A preparations during isotretinoin therapy.
7. Monitor for pregnancy, complete blood count (CBC), lipids and liver function tests at baseline and every month.

A list of available topical and oral Acne medications available in Lebanon is depicted in table 19.1.

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ALGORITHM 19.1: APPROACH TO ACNE TREATMENT

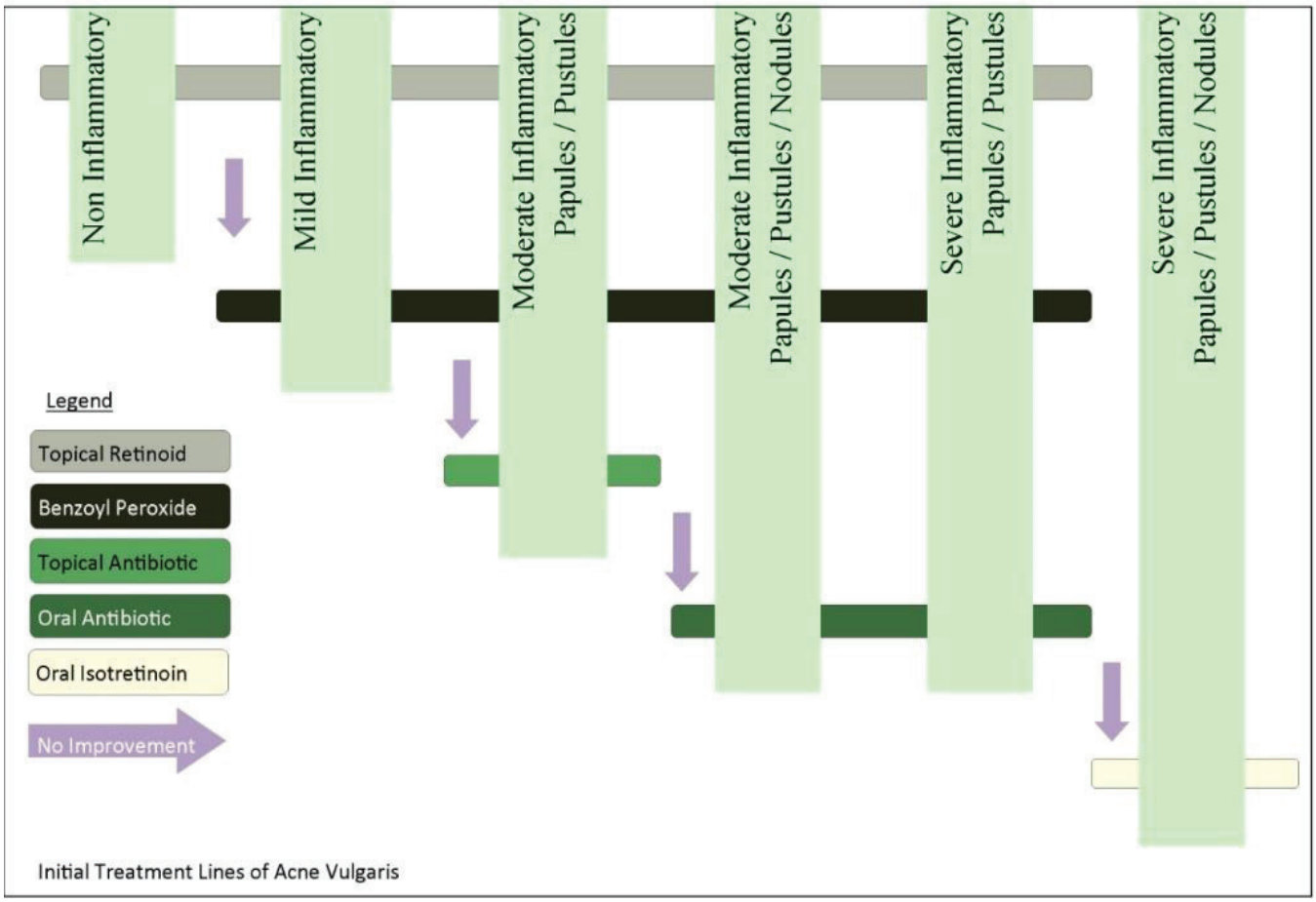

TABLE 19.1: TOPICAL AND ORAL ACNE MEDICATIONS AVAILABLE IN LEBANON

	Medication	Formulation Available
Topical Retinoids	Tretinoin	Cream (0.05%), Lotion (0.1%)
	Isotretinoin	Lotion (0.05%)
	Adapalene	Gel (0.1%)
Peroxides	Benzoyl Peroxide	Gel (5%, 10%)
Topical Antibiotics	Clindamycin	Solution, Gel (1%)
	Erythromycin	Solution (1.5%, 4%)
Topical Combinations	Benzoyl Peroxide - Erythromycin	Gel (5% - 3%)
	Isotretinoin - Erythromycin	Gel (0.05% - 3%)
	Tretinoin - Erythromycin	Gel (0.025% - 5%)
Oral Antibiotics	Doxycycline	Tabs, Capsules (50 mg, 100 mg)
	Erythromycin	Tabs (500 mg)
Oral Isotretinoin	Isotretinoin	Capsules (10, 20, 40 mg)

CHAPTER 20.

BACK PAIN

Mario Ghanem, MD

EPIDEMIOLOGY

1. Back pain causes more disability than any other condition. It is the second most common reason, after respiratory disorders, that patients access the health care system.
2. Up to 85% of people will be disabled by an attack of back pain during their lives, and at any given time up to 10% of the adult population is suffering from a bout of back pain lasting 2 weeks or longer.
3. The first episode usually occurs between 20 and 40 years of age.
4. Many cases of low back pain are self-limited and resolve with little or no intervention.

RISK FACTORS

1. Obesity.
2. Older age.
3. Female gender.
4. Physically or psychologically strenuous work.
5. Sedentary lifestyle.
6. Low educational attainment.
7. Job dissatisfaction and psychological factors such as somatization disorder, anxiety, and depression.
8. Poor physical health.
9. Smoking.

CAUSES OF BACK PAIN

Most etiologies of low back pain are caused by mechanical problems in joints and muscles. Over 90% of back pain, including strains and sprains, normal wear and tear of life, is caused by functional pathology (e.g. restricted joint movements; stiffness, weakness or trigger points in muscle; nerve entrapment) rather than structural pathology (e.g. rheumatologic disease, tumors, fractures, disc herniation).

MECHANICAL BACK PAIN

1. Acute soft tissue injury or lumbosacral pain (less than 6 weeks duration).
2. Acute discogenic pain with or without nerve root involvement.
3. Chronic musculoskeletal pain syndrome.

NON-MECHANICAL BACK PAIN

1. Rheumatological and other inflammatory joint diseases.
2. Infection.
3. Systemic and endocrinologic disorders.
4. Neoplasm, local or metastatic.

HISTORY

1. Pain onset (gradual vs. sudden), injury mechanism (if any).
2. Location and distribution of pain (upper, mid, lower, other joints).
3. Palliative and provocative factors (i.e. movement).
4. Quality, timing and duration (acute onset, chronic, versus comes and goes).
5. Previous episodes of pain (similar, same location, other joints which may indicate inflammatory conditions).
6. Occupational history.
7. Physical inactivity.
8. Social or psychological distress.
9. Screen for depression in chronic pain.

ALARMING OBSERVATIONS

Clues suggesting underlying systemic disease, neurological compromise or infection include:

1. Fever.
2. Age over 50.
3. History of cancer.
4. Unexplained weight loss.
5. Duration of pain greater than one month.
6. Pain at night or unrelieved by rest.
7. Saddle anesthesia.
8. Bladder or bowel incontinence.
9. Bilateral leg weakness and numbness.
10. History of abdominal aortic aneurysm.
11. Unresponsive to previous back therapy.
12. Immunosuppression.
13. Prolonged steroid use.
14. Injection drug use.
15. Osteoporosis.

PHYSICAL EXAMINATION

1. Gait and Posture
    a. Assess the patient's gait
    b. Check for scoliosis
    c. Inspect the back for signs of asymmetry (scoliosis, muscle atrophy), lesions (abscess / infection), scars, trauma, or previous surgery.
2. Range of Motion
    a. Assess limitation and pain in active and passive movement of the back, including flexion, extension, rotation and lateral bending
3. Orthopedic and Neurological testing
    a. Heel and Toe Walk (weakness may result from L5, S1 nerve root involement)
    b. Squat and Rise
    c. Straight Leg raising (raising the affected leg while patient is supine. If negative, 91% sensitivity ruling out nerve compression) (and Crossed Straight Leg Raise (if positive, 88% specificity for nerve compression)
4. Deep Tendon Reflex
    a. Knee reflex – L3, L4 nerve root
    b. Ankle reflex – S1 nerve root
5. Motor testing
    a. Hip flexion, L3
    b. Knee extension, L4
    c. Dorsiflexion of big toe, L5
    d. Plantar flexion, S1
6. Palpation and percussion of the spine
    a. Paraspinal and upper gluteal muscles
    b. Intervertebral and sacroiliac joints
    c. Vertebral bony prominences
7. Evaluate for malignancy including multiple myeloma (if systemic symptoms, night and at rest pain, recurrent infections, weight loss, anemia, ecchymosis, etc.)
    a. Breast and prostate exam
    b. Lymph node examination
    c. Splenomegaly
    d. Vertebral tenderness with neurologic deficit

EVALUATION

Algorithm 20.1 describes the different steps in the evaluation of low back pain.

LABORATORY TESTING

1. Not routinely ordered except when suspecting systemic inflammatory or infectious etiology (ie. Spinal epidural abscess, discitis).
2. Consider the following test in the initial work-up
    a. ESR or CRP
    b. CBC with differential
    c. Serum protein electrophoresis (SPEP) and Urine protein electrophoresis (UPEP) if suspecting multiple myeloma (chronic pain, recurrent infections)

IMAGING TESTS

1. Do not routinely obtain diagnostic imaging including plain X-rays in patients with nonspecific low back pain.
2. Perform diagnostic imaging for patients when:
    a. Serious underlying conditions are suspected on the basis of history and physical exam (i.e. malignancy, infection)
    b. Severe or progressive neurologic deficits are present.
3. Evaluate patients with persistent low back pain and signs or symptoms of radiculopathy or spinal stenosis with MRI (preferred) or CT only if they are potential candidates for surgery or epidural steroid injection (for suspected radiculopathy).

INDICATIONS FOR REFERRAL

1. Cauda equine syndrome (a surgical emergency)
    a. Patient presents with bowel and/or bladder dysfunction (urinary retention), saddle anesthesia, and bilateral leg weakness and numbness
2. Suspected spinal cord compression (emergent evaluation for surgical decompression).
3. Progressive or severe neurological deficit.
4. Neuromotor deficit that persists after 4 - 6 weeks of conservative therapy.

MANAGEMENT

MAIN GOALS

1. To relieve pain, improve function, reducetime away from work, and develop coping strategies through education. Patients who have high expectations for recovery have better outcomes.

PATIENT EDUCATION

1. Provide patients with evidence-based information on low back pain with regard to their expected course, advise patients to remain active, give information about effective self-care options, back injury prevention and stretching exercises.

MEDICATIONS

1. First-line medication options are paracetamol, acetaminophen, or nonsteroidal anti-inflammatory drugs (NSAID).
2. Extreme caution when prescribing NSAIDS to the elderly, and patients with renal, gastric, or cardiovascular comorbidity).
3. Tricyclic antidepressant may be beneficial in chronic low back pain but not for acute pain.
4. Reserve tramadol and other narcotic analgesics to severe pain not responsive to the first line medications.
5. Referral to a pain management specialist is appropriate for patients who continue to experience severe functional impairment or unremitting pain, or when patients or physicians feel that progress has stopped or want a second opinion.

NON-PHARMACOLOGIC THERAPY

1. For acute low back pain
    a. Spinal manipulation
2. For chronic or subacute low back pain
    a. Interdisciplinary rehabilitation
    b. Spinal manipulation
    c. Exercise therapy
    d. Massage

e. Acupuncture
f. Yoga
g. Cognitive-behavioral therapy
h. Progressive relaxation

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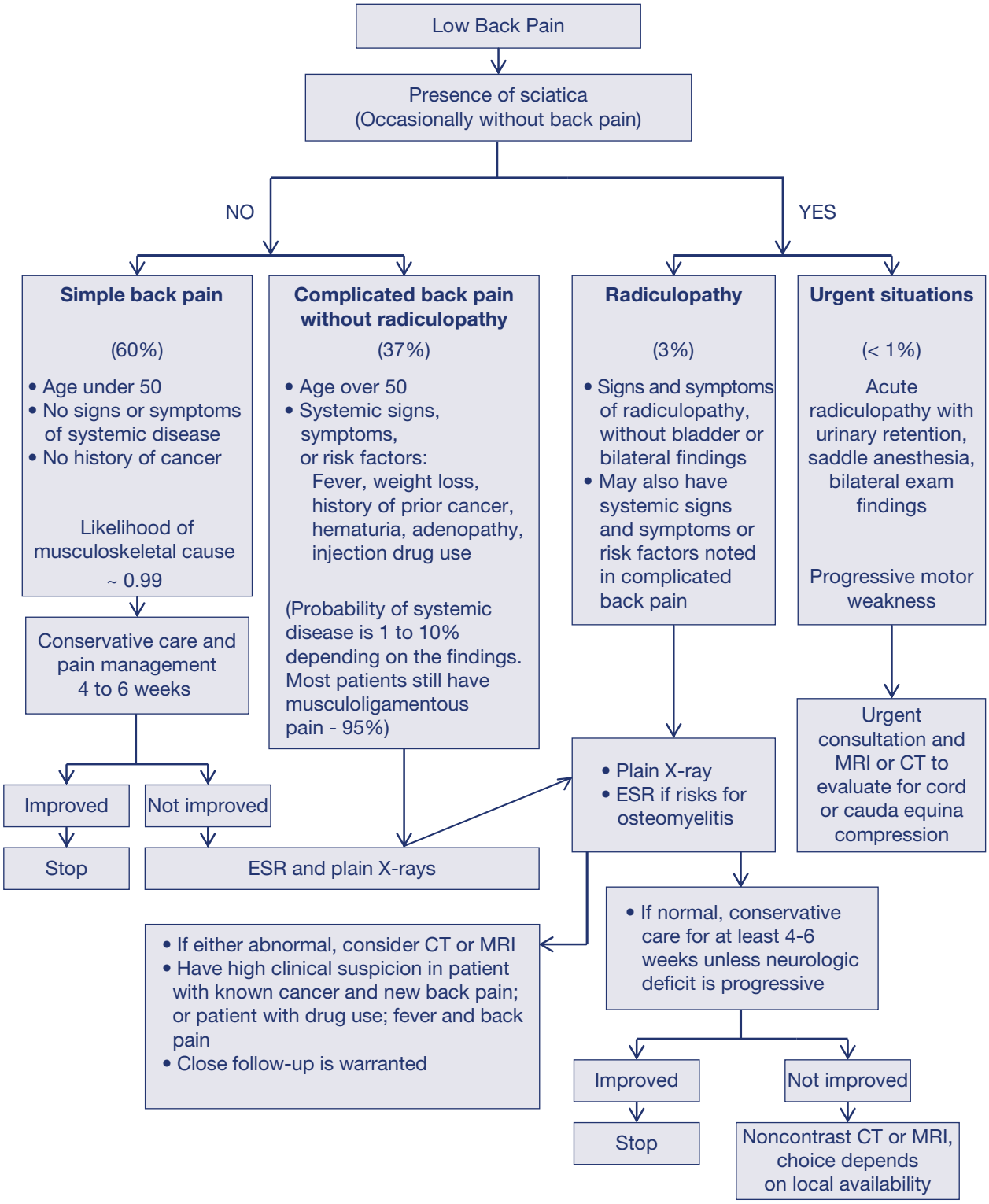
ALGORITHM 20.1: EVALUATION OF LOW BACK PAIN



CHAPTER 21.

OSTEOARTHRITIS, JOINT AND NECK PAIN

Mario Ghanem, MD

EPIDEMIOLOGY

1. Osteoarthritis (OA) is the most common rheumatic disease. Prevalence increases with age; the disease is almost universal in people 65 years or older.
2. Stronger genetic preponderance in females (incidence 10 times greater than in males).

RISK FACTORS

1. Obesity (strongest modifiable risk factor).
2. Abnormal joint biomechanics.
3. Previous joint injury.
4. Systemic and metabolic conditions.
5. Increased bone mass is also positively correlated with osteoarthritis.

DEFINITION

1. Osteoarthritis is a clinical syndrome of joint pain accompanied by varying degrees of functional limitation and reduced quality of life.
2. Osteoarthritis is characterized by progressive loss of articular cartilage and by reactive changes at the margins of the joints and in subchondral bone. Associated secondary synovitis is common.

CLASSIFICATION

1. Idiopathic (primary) - Affects more commonly the hands, hip, knee, feet, and spine.
2. Secondary - Results from joint trauma, congenital or developmental disorders, and other systemic diseases.

CLINICAL PRESENTATION

1. Pain is usually the first symptom and initial source of morbidity in osteoarthritis. Manifestations include the following:
    a. Deep achy joint pain exacerbated by extensive use is the disease's primary symptom.
    b. Early in the course of the disease: pain occurs after joint use and is relieved by rest. Later, the pain can occur with minimal or no movement and during the night.
    c. Reduced range of motion and crepitus (feeling of crackling as the joint is moved) - frequently present.
    d. Joint enlargement - Results from synovitis, increased amount of synovial fluid, or proliferative changes in cartilage and bone.
    e. Signs and symptoms are usually local. If more generalized, a systemic form of connective tissue disease is suggested.

HISTORY

1. It is important to differentiate osteoarthritis from other acute pathologic joint conditions that may need urgent medical attention (i.e. septic joint, connective tissue and other systemic diseases that may cause joint pain. Ask about the following:
    a. Pain site (one or multiple joints), onset (if sudden with no associated trauma, more likely infectious or inflammatory condition), character, severity, duration, frequency, radiation, aggravating and palliative factors.
    b. Joint stiffness, swelling, warmth (in OA, the symptoms are usually unilateral with no warmth or erythema)
    c. Stiffness at rest (gelling) may develop with morning joint stiffness, usually lasting for less than 30 minutes in OA
    d. Trauma (joint trauma, whiplash injury in case of neck pain)
    e. Dysphagia or respiratory tract symptoms (may result from a large anterior osteophytes in the cervical spine)
    f. Neuropathic conditions, systemic diseases, and metabolic bone disorders
    g. Fever, weight loss, abdominal pain, ocular abnormalities (inflammatory bowel disease)

PHYSICAL EXAMINATION

1. In early stages, joint exam may appear normal.
2. Antalgic gait or limping if weight-bearing joints are involved.
3. Limitation of motion or muscle atrophy may be noted.
4. Joint effusion, enlargement, tenderness.

Hands

1. Tenderness over carpometacarpal joint of thumb.
2. Hypertrophic changes at distal (Heberden nodes) and proximal (Bouchard nodes) interphalangeal joints.

Shoulders

1. Crepitus, especially in external rotation.
2. Tenderness at the glenohumeral or acromioclavicular joints.

Neck

1. Localized or radicular pain reproduced with Spurling's maneuver / neck compression test).
2. Upper trapezius and paraspinal muscle palpation (spasm and tenderness).
3. Neurologic exam including sensory, motor, and reflex (triceps & brachioradialis) testing (deficit or weakness if nerve root impingement).

Hips

1. Pain on movement at the hip, groin, inner thigh or buttock.
2. Limitation of motion, especially internal rotation and extension.

Knees

1. Crepitus.
2. Tenderness, effusion.
3. Muscle atrophy.
4. Presence of popliteal cyst (Baker cyst).
5. Valgus or varus deformity (due to loss of cartilage).

Feet

1. Pain on ambulation, especially at first metatarsophalangeal joint (aggravated by tight shoes).
2. Tenderness of first metatarsophalangeal joint, hallux rigidus.
3. Irregularities in joint contour, Hallux valgus deformity (late stage).

EVALUATION

LABORATORY TESTS

1. Order ESR when suspect other inflammatory conditions.

IMAGING TESTS

1. Osteoarthritis is mainly a clinical diagnosis. X-rays are rarely needed to confirm the diagnosis. Characteristic progressive changes on radiographs include:
    a. Joint space narrowing
    b. Subchondral bony sclerosis (eburnation)
    c. Marginal osteophyte and cyst formation
2. For neck pain, consider X-rays if:
    a. Age > 50
    b. Moderate to severe neck pain lasting more than 6 weeks
    c. Progressive neurological deficit
    d. Constitutional symptoms (fever, unexplained weight loss)
    e. History of malignancy
    f. Infection

TREATMENT

MAIN GOALS

1. Control pain and swelling.
2. Improve quality of life and minimize disability.
3. Optimally, patients should receive a combination of pharmacologic and non-pharmacologic treatment. (Tables 21.1 and 21.2).

PHARMACOLOGIC

1. Includes: paracetamol, NSAIDS tabs, topical capsaicin, colchicine, opioids analgesics, inta-articular glucocorticoids, intra-articular hyaluronic acid.

NON-PHARMACOLOGIC

1. Includes: patient education, rest (in the acute phase), orthoses, canes and walkers, heat and cold, weight loss, exercise (regular low impact or water-based), physical/occupational therapy, acupuncture.
2. Surgical interventions (if severe osteoarthritis, and continued pain despite pharmacologic and non-pharmacologic care). Includes: arthroscopy, debridement, irrigation, joint replacement.

MANAGEMENT OF SPECIFIC JOINTS

HANDS

1. Avoid repetitive trauma to affected joints.
2. Hot soaks or paraffin wax applications.
3. Local steroid injection.
4. Joint arthroplasty or arthrodesis.

HIPS

1. Heat, rest from weight bearing, and appropriate range of motion exercises.
2. Stress is reduced by the use of crutches, canes or a walker.
3. Hip replacement for advanced disease.

KNEES

1. Elastic supports or bracing.
2. Muscle strengthening exercises.
3. Steroid injection.
4. Arthroscopy with irrigation or arthroplasty.

TABLE 21.1: EVIDENCE BASED TREATMENT OF OSTEOARTHRITIS

Recommendations	Evidence Rating
Use paracetamol as first-line therapy for mild osteoarthritis.	A
Physical therapy (regular or water-based exercise) can help improve function and reduce arthritis pain.	B
NSAID are superior to paracetamol in the treatment of moderate to severe osteoarthritis.	A
The combination of glucosamine and chondroitin may decrease pain in patients with moderate to severe knee osteoarthritis.	B
Intra-articular corticosteroid injections can be beneficial for short-term relief of knee pain in osteoarthritis.	A
Intra-articular hyaluronic acid injections are less effective than intra-articular steroids hyaluronic in the short term, equivalent in the intermediate term (four to eight weeks), and superior in the long term.	B
Patients who have continued pain and disability from osteoarthritis of the hip, knee, or shoulder despite maximal medical therapy are candidates for total joint replacement.	B
A = consistent, good-quality patient-oriented evidence; B = inconsistent or limited-quality patient-oriented evidence; C = consensus, disease-oriented evidence, usual practice, expert opinion, or case series.	

Source: AAFP (http://www.aafp.org/afpsort.xml)

TABLE 21.2: STEPPED CARE APPROACH TO TREATMENT OF OSTEOARTHRITIS

Mild Osteoarthritis	Moderate Osteoarthritis	Severe Osteoarthritis
Weight loss if obese Regular exercise Land or water-based May refer to PT for supervised exercises. Paracetamol for pain relief Step up to NSAID as needed for pain control Switch to different NSAID if initial choice not effective	Add glucosamine and chondroitin for moderate or severe knee osteoarthritis Give for 3 months Discontinue if no change	Consider opioids drugs (monitor for dependency/abuse) Consider corticosteroid injections for acute exacerbation of knee osteoarthritis Consider hyaluronic acid for persistent knee pain Discuss surgical treatment (joint replacement) for hip, knee or shoulder if previous steps unsuccessful

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CHAPTER 22.

THYROID DISORDERS

Fadila Naji, MD

I. HYPOTHYROIDISM

DEFINITION

1. **Primary hypothyroidism:** High TSH and low free T4 (95% of all cases).
2. **Secondary hypothyroidism (central):** Low fT4 and a TSH level not appropriately elevated.
3. **Subclinical hypothyroidism:** Normal fT4 in the presence of an elevated TSH.

EPIDEMIOLOGY

1. Prevalence of overt hypothyroidism ranges from 0.1 to 2%.
2. Prevalence of subclinical hypothyroidism is 4 to 10% in adults, with a possibly higher frequency in elderly women.
3. It is 5 to 8 times more common in women than men.

COMMON CAUSES

1. Chronic autoimmune thyroiditis (Hashimoto) +++ (most common).
2. Iatrogenic: Thyroidectomy, Radioiodine therapy or external irradiation.
3. Drugs: thionamides, lithium, amiodarone.
4. Infiltrative diseases: hemochromatosis, sarcoidosis.
5. Transient hypothyroidism: thyroiditis.
6. Congenital thyroid agenesis, dysgenesis, or defects in hormone synthesis.

HISTORY

1. Typical symptoms: fatigue, cold intolerance, weight gain, constipation, myalgias, menstrual irregularities.
2. Most of the times the symptoms are highly variable and atypical and might depend on age at onset, duration and severity of the thyroid hormone deficiency.
3. Use of thyrotoxic drugs (see above section), previous iodine therapy or previous thyroid surgery.

PHYSICAL EXAMINATION

1. Look for any thyroid enlargement (goiter) or old thyroidectomy scar.

LABORATORY TESTS

1. TSH- if high then do fT3 and fT4.
2. Antithyroid antibodies (anti-TPO and anti-thyroglobulin) do not need to be measured routinely in patients with overt primary hypothyroidism, **because almost all have chronic autoimmune thyroiditis**.
3. Antithyroid peroxidase antibodies may be useful to predict the likelihood of **progression to permanent overt** hypothyroidism in patients with subclinical hypothyroidism or those with painless (silent) thyroiditis or postpartum thyroiditis.

MANAGEMENT

1. Thyroid hormone replacement (Levothyroxine (T4)) unless the cause is transient (example painless thyroiditis or subacute thyroiditis) or reversible (due to a drug that can be discontinued).
2. Average replacement dose of T4 is approximately 1.6 mcg/kg body weight per day (e.g. 112 mcg/day in a 70-kg adult), but the range of required doses is wide, varying from 50 to 200 mcg/day.
3. Older patients should be started on a lower dose (25 to 50 mcg daily) to avoid arrhythmias.

4. The medication should be taken on an empty stomach, ideally an hour before breakfast.
5. It should not be taken with other medications that interfere with its absorption (bile acid resins, PPIs, calcium carbonate, and ferrous sulfate).
6. Patients usually begin to improve within 2 weeks of treatment. Steady states TSH concentrations are achieved after 6 weeks but complete recovery can take several months in those with severe hypothyroidism.
7. After initiation of therapy, the patient should be reevaluated and serum TSH measured in 6 weeks.
8. If the TSH remains above the normal reference range, the dose of T4 can be increased by 12 to 25 mcg/day. The patient will require a repeat TSH measurement in 6 weeks.
9. After identification of the proper maintenance dose, TSH should be measured once yearly or more often if there is recurrence of symptoms.
10. An increase in dosage may be required during pregnancy.

II. HYPERTHYROIDISM

DEFINITION

1. Overt hyperthyroidism is high fT3 or fT4 with suppressed TSH (algorithm 22.1 depicts the approach to patients with overt hyperthyroidism).
2. Subclinical hyperthyroidism is normal fT3 and fT4 with suppressed TSH.

EPIDEMIOLOGY

1. More common in women than men (5:1).
2. Overall prevalence is 1.3% and increases to 4-5% in older women.
3. Higher prevalence in smokers.
4. Graves' disease is seen more common in younger women.
5. Toxic nodular goiter is more common in older women.

COMMON CAUSES

1. Autoimmune thyroid disease: Graves' disease, Hashitoxicosis.
2. Autonomous thyroid tissue: Toxic adenoma, Toxic multinodular goiter (MNG).
3. Subacute granulomatous (de Quervain's) thyroiditis.
4. Painless thyroiditis (silent thyroiditis, lymphocytic thyroiditis).
5. Postpartum thyroiditis.
6. Amiodarone-induced thyroiditis.

HISTORY

1. Typical symptoms: anxiety, tremors, palpitations, heat intolerance, increased perspiration, weight loss, diarrhea.
2. Symptoms can be mild or atypical.
3. Elderly patients are more likely to develop cardiovascular complications, namely arrhythmias (most commonly atrial fibrillation). Elderly can on the other hand develop "apathetic thyrotoxicosis," in which they have no symptoms except weakness and asthenia.

PHYSICAL EXAMINATION

1. Signs of sympathetic overactivity: Tachycardia, tremors, hyperreflexia, high blood pressure.
2. Warm, moist skin, thin, fine hair.
3. Exophthalmos, periorbital and conjunctival edema, limitation of eye movement, and pretibial myxedema occur only in patients with Graves' disease.
4. Thyroid exam: palpable nodule or goiter with multiple nodules.

LABORATORY TESTS

1. TSH- if low, ask for fT3 and fT4.
2. Thyrotropin receptor autoantibodies (TRAB) if suspecting Graves.
3. Thyroid scintigraphy (Tc-99m pertechnetate or I-123 scan)
    a. If high uptake, autonomy or auto-immune
    b. If low uptake, thyroiditis (subacute, postpartum, amiodarone induced).
    N.B. Tc-99m scan is more readily available and less expensive than iodine scan and it allows a more rapid exam as the images are obtained 15 to 30 min after injection of technetium whereas images are obtained 24 hours after radioactive iodine administration

MANAGEMENT

BETA BLOCKER

1. In moderate-to-severe hyperadrenergic (e.g. tachycardia) symptoms irrespective of the cause of hyperthyroidism.
2. Use (Propranolol 10-40 mg/dose every 6-12 hours or Atenolol 25 to 50 mg QD, and titrate up the dose as needed, up to 200 mg daily).

GRAVES DISEASE

Thionamides

1. Metimazole
    a. Mild hyperthyroidism (fT4, 23-50 pmol/l): Initial dose: 15 mg/day in 3 divided doses (every 8 hours)
    b. Moderate hyperthyroidism (fT4, 51-100 pmol/l): 30-40 mg/day
    c. Severe hyperthyroidism (fT4>100 pmol/l): 60 mg/day
    d. Maintenance: 5-15 mg/day (may be given as a single daily dose in many cases)
2. PTU
    a. PTU is the preferred drug during pregnancy (initial dose: 300 mg QD in 3 divided doses / maintenance dose: 100-150 mg QD)

Radioiodine therapy/Surgery

1. Surgery or radioiodine (RAI) are preferred over prolonged thionamide therapy for long term remission **(Grade 2B)** but thionamides can still be considered in patients who fear surgery or RAI or in patients with mild disease and small goiters.
2. Radioiodine therapy is considered definitive therapy once patients are euthyroid on a thionamide given its lower cost and lower complication rate than surgery **(Grade 2B)**.

TOXIC ADENOMA OR MULTINODULAR GOITER (MNG)

Surgery

1. Compelling indications for surgery are:
    a. Symptoms or signs of compression/obstruction,
    b. A need for rapid return to euthyroidism,
    c. Coexisting thyroid cancer,
    d. Very large goiters (>80 g) **(Grade 2C)**
2. Patients with toxic adenoma/MNG who are to undergo surgery should be treated with an antithyroid drug (methimazole or carbimazole) until they are euthyroid. The antithyroid drug should be discontinued on the day of surgery.
3. For patients with toxic MNG who had near-total or total thyroidectomy, thyroid hormone replacement should be initiated.

Radioiodine therapy

1. In the absence of surgery indication, RAI should be administered **(Grade 2C).**
2. For patients with significant symptoms of hyperthyroidism and in elderly patients with underlying cardiac disease, thionamide (methimazole or carbimazole) shoud be started first to achieve euthyroidism prior to radioiodine therapy **(Grade 2B)**. Methimazoleis then discontinued 3 days prior to radioiodine.
3. After radioiodine treatment, patients require monitoring for hypothyroidism or persistent or recurrent hyperthyroidism. Thyroid tests should be measured six to eight weeks after treatment and then at four to eight week intervals thereafter, depending upon the results of prior testing and change in thyroid size.

III. THYROID NODULE

EPIDEMIOLOGY

1. Life time risk of developing a palpablethyroid nodule is 5-10%.
2. Affects more women than men.
3. Roughly 5% of thyroid nodules are malignant.

EVALUATION

The clinical importance of the thyroid nodule evaluation is primarily related to the need to exclude thyroid cancer. Algorithm 22.2 delineates the steps to approach thyroid nodule.

FACTORS SUGGESTING A MALIGNANT DIAGNOSIS

1. Age younger than 30 or older than 60.
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.

LABORATORY TESTS

1. TSH: to screen for hypothyroidism or hyperthyroidism.
2. fT4 and fT3 levels if TSH is abnormal.
3. Calcitonin level measurement to detect medullary carcinoma is controversial.

IMAGING TESTS

1. Ultrasonography is mandatory in all cases.
2. It is highly sensitive in determining the size and number of thyroid nodules but cannot reliably distinguish a benign nodule from a malignant nodule.
3. CT or MRI is generally not cost-effective in the initial evaluation of solitary thyroid nodules.
4. Thyroid scintigraphy: should be requested if TSH is low. It describes a nodule as hot, warm, or cold on the basis of its relative uptake of radioactive isotope. Hot nodules are rarely malignant; whereas, 5-8% of warm or cold nodules are malignant.

FINE NEEDLE ASPIRATE

Fine needle aspirate or biopsy (FNAB) is the most important and cost-effective step in the initial diagnostic evaluation of thyroid nodules to rule out malignancy (sensitivity 80% and specificity 90%).

INDICATIONS OF FNA:

In patients with risk factors for thyroid cancer

(e.g., childhood head and neck irradiation, family history of thyroid cancer)

a. ATA guidelines recommend ultrasound-guided FNA biopsy for all nodules >5 mm in high-risk patients. But no data supports this approach. Subcentimetric nodules are usually biopsied in case of suspicious ultrasonographic features

In patients with no risk factors for thyroid cancer

1. Solid hypoechoic nodules > 1 cm.
2. Solid nodules that are isoechoic or hyperechoic ≥ 1.0 to 1.5 cm.
3. Mixed cystic-solid nodules without suspicious features on ultrasound, if ≥ 2.0 cm.
4. Spongiform nodules, defined as an aggregation of multiple microcystic components in more than 50% of the nodule volume, may not require FNA regardless of size, although it may be prudent to biopsy spongiform nodules > 2.0 cm.
5. Purely cystic nodules (no mural component) do not require a biopsy.

MANAGEMENT

SMALL NODULES THAT ARE NOT BIOPSIED

1. Periodic ultrasonography (initially at 6 to 12 months, then at increasing intervals over time assuming stability, eg, at one to two year intervals, then three to five years) to evaluate for growth.

BENIGN NODULES

1. Includes macrofollicular or adenomatoid/hyperplastic nodules, colloid adenomas, nodular goiter, and Hashimoto's thyroiditis.
2. Do not require treatment with periodic ultrasound monitoring recommended.
3. Repeat FNA is warranted only if substantial growth (more than a 50% change in volume or 20% increase in at least 2 nodule dimensions), change in the echo texture of a nodule, or new symptoms are attributed to a nodule.

FOLLICULAR LESIONS OF UNDETERMINED SIGNIFICANCE

1. Includes nodules with atypical cells or nodules with both macro-follicular and micro-follicular features.
2. Repeat FNA after 3 to 6 months.
3. Surgical resection should be considered if
   a. Repeat aspirates continue to show atypical cells **(Grade 2C)**
   b. COLD nodules **(Grade 2B)**
   c. Cytology suggesting cancer or suspicious for cancer

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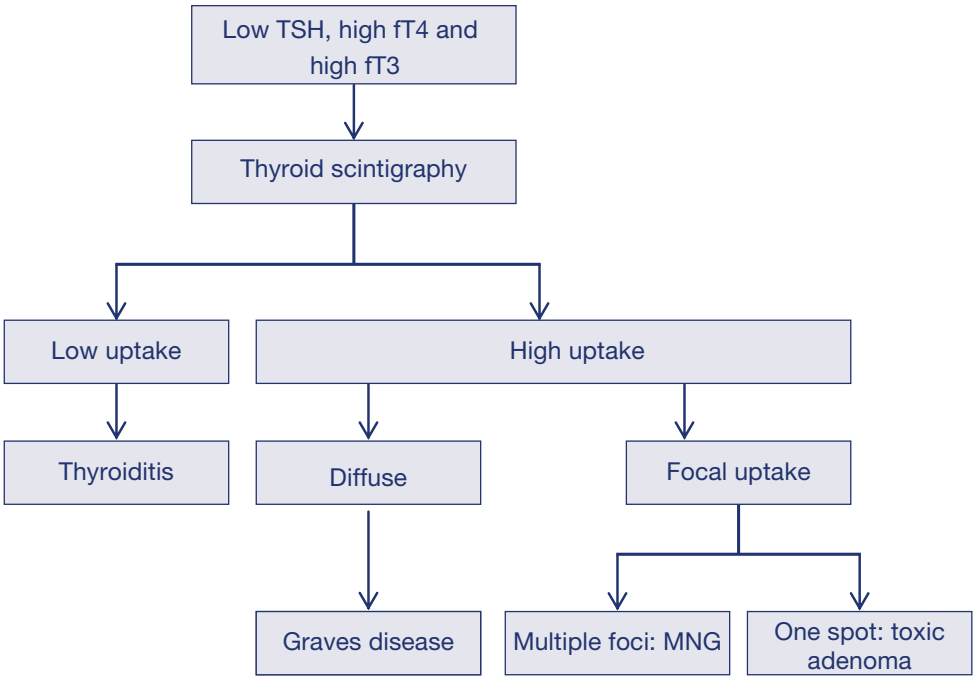
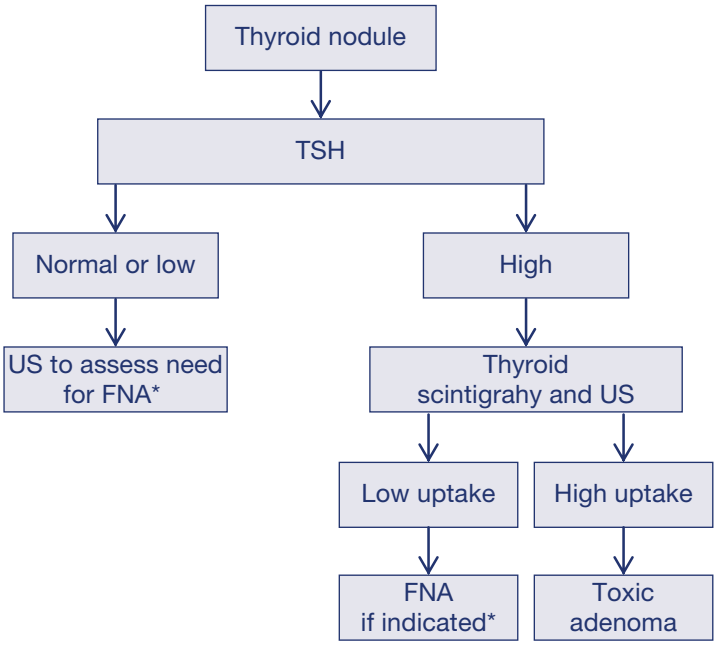
ALGORITHM 22.1: APPROACH TO OVERT HYPERTHYROIDISM



ALGORITHM 22.2: APPROACH TO THYROID NODULE



* Refer to text for list of indications

CHAPTER 23.

COMMON MENSTRUAL PROBLEMS

Beatrice Khater, MD

I. DYSMENORRHEA

EPIDEMIOLOGY

The prevalence of primary dysmenorrhea decreases with advancing age.

1. 50 to 90 % of reproductive-aged women worldwide describe experiencing painful menstrual periods. The majority of these women is young and has primary dysmenorrhea.
2. Dysmenorrhea is one of the most common causes of pelvic pain.

DEFINITION

1. Dysmenorrhea is defined as painful cramps that occur with menstruation.
2. Primary dysmenorrhea (PD) is painful menstruation in the absence of demonstrable pelvic disease. It usually occurs within a year or 2 of the menarche.
3. Secondary dysmenorrhea (SD) has a pathologic cause such as endometriosis, adenomyosis, fibroids or pelvic inflammatory disease (PID). It usually occurs 2 years after onset of menarche and is characterized by new onset of pain or worsening of usual pain.

RISK FACTORS

1. Heavy menses, premenstrual symptoms, irregular menstrual cycles, age < 30 years, history of sexual abuse, menarche before age 12 years, BMI < 20 are considered to be risk factors for dysmenorrhea.
2. There appears to be a familial predisposition to primary dysmenorrhea.
3. Younger age at first childbirth and higher parity were associated with a reduced risk.

HISTORY

1. Look for symptoms suggestive of pelvic pathologies (such as fever, unusual vaginal discharge with a bad odor in pelvic inflammatory disease, or pain in the lower abdomen, pelvis or lower back, pain during and after sex or bleeding between periods in endometriosis…) in which case the diagnosis would change from PD to SD.
2. Evaluate disease severity by grading the pain and its impact on the patient's daily activities.

PHYSICAL EXAMINATION

1. In an adolescent who has never been sexually active and has a typical history of mild to moderate dysmenorrhea, a pelvic examination is not necessary.
2. Women with PD have a normal pelvic examination. Women with SD may also have a normal examination, although physical findings often occur and can be perceived on pelvic examination.

EVALUATION

1. Laboratory testing is only useful when PID is considered (fever, pain on moving cervix, mucopurulent vaginal discharge, high ESR or CRP).
2. Ultrasound examination is needed to confirm anatomic abnormality if suspected by history or physical examination. It can also be useful in obese, in adolescents with PD, if pelvic disease is strongly suspected and/or clinical response to initial treatment with NSAIDs/hormonal contraception is inadequate.
3. Diagnostic laparoscopy is rarely required. It has a role in diagnosis and treatment of endometriosis, but the timing of laparoscopy depends on several factors including the age of the woman, symptom response to empiric therapy, and fertility issues.

MANAGEMENT

NON-PHARMACOLOGICAL INTERVENTIONS

1. Application of heat to the lower abdomen, exercise, a low-fat vegetarian diet, and acupuncture may show some benefit.
2. Vitamin B1 100 mg daily **(Grade IB)**.
3. Vitamin E taken 2 days before and 3 days after onset of menses (500 mg/day) **(Grade IC)**.
4. Fish oil fish oil (2.5 g/day) in combination with vitamin B12 (7.5 mg/day) **(Grade IC)**.
5. Magnesium (500 mg/day) **(Grade II-C)**.
6. Vitamin B6 (200 mg /day) **(Grade II- C)**.

PHARMACOLOGICAL INTERVENTIONS

1. Non-steroidal anti-inflammatory drugs (NSAID) are first line treatment of choice
    a. 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
    b. If there is inadequate response to one agent after three cycles, it should be discontinued and another agent tried.
2. Oral contraceptives may be recommended. The added contraceptive advantage may make oral contraceptives a first-line therapy for some women **(I-A)**.
3. Combination of hormonal contraceptives and NSAIDs may be effective in women who remain symptomatic on either drug alone.
4. Depot medroxyprogesterone acetate and levonorgestrel intrauterine system have been shown to be effective **(II-B)**.

II. PREMENSTRUAL SYNDROME

EPIDEMIOLOGY

1. Premenstrual symptoms occur in 95% of all women of reproductive age.
2. Premenstrual dysphoric disorder (PMDD) affects 3 to 8% of premenopausal women.

DEFINITION

1. Premenstrual syndrome (PMS) is a condition where multiple physical and non-physical symptoms interfering with normal functioning, occur in the premenstrual period and resolve within 4 days of the onset of menses.
2. When affective symptoms are severe and debilitating enough to impact the patient's relationships and social and occupational realms, it is called premenstrual dysphoric disorder (PMDD).

HISTORY

1. PMS manifests 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 including worsening migraine, fatigue, mastalgia, bloating, fluid retention or insomnia).

DIAGNOSIS

1. Clinical history is key to the diagnosis of PMS or PMDD.
   The American College of Obstetricians and Gynecologists suggests diagnosing PMS based on prospective symptom diaries i.e relating symptoms to menstrual cycle; if symptoms outside the luteal phase (the second half of menstrual cycle), then they may be due to other conditions.

MANAGEMENT

1. Lifestyle measures such as regular exercise and stress reduction techniques, may be recommended for mild PMS **(Grade 2C)**.
2. Supplementation or high intake of dietary calcium and vitamin D may be considered for symptom relief in women with PMS or PMDD.
3. Selective serotonin reuptake inhibitors (escitalopram 10-15 mg, fluoxetine 20-60 mg and sertraline 50-150 mg) when taken daily or only during the luteal phase significantly decrease physical and psychological symptoms of PMS compared with placebo.
4. For women who have not responded to or cannot tolerate SSRIs:
    a. Oral contraceptives (OCs) preferably containing drospirenone can be prescribed, continuously or with a short pill-free interval **(Grade 2B)**
    b. For women who have not responded to or cannot tolerate SSRIs or OCs and continue to experience severe symptoms, refer to gynecologist for gonadotropin-releasing hormone (GnRH) agonist therapy with estrogen-progestin add back.

III. MENORRHAGIA

DEFINITION

Menorrhagia is defined as excessive cyclic uterine bleeding that occurs at regular intervals over several cycles, or prolonged bleeding that lasts for more than seven days. A work up of menorrhagia is depicted in algorithm 23.1.

CAUSES

1. Reproductive age: anovulatory cycles, leiomyomas, endometrial polyps, adenomyosis, non-progestin intra-uterine device, thyroid disorders or bleeding disorder.
2. Menopausal transition: intermittent anovulation, uterine structural abnormalities and endocrine abnormalities .

HISTORY

1. Ask for symptoms suggestive of other pathologies (severe pain in endometriosis, painful intercourse and discharge in pelvic inflammatory disease..) and treat underlying pathology.
2. Evaluate for risk of endometrial cancer and refer to gynecologist for endometrial biopsy:
    a. All women age 45 years or older with abnormal uterine bleeding
    b. In women < 45 years:
        - Persistent abnormal uterine bleeding
        - History of unopposed estrogen exposure (obesity, chronic anovulation)
        - Failed medical management of the bleeding
        - At high risk of endometrial cancer (e.g., tamoxifen therapy, Lynch syndrome).

PHYSICAL EXAMINATION

1. Evaluate size of uterus (by exam or ultrasound) and refer if size is > 10 cm or a mass is detected.

LABORATORY TESTS

1. Check for anemia, thyroid dysfunction; test for bleeding disorder if clinically indicated (for example history of easy bruising or bleeding from mucosal surfaces, personal or family history of coagulopathy or adolescent).

MANAGEMENT

The goal of initial therapy is to control the bleeding, treat anemia (if present), and restore quality of life.

1. Combined oral contraceptives: reduce blood flow, regulate cycles, provide contraception, prevent the development of hyperplasia in anovulatory patients, and treat dysmenorrhea. Refer to chapter on contraception for further details.
2. Oral or IM progestins for prevention of excessive bleeding related to endometrial hyperplasia in women with chronic anovulation, but is less effective than the IUD.
3. Progestin IUD: reduce blood flow and may lead to cessation of cycles; refer to chapter on contraception for more details.
4. NSAID; start on the first day of menses and discontinued either after 5 days or at the end of menses. Mefenamic acid 500 mg three times per day; Naproxen 500 mg at onset and three to five hours later, then 250 to 500 mg twice a day or Ibuprofen 600 mg once per day.
5. Antifibrinolytic agents such as Tranexamic acid (1300 mg three times per day during menses for a maximum of five days) to be taken on the days of menses.Use only when other options have been unsuccessful and only in women who are not at a high risk of thrombosis.

SURGERY

1. For women who fail medical therapy or desire a treatment that is definitive or require less maintenance.
2. Minimally invasive procedures to control heavy uterine bleeding include:
    a. Endometrial ablation
    b. Hysterectomy: reserved for women who fail all other measures and do not wish to conceive.

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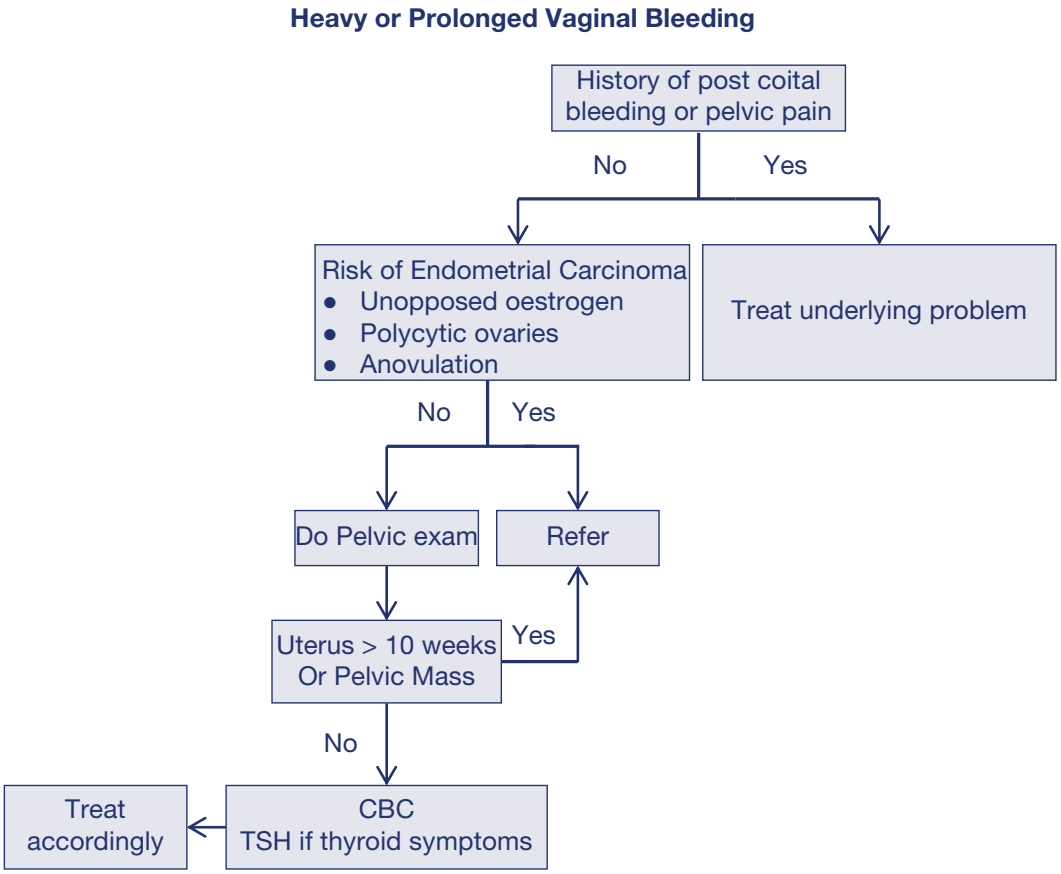
ALGORITHM 23.1: WORK UP OF MENORRHAGIA



CHAPTER 24.

CONTRACEPTION

Jinan Usta, MD, MPH; Fadila Naji, MD

AIM OF CONTRACEPTION COUNSELING

1. Provide proper counseling about various contraceptive methods.
2. Recognize the medical and personal factors that affect the selection of contraceptive method.
3. Advise on contraception in medical conditions where unintended pregnancy is associated with increased health risk.
4. Manage common problems associated with contraceptive use.

HISTORY

1. The points in the history of the woman that would affect the choice of the contraceptive method: Age/ smoking history: **avoid oral contraceptive pill (OCP)** if above 35 years and smoker.
2. Sexual habits: if she or her partner has multiple partners, **avoid intrauterine device (IUD)**; if low frequency of intercourse (less than twice weekly), she can use barrier method or morning after pill.
3. Menstrual history: **avoid IUD** in patients with irregular menses.
4. Child bearing potential: fertility returns sooner upon discontinuation of OCP and IUD but can take around 9 months to return after a depomedroxy-progesterone acetate (DMPA) injection.
5. Life style: good OCP candidates are the ones who can take OCP at the same time on daily basis.
6. Income: Levonoregestrel IUD is very expensive.
7. Religious beliefs.
8. Existing medical conditions:
    a. Acne or hirsutism: better use norgestimate/ethinyl estradiol or cyproterone actetate/ethinyl estradiol formulation)
    b. Obesity, hypercholesterolemia: use less androgenic OCPs, **avoid OCP in hypertriglyceridemia.**
    c. Anemia: **avoid cupper IUD**
    d. Thromboembolic disease, stroke, atherosclerotic heart disease, liver disease or tumor or other estrogen-dependent malignancy: **Absolute contraindication to OCP**
    e. Severe migraine headaches, uncontrolled HTN, DM, gallbladder disease, undiagnosed vaginal bleeding: Relative contraindication to OCP
    f. Recent or recurrent PID: **avoid IUD**
    g. In **certain medical conditions, unintended pregnancy is associated with increased health risks**. In these conditions, the health care provider is advised to initiate the discussion of contraception with the patient. These conditions include: Breast cancer; Malignant liver tumors (hepatoma) and hepatocellular carcinoma of the liver; Complicated valvular heart disease; Peripartum cadiomyopathy; Insulin dependent diabetes or diabetes with nephropathy/retinopathy/neuropathy or other vascular diseases or diabetes of more than 20 years duration; Schistosomiasis with fibrosis of the liver; Endometrial or ovarian cancer; Severe (decompensated) cirrhosis; Sickle cell disease; Epilepsy; Hypertension (systolic > 160 mm Hg or diastolic > 100 mm Hg); Solid organ transplantation within the past 2 years; Stroke; History of bariatric surgery within past 2 years; Systemic lupus erythematosus; Ischemic heart disease; Tuberculosis; Thrombogenic mutations; Malignant gestational trophoblastic disease; HIV/AIDS.

EVALUATION

1. **Initial assessment:** always advised to do initial assessment, but it should not be a barrier to starting contraception. When possible, a general physical exam and a 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
3. **DO NOT FORGET!**
    a. Pap smear annually
    b. HIV Ab if multiple sexual partners

MANAGEMENT

COMBINED ORAL CONTRACEPTIVES

Types

1. Estrogen (Ethinyl estradiol) and a testosterone derived progestin (levonorgestrel, desogestrel, gestodene, norgestimate).
2. Estrogen (Ethinyl estradiol) and a non testorone progestin molecule (Cyproterone acetate, Drospirenone, Chlormadinone acetate).

Starting time

Any time during the menstrual cycle provided the possibility of pregnancy is ruled out.

Onset of contraceptive effect

Needs 7 days of consecutive use to start.

Pregnancy rate in the average user

2% / one year.

Non contraceptive benefits

1. Reduction in: acne, dysmenorrhea, menstrual flow.
2. Regulation of menstrual cycle.
3. Protection against ovarian, endometrial and colorectal cancer.
4. Reduces the risk of PID.

Post pill effects

Amenorrhea is rare. Less than 1% of patients have amenorrhea lasting more than 12 months after pill discontinuation.

Pill-intake timing

1. Take the pill at the same time each day.
2. Start the pill immediately to prevent ovulation if prescribed after an abortion.
3. Allow 6 weeks before starting the pill after pregnancy due to the risk of thromboembolism and possible decreased breast milk production.

Side effects

1. Check table 24.1 for side effects and suggested approach to their management.
2. The majority of these side effects spontaneously resolves within 3 months; better wait for three cycles before switching to another formulation if a side effect is experienced.
3. Spontaneous abortion/ congenital anomalies: do NOT occur more frequently in pregnancies after discontinuance of the pill.

TABLE 24.1: COMMON SIDE EFFECTS ASSOCIATED WITH OCP USE

Problem	Suggested action
Spotting early in the cycle	Increase estrogen
Late spotting	Increase progestin potency (table 24.2)
No withdrawal bleeding	Make sure no pills were missed, perform a pregnancy test, if negative increase progestin potency 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 If fails, decrease progestin potency
Cyclic fluid retention	Shift to mini pill
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	Lowest dose combined pill
Hypertension, severe headaches, leg cramps	Progestin only mini pill if no other suitable method

TABLE 24.2: ANDROGENIC AND PROGESTERONIC POTENCY OF VARIOUS PROGESTERONES

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

PROGESTIN-ONLY OPTIONS

Appropriate candidates

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.

Types

Progestin only mini-pill

a. One year pregnancy rate in the average user: 2.5%
b. Women must take their pills at the same time every day
c. May result in irregular bleeding or amenorrhea.

Hormonal subdermal implants

a. One year pregnancy rate in the average user: 2.5%
b. It is usually inserted into the arm and remain effective for up to 5 years
c. 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.

Depomedroxyprogesterone acetate injections

a. One year pregnancy rate in the average user: 0.25%
b. It involves depomedroxyprogesterone acetate (DMPA) injections every 12 weeks.
c. Irregular bleeding is very common
d. Amenorrhea occurs within 6 months to one year in 50% of the users
e. An average weight gain of 7 Kg over 5 years may occur
f. Androgenic effects of DMPA injections should be discussed with the patient

g. Fertility may return within 2 weeks but may require 12 to 22 months after the last injection
h. 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.

EMERGENCY CONTRACEPTION

Morning after pill (levonorgestrel 1.5 mg)

1. Reported pregnancy rates 0.2 to 3%.
2. Efficacy is better when administered as early as possible after intercourse; can be given up to 120 hours after intercourse;
3. Risk of pregnancy still exists if unprotected sexual intercourse occurred after intake of pill.
4. Menstrual bleeding after emergency contraception typically occurs within one week of the expected time of menstruation.
5. A repeat course of emergency contraception can be given within the same menstrual cycle. It is preferable to begin regular use of nonemergency contraception, which can be initiated the day after emergency contraception administration.

Intrauterine Device (IUD)

1. Can be inserted within 6 days of the intercourse to prevent pregnancy.
2. Has additional advantage of starting regular contraception.

See intrauterine device section for more information.

Condom

1. Advised in individuals with multiple partners, short term users, postpartum, lactating, coming off pill, peri-menopausal, IV drug user or homosexuals.
2. One year pregnancy rate in the average user is 10%.
3. Both male and female condoms offer some protection from STDs although this protection is not full proof.

Intrauterine device

1. One year pregnancy rate in the average user is 5%.
2. Few women have several days of bleeding, cramping or backache after insertion time. Prostaglandin inhibiting drugs lessen these symptoms.
3. During the first few months, spotting between periods can occur and the menstrual cycle can become heavier.
4. Types:
    a. Progesterone IUD
        - Better suited for women who have dysmenorrhea, heavy periods or significant premenstrual syndrome (PMS)
        - Often causes breakthrough bleeding
        - Must be removed and replaced every 5 years
    b. Copper IUD
        - The most cost effective method available
        - Life span of 10 years
    c. Contraindications
        - Confirmed or suspected pregnancy
        - Enlarged uterus or physical uterine abnormalities
        - Acute episode or history of PID (Pelvic Inflammatory Disease)
        - Postpartum endometritis or infected abortion within past 3 months
        - Confirmed or suspected uterine or cervical malignancy
        - Undiagnosed genital bleeding
        - Untreated acute cervicitis or vaginitis
        - Patient or partner has multiple sex partners
        - Diagnosed Wilson's disease or known allergy to copper (Can use progesterone IUD)
        - Increased susceptibility to sexually transmitted infections PID
            - o If PID develops with an IUD inserted, the IUD is removed if the patient doesn't respond to antibiotics and if the patient wishes to remove it (please check algorithm 24.1).
            - o In either case, you need to initiate antibiotics before removal of the IUD.

NATURAL FAMILY PLANNING

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

STERILIZATION

1. One year pregnancy rate in the average user is 0.4%.
2. Refer to gynecologist.

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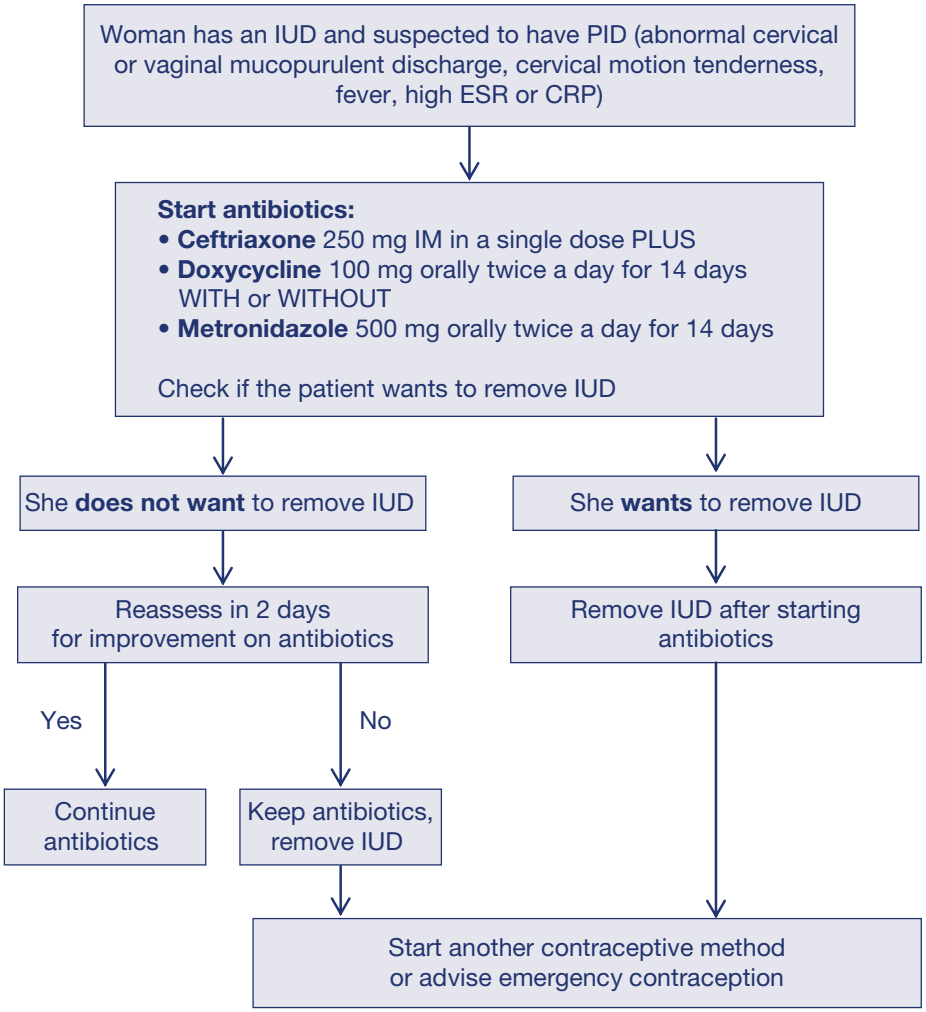
ALGORITHM 24.1: TREATING PELVIC INFLAMMATORY DISEASE (PID) WITH AN IUD IN PLACE



CHAPTER 25.

MENOPAUSE

Jinan Usta, MD, MPH

DEFINITION

1. Cessation of menstruation for 12 months.
2. It is considered “premature menopause” if it occurs before age of 40.

CLINICAL MANIFESTATIONS

1. Cessation of menses can be abrupt or preceded by menopausal transition phase: one or 2 years of increased variability in menstrual cycle length, as for example two skipped menstrual cycles within 60 days or longer periods of amenorrhea.
2. Vasomotor symptoms: hot flashes and night sweats that can start before amenorrhea.
3. Genitourinary symptoms: vaginal dryness, dyspareunia, painful urination, increased urinary infection and incontinence.
4. Psychological symptoms: depression, crying spells, anxiety, mood changes, sleep and memory problems.
5. It can be associated with increased risk of osteoporosis and cardiovascular diseases.

DIAGNOSIS

1. Clinical diagnosis: amenorrhea for 12 months.
2. Follicle Stimulating Hormone (FSH) is not indicated for diagnosis.

PREVENTIVE MEASURES DURING MENOPAUSE

1. Lifestyle modifications: advise losing weight if obese, stop smoking, and exercise.
2. Supplement with 1000 to 1500 mg of calcium per day (better in divided doses) if not achieved by consumption of enough dairy products.
3. Supplement with 800-1000 IU of vitamin D per day for women at risk of deficiency (mal absorption, homebound, veiled).
4. Routine screening with bone densitometry at 65 years of age and earlier for women at high risk of osteoporotic fracture.
5. Aspirin prophylaxis for cardiovascular diseases recommended for women with high risk of coronary artery disease.
6. Screen for breast cancer with mammography every one to two years.
7. Screen for cervical cancer with pap smear every 3 years for ever sexually active women.
8. Screen for colorectal cancer starting 50 years of age.
9. Vaccination: Tetanus (Td or Tdap) once every 10 years, pneumococcal once after 65 years of age, influenza yearly.

TREATMENT

VASOMOTOR SYMPTOMS

1. Lifestyle modifications
    a. Layers of clothes; consume cool drinks; avoid caffeine, spicy foods and alcohol; lose weight; exercise; and stop smoking
2. Non hormonal treatment
    a. Antidepressants
    - Used for treatment of vasomotor symptoms
    - Paroxetine (7.5 mg/day, controlled release 12.5-25 mg/d), or Citalopram, 10-30 mg/d, or Escitalopram, 10-20 mg/d, or Fluoxetine 20 mg/d (up to 30 mg) , or Venlafaxine (37.5-150 mg/day)
    - Adverse effects: nausea, dizziness, dry mouth, constipation, but they generally resolve with time or dose adjustment.
    - Taper down the medications because sudden cessation may cause withdrawal symptoms

b. Gabapentin
- Dosage: 900 mg/day
- Adverse effects: dizziness, and somnolence; better taken at bedtime.

c. Herbal remedies
- Can be used for mild vasomotor symptoms in women who do not respond to lifestyle modification.
- There is no evidence of their effectiveness or potential interaction with other medications or medical conditions
- Soflavone (soy, redclover) (40- 80 mg); Black cohosh, (40 mg); Vit E (800 IU) in divided doses daily.

3. Hormonal replacement therapy (HRT)

a. Indications (box 25.1 for additional advice about HRT)
- Moderate to severe flashes
- Women who feel the benefits of relieving menopausal symptoms outweigh risks associated with its use
- High risk of osteoporotic fractures
- Women with reduced bone mass who want to prevent further loss
- NOT recommended to prevent Alzheimer, dementia, genitourinary symptoms, or cardiovascular disease.

b. Relative contraindications
- History of breast cancer; endometrial cancer or other estrogen dependent cancer
- Porphyria
- History or known high risk of venous or arterial thromboembolic disease
- Undiagnosed vaginal bleeding
- Severe active liver disease
- Cardiovascular disease; uncontrolled hypertension
- Hyper triglyceridemia; in women with hyperlipidemia, better use non-androgenic progestogens (dydrogesterone for example) that have little negative impact on the estrogen-induced increase in HDL
- Epilepsy
- Endometriosis/fibroids
- Gallbladder disease
- Migraine.

c. Additional benefits
- Lower incidence of fracture and colon cancer when taken for 5 years.

d. Increases risks of
- Myocardial infarction (MI) after 3 years of use
- Breast cancer risk after 5 years of use
- Venous thromboembolic disease
- Gallbladder stones and gallbladder diseases
- Endometrial cancer risk when estrogen is used without progesterone.

e. Common side effects
- May resolve with time
- Breast tenderness, nausea and vomiting, vaginal spotting or bleeding.

f. When to start
- Benefits outweigh the harm when HRT is started near menopause.
- Avoid starting HRT in women above 65 years of age or more than 10 years after menopause.

g. Duration of use
- Several weeks may be required to determine the efficacy of HRT in treating vasomotor symptoms
- Use lowest effective dose for shortest duration preferably less than 5 years
- Longer duration is related to increased risk of breast cancer and stroke
- It may be continued for women who judge the benefits of vasomotor symptoms relief outweigh the potential risks of HRT use, those requiring osteoporosis prevention or at high risk for fracture and cannot take alternate therapy.

h. Regimens available: Refer to table 25.1

4. Tibolone
   a. Synthetic steroid with estrogenic and progestogenic effect that reduces vasomotor and urogenital symptoms
   b. Adverse effects include weight gain and headache.
5. Follow up

   It is recommended when Tibolone or hormonal therapy
   a. Yearly pap smear, mammography, liver function tests, lipid profile
   b. Endometrial biopsy when abnormal vaginal bleeding occur on hormonal therapy.

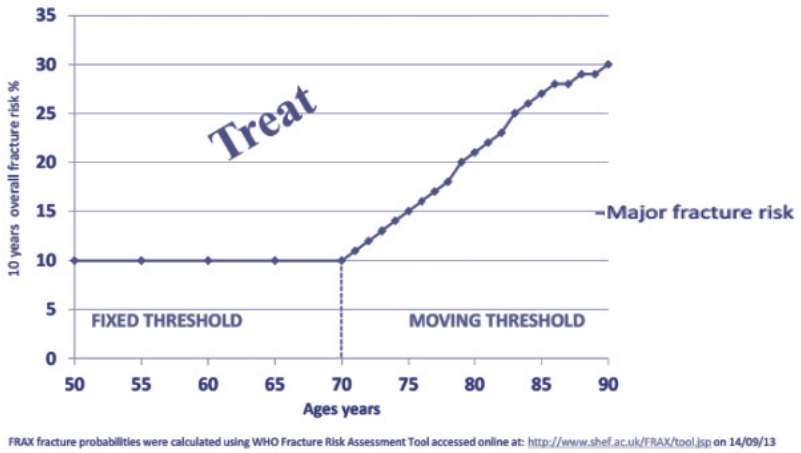
GENITOURINARY SYMPTOMS

1. Vaginal dryness
    a. Apply non estrogen water based or silicone based lubricants before intercourse (KY gel). Apply moisturizers regularly
    b. Local therapy with low dose vaginal estrogen (less than 50 mcg estradiol or < 0.3 mg conjugated estrogen) are effective. Systemic risks are not identified. There is NO need to add progesterone

OSTEOPOROSIS

1. Screening is recommended for all women older than 65 years of age. Consult the WHO absolute fracture prediction algorithm (FRAX) to estimate the patient's 10 year fracture risk and to decide on treatment.
2. Treatment of osteoporosis is recommended to
    a. Regardless of FRAX and BMD, older men postmenopausal women with fragility fractures at spine or hip or more than 2 other fragility fractures
    b. All others, use FRAX index Lebanon–FRAX derived threshold as seen in the below graph based on age and FRAX overall fracture risk:

GRAPH 25.1: FRACTURE RISK BASED ON AGE AND FRAX



FRAX fracture probabilities were calculated using WHO Fracture Risk Assessment Tool accessed online at: http://www.shef.ac.uk/FRAX/tool.jsp on 14/09/13

    c. BMD T-score ≤ -2.5, in absence of risk factors is NOT an indication to intervene

3. Biphosphonates (Alendronate 70 mg/week, or Ibandronate 150 mg/month, or Residronate 35 mg/week), with calcium and Vit D supplements, have been shown to stabilize bone, increase its density and decrease fracture risk when given for 3 consecutive years.
4. Calcitonin is considered second line after biphosphonates in treatment of osteoporosis. Given as 200 U intramuscular daily.

BOX 25.1: ADDITIONAL ADVICE ABOUT HRT

1. Majority of hot flashes will stop spontaneously in years if untreated, and may recur after stopping HRT.
2. Treatment of menopausal symptoms is individualized and tailored to the patient, taking into consideration her risk factors.
3. Hormonal replacement therapy is given to women who have moderate to severe hot flashes and who consider the benefits of treating symptoms outweigh the risks.
4. Hormonal replacement therapy is better started as early to menopause as possible and for duration of 5-10 years. Women who elect to continue should be aware of the increased breast cancer risk and should have regular evaluation.

TABLE 25.1: HORMONAL THERAPY AVAILABLE TO TREAT VASOMOTOR SYMPTOMS

Women characteristics	Hormone recommended	Forms
Women without uterus	Estrogen alone, no need for progestin	Oral estrogen , estradiol 2 mg
		Transdermal 17 beta estradiol patches 0.05 or 0.1 mg patch to be applied twice a week
		Gels/creams
Women with uterus	Combine estrogen and progesterone	Oral fixed combinations Taken continuously - no menses
		Sequential preparation, expect regular monthly cycles
		Transdermal 17 beta estradiol patches 0.05 or 0.1 mg patch to be applied twice a week with oral progesterone
Women with history of breast or endometrial cancer	Progesterone alone	Micronized progesterone (100 mg daily or 200 mg for 10 to 12 days per month) Norethindrone (0.35 mg daily or 5 mg for 10 to 12 days per month)

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CHAPTER 26.

SEXUALLY TRANSMITTED INFECTIONS

Ibrahim Omari MD, MBA

DEFINITION

1. Sexually Transmitted Infections (STIs) are infections caused by transmission of more than 25 organisms mainly through sexual contact (vaginal, anal, oral-genital, oral-anal).
2. Some of these organisms can also be transmitted through non sexual routes (like blood transfusion, materno-fetal transmission of hepatitis B or HIV).

RISK FACTORS

INDIVIDUALS AT HIGH RISK OF STI

1. Sexually active young.
2. Multiple partners.
3. Previous history of STIs.
4. Female sex workers, men who have sex with men, and drug abusers.
5. Inmates of detention centers.
6. Tattoo or body piercing.
7. Infected mother to her baby.

PRACTICES HAVING NO RISK OF STI

1. Abstaining.
2. Hugging.
3. Kissing.
4. Holding Hands.
5. Dancing.
6. Sitting on Toilets.
7. Sharing lip balm.
8. Mutual monogamy.
9. Massage.
10. Sharing forks, knives.

PRESENTING SYMPTOMS

1. Genital ulcers: Genital Herpes Simplex, Lymphogranuloma venereum (LGV), Syphilis (Chancre), Chancroid (Hemophilusducreyi).
2. Vaginal discharge: Vulvovaginal candidiasis, Trichomonas, Bacterial Vaginosis (Gardenella, Mycoplasma Hominis), Gonorrhea.
3. Dysuria, frequency (urethritis): Chlamydial infections, Gonococcal infections, Trichomonas.
4. Vulvovaginal lesions: warts (Human papilloma virus HPV), vesicopapular (herpes simplex I&II), papules (scabies, pediculosis pubis), pruritus (Candida, HPV, herpes).
5. Systemic symptoms: HIV/AIDS, Hepatitis B, Gonorrhea, primary herpes simplex virus (HSV).
6. Painful intercourse: Chlamydia, Gonococcus, Bacterial Vaginosis, Trichomonas.
7. Scrotal swelling, tenderness, penile discharge (Epididymitis): Chlamydia, Gonorrhea.
8. Rectal pain, discharge and tenesmus (Proctocolitis): Chlamydia, Gonorrhea, HSV.
9. Low pelvic pain, vaginal or penile discharge, fever (Pelvic Inflammatory Disease): Gonorrhea, Chlamydia, bacterial vaginosis.
10. Lymphadenopathy: Syphilis, HSV, LGV.

TABLE 26.1: CLINICAL PRESENTATION, DIAGNOSIS, AND TREATMENT OF STIS*

Disease	Relation of symptoms to sexual exposure	Diagnosis	Treatment	Alternative	Pregnant
Gonorrhea	one day	Gram stain PCR	Ceftriaxone 250 IM once. Must follow by Doxycycline 100 mg BID x 7days	Cefixime 400 mg once	Ceftriaxone 125 mg IM once
Chlamydia	2-3 days	PCR	Azithromycin 1000 PO once	Doxycycline 100 mg PO BID x 7 days	- Erythromycin 500 mg PO QID x 7 days - Amoxicillin 500 mg PO Q 8 hours x 7 days
Bacterial Vaginosis	Mostly asymptomatic	KOH smear	Metronidazole 500 mg PO BID x 7 days	Metronidazole PO 2 g once	- Metronidazole 250 mg PO Q 8 hours x7days - Clindamycin 300 Po BID x 7 days
Syphilis	10-90 days	Dark-field microscope VDRL, TPHA	Benzathine pen G2.4 million units IM in one dose.	Doxycycline 100 mg PO BID x 2 weeks	Procaine Penicillin 750 mg IM daily x 7 days
Genital Herpes simplex virus	2-7 days	clinical	Acyclovir 400 mg PO TID 7-10 days	Valacyclovir 1000 mg PO BID x 7-10 days	Starting 36 weeks: Valacyclovir 500 mg PO BID
Genital Warts (HPV)	2-3 months	- Clinical - PCR	Wartec (Podofilox) 0.5 % solution	Cryotherapy	
Trichomoniasis	5 days	Direct microscopy	Metronidazole 2 g PO once	Metronidazole 500 mg PO BID x 7 days	Metronidazole 2 g PO once

* Abstain from intercourse till treatment is over and completely asymptomatic. Treat partner(s) at same time

PREVENTION OF STIs

1. Health advice to travelers about safe sexual practices.
2. Abstinence or mutual monogamy.
3. Correct and consistent use of the male latex condom.
4. Screen for STI: sexually active individuals especially when unprotected intercourse or multiple partners; screen directly after exposure and repeat in 3-6 months if initially negative.
5. Screen the individual for all STIs if one is identified.
6. Screen partner (s) of the identified case for STI.
7. Pre-exposure vaccinations against HPV, Hepatitis A and B:
    a. HPV vaccine:
        - Quadrivalent vaccine prevents genital warts and is recommended for boys and men aged 9–26 years as well as girls and women
        - Bivalent HPV vaccine licensed for girls and women aged 9–26 to prevent cervical pre-cancers and cancers

b. Hepatitis A vaccine is recommended for all unvaccinated injection drug users and sexually active men who have sex with men
c. Hepatitis B vaccine is recommended for:
   - All unvaccinated men who have sex with men
   - people who have a history of an STI
   - have had > 1 sexual partner in the previous 6 months
   - use injection drugs
   - Have a sex partner who uses injection drugs.

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CHAPTER 27.

HEADACHE

Maya Romani, MD

EPIDEMIOLOGY

1. Headache is a common pain condition, affecting 50% of the general adult population at any given time, with a reported lifetime prevalence of 66% worldwide.
2. Nearly 50% of patients with acute headache have tension-type headaches, whereas 10% have migraines.

DIAGNOSIS

1. Detailed history and complete physical and neurological examination are usually sufficient to diagnose common primary headache syndromes (Table 27.1) with limited need for imaging or laboratory tests.
2. All patients should be evaluated for red flags and possible secondary causes (Table 27.2).

RED FLAGS

Warning signs of possible disorder other than primary headache include:

1. Subacute and/or progressive headaches that worsen over time (months).
2. A new or different headache.
3. Any headache of maximum severity at onset.
4. Headache of new onset after age 50.
5. Persistent headache precipitated by a Valsalva maneuver.
6. Presence of fever, hypertension, myalgias, weight loss or scalp tenderness suggesting a systemic disorder.
7. Presence of neurological signs that may suggest a secondary cause.
8. Seizures.

TABLE 27.1: FEATURES FOR COMMON PRIMARY HEADACHES

Common Primary Headaches			
	Migraine with or without aura	**Tension Type headache**	**Cluster headache**
Location	60-70% Unilateral 30% bi-frontal or global	Mostly bilateral	Always unilateral Begins around the eye
Characteristics	Female > Male Gradual; Pulsating; Positive family history	Female > Male Pressure or tightness; Sometimes it spreads into or from the neck.	Female >> Male Abrupt onset; Deep and stabbing
Duration	4 to 72 hours	Variable	30 minutes to 3 hours
Associated symptoms	Sensitivity to light +/- sound Nausea +/- vomiting Aura (with or without headache) is: fully reversible; develops over at least 5 minutes; lasts 5–60 minutes; include visual symptoms (flickering lights, spots or lines); and/or partial loss of vision sensory symptoms (numbness and/or pins and needles); and/or speech disturbance.	Stress; Fatigue; Nausea is rare; Sometimes musculoskeletal problems in the neck	Same headache side: Red +/- watery eye; nasal congestion; and/or runny nose; swollen eyelid; facial sweating; and/or drooping eyelid

Effect on activities	Aggravated by, or causes avoidance of, routine activities of daily living	Not aggravated by routine activities of daily living	Restlessness or agitation
Exacerbating factors	Activity, exertion, bright light, loud noise, and Valsalva	Stress	Alcohol or nitroglycerin use
Relieving factors	Rest Darkness, quiet	Relaxation Biofeedback	None

TABLE 27.2: SERIOUS SECONDARY CAUSES OF HEADACHES

Serious secondary headaches: These may demand immediate intervention	
Intracranial neoplasm	• A history indicative of raised intracranial pressure • On physical exam focal neurological signs are present
Meningitis	• Patients have signs of fever and neck stiffness • Later accompanied by nausea and disturbed consciousness
Subarachnoid hemorrhage	• Abrupt onset • Often described as the worst headache ever • Unilateral at onset and accompanied by nausea, vomiting and impaired consciousness • Demands urgent investigation
Giant cell (temporal) arteritis	Suspected in patients > 50 years of age with new headache • Jaw claudication is highly suggestive • If suspected, immediate steroids is recommended
Primary angle-closure glaucoma	• Rare before middle age • May present with acute ocular hypertension, a painful red eye with the pupil mid-dilated and fixed and, essentially, impaired vision

I. MIGRAINE

1. Primary headache disorder, probably with a genetic basis.
2. Most often begins at puberty and affects mostly those between 35 and 45 years of age.
3. Recurrent, non-progressive lifelong attacks with specific features (table 27.1).
4. In children, attacks are shorter-lasting and abdominal symptoms more prominent.
5. Attack frequency is typically once or twice a month, often subject to triggers (menstruation, chocolate, aspartame, sleep deprivation, fasting).

MANAGEMENT

ACUTE TREATMENT (TABLE 27.I.1)

1. Start as early as possible with one single large dose because gastric stasis develops as the migraine attack progresses and this impedes absorption.
2. Ibuprofen or the combination agent Paracetamol and caffeine and Aspirin are considered the first line therapy for mild to moderate attack. A prokinetic antiemetic (metoclopramide or domperidone) is most suitable in the presence of nausea and vomiting.
3. When oral symptomatic therapy fails, use rectal NSAID, and domperidone if needed.
4. Do not offer opioids for the acute treatment of migraine.

TABLE 27.I.1: SUMMARY MIGRAINE THERAPY

Migraine acute therapy	
First line	- Acetylsalicylic acid (ASA) 600-1000 mg or ibuprofen 400-800 mg - Adding caffeine to paracetamol/NSAIDS/ASA increases efficacy
Second line	- Oral triptans: Sumatriptan:100 mg and repeat once after 2 hour if needed, rizatriptan: 10 mg every 2 hours, max 30 mg/day - Contraindicated in patients with coronary artery disease
Third line	Combination Acetaminophen/NSAIDS plus triptans

PROPHYLACTIC THERAPY (TABLE 27.I.2)

1. Indicated for ≥ 3 attacks/month.
2. Usually for 4-6 months, aiming to reduce the number of attacks.
3. The World Health Organization (WHO) recommends that women with migraine with aura avoid combination contraceptive use.
4. Women over 35 years who smoke and have migraine should use an alternative form of contraception.
5. Acupuncture 1-2 sessions per week for several months is effective (Level A).

TABLE 27.I.2: SUMMARY MIGRAINE PROPHYLAXIS

Prophylactic migraine drugs	
Level A: Effective: Should be offered to patients requiring migraine prophylaxis	
Propranolol 80-240 mg daily	Give 80 to 240 mg/day, in three or four divided doses (risk of bradycardia, consider EKG before treatment)
Topiramate 50 mg twice daily	Start with 25 mg and titrate up carefully to avoid adverse effects. Maximum dose is 200 mg It may impair the effectiveness of hormonal contraception, has risk of fetal malformations
Sodium valproate 500-1000 mg daily	Dose should be carefully up-titrated to avoid adverse events; avoid use in pregnancy
Metoprolol 47.5-200 mg/day / Timolol (10-15 mg BID) / Petasites (75 mg BID)	
Level B: probably effective: Should be considered for patients requiring migraine prophylaxis	
Amitriptyline 25-150 mg at night	Dose should be up-titrated carefully to avoid adverse events especially orthostatic hypotension in elderly; lower doses are often sufficient
Flunarizine 5-10 mg/d	Titrate up to 10 mg per day
Venlafaxine 150 mg per day / Atenolol100 mg per day	
Level C: possibly effective: May be considered for patients requiring migraine prophylaxis	
Fluoxetine 20 mg / Verapamil 80 mg / Carbamazepine 400 mg	

REFERRAL

Consider further investigations and/or referral for people with any of the following atypical aura symptoms: motor weakness or double vision or visual symptoms affecting only one eye or poor balance or decreased level of consciousness.

PATIENT EDUCATION

1. Avoid triggers.
   Potential migraine triggers include:
   a. Environmental: heat or cold, weather changes, bright lights, head or neck injury, odors
   b. Lifestyle, chronic stress, disturbed sleep, skipping meals, smoking
   c. Emotional: anxiety, anger, depression, excitement
   d. Dietary: citrus fruit, chocolate, aspartame, aged cheese, beer or red wine
   e. Medications: oral contraceptives, estrogen therapy, nifedipine, nitroglycerin
2. Regular eating and sleeping schedules.

3. Regular aerobic exercise.
4. keeping a headache diary can help identify frequency, severity, triggers, and response to treatment.
5. Headache treatment medications should not be used > 9 days/ month.
6. Adherence to prophylactic treatment.

II. TENSION-TYPE HEADACHE (TTH)

1. TTH is the most common primary headache disorder.
2. Occurs less than 15 days per month.
3. TTH often begins during the teenage years.
4. Organic disorder should be ruled out first by diagnostic evaluation by CT or MRI.
5. Episodic TTH attacks usually last a few hours, but can persist for several days.

MANAGEMENT

ACUTE TREATMENT

1. Consider Acetylsalicylic acid 1000 mg, paracetamol 1000 mg or an NSAID (Ibuprufen 400-800 mg).
2. Adding caffeine to the above increases efficacy.
3. Do not offer opioids for the acute treatment of tension-type headache.
4. Do not use analgesics medications for more than 15 days per month.

PROPHYLACTIC TREATMENT

1. Amitriptyline 10 mg-100 mg/day.
2. Psychotherapy with CBT, biofeedback and relaxation may be considered.
3. Consider a course of 10 sessions of acupuncture over 5-8 weeks.

III. CLUSTER HEADACHE (CH)

1. A primary headache disorder.
2. Most people developing CH are in their 20s or older.

MANAGEMENT

ACUTE TREATMENT

1. Offer 100% oxygen at a flow rate of at least 12 liters per minute with a non-rebreathing mask and a reservoir bag and arrange provision of home oxygen.
2. Consider the need for neuroimaging for people with a first attack to rule out secondary causes.
3. Do not offer paracetamol, NSAIDS, opioids, ergots or oral triptans for the acute attack.

PROPHYLACTIC TREATMENT

1. Verapamil 240-480 mg/ day in 3-4 divided doses, extended release dosage are less effective than divided doses.
2. Do EKG before starting verapamil and with each dosage increase to monitor for prolonged PR interval and cardiac arrhythmia.
3. Refer if headache is not responsive to verapamil or if attacks are during pregnancy.
4. Other possibly effective drugs: lithium, topiramate.

IV. MEDICATION-OVERUSE HEADACHE (MOH)

1. MOH is the most common secondary headache.
2. MOH is oppressive, persistent and often at its worst on awakening.

DIAGNOSIS

1. Headache present on > 15 days per month.
2. Caused by chronic and excessive use of medication for > 3 months to treat headache:
   a. Triptans, opioids, or combination analgesics for ≥ 10 days per month.

b. Paracetamol, aspirin or an NSAID alone or any combination ≥ 15 days per month.
3. Headache has developed or markedly worsened during medication overuse.

MANAGEMENT

1. For the overuse of analgesics or triptans, abrupt withdrawal is recommended.
2. For the overuse of opioids or benzodiazepines tapering down of the medication should be offered.
3. Individualized preventive medication should be started at the first day of withdrawal treatment or even before if applicable.
4. Topiramate (up to 200 mg maximum) per day is effective in the treatment of MOH.
5. Corticosteroids (prednisone 60mg) and amitriptyline (up to 50 mg) are possibly effective in the treatment of withdrawal symptoms.
6. Patients after withdrawal therapy should be followed up regularly to prevent relapse of medication overuse.
7. Withdrawal symptoms include severely exacerbated headaches accompanied by nausea, vomiting, agitation, restlessness, sleep disorder, and (rarely) seizures.

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CHAPTER 28.

RED EYE

Eliane Eid, MD

DEFINITION

A ‘red eye” is a very common complaint in primary care, which is caused by an inflammation of any part of the eye.

HISTORY

1. A change in visual acuity.
2. Foreign body sensation: an inability to open or keep the eye open because of a foreign body sensation suggests a corneal involvement necessitating emergency ophthalmologic referral. This should be distinguished from the “sand in my eyes” feeling present in conjunctivitis or dry eyes.
3. Photophobia: sensitivity to light is a sign of serious conditions (active corneal process, keratitis, iritis).
4. Trauma: blunt or sharp; close or open injury.
5. Contact lens: contact lens wearers are prone to keratitis.
6. Presence of discharge: watery or serous v/s purulent discharge.
7. Unilateral or bilateral involvement.
8. Duration of symptoms.
9. Severity of pain if present.
10. Previous treatments.
11. Systemic disease or allergies.

PHYSICAL EXAMINATION

1. General observation: rhinorrhea, upper respiratory tract symptoms.
2. Examination of the eyelids and lacrimal sac.
3. Pupil size and reaction to light: **pinpoint** in cases of corneal abrasion, infectious keratitis (inflammation of the cornea), or iritis (inflammation of the iris); **fixed** in mid-dilation in cases of angle-closure glaucoma.
4. Presence of hypopyon (inflammatory cells or exudate in the anterior chamber of the eye) or hyphema (blood in the anterior chamber of the eye). They are visible to the naked eye as a white (hypopyon) or red layer (hyphema) in the anterior chamber.
5. Corneal inspection: white spot versus opacity on the cornea versus presence of foreign body; pattern of staining.
6. Color of discharge: purulent versus watery discharge; continuous versus intermittent discharge.
7. Pattern and location of hyperemia: injection (generalized redness) versus hemorrhagic (localized redness); diffuse injection versus ciliary flush (circumcorneal injection).
8. Preauricular lymph node.
9. Visual acuity: should be performed in every patient **before** the assessment of papillary reflex or the use of any eye drops and with the eyeglasses in eyeglass wearers. Each eye tested separately. Snellen acuity for far vision or measurement of near vision. Exact measurements are not necessary, as the aim is to identify a change in vision when present.
10. Fundus exam: limited usefulness and sometimes difficult to perform.

DIFFERENTIAL DIAGNOSIS

(Algorithm 28.1)

ASYMPTOMATIC

1. Subconjunctival hemorrhage

The patient is unaware of the problem. A demarcated area of extravasated blood just beneath the surface of the eye is diagnostic. The diagnosis is confirmed by normal acuity and the absence of discharge, photophobia, or foreign body sensation. Contrary to common belief, it is not related to high blood pressure.

MILD OR NO PAIN, MILD BLURRING OR NORMAL VISION

1. Viral conjunctivitis

a. Signs: normal pupil size, conjunctival redness, preauricular lymphadenopathy.
b. Symptoms: mild to no pain, diffuse hyperemia, occasional itching, and non purulent discharge; unilateral at onset with second eye involved within one or two days.
c. Causes: Adenovirus (most common and highly contagious), enterovirus, coxsackievirus, varicella zoster virus (VZV), Epstein-Barr virus, Herpes simplex virus (HSV), influenza.

2. Bacterial conjunctivitis (acute and chronic)

a. Signs: eyelid edema, preserved visual acuity, conjunctival redness, normal pupil reaction.
b. Symptoms: mild to moderate pain with stinging sensation, red eye with foreign body sensation, mild to moderate purulent discharge and secretions.; glued eyes upon awakening.
c. Causes: common pathogens in children: S.pneumoniae, H. influenzae. Common pathogen in adults: Staphylococcus Aureus (S.aureus). Other: Staphylococcus species, Chlamydia Trachomatis (C.trachomatis), Nisseria Gonorrhea (N.gonorrhoeae), Esterichiae Coli (E.coli), Pseudomonas species.

3. Allergic conjunctivitis

a. Signs: visual acuity preserved, pupils reactive to light, chemosis.
b. Symptoms: bilateral eye involvement; painless tearing; intense itching; diffuse redness; watery discharge.
c. Causes: airborne, animals or environmental antigens.

4. Dry eyes (kerato-conjunctivitis sicca)

a. Signs: vision usually preserved, pupils reactive to light; hyperemia.
b. Symptoms: bilateral red, itchy eyes with foreign body sensation; mild pain; on/off watering.
c. Causes: imbalance in tears (production, distribution, evaporation, absorption); medications (anticholinergics, antihistamines, oral contraceptive pills); Sjögren syndrome. A very common cause nowadays is the excessive use of computers and screens.

5. Episcleritis

a. Signs: visual acuity preserved pupils normal and reactive to light, dilated episcleral blood vessels, edema of episclera, confined red patch.
b. Symptoms: mild to no pain; limited, isolated patches of redness.
c. Causes: idiopathic (isolated presentation)

6. Blepharitis

a. Signs: dandruff-like scaling on eyelashes, missing or misdirected eyelashes, swollen eyelids, secondary conjunctivitis.
b. Symptoms: red, irritated eye that is worse upon waking; itchy, crusted eyelids.
c. Causes: chronic inflammation of eyelids by staphylococcal infection.

MODERATE TO SEVERE PAIN, IMPAIRED VISION

Diagnosis is difficult by a primary care physician, prompt urgent ophtalmology referral

1. Corneal abrasion and foreign body

a. Signs: reactive miosis, corneal edema or haze, possible foreign body, variable visual acuity.
b. Symptoms: severe eye pain; red, watery eyes; photophobia; foreign body sensation; blepharospasm.
c. Causes: direct injury from an object (e.g., nail); metallic foreign body; contact lenses

2. Keratitis

a. Signs: diminished vision, corneal opacities/ white spots, corneal ulcers on fluorescein staining, eyelid edema, hypopyon.
b. Symptoms: painful red eye, diminished vision, photophobia, mucopurulent discharge, foreign body sensation.
c. Causes: bacterial (Staph species, Strepto); viral (HSV, VZV, EBV, CMV); foreign body; contact lenses.

3. Iritis

a. Signs: diminished vision; poorly reacting constricted pupils; ciliary/ perilimbal injection.
b. Symptoms: constant eye pain (radiating into brow/temple) developing over hours, watering red eye, blurred vision, photophobia.
c. Causes: autoimmune diseases, infection from wound or corneal ulcer.

4. Glaucoma (acute angle-closure)

a. Signs: decreased visual acuity, mid-dilated pupils react poorly to light, diffuse redness, painful and hard eyeball.
b. Symptoms: acute onset of severe pain; watering red eye; halos appear when patient is around lights.
c. Causes: increased intraocular pressure from an impaired drainage of the aqueous humor.

5. Scleritis

a. Signs: diffuse redness, diminished vision, tenderness, scleral edema, corneal ulceration.

b. Symptoms: severe pain radiating to periorbital area increasing with eyeball movements; ocular redness; watery discharge; photophobia; intense nighttime pain.
c. Causes: systemic diseases (rheumatoid arthritis, Wegener granulomatosis, reactive arthritis, sarcoidosis, inflammatory bowel disease, syphilis, tuberculosis...)

6. Chemical burn

a. Signs: diminished vision, corneal involvement (common).
b. Symptoms: severe, painful red eye; photophobia.
c. Causes: accidental eye contact with acidic or alkali agents.

7. Bacterial hyperacute conjunctivitis

a. Signs: chemosis with possible corneal involvement
b. Symptoms: severe pain; copious, purulent discharge; diminished vision
c. Causes: Neisseria gonorrhoeae

MANAGEMENT

SUBCONJUNCTIVAL HEMORRHAGE

1. No treatment. Work-up for bleeding disorders if recurrent.

VIRAL CONJUNCTIVITIS

1. Cold compresses, ocular decongestants, and artificial tears.
2. Hygiene to prevent the spread by strict hand washing.
3. Food handlers and health personnel should stop working until discharge ceases.
4. Explain to patients that discharge may get worse for 3 to 5 days before getting better.
5. Ophthalmic referral if persistence after 7 days or corneal involvement.

BACTERIAL CONJUNCTIVITIS

1. Same measures as for viral in addition to any ophthalmic antibiotics (gentamycine, tetracycline, ofloxacine).
2. Antibiotic eye drops help shortening the clinical course if given before day six.
3. Topical glucocorticoids or combination steroid/antibiotic drops should not be used by primary care physician and have no additional benefit in acute conjunctivitis.
4. Discontinue contact lens wear until 24 hours of no discharge after the completion of therapy. Lens should be discarded, disinfected or replaced (better).
5. Culture if no response in 7 days or patient is in hospital.

ALLERGIC CONJUNCTIVITIS

1. Avoidance of allergens and use of artificial tears.
2. Topical mast cell stabilizers alone (Olopatadine twice daily) or in combination with topical antihistamines (Decongestant + Antihistamine 1-2 drops every 6 hours).

DRY EYES

1. Artificial tears daily and lubricant ointment nightly.
2. Systemic Omega 3 could be beneficial (evidence C).
3. Referral if no response.

BLEPHARITIS

1. Daily eyelid hygiene + warm compresses + lid massage.
2. Referral if no response.

FOREIGN BODY

1. Ophtalmic referral for removal of foreign body.
2. For experienced doctors: topical anesthetic+ removal with sterile needle under slit lamp + antibiotic ointment and patched for 24 hours.

EPISCLERITIS

1. Artificial tears for 3 weeks. Refer if severe, persistent or recurrent.

SCLERITIS, KERATITIS AND IRITIS

1. Urgent referral is needed.

ANGLE-CLOSURE GLAUCOMA

1. Urgent referral to ophthalmology with an immediate referral to hospital for pressure lowering treatment.

Indications for emergency (immediate) ophthalmology referral

1. Unilateral red eye in a generally uncomfortable patient with nausea and vomiting (suggestive of acute angle-closure glaucoma).
2. Severe ocular pain or a visual deficit in association with a red eye (keratitis, uveitis).
3. Corneal infiltrate or opacity that stains with fluorescein.
4. Hypopyon, hyphema.

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ALGORITHM 28.1: APPROACH TO RED EYE