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NP Notes

3rd Edition

Nurse Practitioner's Clinical Pocket Guide

Ruth McCaffrey
Humberto Reinoso

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- ✔ Clinical Pearls
- ✔ Differential Diagnosis Charts for Common Disorders
- ✔ Complementary and Alternative Therapies
- ✔ Commonly Ordered Meds
- ✔ Billing & Coding Information

Electronic Resources

Topic	Web Address
Agency for Healthcare Research and Quality	http://www.ahrq.gov
American Academy of Nurse Practitioners	http://www.aanp.org/AANPCMS2
American College of Nurse Practitioners	http://www.acnpweb.org/i4a/pages/index.cfm?pageid=1
American Diabetes Association	http://www.diabetes.org/home.jsp
American Heart Association	http://www.americanheart.org
American Nurses Association	http://www.nursingworld.org/
Auscultation Assistant: Heart and Lung Sounds	http://www.wilkes.med.ucla.edu/intro.html
Centers for Disease Control	http://www.cdc.gov/
Cochrane Evidence Database	http://www.cochrane.org/
Dermatology for Adult Primary Care	http://enotes.tripod.com/14.htm
Family Practice Notebook	http://www.fpnotebook.com/
General Practice On-line	http://www.priory.com/gp.htm
JNC 7 Guidelines	https://www.nhlbi.nih.gov/files/docs/guidelines/phycard.pdf
Lab Tests Online	http://www.labtestsonline.org/
Medline (Database from the National Library of Medicine)	http://www.nlm.nih.gov/medlineplus/
Medscape	http://www.medscape.com/nurses
MentalHelp.net	http://www.mentalhelp.net/
National Guideline Clearinghouse	http://www.guidelines.gov
National Institutes of Health	http://www.nih.gov
NP Central	http://www.npcentral.net/siteinfo/
The Nurse Practitioner's Place	http://www.arnp.blogspot.com/
Office of Disease Prevention and Health Promotion	https://health,gove
PubMed (Database)	http://www.ncbi.nlm.nih.gov/pubmed/

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A Davis's Notes Book


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Preventive services: The following categories reflect the magnitude of the net benefit, strength, and certainty of specific recommendations for preventive services. These grades translate to practice guidance for clinicians:

A: Strongly recommended and should be offered to eligible patients.
B: Recommended and should be offered to eligible patients.
C: Lower priority but should still be recommended when individual considerations warrant.
D: Discourage the use of these services; they need not be provided.
I: These may actually cause harm.

General Health Screening Guidelines

Screening Tests	Ages 18–39	Ages 40–49	Ages 50–64	Ages 65 and Older
General health Full checkup, including weight (including BMI) and height	Every 5 years	Yearly	Yearly	Yearly

Continued

General Health Screening Guidelines—cont'd

Screening Tests	Ages 18–39	Ages 40–49	Ages 50–64	Ages 65 and Older
Heart health Blood pressure test *Grade A recommendation* Cholesterol test *Grade A recommendation*	At least every 2 years Start at age 20	At least every 2 years Every 3 years Every year if hyperlipidemia present	At least every 2 years Every 3 years Every year if hyperlipidemia present	At least every 2 years Every 3 years Every year if hyperlipidemia present
Diabetes Blood sugar test	The USPSTF recommends screening for abnormal blood glucose as part of cardiovascular risk assessment in adults aged 40–70 years who are overweight or obese. Clinicians should offer or refer patients with abnormal blood glucose to intensive behavioral counseling intervention to promote a healthful diet and physical activity—Grade B recommendation			
Prostate health Digital rectal examination (DRE) Prostate-specific antigen (PSA) blood test	The USPSTF has found insufficient evidence to recommend screening for prostate cancer in men younger than 75 years of age. *Grade I recommendation.* The USPSTF recommends against prostate screening for men more than 75 years of age. *Grade D recommendation* Clinician should not order the PSA test without first discussing with the patient the potential but uncertain benefits and the known harms of prostate cancer screening and treatment. *Grade A recommendation*			

Continued

General Health Screening Guidelines—cont'd

Screening Tests	Ages 18–39	Ages 40–49	Ages 50–64	Ages 65 and Older
Reproductive health Testicular examination Chlamydia test Sexually transmitted disease (STD) tests	The USPSTF recommends against routine screening for testicular cancer in asymptomatic male adolescents and adults. *Grade D recommendation* The USPSTF concludes that the current evidence is insufficient to assess the balance of benefits and harms of screening for chlamydial infection for men. *Grade I statement* The USPSTF recommends intensive behavioral counseling for all sexually active adolescents and for adults who are at increased risk for sexually transmitted infections.			
Colorectal health	The USPSTF recommends screening for colorectal cancer using fecal occult blood testing, sigmoidoscopy, or colonoscopy in adults, beginning at age 50 years and continuing until age 75 years. The risks and benefits of these screening methods may vary. *Grade A recommendation.* The USPSTF recommends against routine screening for colorectal cancer in adults more than 76 years of age. Considerations may support colorectal cancer screening in an individual patient. *Grade C recommendation* The USPSTF recommends initiating low-dose aspirin use for the primary prevention of cardiovascular disease and colorectal cancer in adults aged 50–59 who have a 10% or greater 10-year cardiovascular risk, are not at increased risk for bleeding, and are willing to take low-dose aspirin daily for at least 10 years.			
Hepatitis C	The USPSTF advises primary care physicians to consider hepatitis C screening for adults born between 1945 and 1965, and it said those with a history of IV drug use or blood transfusions before 1992 should be tested. *Grade A recommendation*			

Continued

General Health Screening Guidelines—cont'd

Screening Tests	Ages 18–39	Ages 40–49	Ages 50–64	Ages 65 and Older
Eye and ear health				
Eye examination Including dilated eye examination and glaucoma screening	If you have any vision problems; at least one examination from ages 20–29 and at least two examinations from ages 30–39	Every 2–4 years	Every 2–4 years	Every 1–2 years
Hearing test	Starting at age 18, then every 10 years	Every 10 years	Every 3 years	Every 3 years
Skin health				
Mole examination	Monthly mole self-examination; by a provider every 3 years, starting at age 20	Monthly mole self-examination; by a provider every year	Monthly mole self-examination; by a provider every year	Monthly mole self-examination; by a provider every year
Oral health				
Dental examination	One to two times every year			
Alcohol use	The USPSTF recommends screening and behavioral counseling interventions to reduce alcohol misuse (go to Clinical Considerations) by adults, including pregnant women, in primary care settings. *Grade B recommendation*			

Continued

General Health Screening Guidelines—cont'd

Screening Tests	Ages 18–39	Ages 40–49	Ages 50–64	Ages 65 and Older
Depression	The USPSTF recommends screening adults for depression when staff-assisted depression care supports are in place to ensure accurate diagnosis and effective treatment and follow-up. *Grade B recommendation* "Staff-assisted depression care supports" refers to clinical staff members who assist the primary care clinician by providing some direct depression care, such as care support or coordination, case management, or mental health treatment.			
Drug use	Although clinicians should be alert to the signs and symptoms of illicit drug use in patients, the added benefits of screening asymptomatic patients in primary care practice remains unclear. Drug tests of blood or urine can provide objective evidence of drug use, but such tests do not distinguish between occasional users and those who are impaired by drug use. *Grade I recommendation*			
Immunizations				
Influenza vaccine	Yearly if risk factors exist	Yearly if risk factors exist	Yearly if risk factors exist	Yearly if risk factors exist
Pneumococcal vaccine	Every 6–8 years if risk factors warrant	Every 6–8 years if risk factors warrant	Every 6–8 years if risk factors warrant	One time only
Tetanus-diphtheria booster vaccine	Every 10 years	Every 10 years	Every 10 years	Every 10 years
Meningococcal vaccine	Discuss with your provider if attending college			
Human papillomavirus vaccine	Up to age 26 for both males and females			

Women's Health Specific Guidelines

Screening Tests	Ages 18–39	Ages 40–49	Ages 50–64	Ages 65 and Older
General health				
Full checkup, including weight, BMI, height, WHR, and	Yearly	Yearly	Yearly	Yearly
thyroid-stimulating hormone test (TSH)	Start at age 35, then every 5 years	Every 5 years	Every 5 years	Every 5 years
Heart health				
Blood pressure test *Grade A recommendation*	At least every 2 years if blood pressure below 120/80; every year if blood pressure between 120/80 and 139/89	At least every 2 years if blood pressure below 120/80; every year if blood pressure between 120/80 and 139/89	At least every 2 years if blood pressure below 120/80; every year if blood pressure between 120/80 and 139/89	At least every 2 years if blood pressure below 120/80; every year if blood pressure between 120/80 and 139/89
Lipid testing *Grade A recommendation*	Starting at age 20, have lipid testing regularly if risk factors for heart disease exist. Ask provider how often is needed.	Start routine lipid testing at age 45 if not begun earlier. Ask provider how often testing is needed.	Start routine lipid testing if not begun earlier. Ask provider how often testing is needed.	Have lipid testing regularly. Ask provider how often it is needed. USPSTF recommends

Continued

Women's Health Specific Guidelines—cont'd

Screening Tests	Ages 18–39	Ages 40–49	Ages 50–64	Ages 65 and Older
				that adults without a history of cardiovascular disease (CVD) use a low- to moderate-dose statin for the prevention of CVD events and mortality when all of the following criteria are met: 1) they are ages 40–75 years, 2) they have one or more CVD risk factors, 3) they have a calculated 10-year risk of a cardiovascular event of 10% or greater. *Grade B recommendation*

Continued

Women's Health Specific Guidelines—cont'd				
Screening Tests	**Ages 18–39**	**Ages 40–49**	**Ages 50–64**	**Ages 65 and Older**
Bone health Bone mineral density test	Discuss need for adequate calcium, vitamin D_3, and weight-bearing exercise.	Discuss need for adequate calcium, vitamin D_3, and weight-bearing exercise. Bone mineral density study if early menopause.	Discuss need for adequate calcium, vitamin D_3, and weight-bearing exercise. Bone mineral density scan at menopause and every 2 years with risk factors present.	Discuss need for adequate calcium, vitamin D_3, and weight-bearing exercise. Bone mineral density test every 2 years.
Diabetes Blood glucose test	The USPSTF recommends screening for gestational diabetes mellitus in asymptomatic pregnant women after 24 weeks gestation.			
Breast health Mammogram (x-ray of breast)	The USPSTF recommends biennial screening mammography for women aged 50 to 74 years. *Grade B recommendation* The decision to start regular, biennial screening mammography before the age of 50 years should be an individual one. *Grade C recommendation* The USPSTF recommends that clinicians engage in shared, informed decision making with women who are at increased risk for breast cancer about medication to reduce risks such as Tamoxifen			

Continued

Women's Health Specific Guidelines—cont'd

Screening Tests	Ages 18–39	Ages 40–49	Ages 50–64	Ages 65 and Older
Reproductive health				
Pap test and pelvic examination	No screening under age 21 unless risk factors or symptoms Ages 21–29, every 3 years Ages 30–65, Pap and HPV every 5 years or Pap every 3 years *Grade A recommendation*	Ages 30–65, Pap and HPV every 5 years or Pap every 3 years *Grade A recommendation*	Ages 30–65, Pap and HPV every 5 years or Pap every 3 years *Grade A recommendation*	The USPSTF recommends against routinely screening women older than age 65 for cervical cancer if they have had adequate recent screening with normal Pap smears and are not otherwise at high risk for cervical cancer. USPSTF recommends against Pap smear screening for women after total hysterectomy.

Continued

Women's Health Specific Guidelines—cont'd

Screening Tests	Ages 18–39	Ages 40–49	Ages 50–64	Ages 65 and Older
Chlamydia test	Testing annually through age 24 if sexually active or pregnant	If new, multiple partners, or partner with other partners	If new, multiple partners, or partner with other partners	If new, multiple partners, or partner with other partners
Sexually transmitted disease (STD) tests	Both partners should be tested for STDs, including HIV, before having sexual intercourse.	Both partners should be tested for STDs, including HIV, before having sexual intercourse.	Both partners should be tested for STDs, including HIV, before having sexual intercourse.	Both partners should be tested for STDs, including HIV, before having sexual intercourse.
Colorectal health				
Fecal occult blood test (FOBT) OR fecal immunochemical test (FIT)		Begin routine screening at age 40 if high risk or 10 years younger than age of youngest affected diagnosed relative	Yearly	>Yearly
Colonoscopy			Every 10 years	Every 10 years

Continued

General Immunization Guidelines

Screening Tests	Ages 18–39	Ages 40–49	Ages 50–64	Ages 65 and Older
Immunizations Influenza vaccine	If risk factors are present	If risk factors are present	Yearly	Yearly
Pneumococcal vaccine	If risk factors are present	If risk factors are present	If risk factors are present	One time only
Tetanus-diphtheria booster vaccine	Every 10 years			
Meningococcal vaccine	Recommended before attending college			
Herpes zoster vaccine (to prevent shingles)	Starting at age 60, one time only			

Medicare Preventive Services (Covered Under Medicare Part B)

Test	How Often Medicare Covers
"Welcome to Medicare" physical (includes vision screening/EKG	Within the first 6 months of enrollment
Cholesterol screening	Once every 5 years
Mammogram	Once every 12 months. Every other year for women from 40 years and older
Pap test	Once every 24 months or every 12 months for high-risk women
Fecal occult blood test	Once every 12 months
Sigmoidoscopy	Once every 48 months
Colonoscopy	Once every 120 months or every 24 months for high-risk
DRE for prostate screening	Once every 12 months
PSA	Once every 12 months
Flu shot	Yearly
Pneumonia shot	Once
Hepatitis B vaccination	Three shots in recommended sequence
Fasting glucose test	Yearly
Glaucoma study	Once every 12 months
Smoking cessation	8 face-to-face visits in a 12-month period
Bone mass measurement	Once in 24 months or more often if necessary
Weight loss counseling	For those with BMI over 30. One face-to-face meeting monthly for 1 month, then counseling every other week for 5 months; can be extended with proof of weight loss

Adult Treatment Panel (ATP) III Guidelines for Cholesterol Management

Step 1: Determine Lipoprotein Levels

Obtain complete lipoprotein profile after 9- to 12-hour fast.

ATP III Classification of LDL Cholesterol (mg/dL)

- <100: Optimal
- 100 to 129: Near optimal/above optimal
- 130 to 159: Borderline high
- 160 to 189: High
- 190: Very high

ATP III Classification of Total Cholesterol (mg/dL)

- <200: Desirable
- 200 to 239: Borderline high
- 240: High

ATP III Classification of HDL Cholesterol (mg/dL)

- <40: Low
- 60: High

Step 2: Determine Risk Category

- Establish LDL goal of therapy.
- Determine need for therapeutic lifestyle changes.
- Determine level for drug consideration.

LDL Cholesterol Goals and Cutpoints for Total Lifestyle Change (TLC) and Drug Therapy in Different Risk Categories

Risk Category	LDL Goal	LDL Level to Initiate TLC	LDL Level to Consider Drug Therapy
CHD or CHD risk equivalents (10-year risk >20%)	<100 mg/dL	≥100 mg/dL	≥130 mg/dL (100–129 mg/dL: drug optional)*

Continued

LDL Cholesterol Goals and Cutpoints for Total Lifestyle Change (TLC) and Drug Therapy in Different Risk Categories—cont'd

Risk Category	LDL Goal	LDL Level to Initiate TLC	LDL Level to Consider Drug Therapy
2+ risk factors (10-year risk 20%)	<130 mg/dL	≥130 mg/dL	10-year risk 10%–20%: ≥130 mg/dL 10-year risk <10%: ≥160 mg/dL
0–1 risk factor	<160 mg/dL	≥160 mg/dL	≥190 mg/dL (160 189 mg/dL: LDL-lowering drug optional)

Step 3: Initiate TLC If LDL Is Above Goal

- TLC diet
  - Saturated fat <7% of calories; cholesterol <200 mg/day
  - Increased viscous (soluble) fiber (10–25 g/day) and plant stanols/sterols (2 g/day) as therapeutic options to enhance LDL lowering
- Weight management
- Increased physical activity

Step 4: Consider Adding Drug Therapy

- Consider drug simultaneously with TLC for CHD and CHD equivalents.
- Consider adding drug to TLC after 3 months for other risk categories.

Examples of Drugs Affecting Lipoprotein Metabolism

Drug Class	Agents and Daily Doses	Lipid/Lipoprotein Effects	Side Effects	Contraindications
HMG CoA reductase inhibitors (statins)	Lovastatin (10–80 mg) Pravastatin (10–40 mg) Simvastatin (20–80 mg) Fluvastatin (10–80 mg) Atorvastatin (10–80 mg) Rosuvastatin (5-20 mg)	LDL-C (18%–55%) HDL-C (5%–15%) TG (7%–30%)	Myopathy Increased liver enzymes	**Absolute:** Active or chronic liver disease **Relative:** Concomitant use of certain drugs
Bile acid sequestrants	Cholestyramine (4–16 g) Colestipol (5–20 g) Colesevelam (2.6–3.8 g)	LDL-C (15%–30%) HDL-C (3%–5%) TG (no change)	Gastrointestinal distress Constipation Decreased absorption of other drugs	**Absolute:** Dysbetalipoproteinemia G >400 mg/dL **Relative:** TG >200 mg/dL

Continued

Examples of Drugs Affecting Lipoprotein Metabolism—cont'd

Drug Class	Agents and Daily Doses	Lipid/Lipoprotein Effects	Side Effects	Contraindications
Nicotinic acid	Immediate-release (crystalline) nicotinic acid (1.5–3 g) Extended-release nicotinic acid (Niaspan) (1–2 g) Sustained-release nicotinic acid (1–2 g)	LDL-C (5%–25%) HDL-C (15%–35%) TG (20%–50%)	Flushing Hyperglycemia Hyperuricemia (or gout) Upper GI distress Hepatotoxicity	**Absolute:** Chronic liver disease Severe gout **Relative:** Diabetes Hyperuricemia Peptic ulcer disease
Fibric acids	Gemfibrozil (600 mg bid) Fenofibrate (200 mg) Clofibrate (1000 mg bid)	LDL-C (5%–20%; may be increased in patients with high TG) HDL-C (10%–20%) TG (20%–50%)	Dyspepsia Gallstones Myopathy	**Absolute:** Severe renal disease Severe hepatic disease
Cholesterol absorption inhibitor	Ezetimibe		Muscle pain Nausea Headache/dizziness Joint pain	**>Relative** Steroid use Thyroid disease Renal disease

MAST Questionnaire

Question	Yes	No
1. Do you feel you are a normal drinker? ("normal"-drink as much or less than most other people)?	1	0
2. Have you ever awakened the morning after some drinking the night before and found that you could not remember a part of the evening?	1	0
3. Does any near relative or close friend ever worry or complain about your drinking?	1	0
4. Can you stop drinking without difficulty after one or two drinks?	1	0
5. Do you ever feel guilty about your drinking?	1	0
6. Have you ever attended a meeting of Alcoholics Anonymous (AA)?	1	0
7. Have you ever gotten into physical fights when drinking?	1	0
8. Has drinking ever created problems between you and a near relative or close friend?	1	0
9. Has any family member or close friend gone to anyone for help about your drinking?	1	0
10. Have you ever lost friends because of your drinking?	1	0
11. Have you ever gotten into trouble at work because of drinking?	1	0
12. Have you ever lost a job because of drinking?	1	0
13. Have you ever neglected your obligations, your family, or your work for 2 or more days in a row because you were drinking?	1	0
14. Do you drink before noon fairly often?	1	0
15. Have you ever been told you have liver trouble such as cirrhosis?	1	0
16. After heavy drinking have you ever had delirium tremens (DTs), severe shaking, visual or auditory (hearing) hallucinations?	1	0
17. Have you ever gone to anyone for help about your drinking?	1	0

Continued

Question	Yes	No
18. Have you ever been hospitalized because of drinking?	1	0
19. Has your drinking ever resulted in your being hospitalized in a psychiatric ward?	1	0
20. Have you ever gone to any doctor, social worker, clergyman, or mental health clinic for help with any emotional problem in which drinking was part of the problem?	1	0
21. Have you been arrested more than once for driving under the influence of alcohol?	1	0
22. Have you ever been arrested, even for a few hours, because of other behavior while drinking?	1	0
TOTAL		
NOTE: Score 1 point if you answered "no" to questions 1 or 4. Score 1 point if you answered "yes" to questions: 2, 3, and 5 through 22. A total score of 6 or more indicates hazardous drinking or alcohol dependence, and further evaluation by a health care professional is recommended.		

Source: Selzer, M.L.: The Michigan Alcoholism Screening Test (MAST): The quest for a new diagnostic instrument. *Am J Psychiatry* 127:1653–1658, 1971.

RAFT Questionnaire

Question	Yes	No
Relaxation: Do you ever use drugs or drink alcohol in order to relax or improve your self-esteem?	1	0
Alone: Do you every use drugs or drink alcohol while you are alone?	1	0
Friends: Do you have any friends who use drugs or have a problem with alcohol?	1	0
Trouble: Have you ever gotten into trouble because of drugs or alcohol?	1	0
Total:		
Note: Any positive answer warrants further investigation.		

Source: Riggs, S., and Alario A.: Adolescent substance use. In Dube, C.E., Goldstein, M.G., Lewis D.C., et al (eds): *Project ADEPT Curriculum for Primary Care Physician Training.* Vol II: *Special Topics.* Providence, RI, Brown University, 1989.

Zung Self-Rating Depression Scale

Item	A Little of the Time	Some of the Time	A Good Part of Time	Most of the Time
I feel down-hearted and blue.	1	2	3	4
Morning is when I feel best.	4	3	2	1
I have crying spells or feel like it.	1	2	3	4
I have trouble sleeping at night.	1	2	3	4
I eat as much as I used to.	4	3	2	1
I still enjoy sex.	4	3	2	1
I notice that I am losing weight.	1	2	3	4
I have trouble with constipation.	1	2	3	4
My heart beats faster than usual.	1	2	3	4
I get tired for no reason.	1	2	3	4
My mind is as clear as it used to be	4	3	2	1
I find it easy to do the things. I used to do	4	3	2	1
I am restless and can't keep still.	1	2	3	4
I feel hopeful about the future.	4	3	2	1
I am more irritable than usual.	1	2	3	4
I find it easy to make decisions.	4	3	2	1
I feel that I am useful and needed.	4	3	2	1
My life is pretty full.	4	3	2	1
I feel that others would be better off if I were dead.	1	2	3	4
I still enjoy the things I used to do.	4	3	2	1
Add up numbers for a total score. A score of greater than 45 is indicative of depression.				

Adapted from Zung, W.W.K.: A self-rating depression scale. *Arch Gen Psychiatry* 12:63–70, 1965.

Edinburgh Postnatal Depression Scale

Physician Instructions

- Have the patient complete the scale by marking one answer for each question that comes closest to how she has felt in the past 7 days, not just how she feels today.
- Review item 10 in particular because it concerns thoughts of self-harm or possible suicide.

Scoring

- Responses are scored 0, 1, 2, and 3 according to the increased severity of symptoms.
- Items 3 and 5 through 10 are reverse scored (for example, 3, 2, 1, 0).
- The total score is the sum of all item scores.
- Women with scores higher than 12 are likely to be suffering from depression.

Edinburgh Postnatal Depression Scale

How have you felt during the past week (or the past 7 days)? In the past 7 days:

1.	I've been able to laugh and see the funny side of things:	
	•	As much as I always did.
	•	Not quite so much now.
	•	Definitely not so much now.
	•	Not at all.
	•	As much as I always did.
	•	Not quite so much now.
2.	I've looked forward with enjoyment to things:	
	•	As much as I always did.
	•	Not quite so much now.
	•	Definitely not so much now.
	•	Not at all.
	•	As much as I always did.
	•	Not quite so much now.

Continued

Edinburgh Postnatal Depression Scale—cont'd

How have you felt during the past week (or the past 7 days)? In the past 7 days:

3.	I've blamed myself unnecessarily when things went wrong:	
	•	As much as I always did.
	•	Not quite so much now.
	•	Definitely not so much now.
	•	Not at all.
	•	As much as I always did.
	•	Not quite so much now.
4.	I've been anxious or worried for no good reason:	
	•	As much as I always did.
	•	Not quite so much now.
	•	Definitely not so much now.
	•	Not at all.
	•	As much as I always did.
	•	Not quite so much now.
5.	I've felt scared or panicky for no very good reason:	
	•	As much as I always did.
	•	Not quite so much now.
	•	Definitely not so much now.
	•	Not at all.
	•	As much as I always did.
	•	Not quite so much now.
6.	Things have been getting on top of me:	
	•	As much as I always did.
	•	Not quite so much now.
	•	Definitely not so much now.
	•	Not at all.
	•	As much as I always did.
	•	Not quite so much now.

Continued

Edinburgh Postnatal Depression Scale—cont'd

How have you felt during the past week (or the past 7 days)? In the past 7 days:

7.	I've been so unhappy that I've had difficulty sleeping:
	• As much as I always did.
	• Not quite so much now.
	• Definitely not so much now.
	• Not at all.
	• As much as I always did.
	• Not quite so much now.
8.	I've felt sad or miserable:
	• As much as I always did.
	• Not quite so much now.
	• Definitely not so much now.
	• Not at all.
	• As much as I always did.
	• Not quite so much now.
9.	I've been so unhappy that I have been crying:
	• As much as I always did.
	• Not quite so much now.
	• Definitely not so much now.
	• Not at all.
	• As much as I always did.
	• Not quite so much now.
10.	The thought of harming myself has occurred to me:
	• As much as I always did.
	• Not quite so much now.
	• Definitely not so much now.
	• Not at all.
	• As much as I always did.
	• Not quite so much now.

Source: Cox, J.L., Holden, J.M., and Sagovsky, R.: Detection of postnatal depression: Development of the 10-item Edinburgh Postnatal Depression Scale. *Br J Psychiatry* 150:782–786, 1987

Nutritional Deficiency

Area/System	Symptom or Sign	Deficiency
Skin	Rash Easy bruising Rash in sun-exposed areas	Zinc, fatty acids, vitamins Vitamin C or K Niacin
Hair and nails	Thinning or loss of hair Premature whitening of hair Spooning of nails	Protein Selenium Iron
Eyes	Impaired night vision Corneal keratomalacia (corneal drying and clouding)	Vitamin A Vitamin A
Mouth	Cheilosis and glossitis Bleeding gums	Riboflavin, niacin, iron Vitamin C, riboflavin
Extremities	Edema	Protein
Neurological	Paresthesias or numbness in a stocking-glove distribution Tetany Cognitive and sensory deficits Dementia	Thiamin Calcium and magnesium Thiamin, niacin, pyridium, vitamin B_{12} Thiamin, niacin, vitamin B_{12}
Musculoskeletal	Wasting of muscle Bone deformities (bowlegs, knocked knees, curved spine) Bone tenderness Joint pain or swelling	Protein Vitamin D, calcium Vitamin D Vitamin C
Gastrointestinal	Diarrhea Diarrhea and dysgeusia Dysphagia or odynophagia (from Plummer-Vinson syndrome)	Protein, niacin, folate, vitamin B_{12} Zinc Iron
Endocrine	Thyromegaly	Iodine

Geriatric Depression Scale

Choose the best answer for how you have felt over the past week:

1. Are you basically satisfied with your life? YES/NO
2. Have you dropped many of your activities and interests? YES/NO
3. Do you feel that your life is empty? YES/NO
4. Do you often get bored? YES/NO
5. Are you in good spirits most of the time? YES/NO
6. Are you afraid that something bad is going to happen to you? YES/NO
7. Do you feel happy most of the time? YES/NO
8. Do you often feel helpless? YES/NO
9. Do you prefer to stay at home, rather than going out and doing new things? YES/NO
10. Do you feel you have more problems with memory than most? YES/NO
11. Do you think it is wonderful to be alive now? YES/NO
12. Do you feel pretty worthless the way you are now? YES/NO
13. Do you feel full of energy? YES/NO
14. Do you feel that your situation is hopeless? YES/NO
15. Do you think that most people are better off than you are? YES/NO

Count 1 point for any of the following answers:
1. No; 2. Yes; 3. Yes; 4. Yes; 5. No; 6. Yes; 7. No; 8. Yes; 9. Yes; 10. Yes; 11. No; 12. Yes; 13. No; 14. Yes; 15. Yes

Score

1–3: Not depressed

4–7: Mildly depressed

8–11: Moderately depressed

12–15: Severely depressed

Source: Yesavage, J.A., Brink, T.L., Rose, T.L., et al: Development and validation of a geriatric depression screening scale: A preliminary report. *J Psychiatr Res* 17:37–49, 1983.

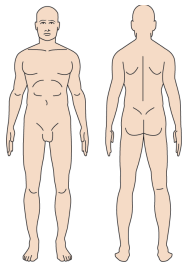
Simplified Nutrition Assessment Questionnaire (SNAQ)

1. My appetite is:
   a. Very poor.
   b. Poor.
   c. Average.
   d. Good.
   e. Very good.
2. When I eat:
   a. I feel full after eating only a few mouthfuls.
   b. I feel full after eating about a third of the meal.
   c. I feel full after eating more than half a meal.
   d. I feel full after eating most of the meal.
   e. I hardly ever feel full.
3. Food tastes:
   a. Very bad.
   b. Bad.
   c. Average.
   d. Good.
   e. Very good.
4. Normally, I eat:
   a. Less than one meal a day.
   b. One meal a day.
   c. Two meals a day.
   d. Three meals a day.
   e. More than three meals a day.

Points are assigned for the patient's answers as follows: a = 1, b = 2, c = 3, d = 4, e = 5. The sum is the SNAQ score. An SNAQ score of <14 indicates high risk of at least 5% weight loss within 6 months.

Adapted from Wilson, M.M., Thomas, D.R., Rubenstein, L.Z., et al: Appetite assessment: Simple appetite questionnaire predicts weight loss in community-dwelling adults and nursing home residents. *Am J Clin Nutr* 82:1074–1081, 2005; used with permission.

Visual Body Map



Mark the area of injury on a body map.
Score each incident according to the following scale:

- 1 = Threats of abuse, including use of a weapon
- 2 = Slapping, pushing, no injuries, and/or lasting pain
- 3 = Punching, kicking, bruises, cuts, and/or continuing pain
- 4 = Beating up, severe contusions, burns, broken bones
- 5 = Head injury, internal injury, permanent injury
- 6 = Use of weapon; wound from weapon

If any of the descriptions for a higher number apply, use the higher number.

Body Mass Index

- **Underweight:** <18.5
- **Normal weight:** 18.5–24.9
- **Overweight:** 25–29.9
- **Obesity:** 30 or greater

Domestic Violence Assessment

Framing Statements

These statements may help you start the conversation.

- Because violence is so common in many people's lives, I've begun to ask all my patients about it.
- I'm concerned that your symptoms may have been caused by someone hurting you.
- I don't know if this is a problem for you, but many of the women I see as patients are dealing with abusive relationships. Some are too afraid or uncomfortable to bring it up themselves, so I've started asking about it routinely.
- Some of the women and men we see here who are gay are hurt by their partners. Does your partner ever try to hurt you?

Direct Verbal Questions

- Are you in a relationship with a person who physically hurts or threatens you?
- Did someone cause these injuries? Was it your partner?
- Has your partner or ex-partner ever hit you or physically hurt you? Has he or she ever threatened to hurt you or someone close to you? Do you feel controlled or isolated by your partner?
- Do you ever feel afraid of your partner? Do you feel you are in danger? Is it safe for you to go home?
- Has your partner ever forced you to have sex when you didn't want to? Has your partner ever refused to practice safe sex?
- Have you ever been hurt or threatened by your partner?
- Have you ever been hit, kicked, slapped, pushed, or shoved by your partner?
- Have you ever been hit, kicked, slapped, pushed, or shoved by your partner during this pregnancy?
- Have you ever been raped or forced to engage in sexual activity against your will?
- Are you currently or have you ever been in a relationship where you were physically hurt, threatened, or made to feel afraid?
- Have you ever been forced or pressured to have sex when you did not want to?

Developing a Genetic Pedigree Chart

A pedigree, or a picture of a medical family history using symbols, can be a time-saving, inexpensive diagnostic and screening tool. Many clinicians ask about family illnesses as part of a client's medical evaluation and write out the history in textual form. However, once a clinician is used to generating a pedigree, it usually requires less time than writing out text, is easier to review later, and is often more concise and specific. An accurate pedigree can be just as useful in determining that a condition is not genetic as it is in establishing that a condition is inherited in a family. It is also extremely useful in assessing the hereditary component of common cancers, such as breast and colon cancer.

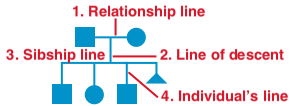
Common Symbols Used to Develop Genetic Pedigrees

	Male	Female	Sex Unknown
Individual	b. 1925	30 y	4 mo
Affected individual (Define shading in key legend)			
Affected individual (more than one condition)			
Multiple individuals, number known	5	5	5
Multiple individuals, number unknown	n	n	n
Deceased individual	d. 35 y	d. 4 mo	
Stillbirth (SB)	SB 28 wk	SB 30 wk	SB 34 wk
Pregnancy (P)	P LMP: 7/1/94	P 20 wk	P
Spontaneous abortion (SAB)	male	female	* ECT
Affected SAB	male	female	16 wk
Termination of pregnancy (TOP)	male	female	
Affected TOP	male	female	

Source: Bennett, R.L., Steinhaus, K.A., Uhrich, S.B., et al: Recommendations for standardized human pedigree nomenclature. *Am J Hum Genet* 56:745–752, 1995.
*ECT, ectopic pregnancy.

Pedigree Line Definitions

Definitions



If possible, male partner should be left of female partner on relationship side.

Sibling should be listed from left to right in birth order (oldest to youngest).

For pregnancies not carried to term (SABs and TOPs), the individual's line is shortened.

Relationships



A break in a relationship line indicates the relationship no longer exists. Multiple previous partners do not need to be shown if they do not affect genetic assessment.

Consanguinity



If degree of relationship not obvious from pedigree, it should be stated (e.g., third cousins) above relationship line.

Twins



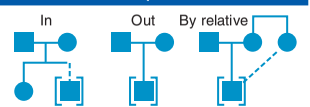
No Children By Choice or Reason Unknown



Infertility



Adoptions



Source: Bennett, R.L., Steinhaus, K.A., Uhrich, S.B., et al: Recommendations for standardized human pedigree nomenclature. *Am J Hum Genet* 56:745–752, 1995.

Factual and Health Information to Include in a Pedigree

- Age/birth date or year of birth
- Age of death
- Cause of death
- Pregnancy with gestational age (last menstrual period) or estimated date of delivery
- Pregnancy complications with gestational age noted (e.g., 6 weeks, 34 weeks), miscarriage, stillbirth, or pregnancy termination
- Infertility versus no children by choice
- Relevant health information (e.g., height, weight)
- Affected/unaffected status (define shading of symbol in key/legend)
- Testing status ("E" is used for evaluation on pedigree and defined in key/legend)
- Ethnic background
- Consanguinity (note degree of relationship if not implicit in pedigree)
- Date pedigree developed or updated
- Name of person who developed pedigree with credentials
- Key/legend

PQRSTOA Symptom Assessment

	Definition	Questions To Ask
P	Provocative (aggravating) or Palliative (alleviating)	When did you first experience this symptom? What makes it better? What makes it worse (exertion, stress, breathing, lying down)?
Q	Quality or Quantity	How would you describe how the symptom feels/looks/sounds (e.g., if pain: dull, sharp, burning; if runny nose: color of exudate, any nose bleed)? How much are you experiencing now? Is it so much that it prevents you from performing any activities? Is it more or less than you experienced at any other time?

Continued

	Definition	Questions To Ask
R	Region or Radiation	Where does the symptom occur? In the case of pain, does it travel or radiate to any other part of your body?
S	Severity or Signs and Symptoms	How does the symptom rate on a severity scale of 1 to 10, with 10 being the most extreme? What other associated symptoms exist (e.g., pain has vomiting, sneezing has headache, stomach cramping has diarrhea)?
T	Timing	When did the symptom begin? How often does it occur? How long does it last? Is it sudden or gradual?
O	Onset	When did the symptom begin? Does it come and go or is it constant?
A	Associated signs and symptoms	What is happening when the symptoms appear? What other things happen when the symptoms appear?

Preventive Services Recommended by the USPSTF

Recommendation	Population	Specifics
Abdominal aortic aneurysm screening	Men	One-time screening by ultrasonography in men aged 65 to 75 who have ever smoked
Alcohol misuse screening and behavioral counseling interventions	Men Women	
Aspirin for the primary prevention of cardiovascular events	Men Women	Those older than age 40 with no contraindications

Continued

Recommendation	Population	Specifics
Breast cancer screening	Women	Every 2 to 3 years for women older than 40
Cervical cancer screening	Women	Those who are sexually active and have a cervix
Chlamydial infection screening	Women	Those who are sexually active
Colorectal cancer screening	Men Women	Age 50 and older
Dental caries in preschool children	Preschool children	Consider fluoride in children older than 6 months who do not have fluorinated water
Depression screening	Men Women	In clinical practices with systems to ensure accurate diagnoses, effective treatment, and follow-up
Diabetes mellitus screening (type 2 diabetes)	Men Women	Adults with hyperlipidemia or hypertension
Diet counseling	Men Women	For BMI over 30, weight loss, and other deficiencies in dietary habits
Gonorrhea screening	Women	All sexually active women
High blood pressure screening	Men Women	
HIV screening	Men Women Children	
Lipid screening	Men Women	Men older than 35; women older than 45
Obesity in adults screening	Men Women	Intensive counseling and behavioral interventions to promote sustained weight loss for adults who are obese

Continued

Recommendation	Population	Specifics
Osteoporosis	Postmenopausal women	Women 65 and older and women 60 and older at increased risk for osteoporotic fractures
Syphilis infection screening	Men Women	Persons at risk and all pregnant women
Tobacco use and tobacco-caused disease counseling	Men Women	Tobacco cessation interventions for those who use tobacco Augmented pregnancy-tailored counseling to pregnant women who smoke
Visual impairment in children younger than age 5 years screening	Children	To detect amblyopia, strabismus, and defects in visual acuity

Source: Adapted from Agency for Healthcare Research and Quality (AHRQ): *The Guide to Clinical Preventive Services: Recommendations of the U.S. Preventive Service Taskforce.* Washington, DC, AHRQ, 2006.

Vision Testing

Test	Test performance	Findings
Visual acuity	Snellen eye chart: Cover one eye and have patient read lowest possible line on chart. Do other eye, then both eyes together.	Patient with 20/200 vision can read print at 20 feet that a person with normal vision can read at 200 feet.
Visual fields by confrontation	• Ask patient to look with both eyes into your eyes. • Place your hands lateral to the patient's ears. • Wiggle fingers of both hands and bring fingers toward the line of gaze.	Normally, patient sees both sets of fingers at the same time.

Continued

Test	Test performance	Findings
Position and alignment of eyes	Stand in front of patient and inspect eyes for position and alignment.	Inward or outward deviation of eyes is abnormal, as is abnormal protrusion of eyes (Graves' disease).
Peripheral vision test	Hold fingers to side of patient; bring slowly from side into field of gaze.	Loss of peripheral vision can be the result of glaucoma.
Inspection of lens of eye	Using ophthalmoscope, darken the room if possible, and shine the light beam on the pupil. You should see an orange/red reflection (red reflex).	Absence of red reflex means the lens of the eye is opaque, which could be caused by cataracts.

Adapted from Dillon, P.M.: *Nursing Health Assessment: A Critical Thinking, Case Studies Approach,* 2nd ed. Philadelphia, F.A. Davis Company, 2007.

Assessment and Treatment of Metabolic Syndrome

Clinical identification of the metabolic syndrome involves any three of the risk factors in the following table.

National Cholesterol Education Program Guidelines

Risk Factor	Defining Level
Abdominal obesity* Men Women	Waist circumference** >102 cm (>40 in) >88 cm (>35 in)
Triglycerides	<150 mg/dL
HDL cholesterol Men Women	 <40 mg/dL <50 mg/dL

Continued

National Cholesterol Education Program Guidelines—cont'd

Risk Factor	Defining Level
Blood pressure	130/85 mm Hg
Fasting glucose	110 mg/dL

*Overweight and obesity are associated with insulin resistance and the metabolic syndrome. However, the presence of abdominal obesity is more highly correlated with the metabolic risk factors than is an elevated body mass index (BMI). Therefore, the simple measure of waist circumference is recommended to identify the body weight component of the metabolic syndrome.

**Some male patients can develop multiple metabolic risk factors when the waist circumference is only marginally increased (e.g., 94–102 cm [37–39 in.]). Such patients may have a strong genetic contribution to insulin resistance. They should benefit from changes in life habits, similarly to men with categorical increases in waist circumference.

Source: U.S. Department of Health and Human Services; found at http://aspe.hhs.gov/health/prevention/

Cranial Nerve Assessment

Nerve	Type	Name	Function	Assessment Test
I	Sensory	Olfactory	Smell	Ask patient to identify familiar smells (lemon, coffee, peppermint).
II	Sensory	Optic	Visual acuity Visual field	Assess visual acuity using Snellen chart. Assess peripheral vision.
III	Motor	Oculomotor	Pupillary reaction	Assess pupils for equality and reactivity to light.
IV	Motor	Trochlear	Eye movement	Have patient follow finger with his or her eyes without moving head.
V	Sensory and motor	Trigeminal	Facial sensation Muscles of mastication	Touch the face and assess for sharp and dull sensations. Have patient hold mouth open.

Continued

Nerve	Type	Name	Function	Assessment Test
IV	Motor	Abducens	Abduction of the eye	Have patient follow your finger without moving his or her eyes.
VII	Sensory and motor	Facial	Facial expression Sense of taste	Have patient smile, wrinkle face, and puff cheeks. Ask patient to differentiate between sweet and salty taste.
VIII	Sensory	Acoustic	Hearing Balance	Snap fingers close to patient's ears. Have patient stand with feet together, arms at side, and eyes closed for 5 seconds.
IX	Sensory and motor	Glosso-pharyngeal	Swallowing and voice	Have patient swallow and then say "Ahh."
X	Sensory and motor	Vagus	Gag reflex	Use tongue depressor or swab to elicit gag reflex.
XI	Motor	Spinal accessory	Neck motion	Have patient shrug shoulders or turn head against resistance.
XII	Motor	Hypoglossal	Tongue movement and strength	Have patient stick out tongue and move it from side to side.

Patient Assessment Assumptions and Guidelines

- Provider should introduce himself or herself and welcome patient with conveyed interest and concern.
- Every provider interaction with a patient is therapeutic.
- Every patient is unique and should be evaluated as an individual.
- An established interviewing technique should be followed.
- Trust in the provider takes time to develop.
- The physical environment should be conducive to patient comfort and privacy.
- Legal and ethical parameters should be maintained, such as informed consent, privacy, and confidentiality rights.
- Effective assessment requires clear communication.
- Interactions, including verbal and physical examination, should be accomplished using language and actions matched to respect patient's dignity and characteristics, such as age, mental status, education, ethnicity, culture, and religion.
- A qualified interpreter should be available if needed; a family member or caregiver may be needed in certain situations, such as for an elderly patient with some dementia, or in certain cultures.
- Nonverbal and verbal cues from the patient are critical to consider.
- Authentic listening to a patient means attention, skill, and focus are on the patient; only necessary interruptions should be permitted.
- Patients are often stressed when visiting a provider; adequate learning may not take place initially; written information and follow-up are required.
- The history interview is done with the patient dressed or covered and comfortably seated or in bed (if in the hospital). The patient is provided with privacy to disrobe, a gown, and adequate drapes.

Documentation Guidelines

- Record all findings in acceptable, medically descriptive terms.
- Use correct legal abbreviations.
- Use the approved process for documentation for the organization.
- Avoid recording information as guesses or slang; put diagnoses in the proper section of record, not in physical examination section where descriptions of findings are recorded.

- Avoid making any disrespectful notations; all documentation is part of the legal record.
- If the patient's own words are to be used as part of record, put them in quotation marks.
- Code accurately (see Tab 5, Billing/Coding).

SOAP Method

The SOAP method provides consistency and ease of critically evaluating each problem or reason for visit. Problems should be numbered. One SOAP entry for each numbered problem is indicated.

- **S–Subjective data:** Includes CC, HPI, relevant PMH, FH, PSH, medications, relevant ROS, and other relevant historical data
- **O–Objective data:** Includes all physical assessment data and any laboratory results
- **A–Assessment:** Includes diagnosis(es)
- **P–Plan:** Includes nonpharmacotherapeutic, pharmacotherapeutic, education, and plan for follow-up/monitoring/evaluation of therapy outcomes

Health History

Clinical Pearl: The health history records subjective data. It is important whether the visit is an annual or an episodic examination. By the end of the history portion of the examination, the provider should have a good idea of the patient's health-related problems or diseases. Take your time with the health history, be thorough, seek confirmation, and let the patient know you are interested in what he or she is saying.

Identifying Data

Identifying data are also called demographic/biographic data.

- Record the following:
  - Name
  - Age
  - Place/date of birth
  - Nationality
  - Gender
  - Race/ethnicity



- Religion
- Marital status
- Address (and alternates); phone (and alternates)
- Educational level
- Occupation
- Any required legal/insurance information, such as Social Security number
- Person(s) for emergency notification, advance directives

- Recheck data collected by clerk with patient for accuracy.

Source of Referral and Reliability of Person Giving History

- Note both. Report may need to be requested from referring provider.
- Reliability of patient may be in question; if a family member or caregiver is present, note that person's presence and reliability.

Clinical Pearl: When obtaining a history from a person who does not speak English, it is important to have an interpreter who can provide information about the patient. If the interpreter is a family member, there may be change to information the patient is not willing to share with the person translating.

Chief Complaint or Reason for Visit (RFV)

- Record a short statement in patient's own words of symptoms or reasons for seeking care; note complaint in a time frame (e.g., CC: Chest pain for 2 hours with nausea and vomiting for last hour; RFV: I need a routine woman's health examination and Pap test).
- Use caregiver's words if patient is unable to participate in assessment.
- CC is not a diagnosis; it is the main symptom/sign or complaint of the patient.

History of Present Illness or Current Health Status

- Record in narrative form:
  - Usual state of health
  - Chronological development of chief complaint (CC)
    - See PQRSTOA table on pages 31 and 32 in Tab 1: Screening, for guidance in gathering data related to patient's signs and symptoms

- Other pertinent data for HPI, including:
  - Past occurrences
  - Others in family with problem
  - Relevant personal history, such as mild MI 5 years ago
  - Relevant family history, such as father died at age 56 of MI
  - Disability
- Significant negatives related to symptoms and signs, such as no history of heart disease, HTN, respiratory illness

Clinical Pearl: The HPI extracts relevant data from the ROS. Include relevant medications, habits, and allergies. If the patient is having a routine checkup, record information on the state of health since the last visit, any important findings from the last examinations and test results, relevant medications, and significant negatives for the visit.

Past Medical History (PMH) or Past Health Status (PHS)

- Medical, surgical, OB/GYN, psychiatric past history with dates/places, such as hospitalizations, serious illnesses, surgeries, accidents and injuries, and pregnancies, including delivery outcomes, and gestation lengths
- Immunizations and dates
- Screening tests, dates, places, and results
- Recent travel, including where and why

Medications and Therapies

Clinical Pearl: During the health history, it is important to ask what over-the-counter medications or supplements patients are taking. Some time may be required to obtain a complete answer because patients often do not consider things such as aspirin, vitamins, minerals, or herbal supplements to be important, or they may be unwilling to tell their health-care provider about these products.

Clinical Pearl: Polypharmacy is especially problematic for older adults and may account for cognitive problems or other presenting symptoms. Be sure to ask patients to bring all medications in their appropriate bottles to the visit. Then a complete list of medications can be established, and the provider can determine whether medications are being taken appropriately.

- Dosages, frequencies, routes of administration, and side effects of all current medications, including over-the-counter and prescription medications, contraceptives, herbs, and supplements
- Current therapies, including complementary and alternative therapies, such as acupuncture, hypnosis, and therapeutic touch

Allergies

- All allergies, known causes, and responses to allergies, such as dyspnea, swelling, hives, itching, erythema
- All sensitivities (rather than allergies) to drugs or other substances

Comprehensive advice on preventing peanut allergy has been added to the 2010 guidelines issued by the National Institute of Allergy and Infectious Diseases (NIAID).

The recommendations include the following:

- Infants with severe eczema, egg allergy, or both should have peanut-containing foods introduced as early as 4 to 6 months.
- For infants with only mild-to-moderate eczema, peanut introduction should occur at around 6 months.
- Infants without eczema or any food allergy should eat solid foods containing peanuts "in accordance with family preferences and cultural practices."

Family History

- List or diagram of all grandparents, parents, and siblings with ages and health or illnesses or, if dead, age deceased and cause of death
- Specific diseases within family

Personal/Social History*

*Also called psychosocial and personal/spiritual history

- Cultural and ethnic values and health beliefs
- Living environment and safety
- Family and household members' relationships, roles, and support persons
- Violence and abuse issues
- Occupation and risks to health
- Economic situation
- Nutritional habits/daily fluid intake
- Use of tobacco, alcohol, and other substances with potential for abuse
- Exercise and physical activity patterns
- Health habits and patterns of care
- Education, including how the patient learns best
- Recreation, relaxation, and hobbies
- Stress and coping methods
- Sleep and rest pattern
- Daily profile
- Seatbelt use
- Helmet use
- Goggles and other protective equipment use

Sexual History

- May be recorded separately or with personal/social history; questions dependent on the specific patient
- Includes sexual preference, activity, contacts, function, satisfaction, concerns, issues, and abuse
- When discussing sexual history and STI risk with your patients, ask about the 5 "P"s of sexual health.
  - Partners
  - Prevention of pregnancy
  - Prevention of STIs
  - Practices
  - Past history of STIs

* For more information visit www.cdc.gov/std/treatment/sexualhistory.pdf

LGBTQ Assessment

LGBTQ refers to Lesbian, Gay, Bisexual, Transgender, Queer. Other terms to be familiar with when addressing LGBTQ patients are:

- Biologic sex refers to a person's biological status and is typically categorized as male, female, or intersex.
- Sexual orientation refers to a person's physical, romantic, and/or emotional attraction toward other people. For example heterosexual, homosexual, or bisexual.
- Gender identity refers to the individual's innermost concept of self as male, female, a blend of both, or neither. One's gender identity can be the same or different from the sex assigned at birth
- Gender expression refers to an individual's presentation—including physical appearance, clothing choice, and accessories—and behavior that communicates aspects of gender or gender role. Gender expression may or may not conform to a person's gender identity.

* For more information please visit www.who.int/gender-equity-rights/news/sexual-gender-diversity-faq.pdf

Violence History

- May be recorded separately or with personal/social history
- Includes description of abuse or violence patterns in patient's life, physical and psychological sequelae, and measures being taken to be safe

Safety

Safety concerns should be part of a thorough history. Inquiry into safety practices allows the provider an opportunity to evaluate risk factors and educate on safety practice.
Safety concerns to inquire about include:

- Seat belts
- Child passenger safety
- Teen drivers
- Bicycle safety

- Older adult drivers
- Helmet safety
- Occupational safety

Reproductive/Gynecological History

- For women (describe here, in PMH, or in ROS):
  - Date of last menstrual period (LMP)
  - Date of previous menstrual period (PMP)
  - Age at menarche
  - Pattern of menstrual periods, including frequency, first day of one to first day of next, duration, characteristics of flow, bleeding between periods
  - Number of pregnancies
  - Number of deliveries
  - Number of abortions, including spontaneous and induced
  - Complications of pregnancies
  - Methods of contraception, including problems
  - Condom use
  - Age of menopause, symptoms, postmenopausal bleeding
  - Exposure to DES if born before 1971
  - History of exposure to STDs/HIV/AIDS and treatments
  - For men, see "Male Genitalia" under "Review of Systems."

Review of Systems

Guidelines

- Record in an orderly process what the patient tells you about the presence or absence of specific diseases or symptoms and signs common to each major body system. Make a note of all pertinent positive and negative statements regarding a symptom or problems.
- Organize from head to extremities.
- Request "yes" or "no" answers; for "yes" answers, ask direct questions for more information.
- Do not repeat questions asked in earlier sections except for clarification.
- Questions for ROS may be asked during the physical examination if necessary.



General

- Usual health state
- Usual weight and height
- Changes in weight, height, clothing fit
- Fever, sweats, chills, malaise, weakness, fatigue
- Change in exercise tolerance and ability to carry out activities of daily living (ADLs)

Integumentary

- Rashes, sores, lumps, itching, hives, dryness, flaking
- Changes in skin moisture
- Skin color, hair texture, nail texture, nail appearance
- Use of hair dye
- Excessive loss or growth of hair, care practices
- History of skin disorders

Head, Eyes, Ears, Nose, and Throat

- **Head:** Dizziness, fainting, light-headedness, headaches, pain, head injury/sequelae, stroke
- **Eyes:** Use of corrective glasses/contact lenses, current vision, vision changes, last vision examination/results, injuries, excessive tearing, redness, discharge, infections, double/blurred vision, spots, specks, flashing lights, glaucoma, cataracts
- **Ears:** Hearing acuity/impairment, hearing aid use/effectiveness, tinnitus, vertigo, discharge, pain, earaches, infections, diseases
- **Nose/Sinuses:** Frequent colds, nosebleeds, stuffiness, discharge, itching, obstruction, injury, seasonal problems/allergies, sinus infections, postnasal drip, sense of smell

Clinical Pearl: Blood when blowing the nose is not cause for alarm in most cases but rather is caused by the breaking of small capillaries in the nasal passages. Blood on the sclera of the eye is also not usually a cause for alarm because it is caused by broken small capillaries behind the eye.

- **Mouth/Throat:** Teeth/gums condition, sores/ulcers/bleeding gums, last dental examination/results, frequent sore throat, burning/soreness of tongue, dry mouth, voice changes, hoarseness

Neck

- Lumps
- "Swollen glands"
- Goiter or growth on neck
- Pain/tenderness
- Stiffness
- Thyroid disorder

Chest

- Cough
- Sputum production, including quantity, appearance, color
- Coughing up blood
- Shortness of breath, wheezing, history of asthma, tuberculosis, pleurisy, bronchitis, emphysema, or pneumonia
- Last TB test and results
- Last chest x-ray and results
- History of bacille Calmette-Guérin (BCG) vaccination
- Current status and history of smoking, tobacco use, and plan to quit

Breasts/Axillae

- Lumps, thickening, pain or tenderness, skin changes
- Nipple discharge and color
- Self-examination
- Last provider examination
- Last mammogram or ultrasound and results
- Breastfeeding history

Cardiovascular

- Chest pain
- Heart disease
- High blood pressure
- Palpitations, irregular heart rate
- Cyanosis
- Shortness of breath with exertion/lying flat/sleeping

- History of rheumatic fever or heart murmur
- Last electrocardiogram or other heart test

Peripheral Vascular

- Pain or cramps in legs, calves, thighs, hips when walking
- Varicose veins
- Edema
- Thrombophlebitis/phlebitis
- Color or temperature changes of extremities
- Hair loss on legs
- Ulcers

Gastrointestinal

- Appetite
- Swallowing difficulty
- Excessive hunger or thirst
- Excessive belching or passing gas
- Heartburn, reflux, nausea, vomiting, cough
- Distention, constipation, diarrhea, abdominal pain
- Changes in stool color, amount, consistency, frequency
- Rectal bleeding, tarry stools, hemorrhoids
- Laxative or antacid use
- Rectal pain, pain with defecation
- Jaundice, liver disease, hepatitis
- Gallbladder disease
- History of abdominal x-rays or scans and results

Urinary

- Frequency, urgency, incontinence, retention
- Difficulty beginning or maintaining urine stream
- Change in force of stream
- Polyuria, nocturia
- Burning or painful urination
- Hematuria, infections, stones
- Kidney or flank pain

- Bed-wetting, dribbling
- Change in urine color or odor

Clinical Pearl: Unexplained hematuria without pain, not caused by a kidney stone, is a cause for alarm and should be investigated because bladder cancer is the most common cause.

Male Genitalia

- Penile sores, ulcers, vesicles, discharge
- Scrotal masses, pain, edema
- Hernias
- History of or exposure to STDs, HIV, or AIDS
- Fertility problems
- Erection problems
- Prostate disorders
- Sexual satisfaction
- High-risk sexual behaviors, such as multiple partners, unprotected intercourse
- Methods of birth control, condom use

Clinical Pearl: Urinary tract infections in men are rare and often indicate a serious underlying problem. All urinary tract infections in men should be fully investigated.

Female Genitalia*

*Also see "Sexual" and "Reproductive/Gynecological," under "History."

- Lesions, itching, discharge
- Date of last Papanicolaou (Pap) smear or HPV test and results
- Dyspareunia
- Frequency of intercourse
- Fertility issues
- Hernias
- High-risk sexual behaviors, such as multiple partners, unprotected intercourse
- Menstrual pain or dysmenorrhea and treatment

Clinical Pearl: Female premenopausal patients with abdominal or pelvic pain should always be assessed for pregnancy. Tubal pregnancy is a commonly missed life-threatening problem.

Musculoskeletal

- Weakness, pain, stiffness, redness, swelling, cramps
- Neck or back problems
- Limitation of movement
- Arthritis
- Gout
- Deformities

Neurological/Psychiatric

- Fainting, dizziness, vertigo, blackouts
- Seizures, paralysis, headaches, stroke
- Numbness, tingling, and burning pain
- Tremors or other involuntary movements
- Loss of memory
- Changes in attention, mood, speech, gait, behavior, judgment, insight, or orientation
- Nervousness, depression, anxiety, suicide attempt, hallucinations

Hematological/Immune

- Blood type
- History of anemia
- Easy bruising/bleeding
- History of transfusions/reactions
- Allergies
- Unexplained infections
- Lymph node enlargement

Endocrine

- Unexplained weight/height changes
- Thyroid disorder

- Intolerance to heat or cold
- Excessive sweating, thirst, hunger, urination
- Change in glove size/shoe size/facial structure
- Excessive changes in skin/hair

Comprehensive Physical Examination

Unlike the objective information you receive when taking a patient's history, the physical examination provides concrete, subjective information.

Overview and Systematic Approach

- Explain examination process and procedures to patient; answer questions.
- Ensure that patient has voided before the examination.
- Provide privacy, gown/draping, and a comfortable environment.
- Apply measures to prevent infection, including clean hands and universal precautions.
- Conduct examination by using a head-to-toe approach, unless another approach is indicated based on age or physical and mental status of patient.
- Use system assessment approach if a focus on a specific system is indicated; may need to begin with an obvious problem.
- Provide abbreviated, focused examination for episodic or some routine examinations.
- Save genital and rectal examinations until last in most circumstances.
- Observe patient for signs of discomfort or pain; provide comfort as indicated.
- Apply techniques of examination in order of **inspection, palpation, percussion,** and **auscultation** accurately for each system or region; the exception is abdominal examination, in which the order is inspection, auscultation, percussion, and palpation.
- Ensure that the equipment and materials needed are in place, operational, and used appropriately.
- Offer patient relaxation suggestions, such as breathing and imagery, during the examination.
- Provide anticipatory advice and information during examination.



- Avoid facial expressions and comments that may convey negative thoughts.
- Look, listen, and touch with care; the senses and ability of the provider to think critically are the most valuable assets to the assessment process.
- Compare right and left body systems/sides for similarity.
- Be gentle and respectful in physical contacts.

Equipment

- Thermometer (oral, tympanic, rectal)
- Sphygmomanometer with varying cuff sizes
- Gloves (nonlatex)
- Water-soluble lubricating gel
- Tongue blades, applicator sticks, cotton-tipped applicators (large/small)
- Gauze pads
- Stethoscope (cardiac level)
- Oto-ophthalmoscope with nasal/ear specula
- Penlight
- Reflex hammer
- Tuning forks (128 and 512 Hz)
- Safety pins or box of straight pins (use each pin once and discard)
- Tape measure
- Pocket visual acuity card
- Occult blood card
- Vaginal specula and associated materials for tests
- Accurate scale to measure height and weight
- Other equipment indicated, depending on the history and physical examination

General Survey

- **State of health:** Look at patient for general appearance of health or ill health; listen and look for subtle clues before touching patient.

- **Height and weight, habitus:** Obtain height, weight, BMI, nutritional status; note body build, posture, and symmetry of body parts.
- **Sexual development:** Note whether level of sexual development is appropriate for age/race/gender.
- **Motor activity and gait:** Observe for abnormalities with walking, sitting, and moving during the examination.
- **Personal characteristics:** Note appropriateness of dress, grooming, and hygiene and any abnormal odors.
- **Emotional state:** Observe reactions, facial expressions, manner, and affect.
- **Awareness/consciousness:** Note level of alertness, words, and speech.

Vital Signs

See the table following this section for examples of normal vital signs by age group and the appropriate physical assessment reference for in-depth information.

Temperature

- Use correct route, device, and application for safety and accuracy of findings; consider patient's age, mental status, and condition.
- Temperatures fall during sleep and are lowest between 2:00 a.m. and 4:00 a.m.; they rise during the day to peak between 6:00 p.m. and 10:00 p.m.
- Routes are tympanic, oral, rectal, and axillary.
- Body temperature in infants and young children is higher until age 3 years; children's temperature fluctuates in a day up to 3°F, even to 100.8/9°F.
- Older men have lower oral temperatures compared with older women.

Heart Rate/Pulse

- Obtain an initial radial or apical pulse for 1 minute; recheck character of heart and pulse, including rate, rhythm, and volume/intensity,

when conducting a cardiovascular or peripheral vascular examination.
- The heart rate is higher normally in infants and children.

Respiratory Rate

- Observe or obtain an initial respiratory rate for 1 minute; recheck during the respiratory examination.
- The respiratory rate in infants and children has greater range.

Blood Pressure

- Obtain initial BP using accepted method, such as patient removing all clothing, correct sphygmomanometer cuff placed smoothly around upper arm, arm at level of the heart on an arm rest, stethoscope applied over brachial artery at elbow below cuff, pressure inflated above systolic pressure in brachial artery and released slowly at about 1 mm Hg/sec.
- Listen for all Korotkoff sounds and record first (systolic) and last (diastolic), even if muffled. Consider that patients with hypertension may have an auscultatory gap.
- Record the exact numbers heard and note patient position; recheck BP in supine and sitting positions in both arms (and legs if indicated) if elevated.
- Consider patient-altering conditions when taking and documenting vital signs:
  - Patient arrives late for appointment, making him or her hurried or anxious.
  - Patient smokes a cigarette or drinks hot or cold drink within the previous 30 minutes.
  - Patient takes medication 20 minutes before arriving.
  - Examination room is too hot or too cold.

Examples of Physiological Vital Signs Ranges by Age

Vital Sign	Infant (3 mo–1 year)	Child (3–5 years)	Child (9–13 years)	Adolescent (14–18 years)	Adult (19–55 years)	Elder (55 years and older)
Temperature (°F)						
Oral	99.4–99.7	99.0–98.6	98.1–97.8	98.1–97.8	98.6–100.6	95–97
Rectal or tympanic	99.0–101	99.0–101	99.0–101	99.0–101	99.0–100	99.0–101
Axillary	96.6–98.6	96.6–98.6	96.6–98.6	96.6–98.6	96.6–98.6	96.6–98.6
Heart/pulse rate (resting) (beats/min)	(Older baby–toddler) 75–160	60–138	65–125	55–115	60–100	60–100
Respiratory rate (resting) (breaths/min)	(Older baby–toddler) 20–40	(Age 3) 20–30	(Age 10) 16–20	(Age 14) 14–20	12–20	12–20
Blood pressure (mm Hg)						
Systolic	75–115	103–112	111–119	120–139	120–139	120–139
Diastolic	52–56	65–70	73–78	76–82	80–90	80–90

Integumentary System

- Inspect and palpate skin on face and other body systems during examination for color or discolorations, lesions, temperature, moisture, and turgor.
- Note excessive growth or loss of hair, tattoos, piercings, and scars.
- Inspect for primary and secondary lesions.
- Evaluate lesions for:
  - A–Asymmetry of shape
  - B–Border irregularity
  - C–Color variation
  - D–Diameter >6 mm
- Note type, location, distribution, and arrangement of lesions.
- Inspect hair for color, use of dyes, texture, consistency, areas of loss or excess growth, and parasites.
- Inspect fingernails and toenails for signs of disease, such as Beau's lines, clubbing, koilonychias; inspect artificial nails for signs of infection.

Head, Eyes, Ears, Nose and Sinuses, and Throat

- **Head:** Inspect and palpate scalp, skull, temporomandibular joints, and face and facial structure for lesions, pain or tenderness, symmetry; note position and size of head.
- **Eyes**
  - Inspect symmetry and alignment of eyes.
  - Inspect bilateral eyelids, sclera, conjunctiva, cornea, and iris.
  - Screen for visual acuity, visual fields, and extraocular movements.
  - Inspect pupillary size and compare.
  - Test papillary reaction to light, both direct and indirect, and convergence/accommodation.
  - Inspect anterior chamber, lens, and retinal or ocular fundi with an ophthalmoscope.
  - See "Funduscopic Items to Check" on page 57.
- **Ears**
  - Inspect and palpate outer ear.
  - Check auditory acuity/Weber's/Rinne.
  - With otoscope, assess ear canal, TM, and visible structures behind TM.

- **Nose**
  - Assess sense of smell for each nostril separately.
  - Inspect external nose structure.
  - With a nasal speculum and light, inspect nasal mucosa, septum, and turbinates.
  - **Sinuses:** Palpate frontal and maxillary sinuses for tenderness.
- **Mouth and Throat**
  - Inspect mouth and throat for lesions and discolorations.
  - With gloves, palpate accessible mucosa; inspect for dental caries, missing teeth, and appliances.
  - Assess swallowing.

Funduscopic Items to Check: Examples of Abnormalities

- **Red reflex:** Absence indicating cataract or other abnormality
- **Optic disc/cup:** Papilledema, abnormal color or size
- **Veins:** No pulsations
- **Arteries:** Narrowing, copper wire or silver wire appearance
- **Arteriovenous crossing:** Nicking, tapering, banking
- **Retina:** Hemorrhage, aneurysm, new vascularization, abnormal color, drusen bodies, exudates, cotton-wool patches
- **Neck**
  - Inspect and palpate trachea for alignment.
  - Inspect jugular veins for distention or masses and the neck for full ROM.
  - Inspect and palpate sternocleidomastoid and trapezius muscles for tenderness or abnormality.
  - Inspect and palpate lymph nodes of the face and neck for enlargement, pain or tenderness, irregularity of shape, or hardness. Include occipital, preauricular, postauricular, tonsillar, submaxillary, submental, posterior cervical, anterior cervical, deep cervical, supraclavicular, and infraclavicular nodes.
  - Inspect and palpate thyroid gland at rest and with swallowing for nodules or enlargement.
  - Palpate and auscultate carotid arteries for pulse characteristics and bruits.

Posterior Thorax and Lungs

- Inspect anterior-to-posterior diameter of chest and configuration of the chest for abnormality. Compare with transverse diameter (1:2 ratio).

ASSESS

- Assess respiratory rate, pattern, effort, posture, and impairment.
- Inspect and palpate back for spinal alignment, symmetry of muscles and bony structures, tenderness, and abnormalities.
- Palpate and percuss posterior chest; note increased fremitus over any area. Note level of diaphragm with and without excursion. Auscultate all lobes for normal and adventitious (abnormal) breath sounds; listen to transmitted voice sounds if abnormal sounds are heard.

Percussion Notes and Examples of Locations

- **Resonance:** Fairly loud, long, medium-pitched sound heard over normal lung
- **Hyperresonance:** Very loud, longer than resonance, lower-pitched sound not heard normally; heard over lung with abnormality such as emphysema or pneumothorax
- **Tympany:** Loud, variable duration, often high-pitched sound heard over gastric bubble (normal) or pneumothorax (abnormal)
- **Dullness:** Moderate intensity, duration, and pitched sound heard over liver (normal) and lung (abnormal)
- **Flatness:** Soft-intensity, short-lived, high-pitched sound heard over bone (normal)

Abnormal Breathing Characteristics

- **Bradypnea:** Slow, regular breathing seen with depressed respirations from drug, diabetic coma, or intracranial pressure increase
- **Tachypnea:** Fast, shallow breathing resulting from causes such as chest pain from pleurisy, lung disease causing restriction to breathing, and pressure under diaphragm that elevates it and decreases lung expansion
- **Cheyne-Stokes:** Apnea alternating with deep breathing seen with heart failure, brain damage, and many other causes but also seen normally in children and elderly patients
- **Hyperpnea (hyperventilation):** Fast, deep breathing seen with anxiety or exertion; may be fast or slow in metabolic acidosis; called Kussmaul breathing
- **Biot's (ataxic):** Irregular breathing that is unpredictable in pattern; may be deep, shallow, stopped, or rapid; seen with brain damage
- **Sighing:** May be normal if breathing is interrupted by sighs but also may relate to dyspnea, dizziness, or hyperventilation
- **Obstructive:** Expiratory phase prolonged; difficult because of narrowing of airways; seen with COPD, asthma, and chronic bronchitis

Normal, Adventitious (Added), and Altered Breath/Voice Sounds

- **Vesicular:** Soft-intensity expiratory sound that has longer inspiration and is moderately low pitched; heard over most normal lungs
- **Bronchovesicular:** Intermediate-intensity expiratory sound of moderate pitch level equal in length with inspiration; heard between scapulae and over interspaces 1 and 2 on anterior chest; not heard normally away from locations mentioned
- **Tracheal:** Loud expiratory-intensity sound of fairly high pitch that lasts longer than inspiration; may be heard over the manubrium; may not be heard
- **Bronchial:** Quite loud expiratory sounds of fairly high pitch and equal to inspirations in length; heard over trachea; not heard normally away from location mentioned
- **Crackles (rales)**
  - Heard discontinuously and intermittently; musical and brief
  - May be fine (soft, very brief, high pitched) versus coarse (louder, lower pitched, brief)
  - Described as fine or coarse "dots," like hair rolled between thumb and finger
  - Heard in lung abnormalities such as pneumonia
- **Wheezes/rhonchi**
  - Heard continuously for some part of respiratory cycle
  - Described as musical, prolonged
  - More high-pitched shrill, squeaky hisses not relieved by coughing (wheezes)
  - Lower-pitched, harsh, loud snores (rhonchi)
  - Heard best over bronchi/trachea during expiration
  - Relieved by coughing at times
  - Heard in diseases such as asthma, bronchitis, and congestive heart failure
- **Stridor**
  - Heard without a stethoscope as a harsh, high-pitched wheeze
  - Heard with partial tracheal or laryngeal obstruction/narrowing
  - Indicates need for immediate intervention
- **Absent or diminished:** Lung sounds normal only on one side; heard with pneumothorax, pneumonectomy, and other causes of no lung function on one side

- **Pleural rub:** Heard as grating, creaking, continuous or discontinuous sound from friction of rough, inflamed pleural surfaces rubbing against each with breathing
- **Egophony:** "ee" when spoken changing to "ay" if no air in lobe
- **Bronchophony:** Words spoken being clearer and louder if no air in lobe
- **Whispered pectoriloquy:** Words whispered being clearer and louder if no air in lobe

Anterior Thorax and Lungs

- Inspect and palpate anterior chest for breathing pattern, fremitus, muscle and bone structure symmetry, or tenderness.
- Percuss and auscultate anterior lung fields for abnormal breath sound. Reminder: The right middle lobe can be assessed only from the right anterior or lateral chest. Listen above the clavicles to the very upper aspects of the lungs. Breasts or obesity may muffle sounds.

Breasts, Axillae, and Epitrochlear Nodes

- Inspect female breasts, with patient's arms at sides and above head and with hands pressed on hips, for size, asymmetry, masses, skin discolorations, dimpling, retraction, venous pattern abnormities, or lesions. Inspect male breasts seated or supine for enlargement also.
- Inspect the axillae for skin discoloration, masses, swelling, or lesions.
- Palpate the axillae for enlarged/hard/irregular nodes or tenderness (specifically the central, pectoral [anterior], lateral, and subscapular groups of nodes). Check supraclavicular and infraclavicular nodes if not checked with examination of the neck.
- Palpate each breast, areola, and nipple, with patient supine with arms over head and a small pillow under back on side being examined, for tenderness, masses, nodules, or thickened areas. Gently compress nipples and note color, consistency, and amount of any discharge. With large, pendulous breasts, palpate with patient sitting, then supine.
- Note specific location, size, shape, consistency, tenderness, and mobility of any nodule or mass.

Heart

- With patient supine at 30 degrees, inspect and palpate the precordium at 2nd right and left interspaces and apical impulse (PMI) at apex (generally midclavicular line, 5th left intercostal space), and note characteristics of impulse, including location, duration, diameter, and amplitude. If PMI not felt, assess with patient on left side partly in the left lateral decubitus position.
- Auscultate systole or S_1 and diastole or S_2 at mitral, tricuspid, aortic, and pulmonic listening areas with bell, then diaphragm.
- Look and listen for S_3 and S_4.
- Listen at apex for extra sounds, with patient in a sitting position, leaning forward.
- Note the characteristics of all sounds heard in systole and diastole for abnormalities; grade murmurs based on timing, shape, maximal intensity location, radiation, and intensity as fraction.

Murmur Grading

- **Grade 1 (1/6):** Very difficult to hear; not usually heard in every listening position
- **Grade 2 (2/6):** Heard when stethoscope placed on chest, but not loud
- **Grade 3 (3/6):** Moderate loudness
- **Grade 4 (4/6):** Loud; thrill present
- **Grade 5 (5/6):** Quite loud; heard with stethoscope off chest partly; thrill present
- **Grade 6 (6/6):** Quite loud; heard without stethoscope on chest; thrill present

Assessing Jugular Venous Pressure

- Assess whether it is indicated by history and prior findings of physical examination, such as abnormal carotid pulsations or bruits, and abnormal heart examination findings.
- The internal jugular veins lie between carotid arteries and sternocleidomastoid muscles bilaterally. Pulsations undulate, reflecting right atrial pressure changes, dynamics of blood volume pressures, and heart function.

Clinical Pearl: Distinguish from carotid artery pulsations, which are palpable, have more intense pulsations that are not changed by position changes or inspiration, and reflect systolic and diastolic pressure changes, particularly ventricular effects.

- Raise examination table or bed to 30 degrees. A small pillow under the head is acceptable. To focus on internal jugular venous pulsations, you may need to lower or raise head; the change in height will not affect the findings.
- Use tangential lighting to see pulsations, and ask patient to turn head the opposite way.
- Inspect both sides of the neck to find external and internal jugular pulsations. Find peak of pulsations of internal jugular artery; place a long, straight card or object in horizontal position from pulsation's highest point so that it crosses a vertical ruler placed from the sternal angle to form a right angle.
- Measure the distance in centimeters from the sternal angle (reflect pressure in right atrium) to where the horizontal card or object crosses the ruler.
- Repeat on opposite side, and record left JVP and right JVP measurements.
- Abnormal JVP is more than 4 cm above the sternal angle.

Peripheral Vascular Assessment*

- Inspect all extremities completely: fingertips to shoulders for arm; ends of toes to groin and buttocks. Compare one side with the other.
- Inspect and palpate for size, edema (note severity of slight to excessive pitting on a 4-point scale), symmetry, venous pattern/enlargement/varicosities, skin texture, temperature (with backs of hands), color/discoloration, pigment changes, lesions, and hair patterns, particularly on lower extremities.
- Palpate and compare pulses: radial, brachial, femoral, popliteal, dorsalis pedis, and posterior tibial.
- Grade pulse amplitudes as 0 (absent, nonpalpable), 1+ (weak, diminished), 2+ (brisk), 3+ (increased), or 4+ (bounding). Record a grade for each pulse.
- Inspect/palpate right and left epitrochlear nodes and superficial inguinal nodes (horizontal and vertical) for size, tenderness, consistency, discreteness, and mobility.

- Auscultate for bruits with the bell over the aorta and iliac and femoral arteries.

*This auscultation may be done during the abdominal, musculoskeletal, or neurological examination.

Abdomen

- Inspect abdominal skin for color, lesions, scars, striae, venous pattern; inspect umbilicus for signs of infection or hernia.
- Know, in your mind's eye, the normal location of all abdominal organs in left and right upper and lower quadrants and central abdomen from epigastrium to symphysis pubis. Inspect abdominal contour for symmetry, visible organs or masses, peristaltic waves, and pulsations. Note whether the contour is flat, round, protuberant, excessively concave or hollow (scaphoid), or has local or flank bulges. Ask patient to lift head up slightly; note diastasis recti.
- Auscultate bowel sounds with diaphragm (normally 5–34 clicks/gurgles/minute). Listening in one quadrant only is acceptable because of sound transmission efficiency in abdomen. If abnormality suspected, listen in all quadrants carefully.
- Auscultate aorta, renal arteries, iliac arteries, and femoral arteries for bruits. Auscultate the upper middle abdomen (epigastrium) for venous hum.
- Percuss upper and lower borders of liver at RMCL; tympany becomes dullness at lower border; resonance becomes dullness at upper border. Measure distance between borders in centimeters (normal, 6–12 cm at MCL and 4–8 cm immediately left of sternal border).
- Percuss for splenic enlargement by finding and percussing over left lowest interspace in left anterior axillary line; when patient is asked to take a deep breath, percussion note changes from tympany before the breath to dullness during the breath, thus indicating the spleen may be enlarged.
- Percuss entire abdomen for tympany (gas) and dullness (masses/fluid/feces); note any tenderness with percussion. Note dullness level of distended bladder above symphysis pubis.
- Palpate **first** with light palpation over abdomen to find tenderness, any masses/organs near the surface, or resistance of the musculature.

- Palpate **second** with deep palpation systematically in all quadrants for masses and characteristics, tenderness (note rebound tenderness if present), and pulsations.
- Palpate liver border for consistency, irregularity, contour, and tenderness; normally liver edge is smooth, regular, and not hard or firm. With an abdominal deep breath, the liver falls about 3 cm below costal margin for better evaluation.
- Strike a flat hand resting on lower right rib cage with ulnar side of other hand to assess for tenderness, which may indicate hepatitis or congestion; compare with left side (should be absent).
- Palpate the kidneys bilaterally for size (enlargement), contour (masses, irregularity), and tenderness. It is rare to palpate a normal left kidney; a normal right kidney may be palpable if a person is thin and relaxed.
- Strike ball of one hand over each CVA with ulnar fist of other hand to assess for kidney tenderness. Normally, no pain is elicited.
- Palpate aortic pulsations in the upper abdomen; assess width of aorta if possible. A normal aorta is not wider than 3 cm.

Musculoskeletal System*

- Inspect and palpate joints of upper extremities for swelling, tenderness, warmth, redness, deformities, nodules, and thickenings:
  - Shoulder/clavicle/scapula (glenohumeral, sternoclavicular, acromioclavicular) joints
  - Elbow formed from humeroulnar, radioulnar, and radiohumeral joints
  - Wrist joint formed from radiocarpal, distal radioulnar, and intercarpal joints
  - Hand/finger joints consisting of metacarpophalangeal, proximal interphalangeal, and distal interphalangeal joints
- Inspect and palpate muscles, bursae, ligaments, tendons, capsules, and surrounding tissues of upper extremities for crepitus, atrophy, nodules, swelling, tenderness, or bruising. Compare sides.
- Test ROM for upper body and upper extremities:
  - **Neck:** Flexion, extension, rotation, lateral bending
  - **Shoulders:** Abduction, adduction, flexion, extension, internal and external rotation
  - **Elbow:** Flexion, extension, pronation, supination

- **Wrists:** Flexion, extension, ulnar deviation, radial deviation, grip
- **Fingers/thumbs:** Flexion, extension, abduction, adduction; opposition for the thumbs

- Inspect posture, movement, and gait with walking from and to provider. Note width of base, pelvic shift, knee flexion, smoothness, and continuousness of rhythm. Note stance and cycle of weight-bearing foot and swing of foot that is not weight-bearing.
- Inspect spine and hips from side and behind with patient standing. Inspect curves of cervical, thoracic, and lumbar spine; alignment of spinal processes; and alignment of shoulders and scapulae. Inspect paravertebral muscles, hip surfaces, and condition of skin over back and hips for abnormalities.
- Palpate spinous processes, joints, and paravertebral muscles from neck, down spine, and through sacroiliac joints for tenderness, spasm, or obvious lack of or too prominent spinal process.
- Test ROM of spine, including flexion, extension, rotation, and lateral bending; and hips, including flexion, extension, abduction, adduction, and internal and external rotation. Spinal ROM tested while standing; hips ROM tested while standing or supine.
- Inspect and palpate joints of lower extremities for alignment, swelling, tenderness, warmth, redness, deformities, nodules, thickenings, or atrophy:
  - **Hip joint:** Where the femoral head inserts into the acetabulum
  - **Knee:** Tibiofemoral and patellofemoral joints, trochlear groove
  - **Ankle:** Tibiotalar, subtalar joints
  - **Foot:** Metatarsophalangeal forefoot joints, proximal and distal interphalangeal toe joints
- Inspect and palpate muscles, bursae, ligaments, tendons, capsules, menisci, surrounding tissues of lower extremities for crepitus, atrophy, nodules, swelling, tenderness, thickening, bogginess, or bruising. Compare sides.
- Test ROM of knee for flexion and extension, ankle for plantar flexion and dorsiflexion, and foot for inversion and eversion.

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*Temporomandibular joint and masseter muscle assessment is done with HEENT; ROM and evaluation of the spine and gait are often completed at the beginning of the examination or at the very end. See the next section, "Nervous System," for motor and strength assessment.

Nervous System

Mental Status/Behavior

Some Assumptions

- Some assessment of the patient's mental status occurred from first meeting the patient, conducting the interview to gather history data, and performing the physical examination to this point.
- The general survey provided specific data that applied to the nervous system evaluation of the mental status and gave indication for further assessment.
- An in-depth evaluation of the mental status does require specific questions and activities that seek specific indications of normalcy or deviations.
- If the provider has concerns that a more in-depth assessment is needed for mental status, the next sections would be indicated. More detailed information about these sections may be accessed in a reputable health assessment text.

Appearance/Behavior

- **Consciousness:** The patient is alert, awake, aware of and understands questions, responds appropriately within an acceptable period of time, and stays on track.
- **Dress, grooming, body and clothing hygiene:** Dress and appearance are appropriate for the person's situation, age, and sociocultural background; clothing is clean, in good condition, right-side out, and in place and fastened; skin and teeth are clean, and hair, nails, and body hair are groomed and hygienic.
- **Posture, motor activity:** Body movements and posture are evidence of patient's state of relaxation or stress or other, such as pain, and are not influenced by other activities in the area.
- **Facial expression:** Patient's expressions change in response to questions, statements, and activities of provider during examination or remain unchanged throughout process of assessment.
- **Manner, affect, relationship to others and things:** Patient's affect is appropriate to the situation, circumstances, and topics asked or discussed; the patient is open and may be approached by others; reactions are appropriate. Patient converses only with the provider or other person invited to be present and does not talk to someone absent or see or hear something the provider does not see or hear.

Clinical Pearl: When an older adult presents with sudden-onset confusion, the provider should consider delirium rather than dementia. Common causes of delirium in older adults include infection, electrolyte imbalance, polypharmacy, fecal impaction, and cardiac arrhythmias.

Speech and Language

- **Quantity, rate, volume:** Patient responses and speech are spontaneous and acceptable in quantity and loudness, without excessive words.
- **Word articulation, fluency:** Spoken words are clear, distinct, and with inflections; without nasal characteristic, hesitations, substitutions for words unable to recall, or paraphasia of words.

Mood, Thoughts, and Perceptions

- **Self-perceptions of mood:** Patient responds to questions about feelings related to specific life events, current feelings and spirits, feelings of depression or discouragement, how he or she sees himself or herself in the future, and thoughts of death or suicide (if so, how it would be done and what he or she believes death is like). Assess whether the patient has a plan and the means to carry out the plan to commit suicide.
- **Thought processes, content, perceptions, insights, judgment:** Patient's thought processes are logical, organized, relevant, understandable, coherent, and goal oriented. Thought content does not exhibit compulsiveness, obsessions, phobias, anxieties, feelings of unreality or depersonalizations, or delusions. Perceptions do not seem to be misinterpretations of reality or hallucinations. Insight is appropriate to questions/statements. Judgment and decisions/planning are realistic, not suggestive of psychosis, impairment, anxiety, low level of intelligence, or disorientation.

Cognitive Function

Rudimentary Cognitive Functions

- **Orientation:** Patient answers questions correctly related to information that can be confirmed, such as time of day, week, month, season, date, year; place of health visit, town or city, and state; own name, names of family members or others that can be verified.

- **Attention:** Patient's concentration is evidenced by correct repeating of numbers in the digit-span exercise, subtracting 7s from 100 in about 1.5 minutes, or spelling words backward.
- **Remote and recent memory:** Patient is able to give generally accurate information that can be verified, such as jobs held, anniversary, historical events and people; gives accurate information that is recent, such as time for appointment, medications, weather of the day.
- **Learning and immediate retention:** Patient is able to repeat back at the end of the examination a series of 3 to 4 words given at beginning of examination. Words are correct; patient is aware of correctness.

Higher Cognitive Functions

- **Information and vocabulary:** Patient has a higher cognitive function; is able to discuss topics intelligently or answer more complex, direct questions accurately.
- **Calculating ability:** Patient is able to complete addition and multiplication correctly at simple and slightly more complex level or give correct answers to situational math problems.
- **Abstract thinking:** Patient is able to draw the face of a clock, complete with numbers, accurate size of hands, or give reasonable, nonconcrete interpretations of common proverbs, such as "a stitch in time saves nine," "the squeaky wheel gets the grease"; patient is able to say how things are alike accurately and the relevance, such as a church and a theater or a piano and a violin. The degree of abstractness or concreteness is accurate.

Clinical Pearl: Screening for cognitive impairment in older adults is important. Cognitive impairment can significantly affect the information provided by the patient, and another health-care informant may be required. In addition, cognitive impairment may affect the patient's safety at home and the ability to complete activities of daily living and may be the cause of somatic complaints.

Cranial Nerves, Motor and Sensory Systems, and Reflexes

Selected Assumptions

- Assessment of some components of the nervous system takes place during the earlier physical examination, such as cranial nerve during HEENT and neck examinations.

- Assessment of motor and sensory systems and reflexes may be integrated into assessment of specific regions of the body, such as combined with peripheral vascular and musculoskeletal of the upper extremities, and so on.
- Always test and compare opposite sides of the body, such as each nostril separately for smell acuity, each eye separately and both together, each pupil separately for pupillary reactions, and feet separately for sensory function.
- Compare proximal with distal areas of the body; use nonrepetitive patterns to assess so the patient is not able to anticipate the test area.

Cranial Nerves and Motor System

- Assess cranial nerves (CN I–XII).
- Inspect and palpate motor system by observing body position at rest and during activity, inspecting for involuntary movements; inspecting and palpating muscles for size and contour, atrophy, fasciculations, maintenance of tone when muscle is relaxed, decreased resistance with passive movement by provider, spasticity and rigidity, and floppiness.
- Test coordination with:
  - Rapid alternating movements (arms, legs) for rhythm, speed, and smoothness
  - Point-to-point function (arms, legs) for smoothness, accuracy, and lack of tremor
  - Gait (walk naturally, heel-to-toe, walk on toes, walk on heels) for balance, posture, appropriate swing of arms and leg movements, and smooth turns
  - Hopping in place and shallow knee bends for position sense and balance, by testing with each leg separately (may substitute standing from a sitting position without using arm support and stepping up on a sturdy step if patient is ill or older)
  - Testing for muscle strength (see table immediately following this list)
- Test stance for balance, position sense, and intact corticospinal tract with the:
  - Romberg test: Ability to maintain upright position with no support for 20 to 30 seconds after closing eyes while standing
- Test for pronator drift: Ability to keep both arms straight forward with palms up and eyes closed for 20 to 30 seconds; ability to return to prior position when provider taps arm and arm drifts only slightly
- Test and grade muscle strength for the following muscles and spinal nerve roots; see tests and method for testing in the table provided here, followed by grading scale for strength.



Muscle Strength Testing

Test	Spinal Root	Method for Testing
Biceps flexion	C5, 6	Ask patient to bend arm at elbow and pull lower arm up; provider offers resistance, holding lower arm near wrist.
Triceps extension	C6, 7, 8	Ask patient to bend arm at elbow and push lower arm down; provider offers resistance by holding arm near wrist.
Wrist extension	C6, 7, 8	Ask patient to make fist and not let provider push it down.
Grip	C7, 8, T1	Ask patient to squeeze provider's middle and index fingers so that provider cannot pull them out. Test both sides at once.
Finger abduction	C8, TI, ulnar nerve	Ask patient to spread fingers with palm down and not let provider push them together.
Thumb opposition	C8, T1, median nerve	Ask patient to turn hand with thumb up and palm inward and touch thumb to little finger as provider offers resistance under thumb. Provider holds wrist steady.
Spinal flexion, extension, bending		Ask patient to stand with back straight, bend to each side at waist, and bend over and try to touch his or her toes.
Hip flexion	L2, 3, 4—iliopsoas	With patient supine, ask patient to raise straight leg with provider's hand offering resistance on the thigh.
Hip adduction	L2, 3, 4—adductors	Ask patient to bring legs together against provider's hands placed firmly on surface between patient's knees.

Continued

Muscle Strength Testing—cont'd

Test	Spinal Root	Method for Testing
Hip abduction	L4, 5, S1—gluteus maximus	Ask patient to bring legs apart against provider's hands placed firmly on surface on the outside of patient's knees.
Hip extension	S1—gluteus maximus	Place hand under patient's posterior thigh, lift to offer resistance, and ask patient to push down against hand.
Knee extension	L2, 3, 4—quadriceps	Place hand under patient's knee, lift knee to flex leg; ask patient to straighten leg as provider uses other hand to press down on lower leg.
Knee flexion	L4, 5, S1, S2—hamstrings	Ask patient to flex leg with heel on table; place hand on patient's anterior lower leg right below knee for stability; ask patient to keep foot on table as provider tries to lift leg with hand around lower leg/ankle.
Ankle dorsiflexion	L4, 5	Ask patient to pull up with foot as provider holds top of foot to offer resistance.
Ankle plantar flexion	S1	Ask patient to push down with foot against provider's open hand pressing upward on bottom of foot.

Sensory System and Reflexes

- To test sensory system:
  - Sample dermatomes and peripheral nerve areas, comparing symmetrical sides for sensory intactness; map areas where deficits are found.

ASSESS

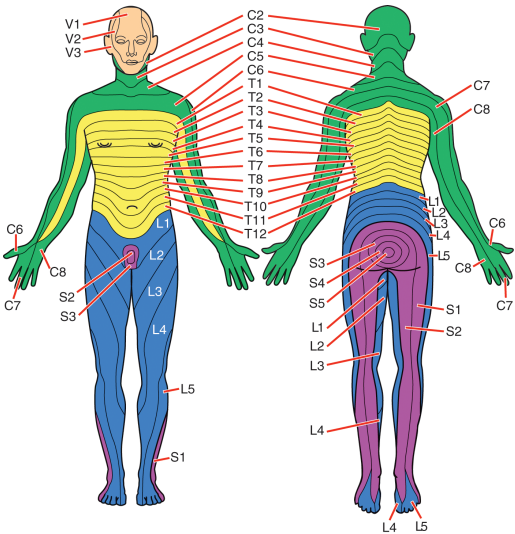
- Avoid holding patient's hand, foot, or other body part with pressure or in way that alerts the patient or interferes with test accuracy.
- Patient's eyes must be closed.
- Alter test site opposites irregularly during test so patient cannot anticipate sensation.

Retest any test area lacking sensation.

Test for pain with a sharp, clean safety pin, broken cotton-tipped applicator, or other clean tool that has a blunt end and a sharp end.

- Test for light touch with a cotton wisp swiped lightly to a sampling of areas.
- Test for vibratory sense using a vibrating tuning fork (128 Hz) placed on distal joint of one finger on each hand and joint of big toe on each foot.
- Test for position sense by holding big toe lightly on each side and moving up and down in small arc.
- Test for sensory discrimination with:
  - Stereognosis: Object identification in hand
  - Graphesthesia: Number identification when drawn on palm
  - Two-point discrimination: Identifying two or one point of ends of two blunt pins or two opened paper clips applied gently to pad of one finger
  - Point localization: Asking patient to point to place lightly touched
  - Extinction: Asking patient where touch was felt after touching corresponding areas on both sides of body
- Test for deep tendon reflexes with reflex hammer applied to areas identified for reflex responses in the table that appears after the figure. Help patient relax using reinforcement technique (isometric contraction of other muscles by clenching teeth or squeezing thigh with opposite hand) or asking patient to place fingers in a locked position together and pull away with arms horizontally.

Dermatomes



Sensory System and Reflex Testing

Reflex	Nerve Root	Method to Test and Response
Biceps	C5, 6	• Patient's arm partially flexed at elbow with palm down • Provider firmly presses finger/thumb on biceps tendon and strikes finger with hammer to elicit tendon reflex • Response: elbow flexion, biceps muscle contraction

Continued

Sensory System and Reflex Testing—cont'd

Reflex	Nerve Root	Method to Test and Response
Triceps	C6, 7	• Patient's arm partially flexed at elbow with palm facing toward body • Provider pulls arm across chest slightly and strikes with hammer above elbow on back of upper arm • Response: triceps muscle contraction, elbow extension
Brachioradialis	C5, 6	• Patient's hand resting on lap or abdomen, forearm pronated partially • With flat edge of hammer, provider strikes radius above wrist about 2 inches • Response: forearm flexion, supination
Abdominal	T8, 9, 10 (above) T10, 11, 12 (below)	• Provider strokes abdomen lightly and quickly with wooden end of cotton-tipped applicator on each side above and below umbilicus • Response: abdominal muscle contraction, deviation of umbilicus toward stimulation
Knee	L2, 3, 4	• Patient's knee flexed • Provider taps patellar tendon briskly immediately below patella • Response: quadriceps contraction, knee extension
Ankle	S1	• Provider dorsiflexes patient's foot at ankle with own hand; strikes Achilles tendon with flat of hammer • Response: plantar flexion at ankle (seen or felt)
Plantar	L5, S1	• Provider firmly strokes sole of foot laterally from heel up to ball of foot and curves across ball to medial area • Response: plantar flexion of foot, movement of toes (Babinski response indicates CNS lesion except in neonate)

Sociocultural-Spiritual Assessment

General Guidelines

- For insights into sociocultural values and beliefs related to health, illness, and health care, ask for examples of positive and negative health-care experiences.
  - *Response examples:* "I was seen quickly in that office the last time I went." "I'll never go to that doctor again—he never looked at me when he talked." "I was lying on a gurney in the ER hall for 7 hours before anyone came to help me."
- Ask what "good health" means to the patient.
  - *Response examples:* "I can do my job." "I can play sports." "I am able to enjoy being with my family." "I can clean the house, garden, and do my knitting."
- Ask what "poor health" means to the patient.
  - *Response examples:* "I have a lot of pain with my arthritis." "I can't take care of myself as well anymore." "I had to give up playing basketball."
- Learn about dominant cultural and ethnic background beliefs and values related to health care in your area. Ask what the patient feels is important for his or her own health care.
  - *Response examples:* "I want a doctor who doesn't look down on me because I go to a señoría for health care." "I'm African American. My family uses a lot of herbs. I wish I could talk with my health provider about that, but she thinks it's unhealthy." "Islamic culture requires a female family member to be present during my annual exam. A female provider is important too."
- Consider unique personal and cultural responses of the patient and family because they may be different for each person in a culture or ethnicity.
  - *Response examples:* "I know I've got a *castiga* [Italian for curse] on me! It must be that woman down the street who is making me sick." "In my family [Puerto Rican], we try to eat some hot and cold foods to keep well." "I don't talk with my priest to help me with this disease! He just makes me more stressed."
- Try to learn about the patient's subcultures. Recognize that people are multicultural—they may differ from their larger cultural group in

numerous areas, including religion, politics, geographic region, and socioeconomics.
  - *Response examples:* "Going to synagogue is very important to me, though my wife doesn't feel that way." "I really enjoy going to the neighborhood planning meetings, but lately I haven't been able to because of my knee pain." "I'm so distressed because my religion requires me to be clean and I'm having leakage." "I get so stressed at the political meetings for our party—I'm the secretary. People in our area are so rude."
- Learn some general information about a culture or ethnicity related to health care, but be aware that beliefs and values differ widely within groups; do not stereotype patients.
- Find out what actual ethnic or racial factors may be influencing the patient's condition, such as growth patterns or propensity for higher risks for certain diseases within the ethnic or racial group; this is different from values and beliefs. See table that follows for examples of illnesses/genetic conditions found in certain ethnic groups.
- Recognize your own values, beliefs, biases, and stereotypes; be willing to accept other cultures as equal although different. If unable to, refer the patient to someone who can care for that patient in an unbiased manner.
- Obtain effective and accurate translator support to interact effectively with a patient from another culture who does not speak your language well or at all. Use good judgment if a patient insists on a family member; this may be a cultural or religious need.
- In every interaction, seek to show respect, to communicate effectively, to listen authentically, and to collaborate with the patient in his or her own care.

Examples of Ethnic Genetic/Other Health Concerns

Ethnicity	Genetic or Other Disorder
Hispanic • Mexican American • Costa Rican	 • Hypertension • Malignant osteoporosis

Continued

Examples of Ethnic Genetic/Other Health Concerns—cont'd

Ethnicity	Genetic or Other Disorder
Asian/Pacific Islander	
• Chinese	• Diabetes mellitus
• Filipino	• Thalassemia
• Hawaiian (women)	• Thalassemia
Black	
• African	• Sickle cell anemia, glaucoma, hypertension • Systemic lupus erythematosus
Middle Eastern	
• Armenian	• Familial Mediterranean fever
• Iraqi	• Ichthyosis vulgaris
• Karaite Jewish	• Werdnig-Hoffmann disease
Native American	
• Navaho Indian	• Arthritis, diabetes
• Eskimo (children)	• Fetal alcohol syndrome, diabetes
White	
• Amish	• Coronary heart disease
• Appalachian	• Cystic fibrosis
• English	• Phenylketonuria
• Norwegian	

Questions for Sociocultural-Spiritual Assessment

Communication, Time, Space, Etiquette, and Learning

- How do you prefer to be addressed?
- Which language are you most comfortable speaking?
- Would you be comfortable with a translator?
- Are there any special ways of communicating that you like best?
- How do you feel about being touched? How closely should I sit to you? Do you prefer that I don't make eye contact with you?
- What would be the best way for you to tell me about the reason for your visit today? Some people like for me to ask questions. Some people like to tell me a story.
- May I ask specific questions as we go along so that together we can figure out what could be the problem?

- What would be the best ways for me to help you learn about your health problem and how to help you with your care?
- Do you like to have printed information? Verbal explanations? Both? Would it help for me to talk with a family member and you together?

Social, Ethnic, and Cultural Associations With Health

- How long have you lived here? Where and when did you live before coming here?
- Where are you and your family from originally?
- To which ethnic or cultural groups do you feel you belong?
- What health problems were you exposed to when you lived in those different places?
- What health problems did you have in those places?
- What did you do to get better with each problem?

Family and Social Interactions and Health

- Could you tell me who is in your family? Who is the head of your family?
- How do people in your family get along? Are there any problems that affect your health?
- What ethnic group is your family part of?
- In what ways do ethnic beliefs influence the health of your family?
- What is most important to your family for a health-care person to do to help your family?
- Whom do you socialize the most with? Family? Friends?
- Who are your friends and where do they live?
- How is the health of your family? What health habits do they have?
- What health problems do your family members have?
- What are the social groups you and your family members belong to? For work? For religious practices? For relaxation? In the community?
- What are the food and nutritional practices in your family? (See "Nutritional Assessment," immediately after this list.)

Traditions, Values, Beliefs, and Spiritual or Religious Influences Affecting Health

- Would you share with me some of the traditions about your culture that you value the most?
- Would you say you plan for the future? Or for the present? Or for both?
- What do you see as your main purpose in life?
- Who are the most important people in your life?

- Do you follow a certain faith or religion? Would you tell me which faith or religion?
- Could you tell me what this means to you?
- What are the most important things in your life?
- Are there spiritual beliefs that are important to you if you are ill?
- What do you believe caused the illness you have now?

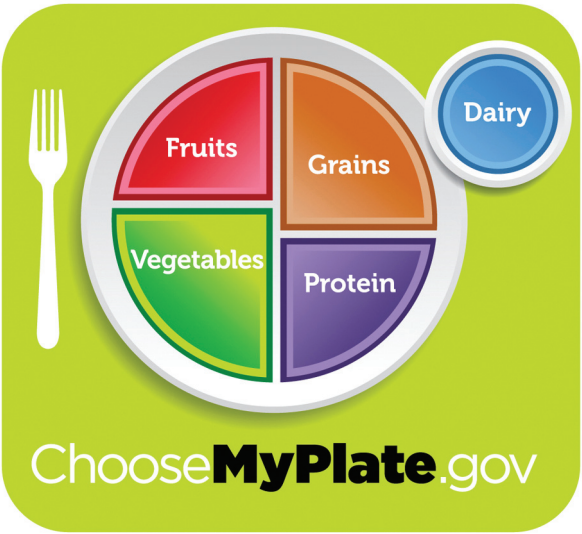
Health Beliefs, Activities, and Barriers

- What does good health mean to you?
- What does being sick mean to you?
- What do you do to be healthy?
- How do you know when you're sick?
- If you have a mild sickness, what do you do?
- If you are very sick, what do you do?
- Who helps you when you are sick?
- Who is the person in your family who makes decisions?
- Who cares for the family's health?
- What rules or restrictions related to seeking or having health care do you keep? Are these a part of your culture? Your religion?
- Whom do you like to have as your health-care provider? Why?
- Are there barriers that restrict your health care at home? In the community?

Nutritional Assessment

General Considerations

- Refer to National Institute of Medicine Dietary Reference Intakes for guidelines about energy requirements; recommended dietary allowances; and adequate intakes for water, energy, energy nutrients, vitamins, and minerals.



- Review for yourself and refer the patient to the USDA's MyPlate for healthy recommendations for personal eating plans.
- When taking the patient's history, assess the role nutrition plays:
  - HPI: Does diet influence this or other illnesses? Include daily fluid intake.
  - PMH: Did nutrition play a role in past illnesses or surgeries?
  - FH: What role has nutrition played in the family history?
  - ROS: Are specific systems influenced by the patient's dietary/supplement intake, such as cardiovascular, and how?
- Also assess how the following have influenced the patient's diet:
  - Body weight history
  - Medications
  - Allergies and sensitivities
  - PSH

- Assess the willingness of the patient and family or caregiver to consider indicated nutritional modifications. Assess how the patient learns best, such as through written materials, oral instructions, or visual cues; decide with the patient, family, or caregiver the most effective ways to help him or her make nutritional changes; consider past efforts' success or failure.
- Refer patient and family/caregiver to nutritional specialist if indicated.

Taking a Diet History

- Aim for a description of the patient's eating habits, food and drinks including daily water intake, and changes since or during the illness.
- Consider one or more of three methods of obtaining information for a diet history:
  - **24-hour recall**: Requires the patient to remember what food and drinks were consumed through the entire previous day, including the times and how much or many of these were consumed; most people can remember this information, but the day of recall may not be typical
  - **Typical day description:** Requests the person to give a usual diet for a day; may give the most information unless there is no typical day for the person
  - **Food frequency method:** Requests how often and what amounts of specific foods are eaten; provides way to focus on certain areas of concern
- Questions about intake related to the specific disease or illness may be helpful, such as consumption of calcium and vitamin D with osteoporosis, excessive salt in HTN, saturated fats in heart disease, and sugar and carbohydrate intake with diabetes.
- With patients at risk related to nutritional factors, including overweight, obese, underweight, malnourished, and elderly patients, obtain a detailed history that includes diet history, psychosocial and cultural influences, and ROS, and conduct a complete physical examination.

Assessment of Anemia

Type of Anemia	Cause	Blood Values	Treatment
Iron deficiency	Low iron levels in the blood, decreasing the ability of the red cell to carry oxygen	• Microcytic (MCV <80; MCH <27) • Elevated RDW >14.5% • Hypochromic (less than normal color) • Low serum iron levels (<80 mcg/dL for men and <60 mcg/dL for women) • Elevated TIBC and transferrin levels	• Replacement of iron to correct deficiency • Replacement of underlying cause of iron deficiency
Macrocytic	• Vitamin B_{12} or folic acid deficiency • Pernicious anemia • Chemotherapy • Gastric bypass or banding • Inability to absorb B_{12} from lack of intrinsic factor in stomach	• Macrocytic (MCV >95) • Normochromic (normal color) • Increased RDW	• Monthly vitamin B_{12} injections to correct the vitamin B_{12} deficiency (corrects the anemia and may correct the neurological complications if taken soon enough) • Preparation of vitamin B_{12} given through the nose

Continued

Assessment of Anemia—cont'd

Type of Anemia	Cause	Blood Values	Treatment
Aplastic	Bone marrow producing too few of all three types of blood cells: • Red blood cells • White blood cells • Platelets	• Normocytic • Normochromic • Low red blood cell count • Low white blood cell count • Low platelets • Usually requires a bone marrow examination for diagnosis	• Immunosuppressant therapy • Bone marrow transplant

Continued

Assessment of Anemia—cont'd

Type of Anemia	Cause	Blood Values	Treatment
Thalassemia	• An inherited autosomal recessive blood disease • Genetic defect resulting in reduced rate of synthesis of one of the globin chains that make up hemoglobin • Reduced synthesis of one of the globin chains causing the formation of abnormal hemoglobin molecules, in turn causing the characteristic presenting symptom of anemia • **Thalassemia major:** A serious and often life-threatening disease • **Thalassemia minor:** A problem that, once diagnosed, can be followed with watchful waiting	• Microcytic • Hypochromic • Decreased MCV • Decreased MCHC	• Thalassemias possibly coexisting with other deficiencies, such as folic acid and iron deficiency in thalassemia minor • Serum ferritin test to determine iron levels and guide patient to further treatment if necessary • Thalassemia minor, although not life-threatening on its own, possibly affecting quality of life as a result of effects of mild to moderate anemia • Studies have shown that thalassemia minor often coexists with other diseases such as asthma and mood disorders

Continued

Assessment of Anemia—cont'd

Type of Anemia	Cause	Blood Values	Treatment
Anemia of chronic disease	• Increasingly referred to as "anemia of inflammation" • A form of anemia seen in chronic illness (e.g., from chronic infection, chronic immune activation, malignancy) • Likely primarily the result of the body's production of hepcidin, a master regulator of human iron metabolism	• Normocytic • Normochromic • Decreased MCV	• Successful treatment of the chronic disease • Transfusion • Erythropoietin
Hemolytic anemia	• Anemia from hemolysis, the abnormal breakdown of red blood cells, either in the blood vessels (intravascular hemolysis) or elsewhere in the body (extravascular)	• Normocytic • Normochromic • Hemolysis of red cells	• Definitive therapy dependent on the cause • Symptomatic treatment possible by blood transfusion, if marked anemia • In severe immune-related hemolytic anemia, steroid therapy sometimes necessary • Splenectomy sometimes helpful when extravascular hemolysis is predominant

Continued

Assessment of Anemia—cont'd

Type of Anemia	Cause	Blood Values	Treatment
Acute blood loss anemia	• Anemia that is the direct result of the decrease in circulating red blood cells • Blood loss from accidental or other causes exceeding 1,000 mL or more; may result in acute consequences	• Normocytic • Normochromic • Decreased MCV • Decreased MCHC • Increased RDW • Decreased blood pressure secondary to decreased volume	• For minor blood loss (<1,000 mL), possible restoration of RBC levels with fluid replacement and iron. For greater amounts of blood loss (>1,000 mL), transfusions and replacement of clotting factors possibly necessary in addition to fluid replacement

Pediatric Assessment

Pediatric Developmental Milestones

Age	Developmental Milestones
1 month	Cries to communicate, reflex activity, eye contact
2 months	Coos, smiles, frowns, tracks objects, lifts head
3 months	Turns from back to side; sits with support
4 months	Turns from back to abdomen; lifts head and bears weight on forearms; can hold head erect; places everything in mouth; grasps with both hands; laughs; makes consonant sounds
5 months	Turns from abdomen to back; uses hands independently; plays with toes; puts feet into mouth
6 months	Sits alone, leaning forward on hands; holds bottle; extends arms to be picked up; starts to show a fear of strangers; begins to make wordlike sounds; looks for dropped objects; plays "peek a boo"
7 months	Begins to crawl; bears weight on feet when supported
8 months	Pulls to standing position; sits alone without any support; increased fear of strangers
9 months	Walks alongside furniture; well-developed crawl; bangs objects together; drinks from cup; attempts to feed self; looks for hidden objects
10 months	May begin to walk and climb; one-handed dominance apparent; may say one or two meaningful words
11 months	Understands meaning of word "no"; can follow simple directions; cooperates with dressing activities; uses spoon
12 months	Walks alone or with one hand held; falls frequently while walking; points with one finger; drinks well with cup; pulls off socks
15 months	Walks independently; throws overhanded; pulls or pushes toys; builds with blocks; scribbles with crayon
18 months	Runs clumsily; jumps in place with both feet; able to say about 10 words; may be able to control anal and urinary sphincters

Continued

Pediatric Developmental Milestones—cont'd

Age	Developmental Milestones
2 years	Runs well; climbs stairs by placing both feet on each step; attains bladder and bowel control between 2 and 3 years of age; names familiar objects; combines two to three words into meaningful phrases
2 1/2 years	Jumps from chair to step; stands on one foot briefly
3 years	Rides tricycle; turns doorknobs; climbs stairs by alternating feet on steps; dresses self; uses short sentences
4 years	Hops on one foot; catches ball; names colors
5 years	Skips well; jumps rope; maintains balance with eyes closed; uses complete sentences; vocabulary of about 2,100 words
6–12 years	Swims, skates, rides bicycle, ties shoes, uses crayon or pencil well, has strong sense of fairness, awareness of rule-governed behavior, uses complex sentences, reads, counts, forms clubs or groups
Adolescent	Learns to care for self independently while learning to interact effectively with society

Source: Myers, E.: *RN Notes Clinical Pocket Guide.* Philadelphia, F.A. Davis, 2003.

Basic Gynecological Examination*

*These guidelines assume that the examiner is alone without a nursing assistant.

Responsibilities of Examiner

- When she makes the appointment, the patient should be informed not to have coitus; douche; or use tampons, foams, creams, jellies, or suppositories for 48 hours before the examination. Instruct the patient that Pap smears may not be done during menses.
- Provide and ensure privacy for the patient. Obtain signed informed consent if required in the institution.
- Notify patient in writing within 30 days of results of tests and follow-up needed.

- Wash hands thoroughly before the examination begins.
- Place gloves on both hands before touching patient; double-glove if concerned with infectious material. Maintain universal precautions. Use nonlatex gloves in case of latex allergy of patient.
- If any equipment malfunctions during examination, have replacements available.
- Do not contaminate the outsides of test containers that other personnel will touch in transferring specimens from sites to containers.
- Do not leave the patient in lithotomy position with speculum in place if you have to leave the room to retrieve additional equipment. Remove speculum, put patient's legs down on table extension, then reposition and reinsert speculum after returning.
- Record findings as soon as possible. Inform the patient of findings or any concerns because this examination often brings forth questions and concerns from women. Schedule appropriate follow-up.

Preparation of Equipment and Room

- Have all necessary equipment clean, checked, and ready to use before patient is prepared.
- Arrange equipment for ease and order of use.
- Basic equipment required:
  - Examination table with adjustable stirrups
  - Rolling stool with adjustable height
  - Excellent light source, such as lighted speculum, gooseneck lamp, head lamp
  - Clean nonlatex gloves
  - Clean coverings for table and draping
  - Vaginal specula
  - Testing equipment:
    - Labels with patient information/date
    - Cytological equipment
  - Warm water
  - Water-soluble lubricant; be sure never to touch the outlet of the tube or bottle with the glove during any part of the examination; drop lubricant onto fingers. Discard any contaminated tube/bottle.

ASSESS

Preparation of Patient

- Have patient empty her bladder; save specimen if indicated.
- Explain all procedures and equipment. Ideally, patient has been provided with written information before the examination.
- Ask patient to remove clothing covering lower abdomen and pelvis. She may leave shoes on if more comfortable.
- Assist patient to assume lithotomy position; adjust table so that head of table is elevated about 30 degrees. This is not done until after the abdominal examination is completed. It does not interfere with pelvic examination findings and provides patient with more control.
- Be sure patient's legs are equally positioned in the stirrups. If shoes off, place clean paper towels in stirrups under feet.
- Position patient's buttocks slightly off end of table so that speculum may be introduced without interference of table.
- Assure patient of explanations during the examination and help her relax. Deep breathing techniques are helpful for relaxation.

External Genitalia Assessment

- Inspect and palpate femoral nodes, mons pubis, labia minora and majora, clitoris, urethral meatus, and vaginal introitus for lesions, erythema, discharge, edema, nodules, or parasites in hair.
- Inspect but do not touch areas of perineum, rectum, and anus. This can be done at time of rectal examination.
- Assess sexual maturity level of genitalia, including hair pattern.
- If ulceration is present, take a specimen for diagnosis.
- Check Bartholin's glands with index finger and thumb at 5 and 7 o'clock for swelling or tenderness; test any discharge from openings inside introitus.
- Assess vaginal support for cystocele, rectocele, or prolapse. Separate labia with fingers; ask patient to bear down, and note location and extent of any bulging. If patient has indicated urinary incontinence, examiner should lean to the side during this examination in case of forceful urine loss.

Internal Vaginal and Cervical Examination

- Insert one finger and identify location/position of cervix and any obstructions.

- Insert an appropriate-size warmed, lubricated speculum at slight angle to avoid urethral meatus, turn horizontally, and open to see ectocervix and cervical os.
- Gently remove excessive discharge that interferes with view with cotton-tipped applicator.
- Determine cervical size, shape, color, and position; determine location of lesions, nodules, masses; identify any bleeding or discharge.
- Obtain wet mount or saline test tube specimens of cervical discharge; take a specimen from under cervix before the Pap smear to avoid blood in specimen; do not take it from cervical os or ectocervix. Evaluate microscopically after examination for abnormal epithelial cells, blood cells, or organisms.
- Check pH of cervical discharge with a pH paper strip; compare color with standards.
- Obtain a cervical cytology specimen (Pap smear) using institutional procedure and equipment; it is important to gain cells from the transformation zone and the ectocervix.
- Specimens may be obtained with cervical spatula from ectocervix and with an endocervical brush, cervical broom, or some other preferred method from endocervix.
  - For pregnant women, use short, rounded portion of spatula for ectocervical specimen and a saline-moistened cotton-tipped applicator for endocervical sampling.
  - For women using birth control pills, the transformation zone may be out on the ectocervix.
  - For postmenopausal women, transformation zone may need to be accessed further into cervical os because it recedes with aging.
- Prepare sample as directed on slides with fixative within 10 seconds, or place slide in a fixative bottle.
- If indicated, obtain specimens for sexually transmitted diseases; swabs from syphilitic ulcerations should be taken.
- If patient bleeds from the cervix after tests are completed, apply pressure with a large, cotton-tipped applicator for several minutes. You may need to apply Monsel's solution to stop bleeding.
- Inspect the vaginal walls by turning and opening the speculum blades (and during withdrawal) to visualize for nodules, masses, ulcerations, other lesions, color, erythema, discharge, and the presence or absence of rugae.

ASSESS

Bimanual Pelvic Examination

- Remove speculum; place it inside a clean glove to retain it if further discharge specimens needed; otherwise, dispense in proper covered container.
- Lubricate index and middle finger of dominant hand; tell patient you're going to insert two fingers to check internal organs and keep fingers of other hand on her lower abdomen to palpate the uterus and other organs between internal and external fingers.
- Palpate all vaginal walls; fornices around cervix; and region of urethra and bladder for nodules, masses, or tenderness.
- Palpate cervix for shape, size, position, consistency, and mobility and any irregularities or tenderness.
- Determine position of uterus: anteverted, retroverted, retroflexed, or midplane.
- Palpate the uterus between both sets of fingers for size, shape, consistency, and mobility and for tenderness or masses.
- If the uterus cannot be palpated with the abdominal hand, it is retroverted, retroflexed, or midplane, or the patient may be obese or have excessive fluid in the abdominal/pelvic cavities.
- Palpate each ovary and adnexa between the two sets of fingers for size, shape, consistency, mobility, and tenderness. The ovaries may not be palpable if the woman is obese, has pain, or is very tense.
- Assess pelvic muscle strength as withdrawing by spreading the two fingers before exiting vagina and asking patient to squeeze vaginal muscles around your fingers. Note seconds that squeeze can be maintained and movement of fingers upward and inward.

Rectovaginal Examination

- Replace glove used for vaginal or uterine examination with a new glove. Lubricate index and middle fingers.
- Ask patient to bear down as if having bowel movement to relax sphincter; insert index finger into vagina and middle finger into rectum slowly, advising patient she will not defecate even if feels she will.
- Find cervix with vaginal finger; palpate area behind cervix of the cul de sac and along the rectovaginal wall for nodules, masses, or tenderness.

- Palpate posterior surface of uterus, left and right ovaries, and adnexal structures.

Clinical Pearl: Retropositioned uteruses are best evaluated with this examination; midplane uteruses may not be easily palpated.

Anorectal Examination

- Change gloves; lubricate one finger.
- Inspect area of perineum, external rectum, and anus for color and for discolorations, lesions, ulcerations, hemorrhoids, fissures, bleeding, or discharge.
- Palpate external rectoanal area, and gently insert a lubricated finger as high as comfortable for patient in rectum.
- Palpate accessible rectal wall for nodules, masses, internal hemorrhoids, or tenderness.
- Wipe off patient's external genitalia and rectal area with tissues, help her sit up, and offer tissues to her for self-care before dressing. Show her where to dispose of tissues appropriately before you leave the room.
- Make sure she is able to come down from the examination table without incident.

Neurological Assessment

Assessment	Tests Used	Findings
Spinal reflexes	**Deep tendon reflexes:** Briskly tap the tendon of a partially stretched muscle	Hyperactive reflexes suggesting central nervous system disease
Motor pathways	**Cranial nerve motor function:** Touch tip of little finger and tip of thumb together	Inability to do this possibly meaning carpal tunnel syndrome

Continued

Neurological Assessment—cont'd

Assessment	Tests Used	Findings
Coordination	**Rapid alternative movements:**	
	Have patient strike one hand on thigh, raise hand, turn it over, and strike the back of the hand down in the same place	Inability to do this task quickly possibly indicating cerebellar disease
	Point-to-point movements:	
	Ask patient to touch your index finger, then his or her nose alternately several times	Jerky or slow movements possibly indicating cerebellar disease
Gait	Heel-to-toe walk	Inability to walk heel to toe indicating ataxia
	Hop in place	Inability to hop in place possibly indicating weakness, lack of proprioception, or cerebellar dysfunction
	Romberg test:	
	Have patient stand with feet together and eyes open, then closing both eyes for 20–30 seconds; swaying and inability to hold position are signs of positive Romberg test	Positive Romberg test possibly indicating cerebellar ataxia

Continued

Neurological Assessment—cont'd

Assessment	Tests Used	Findings
	Pronator drift: • Patient should stand for 20–30 seconds with both arms straight forward and palms upward with eyes closed • Clinician should tap arms briskly downward • In normal patients, the arms return smoothly to the horizontal position	Inability to hold arms horizontally indicating cerebellar dysfunction; pronation of one forearm suggesting a contralateral lesion in the corticospinal tract
Sensory	Discriminative sensations **Stereognosis:** Identification of an object by feeling it **Graphesthesia:** Ability to identify a number written with object on palm of hand **Two-point discrimination:** Using sides of two pins or open end of two paper clips, touch finger pad; alternate the double stimulus between sharp and dull	Astereognosis (inability to identify objects) suggesting a lesion in the sensory cortex Agraphesthesia (inability to identify number on palm of hand) and lack of two-point discrimination suggesting a lesion in the sensory cortex

Continued

Neurological Assessment—cont'd

Assessment	Tests Used	Findings
Speech	Inability to speak or a disturbance in fluency	Aphasia indicating a disturbance in Wernicke area in the brain indicating metabolic encephalopathy
Brudzinski's sign	Sudden, brief, nonrhythmic flexion of the hands and fingers Flexion of the hips and knees as you flex the neck	Brudzinski's sign indicating meningeal inflammation
Kernig's sign	Flex the patient's leg at both the hip and knee, then straighten the knee	Pain and increased resistance to extending the knee features of a positive Kernig's sign, suggesting meningeal irritation
Tremors	Observed intention tremors	Absent at rest, appearing with activity, and worsening as target is neared, indicating cerebellar disorders, multiple sclerosis
	Observed resting tremors	Most prominent at rest, decreasing or disappearing with voluntary movement, indicating Parkinson's disease
	Observed chorea	Brief, rapid, jerky, irregular, and unpredictable movements occurring at rest or interrupting normal movement indicating Huntington's disease
	Observed athetosis	

Continued

Neurological Assessment—cont'd

Assessment	Tests Used	Findings
		Slow twisting movements, writhing, commonly involving face and distal extremities; associated with spasticity, indicating cerebral palsy
	Observed tic	Brief, repetitive, stereotyped, coordinated movements at irregular intervals, associated with cranial nerve damage
	Observed facial dyskinesias	Rhythmic, repetitive, bizarre movements that chiefly involve the face, mouth, jaw, and tongue; can be a late complication of psychotropic drugs (tardive dyskinesias or long-standing psychoses)

Suicide Assessment

Guidelines for Assessment and Intervention

Assessment	Intervention
Patient states suicidal intention	Provide a safe environment; allow patient to express suicidal ideation feelings. Do not argue with patient.
Intention	Ask patient whether he or she thinks about or intends to harm himself or herself.
Plan	Ask patient whether he or she has formulated a plan. What are the details? Where, when, and how will the plan be carried out?
Means	Check availability of method to commit suicide. Does the patient have or have access to a gun, knife, or pills?
Rescue	Call 911; do not allow patient to go home; call family.

High-Risk Populations

Groups at risk for suicide include:

- Adolescent and young adults (ages 15–24)
- Elderly patients (more men than women)
- Patients who are terminally ill
- Patients with extreme stress or loss
- Survivors of persons who have committed suicide
- Patients with bipolar disease or depressions
- Patients who abuse alcohol or drugs
- Patients who have previously attempted suicide

Erikson's Developmental Stages*

Stage/Goal	Age	Outcomes If Goals Met	Outcomes If Goals Not Met
Trust vs Mistrust: Needs maximum comfort with minimal uncertainty to trust himself or herself, others, and the environment	Infant (birth to 18 months)	• Strong bonds • Trust in mothering figure	• Inability to bond • Insecurity • Distrust
Autonomy vs Shame and Doubt: Works to master physical environment while maintaining self-esteem	Toddler (18 months–3 years)	• Independence • Some self-esteem	• Doubt of own ability • Dependence
Initiative vs Guilt: Begins to initiate, not imitate, activities; develops conscience and sexual identity	Preschooler (3–6 years)	• Sense of purpose and ability	• Immobilization by guilt • Dependence

Continued

Erikson's Developmental Stages—cont'd

Stage/Goal	Age	Outcomes If Goals Met	Outcomes If Goals Not Met
Industry vs Inferiority: Tries to develop a sense of self-worth by refining skills	School-aged child (6–12 years)	• Self-confidence by doing and achieving	• Sense of inferiority • Inability to achieve
Identity vs Role Confusion: Tries integrating many roles (child, sibling, student, athlete, worker) into a self-image under role model and peer pressure	Adolescent (12–20 years)	• Secure sense of self • Positive ideals	• Confusion • Inability to make decisions
Intimacy vs Isolation: Learns to make a personal commitment to another as spouse, parent, or partner	Young adult (20–30 years)	• Lasting relationship or commitment	• Isolation • Fear of commitment
Generativity vs Stagnation: Seeks satisfaction through productivity in career, family, and civic interests	Middle-aged adult (30–65 years)	• Creation of a family • Consideration of future and welfare of others	• Stagnation • Self-centeredness • Unfulfilled life and career
Integrity vs Despair: Reviews life accomplishments; deals with loss and preparation for death	Older adult (65 years–death)	• Positive sense of self-worth • Acceptance and preparation for death	• Feeling of hopelessness • Fear and denial of death

*Developed by Erik Erikson in 1956.

Symptoms of Depression

The following are signs of depression and should warrant further investigation on the part of the health-care provider:

- Significant weight loss when not dieting or weight gain (i.e., a change of more than 5% of body weight in a month) or decrease or increase in appetite
- Insomnia or hypersomnia (excessive sleeping) nearly every day
- Feeling restless or sluggish to the point that others notice
- Fatigue or loss of energy
- Feelings of worthlessness or excessive or inappropriate guilt
- Diminished ability to think or concentrate or indecisiveness
- Recurrent thoughts of death (not just fear of dying), recurrent suicidal thoughts without a specific plan, or a suicide attempt or a specific plan for committing suicide

Easy-to-Miss Important Diagnoses

Diagnosis	Signs and Symptoms	Laboratory and Test Findings
Deep vein thrombosis (DVT)	• Often few symptoms but patient could have pain, swelling, redness, and increased warmth to the affected area. • Risk factors warranting increased suspicion include obesity, age, trauma, cancer, immobility, smoking, use of oral contraceptives, and recent surgery.	• When DVT is suspected based on history and signs and symptoms, send patient immediately for an ultrasound of the affected area and D-dimer test. • D-Dimer is useful as a negative predictive test for DVT (if D-dimer is negative, it is unlikely the patient has DVT).
Tubal (ectopic) pregnancy	• Women of childbearing age often present with sharp abdominal pain and nausea similar to appendicitis or gastroenteritis. • Other signs may include vaginal bleeding and fever. • If the tube ruptures, pain becomes extreme and shock can ensue. This makes ectopic pregnancy an emergency diagnosis.	Three tests used to diagnose ectopic pregnancy: • Serum HCG quantitative analysis • Serum progesterone levels • Vaginal ultrasound These should be performed if any suspicion of ectopic pregnancy exists.

Continued

Easy-to-Miss Important Diagnoses—cont'd

Diagnosis	Signs and Symptoms	Laboratory and Test Findings
Upper respiratory infection (bacterial vs viral)	**Viral URIs:** • Usually last <10 days • Have clear-to-yellow discharge from nose and cough • May or may not have fever • Associated with aches, watery eyes, and swollen mucous membranes in the nose • May result in chronic cough from postnasal drip • Respond to supportive treatment, antihistamines, fluids, vitamin C, and zinc **Bacterial URIs:** • More often associated with fever • Nasal discharge green or dark • Often causes a chronic cough not from postnasal drip • Higher risk for patients with chronic pulmonary diseases or impaired immune systems who should be treated even when symptoms are not clearly bacterial	**Viral URIs:** • Lymphocytes may become increased. **Bacterial URIs:** • High WBC count with increased neutrophils on CBC • Increased bands or a "shift to the left" in the WBC count in acute URI • Elevated monocytes in chronic URI

Continued

Easy-to-Miss Important Diagnoses—cont'd

Diagnosis	Signs and Symptoms	Laboratory and Test Findings
	• Treatment of choice is antibiotics, although overuse has caused emergence of resistant strains of bacteria; therefore, antibiotics used for symptoms of bacterial URI	
Appendicitis	• An early sign is aching pain around the navel that often shifts later to the lower right abdomen. • Pain may become sharper and more severe. • Pain tends to settle in the lower right abdomen, near the appendix, at the McBurney point (about halfway between the navel and the top of the right pelvic bone). • The location of pain may vary with age and position of the appendix. • Young children or pregnant women, especially, may have different symptoms such as nausea, vomiting, diarrhea, loss of appetite, fever, constipation, inability to pass gas, or abdominal swelling.	**Diagnostic tests include:** • CBC to detect increased WBC count • Abdominal x-ray, ultrasound, or CT scan **Diseases with matching symptoms to be ruled out include:** • Ectopic pregnancy • Ovarian cyst • Kidney stones • Crohn's disease

Continued

Easy-to-Miss Important Diagnoses—cont'd

Diagnosis	Signs and Symptoms	Laboratory and Test Findings
	• A late sign is rebound tenderness (pain is worse when pressure on the area is released). Pain is often worse with movements such as walking or pulling knees up to chest.	
Pneumonia	**Risk factors for pneumonia:** • Age >65 years • Male gender • Living in nursing home • Age <2 years • Comorbid respiratory conditions • Immunocompromised status • Current chemotherapy • History of splenectomy • Smoking tobacco products • Use of alcohol • Diagnosis of anemia, heart disease, diabetes, or kidney disorders **Symptoms of bacterial pneumonia:** • Fever, chills, chest pain, green to brown sputum, decreased breath sounds, and consolidation of breath sounds in one area of lung	**Diagnostic tests include:** • CBC for high WBC count • Chest x-ray to identify any areas of consolidation • Chest x-ray should be repeated 1 month after treatment to determine whether consolidation has resolved.

Continued

Easy-to-Miss Important Diagnoses—cont'd

Diagnosis	Signs and Symptoms	Laboratory and Test Findings
	Symptoms of viral pneumonia: • Fever, dry cough, headache, muscle pain, weakness increasing breathlessness, and circumoral cyanosis **Symptoms of mycoplasma pneumonia:** • Violent coughing attacks, chills, fever, nausea, vomiting, diarrhea, bradycardia, bluish nailbeds, muscle aches, and rash	
Hypothyroidism	**Signs and symptoms, possibly subtle:** • Fatigue, weight gain, hair loss, constipation, dry skin, changes in menstrual cycle, dizziness, sensitivity to cold, muscle and joint aches, and rough, dry skin • Carpal tunnel syndrome and obstructive sleep apnea if left untreated	• Hypothyroidism occurs when the TSH is mildly elevated but triiodothyronine (T_3) and thyroxine (T_4) levels are normal. • It is advisable to check TSH levels yearly for patients >40 years old. Elevated TSH indicates hypothyroidism. • Thyroid hormone replacement is indicated as the treatment for hypothyroidism.

Emergency Care

Emergency	Diagnostic Signs and Symptoms	Treatment	Follow-up Care
Anaphylaxis	Anaphylaxis is a severe, whole-body allergic reaction. After an initial exposure to a substance such as bee sting toxin, the person's immune system becomes sensitized to that allergen. On subsequent exposure, an allergic reaction occurs. This reaction is sudden, severe, and involves the whole body: • Hives • Difficulty breathing • Wheezing • Confusion • Slurred speech • Cyanosis • Dizziness/fainting • Anxiety • Nausea, vomiting, diarrhea • Angioedema (swelling may close off airway) • Pulmonary edema • Cardiac arrhythmias	**Emergency condition requiring immediate professional medical attention:** • Assessment of the ABCs (airway, breathing, and circulation from Basic Life Support) in all suspected anaphylactic reactions • Epinephrine by injection (EpiPen) without delay in severe anaphylactic reactions to open the airways and raise blood pressure by constricting blood vessels • IV fluids and medications that support the actions of the heart and circulatory system in the case of shock • Antihistamines or corticosteroids to reduce symptoms further	• Ensure that the allergen is noted. • The patient wears a MedicAlert bracelet. • The patient carries an epinephrine injection.

Continued

Emergency Care—cont'd

Emergency	Diagnostic Signs and Symptoms	Treatment	Follow-up Care
Burns	**First-degree burns:** • Only the outer layer of skin is burned; usually it is red, with swelling and pain. **Second-degree burns:** • The first layer of skin is burned through; the second layer of skin (dermis) is also burned. **Third-degree burns:** • All layers of skin are involved; it causes little or no pain, but permanent damage.	**First-degree and minor second-degree burns <7.5 cm:** • Cool the burn. • Hold the burned area under cold running water for at least 5 minutes or until the pain subsides. • Silver sulfadiazine (Silvadene) cream may be applied to the affected area. • Cover the burn with a sterile dressing. • Prescribe an OTC pain reliever. • Do not use ice. • Do not apply butter or ointments to burn. • Do not break blisters.	**First-degree and minor second-degree burns:** • Antibiotics may be necessary because burns are susceptible to infection. **Third-degree burns:** • Follow up after the emergency room visit. • Refer to dermatology for skin grafts if necessary or requested.

Continued

Emergency Care—cont'd

Emergency	Diagnostic Signs and Symptoms	Treatment	Follow-up Care
		Third-degree burns: • Do not remove clothing. • Do not immerse third-degree burns in ice water. • Check for airway, breathing, and circulation. • Elevate burned body parts. • Cover the area of the burn. • Send the patient to the emergency room or call 911.	
Bites	Cat and human bites are more likely to become infected than dog bites. Bites to the hand are of special concern because of the possibility of closed-space infection. Antibiotic prophylaxis is indicated for noninfected bites of the hand, and hospitalization is required for infected hand bites. All infected wounds should be cultured to direct therapy.	• Vigorous cleansing and irrigation of the wound • Débridement of necrotic material • Suturing, but *never* of an infected wound or a wound on the hand • Prophylactic antibiotics indicated for high-risk bites **Cat bites in any location:** • Dicloxacillin 0.5 g orally four times a day for 3–5 days	Follow up to determine effect of antibiotics.

Continued

Emergency Care—cont'd

Emergency	Diagnostic Signs and Symptoms	Treatment	Follow-up Care
		Hand bites from any animal: • Penicillin V 0.5 g orally four times a day for 3–5 days **Other options with a broader spectrum of action include:** • Cefuroxime • Amoxicillin-clavulanic acid • Clindamycin • Ciprofloxacin or levofloxacin • Tetanus and rabies evaluation should be completed on all bite patients.	
Methicillin-resistant *Staphylococcus aureus* (MRSA)	MRSA is a type of bacteria that is resistant to certain antibiotics. "Staph" or MRSA infections in the community are usually manifested as skin infections, such as pimples and boils, and occur in otherwise healthy people.	• Suspicious wounds should be cultured. • For antibiotics effective for MRSA infections or suspected MRSA infections in the outpatient setting, see Current Guidelines. from CDC	• Follow up to check on the progress of healing. • If the wound is not healing properly, hospitalization for IV antibiotic infusions may be required.

Continued

Emergency Care—cont'd

Emergency	Diagnostic Signs and Symptoms	Treatment	Follow-up Care
Poisoning	A poison is any substance that is harmful to the body when ingested, inhaled, injected, or absorbed through the skin. Any substance can be poisonous if enough is taken. Most cases of poisoning are the result of ingestion of drugs, both prescription and OTC.	• For information about treating an episode of poisoning, the National Capital Poison Hotline can be reached at 1-800-222-1222. • Many states and local municipalities have poison control hotlines as well.	• Immediate referral to the emergency room is required for anyone who has been exposed to poisons.
Hiccups	Persistent hiccups may be a sign of a serious underlying illness. Most common causes of persistent hiccups include: • Neoplasm • Infection • Cerebrovascular accident (CVA) • Trauma • Uremia	Treatments include: • Lifting the uvula with a spoon • Eating 1 tsp dry granulated sugar • Holding breath • Valsalva maneuver • Sneezing • Gasping • Rebreathing into a bag • Holding knees to chest	• Follow up with the patient until hiccups subside. • Determine the underlying cause of hiccups over time.

Continued

Emergency Care—cont'd			
Emergency	**Diagnostic Signs and Symptoms**	**Treatment**	**Follow-up Care**
	• Hyperventilation • Irritation of the vagus or phrenic nerve • General anesthesia • Psychogenic causes	Drug treatments include: • Chlorpromazine 25–30 mg orally or intramuscularly • Phenytoin • Carbamazepine • Benzodiazepines • Metoclopramide • Gabapentin	

X-Rays

Bone Densitometry

Also called dual-energy x-ray absorptiometry (DEXA), bone densitometry is used to measure bone loss. DEXA is the standard method for measuring bone mineral density.

When to Use

Bone density is used to diagnose osteoporosis. DEXA is used to measure bone mineral density (BMD) by exposing parts of the body to small doses of ionizing radiation. It is usually performed on the lower spine and hips. Portable devices measuring wrists, fingers, or heels are used only for screening purposes. Once the scan has been completed, two scores are reported to the provider.

Z Score

The Z score reflects the amount of bone the patient has compared with other people in the same age group and gender.

T Score

The T score reflects the amount of bone the patient has in comparison with young adults of the same gender and is the most important measurement of risk for fracture development. A score higher than –1 is considered normal. A score between –1 and –2.5 is classified as osteopenia, the first stage of bone loss. A score of less than –2.5 is defined as osteoporosis.

Mammogram

A mammogram is a low-dose x-ray of the breast used to determine whether abnormal growths or cysts are present. It is an important tool for early detection of breast cancer and is recommended for all women more than 40 years old. It is less sensitive in women with dense breast tissue. Schedule at end of menstrual cycle for comfort if possible.

Screening Mammogram

A screening mammogram is an x-ray examination of the breast in a woman who has no symptoms. The goal of its use is to find cancer when the tumor is still too small to be felt by a woman or her doctor. An ultrasound scan may be used to differentiate between a solid mass and a cystic mass

Diagnostic Mammogram

A diagnostic mammogram is an x-ray examination of the breast in a woman who either has a breast complaint, such as a breast mass or nipple discharge, or an abnormality found during a screening mammogram. During a diagnostic mammogram, more pictures are taken to study the breast condition carefully. In most cases, special images involve magnification to make a small area of suspicious breast tissue easier to evaluate. Positron emission tomography (PET) scans, magnetic resonance imaging (MRI), or breast-specific gamma imaging may be used for further evaluation.

Clinical Breast Examination

A clinical breast examination (CBE) is done to detect breast abnormalities or evaluate patient reports of symptoms to find palpable breast cancers at an earlier stage of progression. CBE should be performed by a health-care provider at least every 3 years for women more than 20 years old and yearly in women starting at age 40 years.

Breast Self-Examination

The breast self-examination (BSE) is an important part of cancer prevention, and women should be educated to perform monthly BSEs and to report any changes in breast architecture immediately.

U.S. Preventive Services Task Force Recommendations

Women Aged 40 Years and Older

- Screening mammography, with or without CBE, every 1–2 years

Women Aged 20–40 Years

- CBE as part of a regular health examination at least every 3 years

Women at High Risk (Greater Than 20% Lifetime Risk)

- MRI and a mammogram each year
- High risk includes:
  - Known *BRCA1* or *BRCA2* gene mutation
  - First-degree relative with *BRCA1* or *BRCA2* gene mutation
  - Lifetime risk of breast cancer of 20%–25% or greater, according to risk assessment tools based mainly on family history

Computed Tomography

Diagnostic Use by Anatomic Region

Region	Diagnostic Use
Head	• NO CONTRAST used for ruling out bleeding • CONTRAST used for ruling out a mass
Chest	• Detection of acute and chronic changes in lung parenchyma • Evaluation of chronic interstitial processes, such as emphysema and fibrosis • Continuous images provided by high-resolution CT done during inspiration and exhalation • IV CONTRAST used for the detection of airspace disease and boundaries of the great vessels and assessment of the mediastinum and hilar regions for lymph-adenopathy (important when a diagnosis of lung cancer is suspected)
Pulmonary angiogram	• Preferred method for diagnosis of pulmonary embolism • Test completed in less than 5 minutes • Any mass/filling defect such as an embolus appears dark in place of the contrast filling
Cardiac (cardiac CT angiography)	• Can be used with retrospective electrocardiogram gating • Exposes patient to high levels of radiation (equivalent to 600 chest x-rays) • 90% sensitive for coronary artery disease, with a negative predictive value of 93%

Continued

Diagnostic Use by Anatomic Region—cont'd

Region	Diagnostic Use
Abdominal and pelvic	• Very sensitive method for diagnosing abdominal disease • CONTRAST used for ruling out appendicitis and diverticulitis • NO CONTRAST used for ruling out kidney stones • Used to determine stages of cancer and follow progress • Can be used to investigate acute abdominal pain, renal stones, appendicitis, pancreatitis, diverticulitis, abdominal aortic aneurysm, and bowel obstruction • First-line study for detecting solid organ injuries after trauma • Used in osteoporosis studies alongside densitometry
Extremities	• Diagnosis of complex fractures, especially around the joints • Diagnosis of ligament injuries and dislocations

Magnetic Resonance Imaging

MRI, rather than CT, should be performed in the following situations:

- In patients with serious allergies or renal failure because contrast-enhanced MRI is safer than contrast-enhanced CT
- For imaging of the liver because it does not use the ionizing radiation associated with CT scanning
- For imaging of the pancreas, adrenals, and kidneys at centers with considerable MRI experience (at centers with CT experience, CT is adequate; practice should change, however, with more centers doing MRI)
- In male and female patients requiring imaging of pelvic organs (although ultrasound is effective for many noncomplex female pelvic conditions)

- For imaging of the bowel at a few centers
- For imaging of large- and medium-sized vessels, mainly for safety reasons
- In patients with vessel disease (particular strengths in this area; described as MR angiography)

CT is preferred over MRI in the following situations:

- In patients with suspected kidney stones
- For imaging of small vessels
- In patients with most lung diseases
- In patients with most types of severe acute trauma
- For determining the location of tubes and catheters in very sick patients

Ultrasound

Ultrasound is safe, noninvasive, and easy to complete. It does not cause the patient pain, and it may provide the first look at internal problems. Ultrasound is often followed by CT or MRI to differentiate further among problems.

Diagnostic Ultrasound Use by Anatomic Region

Region	Diagnostic Use
Thyroid	Identification of nodules and differentiation of types of thyroid cancer
Prostate	Guidance during biopsy procedure
Ovary	Identification of types of adnexal masses
Pregnancy	Identification of intrauterine growth restriction Identification of and location of products of conception; used to diagnose intratubal (ectopic) pregnancy and for suspected threatened abortion
Pelvis	Differentiation among ovarian masses, diverticula, and other lower abdominal masses including uterine fibroids
Cardiac	Observation of coronary plaque progression
Bone	Fracture prediction
Fetus	Detection of some congenital defects

Blood and Body Fluid Evaluations

Complete Blood Count

Tube or Specimen	Normal Results	Abnormal Findings
Red or lavender top tube	**Red blood cells** Male: 4.7–6.1 Female: 4.2–5.4 **Hemoglobin** Male: 14–18 Female: 12–16 **Hematocrit** Male: 42%–52% Female: 37%–47% **Mean corpuscular volume:** 80–95 **Mean corpuscular hemoglobin:** 27–31	• RBC, Hgb, and Hct all reflect the ability of oxygen delivery by the RBC to all cells in the body • Decreased RBC, Hgb, or Hct indicates anemia • Increased RBC, Hgb, or Hct indicates dehydration or polycythemia vera • MCV is related to size of RBCs • Elevated MCV indicates macrocytic anemia (vitamin B_{12} deficiency, folic acid deficiency, hydantoin ingestion, or chemotherapy) • Decreased MCV indicates microcytic anemia (iron deficiency, thalassemia, lead poisoning) • MCH is related to RBC cell weight • Elevated MCH, indicates macrocytic anemia (vitamin B_{12} deficiency, folic acid deficiency, hydantoin ingestion, or chemotherapy) • Decreased MCH indicates microcytic anemia (iron deficiency, thalassemia, lead poisoning)

Continued

Complete Blood Count—cont'd

Tube or Specimen	Normal Results	Abnormal Findings
Red or lavender top tube (cont'd)	**Mean corpuscular hemoglobin concentration:** 32–36	• MCHC is related to Hgb concentration • Elevated MCHC indicates macrocytic anemia (vitamin B_{12} deficiency, folic acid deficiency, hydantoin ingestion, or chemotherapy) • Decreased MCHC indicates microcytic anemia (iron deficiency, thalassemia, lead poisoning)
	Red blood cell distribution width: 11%–14.5%	• Any increase in RDW indicates anemia
	White blood cells: Neutrophils: 55%–70% Lymphocytes: 20%–40% Monocytes: 2%–8% Eosinophils: 1%–4% Basophils: 0.5%–1%	• Increased WBC indicates infection • Decreased WBC indicates decreased immune system function • For white blood cell differential, see later table, page 135 this tab
	Platelets: 150,000–400,000 million/mm3	**Elevated platelet count (thrombocytosis)** • Malignant disorders • Polycythemia vera • Postsplenectomy syndrome • Rheumatoid arthritis • Iron-deficiency anemia **Decreased platelet count (thrombocytopenia)** • Hypersplenism • Idiopathic hemorrhage • Leukemia • Myelofibrosis disorders • Graves' disease

Continued

Complete Blood Count—cont'd

Tube or Specimen	Normal Results	Abnormal Findings
Red or lavender top tube (cont'd)		• Hemolysis, elevated liver enzymes, and low platelet count • Disseminated intravascular coagulopathy • Lupus • Pernicious anemia • Hemolytic anemia • Chemotherapy

Comprehensive Metabolic Panel

Normal Results	Abnormal Findings
Sodium: 136–145 mL/dL	**Elevated (hypernatremia)** • Increased dietary intake • Excessive sodium in IV fluids • Cushing's syndrome • Hyperaldosteronism • Excessive loss of body fluids • Thermal burns • Diabetes insipidus **Decreased (hyponatremia)** • Deficient dietary intake • Deficient sodium in IV fluids • Addison's disease • Diarrhea • Vomiting or nasogastric aspiration • Intraluminal bowel loss (ileus) • Diuretic administration • Chronic renal insufficiency • Excessive water intake • Hyperglycemia • Congestive heart failure • Ascites • Peripheral edema

Continued

Comprehensive Metabolic Panel—cont'd

Normal Results	Abnormal Findings
Potassium: 3.5–5.0 mEq/L	**Elevated (hypokalemia)** • Excessive dietary intake • Excessive IV intake • Acute or chronic renal failure • Addison's disease • Hypoaldosteronism • Potassium-sparing diuretics (spironolactone, triamterene) • Crush injury to tissues • Hemolysis • Transfusion of hemolyzed blood • Infection • Acidosis • Dehydration **Decreased (hypokalemia)** • Deficient dietary intake • Deficient IV intake • Burns • GI disorders • Diuretics • Hyperaldosteronism • Cushing's syndrome • Renal tubular acidosis • Licorice ingestion • Alkalosis • Insulin administration • Glucose administration • Ascites • Renal artery stenosis • Cystic fibrosis • Trauma
Glucose: 60–90 mmol/L	**Elevated (hyperglycemia)** • Diabetes mellitus • Acute stress response • Cushing's syndrome • Pheochromocytoma

Continued

Comprehensive Metabolic Panel—cont'd

Normal Results	Abnormal Findings
Glucose: 60–90 mmol/L (cont'd)	• Chronic renal failure • Glucagonoma • Acute pancreatitis • Diuretic therapy • Corticosteroid therapy • Acromegaly **Decreased (hypoglycemia)** • Insulinoma • Hypothyroidism • Hypopituitarism • Addison's disease • Extensive liver disease • Insulin overdose • Starvation
Calcium: 9.0–10.4 mg/dL	**Elevated (hypercalcemia)** • Hyperparathyroidism • Metastatic tumor to bone • Paget's disease of bone • Prolonged immobilization • Vitamin D intoxication • Lymphoma • Granulomatous infections (sarcoidosis, tuberculosis) • Addison's disease • Acromegaly • Hyperthyroidism **Decreased (hypocalcemia)** • Hypoparathyroidism • Renal failure • Hyperphosphatemia • Rickets • Vitamin D deficiency • Osteomalacia • Malabsorption • Pancreatitis • Fat embolism • Alkalosis

Continued

Comprehensive Metabolic Panel—cont'd

Normal Results	Abnormal Findings
Chloride: 98–106 mEq/L	**Elevated (hyperchloremia)** • Dehydration • Excessive infusion of normal saline solution • Metabolic acidosis • Renal tubular acidosis • Cushing's syndrome • Kidney dysfunction • Hyperparathyroidism • Eclampsia • Respiratory alkalosis **Decreased (hypochloremia)** • Overhydration • Syndrome of inappropriate antidiuretic hormone (SIADH) secretion • Congestive heart failure • Vomiting • Chronic diarrhea • Chronic respiratory acidosis • Metabolic alkalosis • Addison's disease • Diuretic therapy • Hypokalemia • Aldosteronism • Burns
Carbon dioxide: 23–30 mEq/L	**Elevated** • Severe vomiting • Aldosteronism • Use of mercurial diuretics • Chronic obstructive pulmonary disease (COPD) • Metabolic alkalosis **Decreased** • Chronic diarrhea • Loop diuretics • Renal failure • Diabetic ketoacidosis

Continued

Comprehensive Metabolic Panel—cont'd

Normal Results	Abnormal Findings
Carbon dioxide: 23–30 mEq/L (cont'd)	• Starvation • Metabolic acidosis • Shock
Blood urea nitrogen (BUN): 70–100 mL	**Elevated** • Impaired renal function • Congestive heart failure • Dehydration • Shock • Hemorrhage into GI tract • Stress • Excessive protein ingestion or catabolism **Decreased** • Liver failure • Malnutrition • Anabolic steroid use • Overhydration • Pregnancy • Impaired nutrient absorption • SIADH
Creatinine Female: 0.5–1.1 mg/dL Male: 0.6–1.2 mg/dL	**Elevated** • Diseases affecting renal function • Rhabdomyolysis • Acromegaly • Gigantism **Decreased** • Debilitation • Decreased muscle mass
Albumin	**Elevated** • Dehydration **Decreased** • Liver disease • Malnutrition • Inflammation • Renal problems

Continued

Comprehensive Metabolic Panel—cont'd

Normal Results	Abnormal Findings
Total protein: 6.4–8.3 g/dL	**Elevated** • Dehydration **Decreased** • Malnutrition • Pregnancy • Liver disease • Nephropathy • Third space losses • Overhydration • Increased capillary permeability • Inflammatory disease
Total bilirubin: 0.3–1.0 mg/dL	**Elevated Conjugated (direct)** • Gallstones • Extrahepatic duct obstruction (tumor, inflammation, gallstone, scarring, surgical trauma) • Extensive liver metastasis • Cholestasis from drugs **Unconjugated (indirect)** • Transfusion reaction • Sickle cell anemia • Hemolytic jaundice or anemia • Resolution of large hematoma • Pernicious anemia • Large-volume blood transfusion • Hepatitis • Cirrhosis • Sepsis • Gilbert's syndrome
Alkaline phosphatase: 30–120 U/L	**Elevated** • Primary cirrhosis • Intrahepatic or extrahepatic biliary obstruction • Primary or metastatic liver tumor • Normal pregnancy (third trimester or early postpartum period) • Normal bones of growing children

Continued

Comprehensive Metabolic Panel—cont'd

Normal Results	Abnormal Findings
Alkaline phosphatase: 30–120 U/L (cont'd)	• Metastatic tumor to the bone • Healing fracture • Hyperparathyroidism • Paget's disease • Rheumatoid arthritis • Intestinal ischemia or infarction • Myocardial infarction • Sarcoidosis **Decreased** • Hypophosphatemia • Malnutrition • Milk–alkali syndrome • Pernicious anemia • Scurvy (vitamin C deficiency)
Alanine aminotransferase: 4–36 U/L	**Elevated** • Hepatitis • Hepatic necrosis • Hepatic ischemia • Cirrhosis • Cholestasis • Hepatic tumor (acetaminophen) • Hepatotoxic drugs • Obstructive jaundice • Severe burns • Trauma to striated muscle • Myositis • Pancreatitis • Myocardial infarction • Infectious mononucleosis • Shock
Aspartate aminotransferase: 0–35 U/L	**Elevated** • Myocardial infarction • Cardiac operations • Cardiac catheterization and angioplasty • Hepatitis • Hepatic cirrhosis

Continued

Comprehensive Metabolic Panel—cont'd

Normal Results	Abnormal Findings
Aspartate aminotransferase: 0–35 U/L (cont'd)	• Drug-induced liver injury • Hepatic metastasis • Hepatic necrosis (initial stages only) • Hepatic surgery • Infectious mononucleosis • Hepatic infiltrative process (tumor) • Skeletal muscle trauma • Recent noncardiac surgery • Multiple trauma • Severe, deep burns • Progressive muscular dystrophy • Recent convulsions • Heat stroke • Primary muscle disease • Acute hemolytic anemia • Acute pancreatitis **Decreased** • Acute renal disease • Beriberi disease • Diabetic ketoacidosis • Pregnancy • Chronic renal dialysis

Thyroid Panel

Normal Results	Abnormal Findings
Thyroid-stimulating hormone (TSH): 0.4–4.0	**Elevated** • Primary hypothyroidism • Thyroiditis • Thyroid agenesis • Congenital hypothyroidism (cretinism) • Large dose of iodine

Continued

Thyroid Panel—cont'd

Normal Results	Abnormal Findings
Thyroid-stimulating hormone (TSH): 0.4–4.0 (cont'd)	• Radioactive iodine injection • Surgical ablation of thyroid • Severe and chronic illness • Pituitary TSH-secreting tumor **Decreased** • Secondary hypothyroidism • Hyperthyroidism • Suppressive doses of thyroid medication • Factitious hyperthyroidism
Thyroxine, free: 0.8–2.8 ng/dL **Thyroxine, total** Adult male: 4–12 mcg/dL Adult female: 5–12 mcg/dL **Triiodothyronine:** 100–200 mcg/dL	**Elevated** • Primary hyperthyroidism • Acute thyroiditis • Factitious hyperthyroidism • Thyroid cancer **Decreased** • Hypothyroid states • Pituitary insufficiency • Hypothalamic failure • Iodine insufficiency • Renal failure • Cushing's disease • Cirrhosis • Surgery • Advanced cancer • Starvation

Prostate-Specific Antigen (PSA)

Tube or Specimen	Normal Results	Abnormal Findings
Red top tube	<4 ng/mL	**Interfering factors** • Digital rectal examination falsely elevates (draw PSA before DRE) • Ejaculation within 24 hours of testing • Recent urinary tract infection or prostatitis • Finasteride (Propecia, Proscar) increases levels **Elevated** • Prostate cancer • Benign prostatic hyperplasia • Prostatitis

Anemia Workup

Additional blood tests for anemia other than the CBC

Tube or Specimen	Normal Results	Abnormal Findings
Erythropoietin Red top tube • Indicates whether kidney is producing adequate amounts of erythropoietin to stimulate adequate RBC production	5–35 IU/L	Decreased levels may mean that erythropoietin injections are required. Elevated levels indicate sickle cell trait or sickle cell anemia.
Reticulocyte count Lavender top tube • Indicates whether bone marrow is producing RBCs	0.5%–2.0%	Decreased levels indicate bone marrow diseases.
Sickle cell preparation (Hgb S) Lavender top tube	—	Elevated levels indicate sickle cell trait or sickle cell anemia.

Hepatitis

Tube or Specimen	Normal Results
Red top tube	**Hepatitis A (HAV)** ELISA or IgM: detects antibodies Hepatitis A IgM: indicates acute infection Hepatitis A IgG: indicates previous exposure to hepatitis A **Hepatitis B (HBV)** Hepatitis B surface antigen: • Indicates active infection • Increases before onset of symptoms • Peaks during first week of symptoms • Returns to normal when jaundice subsides Hepatitis B surface antibody: • Signifies the end of the acute infection phase; can also signify immunity • Appears 4 weeks after disappearance of surface antigen Hepatitis B core antibody: • Can indicate chronic hepatitis • Appears at the same time as the surface antibody • Serves as the only marker of recent hepatitis infection Hepatitis Be-antigen: • Found in early and active disease with high infectivity • Persistent presence predicts chronic hepatitis **Hepatitis C (HCV)** Enzyme immunoassay (EIA): • EIA3 can detect antibodies to HCV antigen

Prothrombin Time/Partial Thromboplastin Time/International Normalized Ratio

Tube or Specimen	Normal Results	Abnormal Findings
Prothrombin Time Blue top tube	11.0–12.5 seconds	**Elevated (prolonged PT)** • Liver disease • Hereditary factor deficiency • Vitamin K deficiency • Bile duct obstruction • Coumarin ingestion • DIC • Massive blood transfusion • Salicylate intoxication
Partial thromboplastin time Blue top tube	60–70 seconds	**Elevated** • Congenital clotting factor deficiencies (von Willebrand's disease, hemophilia) • Cirrhosis of liver • Vitamin K deficiency • DIC • Heparin administration • Coumarin administration **Decreased** • Early stages of DIC • Extensive cancer
International normalized ratio Because of differences among different batches and manufacturers of tissue factor (it is a biologically obtained product), the INR was devised to standardize the results.	Normal: 0–1.3 when blood is not being thinned by warfarin	On blood thinner therapy such as warfarin

Continued

Prothrombin Time/Partial Thromboplastin Time/International Normalized Ratio—cont'd

Tube or Specimen	Normal Results	Abnormal Findings
International normalized ratio (cont'd)		
The INR is the ratio of a patient's PT to that of a normal (control) sample, raised to the power of the International Standardized Index (ISI) value for the control sample used.	Adequate range with warfarin: 2.0–3.0	In patients who require warfarin therapy, adequate range: 2.0–3.0

Lipid Panel

Component	Tube or Specimen	Normal Results	Abnormal Findings
Cholesterol	Red top tube	Normal <200 mg/dL	Low risk: <240 Moderate risk: 241–260 High risk: >260 **Elevated** • Familial hypercholesterolemia • Familial hyperlipidemia • Hypothyroidism • Uncontrolled diabetes • Pregnancy • Nephrotic syndrome
Low-density lipid profile	—	60–180 mg/dL	**Elevated** • Familial lipoproteinemia • Nephrotic syndrome • Hypothyroidism • Alcohol consumption • Chronic liver disease • Hepatoma • Cushing's syndrome
High-density lipid profile	Red top tube	Male: >45 mg/dL Female: >55 mg/dL	**Elevated** • Familial HDL lipoproteinemia • Excessive exercise **Decreased** • Familial low HDL • Hepatocellular disease • Hypoproteinemia

Continued

Lipid Panel—cont'd

Component	Tube or Specimen	Normal Results	Abnormal Findings
Triglycerides	Red top tube	Male: 40–160 mg/dL Female: 35–135 mg/dL	**Elevated** • Glycogen storage disease • Familial hypertriglyceridemia • Hyperlipidemia • Hypothyroidism • High carbohydrate diet • Poorly controlled diabetes • Nephrotic syndrome • Chronic renal failure **Decreased** • Malabsorption syndrome • Malnutrition • Hyperthyroidism

Erythrocyte Sedimentation Rate and C-Reactive Protein Assay

Test	Tube or Specimen	Normal Results	Abnormal Findings
Erythrocyte sedimentation rate (measures how much inflammation is in the body)	Lavender top tube	Male: up to 15 mm/hr Female: up to 20 mm/hr	**Elevated** • Chronic renal failure • Malignant diseases • Bacterial infection • Inflammatory diseases (temporal arthritis, polymyalgia rheumatica, rheumatoid arthritis, rheumatic fever, lupus) • Necrotic disease • Severe anemia **Falsely decreased** • Sickle cell anemia • Spherocytosis • Hypofibrinogenemia • Polycythemia vera
C-reactive protein (measures the amount of protein in the blood that signals active inflammation)	Red top tube	<1.0 mg/dL	**Elevated** • Acute, noninfectious inflammatory reaction (arthritis, acute rheumatic fever, Reiter's syndrome, Crohn's disease) • Collagen vascular diseases (vasculitis syndrome, lupus erythematosus) • Tissue infarction or damage (acute myocardial infarction, pulmonary infarction, kidney or bone marrow transplant rejection, soft tissue trauma) • Bacterial infections (postoperative wound infection, urinary tract infection, tuberculosis) • Malignant disease • Bacterial infection

Toxoplasmosis, Other, Rubella, Cytomegalovirus [CMV], and Herpes (TORCH) Panel

These types of infections have a detrimental effect on the fetus. Infections that cause problems in pregnancy and during childbirth are included. Each part of the TORCH panel is evaluated as an individual test.

Type of Infections	Tube or Specimen	Normal Results	Abnormal Findings
Toxoplasmosis	Red top tube	**IgG titer** • 1:16—no previous infection • 1:16–256—usually prevalent in the general population • 1:256—recent infection **IgM titer** • 1:256—acute infection	**Elevated** • Toxoplasmosis infection
Rubella	Red top tube	**Hemagglutination inhibition (HAI)** • 1:8—no immunity to rubella • 1:20—immunity to rubella **ELISA IgM** • 1:1—active infection **ELISA IgG** • <7 IU/mL—no immunity to rubella • >10 IU/mL—immunity to rubella	• ELISA is now standard for rubella testing; it provides the most accurate testing method. • If no immunity, immunization is recommended. • Women should not become pregnant for 3 months after immunization is complete.

Continued

Toxoplasmosis, Other, Rubella, Cytomegalovirus [CMV], and Herpes (TORCH) Panel—cont'd

Type of Infections	Tube or Specimen	Normal Results	Abnormal Findings

Cytomegalovirus	• Urine or mouth swab specimen is best
	• Fresh specimen is essential
		• Viral culture most definitive for diagnosis
		• Identification of IgM antibodies indicates a relatively recent infection
		• Three different CMV antigens can be detected immunologically:
		  • Early
		  • Intermediate-early
		  • Late
			Elevated
			• A fourfold increase in CMV titer done 10–14 days apart usually indicates an acute infection.

Herpes • Classified as either type 1 or type 2	Culture of lesion is gold standard for detection • Swab suspicious lesions with red top viral swab culturette May obtain blood for serological study (red top tube)	• If virus present, patient has outbreak of herpes • If IgM antibodies are present, patient has active herpes infection IgG antibodies indicate exposure at some time to herpes-type virus, including chickenpox	Positive IgM antibodies mean present and active herpesvirus.

White Blood Cell Differential Analysis

Type of White Blood Cell	Elevated	Decreased
Neutrophils	**Neutrophilia** • Physical or emotional stress • Acute suppurative infection • Myelocytic leukemia • Trauma • Cushing's syndrome • Inflammatory disorders (rheumatic fever, thyroiditis, rheumatoid arthritis) • Metabolic disorders (ketoacidosis, gout, eclampsia)	**Neutropenia** • Aplastic anemia • Dietary deficiency • Overwhelming bacterial infection (especially in the elderly) • Viral infections (hepatitis, influenza, measles) • Radiation therapy • Addison's disease • Chemotherapy
Lymphocytes	**Lymphocytosis** • Chronic bacterial infection • Viral infection (mumps, rubella) • Lymphocytic leukemia • Multiple myeloma • Infectious mononucleosis • Radiation therapy • Infectious hepatitis	**Lymphocytopenia** • Leukemia • Sepsis • Immunodeficiency • Lupus erythematosus • Later stages of HIV infection • Drug therapy (steroids, chemotherapy) • Radiation therapy
Monocytes	**Monocytosis** • Chronic inflammatory disorders • Viral infections (mononucleosis) • Tuberculosis • Chronic ulcerative colitis • Parasites	**Monocytopenia** • Steroids

Continued

White Blood Cell Differential Analysis—cont'd

Type of White Blood Cell	Elevated	Decreased
Eosinophils	**Eosinophilia** • Parasitic infections • Allergic reactions • Eczema • Leukemia • Autoimmune diseases	**Eosinopenia** • Increased adreno-steroid production
Basophils	**Basophilia** • Myeloproliferative disease • Leukemia	**Basopenia** • Acute allergic reactions • Hyperthyroidism • Stress reactions

Step-by-Step Approach to Reading a Chest X-ray

Factor	Appropriate Considerations
Adequacy	• Check name and date on film. • Organize from right to left. • Is it anterior-posterior or posterior-anterior? • Check for rotation: Are clavicles centered over the spinal column? • Check for film exposure: Is it clear? Count ribs from top: You should be able to count nine if film is correctly exposed.
Airway	• Is the trachea midline? • Pushed away from the abnormality (pleural effusion, tension pneumothorax)? • Pushed toward the abnormality (atelectasis)? • Check for widening mediastinum: masses, inflammation, trauma, hematoma, aneurysms.

Continued

Step-by-Step Approach to Reading a Chest X-ray—cont'd

Factor	Appropriate Considerations
Bones	• Check for fractures or lesions: ribs, clavicle, thoracic spine. • Check soft tissues: surgical clips, foreign bodies, subcutaneous air. • Caution: Nipple shadows can appear as nodules.
Cardiac	• Check size (increased in cardiomyopathy and heart failure). • Heart size greater than 50% of the anterior-posterior width is considered abnormal. • Check borders. • Check aortic notch.
Diaphragm	• Right side should be higher than left. • If much higher, consider effusion, collapse, or diaphragmatic paralysis. • If upright, consider free air under diaphragm and intra-abdominal perforation.
Effusion/Esophagus	• Look for blunting at the costophrenic angle.

Fields (lung)	• Look for:
	  • Granulomas
	  • Pneumothorax
	  • Nodules
	  • Effusions
	  • Consolidations
	  • Kerley B signs (thin linear pulmonary opacities caused by fluid or cellular infiltration into the interstitium of the lungs suggestive of heart failure, pulmonary edema, or pulmonary fibrosis)

Gastric bubble	• May indicate hiatal hernias

Abnormal Vaginal Bleeding

Important history findings	• Assess menstrual cycle history and history of possible pregnancy, miscarriage, or induced abortion:
	  • Menarche
	  • Last normal menstrual period
	  • Prior normal menstrual periods (menopause date onset, symptoms since, any hormone or other therapy, use of OTC supplements/soy, history of hyperplasia/surgical or other treatments)
	• Abnormal uterine bleeding common in girls with recent-onset menarche; perimenopausal women; and women with anovulation from excessive exercise, stress, weight loss or gain, depression, and anxiety
	Must rule out other causes of serious conditions

Physical assessment	• Complete physical assessment and vital signs
Differential diagnosis	• Pregnancy, systemic illness (thyroid or adrenal abnormality, diabetes, obesity, blood dyscrasias or clotting abnormalities, liver disease, renal disease); tumors, polyps, trauma, cancer (reproductive tract, urinary tract, colorectal, lymph); STIs/PIDs; pharmaceuticals, psychological stress. Bleeding secondary to ovulation at midcycle—may be light or heavy, with pain
Diagnostic tests	• Serum pregnancy test • CBC • Endometrial biopsy
Medications	• Based on underlying cause If severe anemia, excessive bleeding, positive pregnancy test, postmenopausal spotting or bleeding, or serious medical conditions, refer to obstetrician-gynecologist for medical/surgical management. Life-threatening conditions need emergency attention.
Other therapies	• Ongoing STI protection—at least for 1 week when drugs started but urge continuation for STI protection
Follow-up	• Follow the patient closely based on response to therapy.

Acne

Important history findings	• Family history of acne, dietary habits • Steroid use • Lithium or phenytoin use • Stages within the menstrual cycle • Onset, type of lesion, distribution • Oral contraceptives • Stress • What has worked in the past?
Physical assessment findings	• Mild: presence of several papules and pustules, but no nodules • Moderate: several to many papules and pustules, along with a few to several nodules • Severe: numerous or extensive papules and pustules and many nodules • Acne also is classified by type of lesion: comedonal, papulopustular, and nodulocystic
Differential diagnosis	• Cellulitis • Dermatitis • Eczema • Rosacea • Steroid rosacea • Molluscum contagiosum • Folliculitis
Diagnostic tests	• None indicated
Medications	• Benzoyl peroxide: applied twice daily • Sulfacetamide/sulfur lotion: applied twice daily • Erythromycin cream 2%: applied twice daily • Clindamycin gel 1%: applied twice daily • Retin-A: applied once daily or once every other day • Tazarotene 0.05%: applied once daily • Doxycycline 50–100 mg: applied twice daily or tetracycline 250 mg four times daily • Isotretinoin (Accutane) 0.5–2 mg: twice daily
Other therapies	• Over-the-counter products may be used as primary or adjunctive treatments

General Dementia	
Important history findings	• Progressive permanent decline in cognitive functioning and memory • History of cognitive impairment: gradual or sudden • Details of sleep-wake cycle • Decreased appetite • Lack of pleasure • Melancholy mood • Medication history • Past medical history • Alcohol abuse
Physical assessment findings	• Observe gait, affect, and dress. • Measure vital signs. • Complete mental status examination. • Examine eyes for papillary response to light, extraocular movements. • Check function of cranial nerves. • Palpate thyroid for enlargement. • Auscultate for carotid bruit. • Examine patient for abnormal movements, tremors, focal weaknesses. • Assess for sensation. • Perform deep tendon reflex and plantar response.
Differential diagnosis	• Vitamin B_{12}, folate deficiency • Seizures • Delirium • Psychosis • Depression • Infection • Dehydration • Brain lesion

Continued

General Dementia—cont'd

Diagnostic tests	• CBC • Urinalysis • Chest x-ray • Serological tests for syphilis • Vitamin B_{12} and folate levels • TSH (thyroid profile) • Complete metabolic panel • CT scan or MRI • Cognitive testing recommended; often undertaken by a neuropsychologist
Medications	• Cholinesterase inhibitors: Razadyne (galantamine), Exelon (rivastigmine), Aricept (donepezil) • Namenda (memantine) These drugs may be used in combination.
Other therapies	• Vitamins E, D, and A • Cognitive stimulation therapy Provide a calm atmosphere where the patient feels safe and secure. Leave reminders in places where the patient will look for things.
Follow-up	• It is important for the health-care provider to monitor the health of the caregiver.

Angina

Important history findings	• Chest pain either on exertion or at rest • Burning, heavy feeling in chest • Nausea or indigestion • Shortness of breath • Short of breath while seated • Numbness or tingling
Physical assessment findings	• Few physical findings to stable angina • Electrocardiogram may show some T-wave changes

Continued

Angina—cont'd	
Differential diagnosis	• GERD • Costochondritis • Dyspepsia
Diagnostic tests	• Stress test • Electrocardiogram • Blood work: complete blood count, electrolytes, liver and kidney function
Medications	• Sublingual nitroglycerin. If the patient takes a nitroglycerin tablet with no response, he or she should take another. After three tablets and no relief of pain, the patient should go to the ED. • Nitroglycerine spray (in place of sublingual) • Beta blockers • Calcium channel blockers
Other therapies	• Angioplasty • Coronary artery bypass surgery • Aspirin 81 mg to keep clots from forming
Follow-up	• For stable angina, see patients every 3 months unless symptoms worsen. • For unstable angina, the patient should be sent to the ED.
Red flags	Unstable angina: pain unrelieved by rest. The patient should be sent to the ED.

Anorexia Nervosa/Bulimia	
Important history findings	• Seriously underweight: less than 85% of expected weight • Depressed affect • Fear of looking fat • Difficulty interacting with others • Irritability • Decreased concentration • Decreased ability to sleep

Continued

Anorexia Nervosa/Bulimia—cont'd

	• Obsessed with food and thoughts of food • Rigid ideas • Overemphasis on exercise • 95% of patients female; disorder usually manifesting during early adolescence • Caucasians more often affected • Occurs more often in upper socioeconomic group
Physical assessment findings	**Diagnostic criteria for anorexia or bulimia** The refusal to maintain body weight at or above a minimally normal weight for age and height (Body weight less than 85% of the expected weight is considered minimal.) • An intense fear of gaining weight or becoming fat, even though the person is underweight • Self-perception that is grossly distorted and weight loss that is not acknowledged • In women who have already begun their menstrual cycle, at least three consecutive periods missed (amenorrhea) or menstrual periods occurring only after a hormone is administered A subtype of anorexia nervosa is binge-eating/purging, in which the individual regularly engages in binge eating or purging behavior that involves self-induced vomiting or the misuse of laxatives, diuretics, or enemas during the current episode of anorexia. Other physical findings may include: • Cardiac arrhythmia • Constipation • Decreased bone density • Anemia • Electrolyte imbalance • Fine, downy hair on extremities • Dry, flaky skin that is yellow tinged • Brittle hair and nails • Erosion of dental enamel if binging and vomiting

Continued

Anorexia Nervosa/Bulimia—cont'd	
Differential diagnosis	Other psychological problems: • Depression • Anxiety • Affective mood disorders Gastrointestinal parasite
Diagnostic tests	• Complete metabolic panel to evaluate electrolytes and renal function • BMI calculation
Medications	• No medications currently available for anorexia or bulimia, but antidepressants may help to some degree
Other therapies	• May be treated in an outpatient setting but often requires hospitalization • Intense psychotherapy for the patient and the patient's family • Careful monitoring for weight and eating habits
Follow-up	• Follow-up is aimed at continuing psychotherapy and monitoring weight and eating habits.

Asthma	
Important history findings	• Shortness of breath • Recent upper respiratory infection • Symptoms that worsen at night • Chest tightness • Cough with clear sputum • History of atrophic diseases and allergies
Physical assessment findings	• Use of accessory muscles for breathing • Decreased breath sounds • Expiratory wheeze • Cyanosis • Diaphoresis • Tachycardia

Continued

Asthma—cont'd

	• Difficulty breathing while sitting in tripod position • Use of accessory muscles for breathing • GERD or symptoms
Differential diagnosis	• Bronchitis • Pneumonia • COPD • Allergic reaction • Foreign body • Decreased peak expiratory volume
Diagnostic tests	• Chest x-ray • Spirometry or peak flow expiratory flow rate

Medications	• Medications to prevent exacerbations
	  • Leukotriene modifiers
	  • Cromolyn
	  • Methylxanthines
	• Multidose inhalers or dry powder inhalers
	  • Short-acting bronchodilator (albuterol)
	  • Long-acting bronchodilator (salmeterol)
	  • Prednisone—first-line treatment
	• **Oral prednisone:** 10 mg tid × 5 days
	• **Combination drugs:** Bronchodilator + prednisone
	• Emergency drugs:
	  • Epinephrine
	  • Ipratropium bromide
	For full treatment guidelines, go to www.nhlbi.nih.gov/guidelines/asthma/index.htm

Other therapies	• Spacer with multidose inhalers • Air filters • Oxygen
Follow-up	• After initial diagnosis, follow up in 1 week to 10 days. • Step up therapy if patient awakens at night with symptoms, has an urgent care visit, has an increased need for short-acting beta$_2$ agonist, or uses more than one canister of short-acting beta$_2$ agonist a month.
Red flags	If asthma symptoms awaken the patient at night and the patient experiences severe shortness of breath, the patient should go to ED.

Back Pain	
Important history findings	• Precipitating factors • Is pain worse with movement?
Physical assessment findings	• Pain on palpation with muscle pain • Tingling in extremities with radiculopathy • Pain on straight leg raise with disc pain • Pain at sciatic notch with sciatic nerve pain
Differential diagnosis	• Pyelonephritis appendicitis • Metastatic disease of the bone • Osteomyelitis • Abdominal aneurysm • Peripheral neuropathy • Cystitis • Prostatitis • Endometriosis • Osteoarthritis • Bursitis • Osteoporosis • Cauda equina syndrome
Diagnostic tests	• MRI • X-ray of spine
Medications	• Ibuprofen or acetaminophen • Muscle relaxants • NSAIDs
Other therapies	• Acupuncture • Physical therapy • Arch supports • Massage • Ice or heat • Exercise (gentle stretching) • Referral to orthopedist, chiropractor, or pain management physician
Follow-up	• Return to the office if no improvement after 2 weeks.
Red flags	Cauda equina syndrome is suspected if the patient has loss of bladder or bowel function. This is a medical emergency.

Bacterial Vaginosis

Important history findings	• History of multiple sexual partners
Physical assessment findings	• Vagina appears pale with adherent white or grayish homogenous discharge on vaginal walls; may or may not have obvious fishy odor
Differential diagnosis	• Trichomonas, trimethylaminuria • Foreign body in vagina • Vulvovaginal • Candidiasis • Atrophic vaginitis • Dermatitis • HIV disease
Diagnostic tests	• Thin, white, gray, or white-yellowish homogenous discharge that adheres to vaginal walls • Positive whiff test • Clue cells • HIV tests • Pregnancy test
Medications	• **Nonpregnant female:** Metronidazole 500 mg at bedtime × 7 nights OR intravaginal metronidazole gel 0.75% 1 applicator full (5 g) daily × 5 days
Other therapies	• Treating male partners not advised by CDC; condom use decreases risk.
Follow-up	• Follow-up for recurrent infection diagnosis and treatment. Recurrence is common: up to 30% of treated women. Most recurrences occur in the first year, especially if a new partner. Refer or consult for recurrent or chronic infection.

Bipolar Disorder	
Important history findings	**Definition:** recurrent episodes of depression and hypomania • At least one manic or mixed episode required to make a diagnosis of bipolar disorder • Periods of sustained euphoria and grandiosity • Depressed mood • Mood lability • Pressured speech • Psychomotor agitation • Hypersexuality • Religiosity • Distractibility • Impaired insight
Physical assessment findings	• Weight loss or gain • Psychomotor agitation • Inability to concentrate • Recurrent suicide ideation • Inflated self-esteem
Differential diagnosis	• Depression • Anxiety • Dysthymia • Brain tumor • Psychosis
Diagnostic tests	• Have patient complete Mood Disorder Questionnaire
Medications	• Lithium: needs monitoring for therapeutic level • Chlorpromazine (Thorazine) • Divalproex (Valproate): needs monitoring for therapeutic level • Selective serotonin reuptake inhibitors (SSRIs) • Aripiprazole (Abilify): Has caused fatal heart attack and stroke in older adults with dementia-related conditions. • Symbyax: Approved by the FDA specifically for treatment of bipolar disorder; used for a treatment-resistant depression; works as a depression treatment and a mood stabilizer

Continued

Bipolar Disorder—cont'd	
Other therapies	• Psychotherapy should accompany pharmacological treatment for bipolar disorder, as with all depressive disorders.
Follow-up	• Follow up 1 week after initiation of new medication to determine efficacy and the patient's condition.

Benign Prostatic Hypertrophy	

Important history findings	• **Risk factors:**
	  • Aging: BPH found in 50% of patients >50 years old and 80% of patients >80 years old
	  • Family history
	  • African American descent
	  • Functioning testes
	• **Symptoms dependent on cause:** dribbling after voiding, hard to stop urine stream, urine retention, frequency, nocturia, incontinence, urgency, dysuria

Physical assessment findings	• DRE revealing firm, smooth, elastic, enlarged gland (larger than walnut size) • May find hematuria (>60 years), weak urine stream, distended bladder (>150 cc), and postvoid residual volume >100 mL
Differential diagnosis	• Neurogenic bladder • Neoplasm • Bladder cancer • Bladder calculi • Prostatitis • Urethritis • UTI
Diagnostic tests	• Urinalysis (for hematuria, infection) • PSA • Serum creatinine

Continued

Benign Prostatic Hypertrophy—cont'd	
Medications	• Alpha$_1$-adrenergic agonists and 5-alpha-reductase inhibitors (take up to 6 months to work). Combining terazosin and finasteride may work best long term, not short term. Start with alpha blockers first.
Other therapies	• Advise avoiding all spicy foods, alcohol, and caffeine. • Some supplements may be used, such as saw palmetto, nettle, pygeum.
Follow-up	• PSA once per year • DRE once per year • Biopsy possibly indicated
Red flags	Inability to urinate is an emergency. Send the patient to the ED for catheterization.

Cataracts	
Important history findings	• Decreased vision; glare, especially when person looks at a point of light (can interfere with night driving) • Visual distortion with straight edges appearing wavy or curved, double vision • Altered color perception with loss of contrast sensitivity
Physical assessment findings	• Decreased visual acuity on Snellen chart • Pupil reaction to light is unaffected by cataracts • Absence of red reflexes with ophthalmoscope examination
Differential diagnosis	• Macular degeneration • Diabetic retinopathy • Glaucoma
Diagnostic tests	• No diagnostic tests
Medications	• None

Continued

Cataracts—cont'd	
Other therapies	• Refer to ophthalmologist for surgical removal of cataracts. This has become an outpatient procedure and can be completed early in the development of cataracts.
Follow-up	• After surgery
Red flags	Eye pain is always a red flag and is not a symptom of cataracts.

Chronic Obstructive Pulmonary Disease	
Important history findings	• History of cigarette smoking or exposure to toxic substances such as asbestos • Dyspnea on exertion • Cough • Fatigue • Infections
Physical assessment findings	• Respiratory distress with exertion • Increased anterior-posterior diameter of chest • Retractions • Accessory muscle use for breathing • Pursed lip breathing • Wheezes, decreased breath sounds, prolonged expiratory time • Weight loss
Differential diagnosis	• Asthma • Congestive heart failure • Acute bronchitis • Bronchiolitis
Diagnostic tests	• Spirometry • Pulmonary function studies • Chest x-ray • Arterial blood gases • CBC with differential • Electrocardiogram

Continued

Chronic Obstructive Pulmonary Disease—cont'd	
Medications	• **Mild COPD:** short-acting beta$_2$ agonist • **Moderate COPD:** anticholinergic agent (ipratropium bromide), short-acting beta$_2$ agonist, and long-acting beta$_2$ agonist; theophylline also effective but has toxicity potential and many drug interactions • **Severe COPD:** refer to pulmonology if possible; a cortisone inhaler added for short course of 3 months
Other therapies	• Smoking cessation • Pneumococcal vaccine • Influenza vaccine yearly • Elimination of environmental irritants • Avoidance of sedating drugs, beta blockers, and antihistamines
Follow-up	• See patient at least every 3 months for follow-up if stable.

Depression	
Important history findings	• Despondency • Anhedonia (inability to feel pleasure) • Insomnia or hypersomnia • Weight gain or loss • Feelings of doom or dread • Loss in desire to complete usual activities • Psychomotor agitation or restriction • Loss of energy • Feelings of worthlessness • Inability to concentrate • Recurrent suicidal ideation
Physical assessment findings	• Sad affect • Weight loss or gain • Signs of fatigue

Continued

Depression—cont'd

Differential diagnosis	• Organic mood disorder • Schizophrenia • Grief • Substance abuse • Dementia
Diagnostic tests	• Depression scale • Complete physical workup
Medications	• **Selective serotonin reuptake inhibitors:** fluoxetine (Prozac), fluvoxamine (Luvox), paroxetine (Paxil), and sertraline (Zoloft); low danger from overdose; however, these drugs not recommended for adolescents or children • **Serotonin-norepinephrine reuptake inhibitors:** venlafaxine (Effexor or Effexor XR), desvenlafaxine (Pristiq), duloxetine (Cymbalta), and bupropion (Wellbutrin). • **Tricyclic antidepressants:** amitriptyline (Elavil), amoxapine (Asendin), clomipramine (Anafranil), desipramine (Norpramin), and doxepin (Sinequan). These drugs have anticholinergic effects that can be detrimental, especially in older adults. Overdose can be life-threatening. • **MAO inhibitors:** best prescribed by psychiatrists because these drugs are difficult to manage, have many side effects, and interact with many other medications
Other therapies	• Psychotherapy (essential for all patients) • Biofeedback • Behavior modification • Group therapy
Follow-up	• Follow up 1–2 weeks after a newly prescribed antidepressant.
Red flag	Any patient who has suicidal ideation and a plan to carry out the suicide should be hospitalized immediately to prevent self-harm.

Diabetes, Type 2	
Important history findings	• Family history of type 2 diabetes • Obesity • Fatigue • Frequent infections • Wounds that are slow to heal • Erectile dysfunction • Changes in vision • Flulike symptoms • Red, swollen gums • For women: history of gestational diabetes
Physical assessment	• Few physical assessment symptoms are present with type 2 diabetes • Frequent yeast infections • Sores that are slow to heal • Overweight
Differential diagnosis	• Hyperglycemia from stress or steroid use • Cushing's syndrome • Pheochromocytoma • Trauma, burns, or infection
Diagnostic tests	• FBS • Glucose tolerance test • Glycosylated hemoglobin • Cholesterol level • Blood pressure • Funduscopic examination • Home glucose monitoring • EKG
Medications	• **Sulfonylurea:** can cause hypoglycemia. It cannot be given to people allergic to sulfa. • **Meglitinides:** These drugs are taken at the beginning of three meals daily and can cause hypoglycemia. • **Biguanides:** decrease the amount of sugar produced by the liver and sensitized muscle tissue cell receptors to insulin. They cannot be taken with renal insufficiency or failure or when dyes excreted through the kidney are given.

Continued

Diabetes, Type 2—cont'd

	• **Thiazolidinediones:** sensitize the insulin receptors of both muscle and fat cells. Monitor for liver enzyme elevation and heart disease. • **DPP-4 inhibitors:** prevent the breakdown of compounds in the body that increase glucose levels. These drugs reduce blood glucose and may have a positive effect on cholesterol. • **Alpha-glucosidase inhibitors:** decrease absorption of carbohydrates. • **Incretin mimetics:** naturally occurring hormones that lower blood glucose levels primarily by increasing insulin secretion. They are given by injection. Primary side effect is nausea. • **Insulin:** used once the pancreas is no longer able to produce adequate amounts of insulin.
Other therapies	• Chromium picolinate: improves carbohydrate metabolism • Magnesium: low magnesium levels worsen blood glucose levels • Vanadium: sensitizes receptors on the cell to insulin • Diet teaching (ADA diet) • Foot care • Referrals to other health-care practitioners, such as an ophthalmologist, dentist, and podiatrist
Follow-up	So much teaching and education are needed that these patients will have to come back several times after being diagnosed. • One week after beginning medications, repeat FBS • $HgbA_{1c}$ every 3 months • Referrals should be made to ophthalmology, podiatry, and dentist

Gastroesophageal Reflux Disease (GERD)	
Important history findings	• Heartburn • Antacid use • Smoking • Recent weight loss • Blood in stool • Excessive alcohol intake • Family history of GERD • Sore throat • Hoarseness • Asthma • Cough • Difficulty swallowing • Unexplained lung infections • Anemia—from bleeding ulcerated esophagus
Physical assessment findings	• Trace to moderate tenderness when epigastric area is palpated
Differential diagnosis	• Cardiac chest pain • Esophagitis • Esophageal motility or structural disorders • Peptic ulcer disease • Esophageal tumor
Diagnostic tests	• Generally none are indicated, but in patients with severe GERD barium swallow or upper endoscopy may be indicated.
Medications	• Antacids • Histamine antagonists • Protein pump inhibitors
Other therapies	• Lifestyle changes, including weight loss, drinking alcohol only in moderation, smoking cessation, sleeping at a 45-degree angle, and avoiding lying down for 3 hours after eating • Avoidance of chocolate, caffeine, peppermint, fatty foods, and alcohol
Follow-up	• In 2 weeks to evaluate treatment and assess GERD symptoms

Headache

Important history findings	• Tension headache: pain in neck and occipital area; vicelike feeling around head with throbbing. Pain becomes more intense as day progresses. • Migraine: may have aura prior to start of headache; severe throbbing, pounding pain with sensitivity to light (photophobia), noise (phonophobia), or odors; mental dullness; nausea; vomiting; and abdominal pain. Migraines tend to run in families. • Cluster: occurs most often in adult males with burning, piercing pain, severe enough that person cannot usually sit still; causes tearing and eye irritation; may occur several times a day. Cluster headaches often wake the patient at night. There is a pattern of remission and exacerbation. • Sinus: deep and constant pain on face, across bridge of nose, cheekbones, and forehead; may have nasal discharge, feeling of fullness in ears, and fever • Post-trauma: changes in cognition, mood, personality, and sleep patterns; head, neck, and shoulder pain with dizziness and vertigo • Rebound: caused by overuse of medications especially analgesics. Headache corresponds to taking drugs.
Physical assessment findings	• Tension: tenderness in neck and shoulder area; evidence of stress, either physical or emotional • Migraine: few physical signs other than those expressed by patient in history • Cluster: stuffy nose, runny eyes, fever, restlessness, temporal swelling and tenderness; sweatiness • Sinus: fever, bulging tympanic membranes, runny nose, eye pain • Post-trauma: visual changes, decreased cognition and memory, evidence of trauma to skull or face • Rebound: signs come mainly from history of analgesic overuse

Continued

Headache—cont'd	
Differential diagnosis	• Infection • Otitis media • Tooth decay • CVA • Brain lesion
Diagnostic tests	• CT or MRI for suspected brain lesion, or CVA • CBC to detect increased white blood cell count in sinus infection or cluster headache • Snellen chart test to test for changes in visual acuity
Medications	• Tension: analgesics (ibuprofen, acetaminophen), tricyclic antidepressants. • Migraine: nonsteroidal anti-inflammatory drugs, serotonin agonists (sumatriptan), ergotamines • Cluster headache: serotonin agonists, ergotamines, methysergide • Sinus: short steroid burst to decrease inflammation, antihistamine for runny nose • Post-trauma: repair damage from trauma
Other therapies	• Tension: exercise, stress management • Migraine: trigger avoidance • Cluster: oxygen therapy • Sinus: breathing in steam
Follow-up	• As needed The following symptoms need further investigations through neuroimaging or referral: Rapidly increasing headache frequency • History of lack of coordination • History of localized neurological signs or a history such as subjective numbness or tingling • History of headache causing awakening from sleep (although this can occur with migraine and cluster headache) • Changes in vision
Red flags	Changes in vision, extreme vertigo, loss of memory or cognitive changes, or very painful stiff neck all may indicate serious disease of the brain that should be investigated.

Hepatitis A

Important history findings	• Transmission mode: fecal/oral usually sudden onset; loss of appetite, nausea, vomiting, fatigue, muscle/joint aches, fever, chills possible, flu symptoms, diarrhea or constipation, recurrent or intermittent RUQ or epigastric abdominal pain; jaundice, urine dark, stools light; not chronic disease; incubation period, 4–6 weeks
Physical assessment findings	• Ill appearance • Jaundiced, icteric sclera • Rhonchi/wheezing • Fever • Nasal discharge • Pharyngitis • Tachycardia • Abnormal bowel sounds • Hepatomegaly • RUQ pain or diffusely tender abdomen • Possible splenomegaly • Tender, possibly swollen joints • Lymphadenopathy
Differential diagnosis	• Infectious mononucleosis • Cytomegalovirus
Diagnostic tests	• Hepatitis screening panel: HAV-IgM antibody (IgM anti-HAV); HBV surface antigen (HBsAg), HBV core antibody (anti-HBc), HCV core antibody; urinalysis; total and direct bilirubin; liver function tests. Rule out mononucleosis, CMV, HIV.
Medications	• Preventive HAV vaccine for travelers, children in day care, and other risk groups
Other therapies	• Good hygiene and hand washing after toileting or changing a diaper • Correct disposable glove use for food handlers • Nausea and vomiting therapy as indicated • No alcohol for 6–12 months
Follow-up	• ALT normal in 12 weeks; may relapse in first year, then recover completely; not generally lethal; no lasting sequelae

Hepatitis B

Important history findings	• History of transmission by blood and body fluids
	• High-risk history:
	  • Homosexual male
	  • IV drug user
	  • Previous infection with HCV or HIV
	  • Immigrant
	  • Multiple sexual partners
	  • Health-care personnel exposed to blood, blood products, needle sticks
	  • Patients receiving hemodialysis

Physical assessment findings	• Ill appearance: jaundiced skin, sclera, mucosa • Fever • Malaise • Hepatomegaly, RUQ pain, or diffusely tender abdomen • Possible splenomegaly • Tender, possibly swollen joints • Lymphadenopathy
Differential diagnosis	• Infectious mononucleosis • Cytomegalovirus • Gallbladder disease • Liver cancer • Acute fatty liver of pregnancy
Diagnostic tests	• Hepatitis screening panel: HAV-IgM antibody (IgM anti-HAV) • HBV surface antigen (HBsAg) • HBV core antibody (anti-HBs) • HCV core antibody (anti-HCV) **If positive:** • HBsAg: HBeAg, anti-HBe, HBV DNA • Other: urinalysis, total and direct bilirubin, liver function tests • Rule out mononucleosis, CMV, HIV
Medications	• HBV vaccine series (pretest for anti-HBs); lasts at least 10 years; postexposure prophylaxis: HBIg (two doses a month apart); monitor for chronic HBV; therapy consisting of interferon with ribavirin or alternative viral agents

Continued

Hepatitis B—cont'd	
Other therapies	• No alcohol for 6–12 months • Nutritious diet • Good hygiene • Restricted activity in acute phase • Teaching about disease, transmission, prevention, and protection • No sharing razors or toothbrushes
Follow-up	• Ongoing evaluation and HBV testing for chronicity

Hepatitis C	

Important history findings	**Important history findings**
	• High-risk history:
	  • IV drug user
	  • Abnormal liver functions
	  • Health-care personnel exposed to blood, blood products, needle sticks
	  • Patients receiving hemodialysis
	• The CDC is now recommending a one-time test for Hepatitis C for all people born between 1945 and 1965

Physical assessment findings	• Ill appearance: jaundiced skin, sclera, mucosa • Hepatomegaly, RUQ pain, or diffusely tender abdomen • Possible splenomegaly
Differential diagnosis	• Liver cancer • Acute fatty liver of pregnancy • Hepatitis A or B
Diagnostic tests	• Persons who should be tested for Hepatitis C include: • Persons who have injected illicit drugs in the recent and remote past, including those who injected only once and do not consider themselves to be drug users.

Continued

Hepatitis C—cont'd	

	• Persons with conditions associated with a high prevalence of HCV infection including:
	  • Persons with HIV infection
	  • Persons with hemophilia who received clotting factor concentrates before 1987
	  • Persons who have ever undergone hemodialysis
	  • Persons with unexplained abnormal amino-transferase levels
	• Prior recipients of transfusions or organ transplants before July 1992, including:
	  • Persons who were notified that they had received blood from a donor who later tested positive for HCV infection
	  • Persons who received a transfusion of blood or blood products
	  • Persons who received an organ transplant
	• Children born to HCV-infected mothers
	• Health-care, emergency medical and public safety workers after a needle stick injury or mucosal exposure to HCV-positive blood
	• Current sexual partners of HCV-infected persons

Medications	Medications are prescribed by a specialist and must be monitored closely. For up-to-date treatment recommendations visit hcvguidelines.org.

Other therapies	• Healthy life style includes:
	  • Liver enzyme blood tests once or twice a year
	  • Liver biopsy every 3 to 5 years
	  • Regular doctor appointments
	  • No alcohol or tobacco
	  • Attaining or maintaining a healthy BMI
	  • Minimizing risk of steatosis with good control of diabetes and lipids

Follow-up	Natural history studies indicate that 55% to 85% of individuals who develop acute hepatitis C will remain HCV infected. If cirrhosis identified, screen for HCV—every 6 months if active HCV infection or annually if cured.

Human Papillomavirus (HPV)

Important history findings	• **Both genders:** young age (15–29 years old) at higher risk
Physical assessment findings	• **Men**: flesh-colored or pink and soft small single or grouped papules or warts on penis, scrotum, perineum, anus, groin, inner thighs, buttocks, oral mucosa, and other nongenital areas • **Women:** flesh-colored or pink and soft small single or grouped papules or warts on mons, vulva (labia, around clitoris, vestibule), perineum, anus, inner thighs, buttocks, oral mucosa, other nongenital areas, vaginal walls, cervix
Differential diagnosis	• Syphilis (flat warts—condylomata) • Molluscum contagiosum • Herpes simplex • Carcinoma • Melanoma • Adenomas • Lipomas • Fibromas • Seborrheic keratoses • Skin tags • Other noncancerous lesions such as psoriatic plaques
Diagnostic tests	• Pap smear or liquid-based test
Medications	• **Patient-applied therapy:** Topical to lesions: imiquimod 5% podofilox 0.5% gel/solution • **Provider-applied therapy:** *Vaccine Gardasil:* three-dose series approved for females and males aged 9–26 years; do not use if pregnant
Follow-up	• For warts: weekly examinations until lesions resolved

Hyperlipidemia	
Important history findings	• Family history of hyperlipidemia • Eastern European Jewish heritage • Past history of hyperlipidemia
Physical assessment findings	• Deposits of cholesterol (called xanthomas) • Pimple-like rash across the body from high triglycerides • Pancreatitis
Differential diagnosis	• Lipoma (for cholesterol deposit) • Abdominal differential diagnoses for pancreatitis
Diagnostic tests	NCEP or ATP III guidelines for diagnoses of hyperlipidemia: www.nhlbi.nih.gov/guidelines/cholesterol/ **Lipid profile** • **Total cholesterol:** normal <200 mg/dL • **LDL:** optimal level <100 mg/dL (<70 mg/dL in those with cardiovascular risk factors) • **HDL (optimum level):** men >40 mg/dL, women >50 mg/dL • **Triglycerides (optimum level):** <150 mg/dL If triglycerides >400 mg/dL, LDL cannot be calculated. • **Very LDL:** optimal between 5 and 40 mg/dL • **HDL and LDL particle size:** indicates type of lipidemia
Medications	• HMG-CoA reductase inhibitors (statins) • Other agents commonly added to statins: bile acid sequestrants, niacin, and ezetimibe • Fibrates, effective for lower triglycerides Combination use of statins and fibrates, although highly effective, greatly increases the risk for myopathy and rhabdomyolysis.
Other therapies	• Omega-3 fatty acids • Red rice yeast (*Monascus purpureus)*, which has been shown to have a cholesterol-lowering effect

Continued

Hyperlipidemia—cont'd	
Follow-up	• Make a follow-up appointment in 8–12 weeks to measure lipids again. Measure ALT to rule out developing hepatotoxicity. Measure creatinine levels in persons with muscle or joint pain. After the target has been met and liver function is stable, yearly follow-ups are sufficient.
Red flags	Muscle and joint pain could indicate rhabdomyolysis, which is a life-threatening complication. Creatinine and CPK levels are diagnostic for rhabdomyolysis.

Hypertension	
Important history findings	• Confirmation of hypertension based on the initial visit, plus two follow-up visits with at least two blood pressure measures at each visit • Family history of hypertension, cardiovascular disease, cerebrovascular disease, diabetes mellitus, or dyslipidemia • History of organ disease in heart, lungs, kidneys, peripheral vascular disease, brain (stroke or dementia), retinopathy, and secondary hypertension • Presence of risk factors such as age >55 years, diabetes mellitus, elevated LDL and cholesterol, low HDL cholesterol, glomerular filtration rate <60, microalbuminemia, family history of cardiovascular disease, obesity, tobacco use, low levels of physical activity
Physical assessment findings	Two or more blood pressure measurements separated by 2 minutes with the patient seated and after standing for at least 2 minutes **Prehypertension** • SBP 120–139 mm Hg and DBP 80–89 mm Hg **Stage one hypertension** • SBP 140–159 mm Hg and DBP 90–99 mm Hg

Continued

Hypertension—cont'd

	Stage two hypertension • SBP >160 mm Hg and DBP >100 mm Hg Other physical assessment findings include: • Measurement of height, weight, and waist circumference • Funduscopic examination for hypertensive retinopathy, such as arteriolar narrowing, focal arteriolar constrictions, arteriovenous crossing changes, hemorrhages and exudates, and disc edema • Examination of the neck for carotid bruits, distended veins, or an enlarged thyroid gland • Examination of the heart for abnormalities in rate and rhythm, increased size, precordial heave, clicks, murmurs, and third and fourth heart sounds
Differential diagnosis	Chronic kidney disease or obstructive uropathy • Thyroid and parathyroid disease • Drugs, excessive alcohol • Obstructive sleep apnea • Primary aldosteronism • Renal artery stenosis • Pheochromocytoma • Cushing's syndrome • Aortic stenosis • Obesity
Diagnostic tests	Initial laboratory screen should include: • 12-lead electrocardiogram • Urinalysis • Fasting blood glucose • Hematocrit • Serum sodium, potassium, creatinine (or estimated or measured GFR) • Calcium • Lipid profile (total cholesterol, HDL cholesterol, LDL cholesterol, and triglycerides). Additional laboratory and diagnostic studies may be required in individuals with suspected secondary hypertension or evidence of target-organ disease.

Continued

Hypertension—cont'd	
Medications	• A thiazide-type diuretic should be considered as initial therapy in most patients with uncomplicated hypertension. • Other classes of medications that should be used in combination to meet BP goals include beta-adrenergic blockers, angiotensin-converting enzyme inhibitors, angiotensin receptor blockers, and calcium channel blockers.
Other therapies	• Weight reduction • Decreased alcohol intake • Increased physical activity • Decreased dietary sodium intake • Avoidance of tobacco • Relaxation and stress management
Follow-up	• Accurate home blood pressure monitoring is an important tool in blood pressure control.

Hypothyroidism	
Important history findings	• Fatigue • Depression • Modest weight gain • Cold intolerance • Excessive sleepiness • Dry, coarse hair • Constipation • Dry skin • Muscle cramps • Increased cholesterol levels • Decreased concentration • Vague aches and pains • Increased or decreased duration and occurrence of menstrual periods

Continued

Hypothyroidism—cont'd	
Physical assessment findings	• Leg swelling • Dry skin • Weight gain
Differential diagnosis	• Ischemic heart disease • Nephrotic syndrome • Cirrhosis
Diagnostic tests	• Thyroid panel: TSH, T_3 and T_4, possibly free T_4 • Complete metabolic panel • Urine pregnancy test • Urinalysis to detect proteinuria • Lipids
Medications	• Synthroid and Levoxyl are thyroid hormone replacements that can be taken orally. Usually start with 50 mcg in younger healthy people or 25 mcg in older persons or in those with chronic comorbidities. Recheck TSH in 1 month; if still elevated, increase thyroid hormone slowly.
Other therapies	• No other therapies available or necessary
Follow-up	• Recheck TSH 1 month after medication change. Then, unless symptoms change, recheck yearly.

Interstitial Cystitis	
Important history findings	• Noninfectious chronic inflammatory bladder syndrome • More common in women (90%; 1 in 4.5 versus 1 in 11 men) • May complain of frequent UTIs with no treatment relief, migraine or frequent headaches, constipation, irritable bowel syndrome, seasonal allergies, heartburn, fibromyalgia, depression • History of seeing many clinicians without relief

Continued

Interstitial Cystitis—cont'd

Physical assessment findings	• Complete PE advised: check for abdominal/vulvar trigger points; pelvic examination with careful evaluation of base of bladder, muscles around bladder and vagina, uterus, adnexa, with rectovaginal examination
Differential diagnosis	• Chronic or recurrent bacterial cystitis • Overactive bladder endometriosis • Vulvodynia • Irritable bowel syndrome • Bladder cancer • Depression or anxiety • Fibromyalgia • Renal disorders • STIs • Neurological or rheumatological conditions
Diagnostic tests	• *In-office:* Blood work to rule out UTI, diabetes, endometriosis; self-scoring test—Pain and Urgency/Frequency Patient Symptom Scale (score of ≥10 suggests IC)
Medications	• Dimethyl sulfoxide: to reduce inflammation, decrease pain, prevent bladder muscle contractions • Pentosan polysulfate sodium (Elmiron): to help protect bladder lining • Amitriptyline to decrease histamine

Other therapies	• Bladder evaluation training
	• Lifestyle alterations
	  • Diet modification: discuss avoiding foods and substances that irritate bladder
	  • Smoking cessation
	  • Stretching exercises
	• Physical therapy to decrease trigger point pain
	• Stress reduction and relaxation techniques
	• Support group
	• Adequate rest
	• Adequate water intake (64 ounces daily)

Follow-up	• Referral or consultation with specialists as indicated

Methicillin-Resistant *Staphylococcus aureus*	
Important history findings	• Pruritic red papules • Boils (similar to spider bites) • Recent hospitalization or surgery • Long-term care residence • Dialysis • Permanent indwelling catheter or percutaneous medical device • Exposure to someone with MRSA
Physical assessment findings	• Erythematous papules, nodules, or abscesses • Furuncles • Abscesses that progress to cellulitis
Differential diagnosis	• Common skin infections, including impetigo, ecthyma, folliculitis, furunculosis, carbunculosis, cellulitis, erysipelas, paronychia, felon, and necrotizing fasciitis
Diagnostic tests	• Wound culture
Medications	• Bactroban topical to wounds on skin AND • Trimethoprim/sulfamethoxazole (Bactrim) orally OR • Doxycycline orally
Other therapies	• Compresses to area to promote drainage
Follow-up	• One week to determine whether lesion resolving
Red flags	It is essential to recognize signs and symptoms of serious, rapidly progressing systemic disease and toxicity to prevent septic shock, acute respiratory distress syndrome, and death.

Otitis Externa

Important history findings	• Swimming • Warm humid climates • Allergies or psoriasis
Physical assessment findings	• Ear pain that increases when pressure is placed on the tragus or when the pinna is moved • Sensation of fullness in the ear • Itching common with fungal infection • Otorrhea: white mucus for acute bacterial; granulation tissue for chronic bacterial; and white, gray, bluish-green, or yellow discharge for fungal
Differential diagnosis	• Otitis media • Mastoiditis • Foreign body in the ear canal • Furunculosis
Diagnostic tests	• Culture exudate
Medications	• Referral for severe or recurrent infections; cerumen removal before starting medications • Polymyxin B sulfate, neomycin, hydrocortisone • Tobramycin dexamethasone (TobraDex) not recommended for children • For children with tympanic membrane that is not intact, use ofloxacin 0.3% solution • For fungal infections: acetic acid, aluminum acetate solution (otic Domeboro), clotrimazole (Lotrimin) solution
Other therapies	• Auralgan drops for pain relief
Follow-up	• Not usually required unless pain and symptoms persist
Red flags	Malignant otitis media: otitis media that spreads to the skull. This is more common in patients with diabetes or those who are immunocompromised. Signs include yellow, foul-smelling drainage from the ear.

Peptic Ulcers	
Important history findings	• Presence, location of epigastric distress or pain • Quality, quantity, and timing of distress or pain • Associated symptoms such as nausea, vomiting, and heartburn • Past medical history of cirrhosis, pancreatitis, arthritis, COPD, hyperparathyroidism • Social history of smoking and stress • Regular nonsteroidal anti-inflammatory drug use or oral corticosteroids • Family history of gastrointestinal ulcers or GERD
Physical assessment findings	• Tenderness in abdominal or epigastric areas • Rigidity • Abnormal bowel sounds • Masses • Liver or spleen enlargement • Rectal examination for tenderness, masses, stool for occult blood • Duodenal ulcers more common than gastric ulcers; duodenal ulcer pain occurring when hungry, whereas gastric ulcer pain occurring immediately after eating
Differential diagnosis	• Neoplasm of the stomach • Pancreatitis • Diverticulitis • Dyspepsia • GERD • Esophageal spasm
Diagnostic tests	• Stool for occult blood • Hemoglobin/hematocrit • Barium swallow • Endoscopy • *Helicobacter pylori* test
Medications	• Magnesium-, aluminum-, or calcium-based antacids (Gaviscon, Tums) • Antibiotics if *H. pylori* test result positive (amoxicillin, clarithromycin, tetracycline, ciprofloxacin, metronidazole)

Continued

Peptic Ulcers—cont'd

	• Bismuth (Pepto-Bismol) • H_2 blockers (Tagamet, Zantac, Pepcid, Axid) • Proton pump inhibitors (PPIs): omeprazole (Prilosec), esomeprazole (Nexium), lansoprazole (Prevacid), or rabeprazole (AcipHex) • Sucralfate (Carafate)
Other therapies	• Cessation of NSAID and ASA use • Smoking cessation • Alcohol in moderation only • Stress reduction • Discontinuation of foods associated with distress or pain • Reduced caffeine intake
Follow-up	• Reevaluate symptoms after 2 weeks.
Red flags	Hematemesis is an ominous sign and should be evaluated immediately.

Pharyngitis

Important history findings	• Start of symptoms • Persons in proximity to patient with similar symptoms
Physical assessment findings	• **Bacterial:** erythema, injections, white pustules, fever, malaise, pain with swallowing • **Viral:** erythema, cobblestone appearance to throat, fever, malaise, pain with swallowing
Differential diagnosis	• Peritonsillar abscess • Mononucleosis
Diagnostic tests	• Throat culture • CBC
Medications	• Antibiotics for bacterial infection • Supportive therapy for both bacterial and viral

Continued

Pharyngitis—cont'd	
Other therapies	• Saltwater gargle • Vitamin C • Cool liquids • Rest • Ibuprofen • Acetaminophen for fever and malaise
Follow-up	• None required unless symptoms persist

Pneumonia	
Important history findings	• Recent upper respiratory infection • Abrupt onset of high fever, shaking chills, productive cough with purulent or rusty sputum, headache, pleuritic chest pain, overwhelming fatigue, myalgia, and malaise • Viral pneumonia rare unless patient immunosuppressed • History of asthma, COPD, pulmonary disease, alcohol or drug abuse
Physical assessment findings	• Diminished breath sounds • No air moving through lungs in areas (consolidation) • Rales and tubular breath sounds • Percussion over chest eliciting dullness over lung tissue
Differential diagnosis	• COPD • Atelectasis • Lung abscess • Heart failure • Neoplasms • Lung damage from physical agents

Continued

Pneumonia—cont'd

Diagnostic tests	• Chest x-ray • Gram stain and culture of expectorant • CBC, complete metabolic panel • Patients >40 years old and patients who are smokers: repeat chest x-ray 4–6 weeks after treatment to rule out tumor
Medications	• Bacterial pneumonia: amoxicillin with clavulanate; ofloxacin; trimethoprim-sulfamethoxazole; and erythromycin, especially for Legionnaires' disease • Viral pneumonia: monitor for secondary bacterial infection • Mycoplasma pneumonia: erythromycin • Ibuprofen: pain relief
Other therapies	• Increased hydration • Breathing cool steam • Sleeping upright for easier breathing • Bedrest • Cough syrups and avoidance of cigarette smoke • After acute phase, pneumococcal vaccination and yearly influenza immunization
Follow-up	• If outpatient, have the patient return in 48 hours to assess improvement, then every 2 weeks until symptoms are gone and the chest x-ray is clear.
Red flags	Increased shortness of breath is an emergency. Hospitalization should be strongly considered for patients older than age 65 years if respiratory rate >30 breaths/min, hypotension, or evidence of sepsis is present.

Rheumatoid Arthritis	
Important history findings	• When did pain start? Did pain start slowly? Does the patient experience joint stiffness and pain in joints that is worse on awakening in the morning? Is the joint involvement symmetric?
Physical assessment findings	• Symmetrical joint pain, redness, warmth, stiffness, decreased range of motion • Flulike symptoms • Muscle pain • Weakness and fatigue • Loss of appetite
Differential diagnosis	• Osteoarthritis
Diagnostic tests	• Laboratory tests, including rheumatoid factor, C-reactive protein, and erythrocyte sedimentation rate • X-ray • MRI • DEXA scan

Medications	• Disease-modifying antirheumatic agents including:
	  • Plaquenil: antimalarial drug
	  • Cyclosporine: antirejection drug
	  • Methotrexate: chemotherapeutic agent
	• Gold therapy
	• Biological response modifiers: Enbrel, Humira, Kineret, and Remicade
	• Avara: to reduce inflammation
	• Nonsteroidal anti-inflammatory drugs
	• Cortisone: systemic and injected

Other therapies	• Zinc, 30 mg daily • Selenium, 300 mg daily • Vitamin C, 1000 units with meals • Pantothenic acid, 500 mg four times daily with meals • Vitamin E, 400–800 IU daily
Follow-up	• Follow up after the rheumatology appointment to determine new medications and treatments prescribed. • Follow up any time symptoms increase or a functional decline occurs.

Scabies

Important history findings	• Itching, including when it is present and if it is worse at night • Onset, duration, and distribution of lesions • Treatments tried • History of housemates: Is anyone else displaying symptoms?
Physical assessment findings	• Vesicles: isolated, pinpoint, and filled with serous fluid (may contain mites) • Papules: small and isolated and representative of a hypersensitivity reaction (rarely contain mites) • Urticarial rash in infants and elderly • Common sites of scabies: hands, especially finger webs, wrist, penis, areola, and axillae; rarely seen on face in adults • Widespread pruritus and skin excoriation
Differential diagnosis	• Atopic dermatitis • Allergic and irritant contact dermatitis • Papular urticaria • Pediculosis
Diagnostic tests	• Microscopic identification of mites, ova, or feces (skin scraping)
Medications	• Only permethrin, crotamiton, and sulfur ointment considered safe for treating children <2 years old • Lindane sometimes used as a secondary treatment
Other therapies	• Washing of all surfaces in living area and sheets, towels, and clothing of everyone in household • Prophylactic therapy of medication recommended for household members
Follow-up	• Follow up in 2 weeks to assess treatment response. If no response has occurred, refer.

Sinusitis	
Important history findings	• History of prior sinus infections, asthma • Pain in periorbital area, on front of face, in tooth, in ears, and in throat • Runny nose, teary eyes • Feeling of fullness in head and ears • Cough that worsens when lying down • Fever, malaise, or colored nasal discharge • Recent upper respiratory infection • Poor response to antihistamines and decongestants
Physical assessment findings	• Periorbital swelling and presence of allergic shiners; edema in nasal mucosa; inflammation in throat, tongue, or gums • Lymphadenopathy • Decreased transillumination of sinuses • Positive tenderness on palpation of frontal and maxillary sinuses
Differential diagnosis	• Dental abscess • Cluster headache • Migraine headache • Allergic rhinitis • Nasal polyp • Tumor • Upper respiratory infection
Diagnostic tests	• CBC to determine infection
Medications	• Nasal steroid spray • Antibiotics for infection • Short burst of oral steroids or steroid injection
Other therapies	• Normal saline nasal spray, fluids • Acetaminophen or ibuprofen • Steam inhalation and warm compresses
Follow-up	• 48 hours if no improvement
Red flags	Patients with periorbital cellulitis, sinus polyps, and chronic sinusitis should all be referred to either the emergency room or specialist. Exquisite pain with palpation or percussion of the face.

Skin Cancer

Important history findings	**Basal cell:** small fleshy bump often on the back of head, ears, neck, or hands; accounts for 90% of all skin cancers and is 95% curable **Squamous cell:** red scaly nodule; second most common skin cancer; found on rim of ear, nose, around mouth **Melanoma:** rarest but most virulent type of skin cancer; most often found in fair-skinned women Melanoma has the following features: A: Asymmetrical nodule B: Borders of nodule irregular or ragged C: Color of the nodule varies D: Diameter of the nodule >10 mm (larger than a pencil eraser) **Important history questions** • Are you out in the sun a lot? • Do you use sunscreen? • Have you had many sunburns? • How long have you had the mole or spot? • Has it changed in shape, size, or color? • Do you have any oozing or bleeding from the mole?
Physical assessment findings	• Moles • Skin lesions • Scaly areas on skin
Differential diagnosis	• Actinic keratosis: sign of prolonged sun exposure • Freckles • Impetigo • Herpes • Molluscum contagiosum • Keratotic lesion
Diagnostic tests	• Punch biopsy of lesion • Refer to dermatologist for other testing
Medications	• Chemotherapy (Efudex and others)

Continued

Skin Cancer—cont'd	
Therapies	• Surgical removal (Mohs' surgery) • Freezing • Laser treatments • Radiation therapy
Follow-up	• Check yearly for return of cancer or new suspicious lesions

Syphilis	
Important history findings	• **Primary syphilis:** chancre emerging several weeks after sexual contact; recedes within 3–6 weeks • **Secondary syphilis:** rash on soles of feet and palms of hands, flat warts on moist skin surfaces, regional lymphadenopathy, malaise, fever, anorexia, painful joints • **Latent syphilis—early phase:** no symptoms; may last rest of life or may move to late/tertiary phase
Physical assessment findings	• **Primary syphilis:** chancre • **Secondary syphilis:** symmetric maculopapular lesions; lymphadenopathy; fever; 10% with enlarged spleen, hepatitis, nephritic involvement • **Latent tertiary phase:** aortic diastolic murmur, congestive heart failure, aneurysms, irregular pupillary response, unequal reflexes, meningeal irritation, wide-based gait, personality deterioration
Differential diagnosis	• Herpes simplex • Condylomata acuminate • Granuloma inguinale • Lymphogranuloma venereum • Chancroid • Cancer

Continued

Syphilis—cont'd

Diagnostic tests	• **Nontreponemal tests:** reactive venereal disease research laboratory (VDRL) or rapid plasma reagin (RPR) • **Confirmation test:** fluorescent treponemal antibody-absorption test (FTA-ABS)
Medications	• **Primary and secondary syphilis:** benzathine penicillin G 2.4 million units IM × 1 dose; *if allergic to penicillin:* doxycycline 100 mg PO bid × 14 days
Other therapies	• In-depth counseling and support
Follow-up	• Primary and secondary syphilis: testing at 6 and 12 months

Trichomoniasis

Important history findings	• **Women:** yellow-green, malodorous vaginal discharge in large or small amounts; dyspareunia; dysuria, vulvar discomfort, vaginal itching, bleeding after coitus • **Men:** Usually mild or no symptoms
Physical assessment findings	• **Women:** External vulva/perineum: edema, erythema, excoriations, ulcers; erythematous papules and/or petechiae on vaginal walls; cervix appears as "strawberry" from erythematous papules; green-yellow discharge • **Men:** urethral discharge; possibly prostate tenderness
Differential diagnosis	• Bacterial vaginosis • Candidiasis • Gonorrhea • Chlamydia • UTI • Foreign-body vaginitis

Continued

Trichomoniasis—cont'd	
Diagnostic tests	• Wet preparation shows motile flagellated trichomonads and >10 WBCs • Culture and DNA probe diagnostic • Test for gonorrhoea, *Chlamydia trachomatis,* syphilis • 10% KOH whiff test may give amine odor
Medications	• Metronidazole • Tinidazole
Other therapies	• No alcohol for 48 hours after metronidazole and 72 hours after tinidazole; both drugs taken with food
Follow-up	• Not indicated unless treatment unsuccessful or infection recurs

Urinary Incontinence	
Important history findings	• **Assess:** voiding symptoms, fluid intake, medications, bowel function changes, sexual function changes, pelvic/abdominal surgery, pads/day, diabetes mellitus, function, functional changes, psychological/mental status. Both genders experience types of UI. • **Stress UI:** urine leakage with coughing, sneezing, lifting, bending, exercising • **Urge UI-OAB-dry:** desire to urinate is sudden, forceful, undeniable • **Urge OAB-UI-wet:** involuntary loss of urine right after urgency sensation (results from hyperactive detrusor muscle) • **Overflow UI:** feeling as if need to void even if just voided; feels fullness, increased abdominal girth, discomfort in suprapubic area; may have constant small urine leakage • **Mixed UI:** stress and urge UI • **Total incontinence:** no control of urine; constant loss of urine because of sphincter damage

Continued

Urinary Incontinence—cont'd

Physical assessment findings	**Both genders:** focused neurological and focused abdominal examination for lower abdominal pain, organomegaly, increased girth, masses, bladder distention, and suprapubic tenderness • **Women:** pelvic examinations, checking for cystocele, bladder neck motion, leakage with Valsalva maneuver (for this assessment, bladder should be filled before examination), strength of vaginal contraction • **Men:** rectal examination of prostate, rectal sphincter tone for pelvic floor muscle endurance
Differential diagnosis	• Pressure from pelvic/abdominal masses • Renal calculi • Pelvic/vaginal infection • Genital herpes
Diagnostic tests	• Urinalysis • Urine C&S • Pregnancy test for women, plus indicated tests for STI and vaginitis • Blood chemistry laboratory scan • Three-day voiding diary brought for visit
Medications	• **Stress UI:** alpha-adrenergics; estrogen preparations may help women; nonpharmacological therapy most helpful for SUI • **Urge UI (overactive bladder):** anticholinergic, antimuscarinic, antispasmodic single or combined agents
Other therapies	• **Stress UI:** surgical pubovaginal sling or transvaginal suspension; intraurethral collagen injection • **Urge UI (overactive bladder):** timed voiding for behavioral modification to improve voluntary bladder control; pelvic floor muscle training to improve symptoms (Kegel's); biofeedback with or without sacral nerve electrical stimulation (used with medications)

Continued

Urinary Incontinence—cont'd	
	• **Overflow UI:** intermittent self-catheterization, nerve stimulation, surgical correction of obstruction • Assist patients with options for leakage, bedding, furniture, clothing, auto upholstery protection, managing odor, hygiene; psychological support. Refer to a physical therapist for perineal muscle control; may be helpful for women with no to little pelvic floor muscle contraction.
Follow-up	• As needed

Urinary Tract Infection (Lower Tract)	
Important history findings	• **Acute:** sudden onset when no prior symptoms • **Chronic:** unresolved infection after treatment • **Recurrent:** recurs <2 weeks after first infection • **Complicated:** acute or chronic with history of catheter use, pregnancy, chronic illness • **Presenting signs/symptoms:** dysuria, frequency, urgency, hematuria, flank pain, suprapubic pain, incontinence, urine smells foul
Physical Assessment	• Urinalysis reveals hematuria, nitrites, >10 leukocytes, elevated protein in urine
Differential diagnosis	• Pyelonephritis • Vaginitis • STIs • Tumors • Interstitial cystitis (inflammatory condition without infection)
Diagnostic tests	• Clean-catch midstream urine for urinalysis • Culture and sensitivity for causative organism

Continued

Urinary Tract Infection (Lower Tract)—cont'd

Medications	Always check for a history of drug allergies; review contraindications. • With acute uncomplicated UTI, no sulfa allergy, no prior hospitalization, and no antibiotic treatment in last 3 months: nitrofurantoin (100 mg bid × 5 days); trimethoprim-sulfamethoxazole 1 tablet bid for five days or fluoroquinolone 250 mg bid for five days • With complicated UTI: trimethoprim-sulfamethoxazole (Bactrim DS 1 tab PO q12 h × 10–14 days) or a fluoroquinolone (levofloxacin, gatifloxacin, ofloxacin, norfloxacin) • For pain, burning, urgency: phenazopyridine (Pyridium), 200 mg PO tid after meals. This drug changes urine to orange color; warn the patient.
Other therapies	• Completion of all medication • Eight 8-oz glasses of water per day • Vitamin C daily • Regular and complete emptying of bladder • Showers instead of baths • For women: wipe front to back after toileting, practice good hygiene, wear cotton underwear only (no thongs), avoid feminine hygiene products and harsh soaps, empty bladder before and after coitus, and use condoms with coitus
Follow-up	• Not indicated with uncomplicated UTI

Urinary Tract Infection (Upper Tract)	
Important history findings	• Sudden onset of fever lasting hours to a few days • Chills • Back pain on one or both sides in flank area • Nausea and vomiting
Physical assessment findings	• Elevated blood pressure pulse rate • Fever up to 103°F • Shaking chills • Unilateral costovertebral angle tenderness • Nausea and vomiting • Diarrhea • Extreme fatigue • Possible urinary urgency, frequency, suprapubic discomfort, sepsis • Evidence of mental confusion in elderly patients
Differential diagnosis	• Cystitis • Urethritis • Asymptomatic bacteruria • Interstitial cystitis, PID, or other pelvic infectious/inflammatory condition in women • Renal calculi
Diagnostic tests	• Urinalysis indicating bacteria, WBC casts (diagnostic), proteinuria, leukocytes, nitrites, pyuria; hematuria IVP, DMSA scan • Ultrasound often used for chronic pyelonephritis
Medications	• Oral therapy used only in mild acute cases without sepsis or nausea/vomiting: trimethoprim-sulfamethoxazole or a fluoroquinolone • Amoxicillin or amoxicillin-clavulanate possibly effective for first episodes in young women without anatomical abnormalities • Third generation cephalosporins, aminoglycosides, or aztreonam for antibiotic-resistant bacteria
Other therapies	• Hospitalization may be indicated.
Follow-up	• Expect adequate response within 48 hours or reevaluate. Refer to a specialist to prevent kidney damage with any lack of response to treatment.

Emerging Infectious Disease

Emerging Viruses are those that have recently appeared within a population or geographical range and are rapidly increasing.	The World Health Organization warned in its 2007 report that infectious diseases are emerging at a rate that has not been seen before. Since the 1970s, about 40 infectious diseases have been discovered, including SARS (severe acute respiratory syndrome), MERS (Middle East respiratory syndrome), Ebola, chikungunya, avian flu, swine flu, and Zika.
Important history findings	• Travel history, especially to geographical areas known for outbreaks • Social history including risk factors • Last menstrual period and pregnancy status
Physical assessment	• Complete physical assessment and vital signs
Differential diagnosis	• SARS and MERS are infectious respiratory diseases that are caused by members of a class of viruses known as coronaviruses. • Both SARS and MERS are characterized by severe, pneumonia-like symptoms, which can be fatal. • People with certain conditions, such as diabetes, renal failure, chronic lung disease, and immunocompromised persons, as well as the elderly, are considered to be at high risk of severe disease from MERS infection. • Ebola viruses cause a severe and often deadly illness known as Ebola virus disease (EVD; previously referred to as Ebola hemorrhagic fever). Other symptoms include fever, headache, muscle pain, weakness, vomiting, and diarrhea and in the more severe cases can include damage to blood vessels and extensive internal and external bleeding (hemorrhage).

Emerging Infectious Disease—cont'd	
	• Zika virus is transmitted primarily by mosquitoes that thrive in tropical climates and urban areas. The virus can cause Zika virus disease. In most cases, Zika virus disease is a mild illness, but Zika virus can cause a serious birth defect known as microcephaly, in which babies have abnormally small heads and symptoms that range from mild developmental delays to a fatal condition. Zika virus can also cause a neurological condition in adults known as Guillain-Barré.
Other therapies	• Therapy surrounds supportive treatment and fever control. • For more information on these and other emerging infectious diseases please go to: www.cdc.gov/ncezid
Follow-up	• Confirmation of any emerging infectious disease requires local and national public health authorities.

Medicare

Medicare is health insurance for people age 65 or older, younger than age 65 with certain disabilities, and any age with permanent kidney failure.

- Participating providers can charge only what Medicare allows.
- Medicare deductibles and copays cannot be waived.
- Medicare pays NPs at 85% of the physician's fee schedule or at 80% of the actual charge, whichever is lower.
- NP must submit own billing number.
- A UPIN billing number must be obtained and submitted on all claims.

Medicare Part A Covered Services

- Inpatient care in a hospital, skilled nursing facility, or hospice
- Home health care, dependent on certain conditions

Medicare Part B Covered Services

- Provider fees: office and hospital visits, consultations, nursing home visits
- X-rays, laboratory tests, physical and occupational therapy, other outpatient diagnostic testing
- Ambulatory surgical center services
- Surgical dressing, casts, splints
- Certain braces
- Durable medical equipment

Medicaid

Medicaid is a state program that differs in eligibility and payment depending on the state in which you practice. Services covered include:

- Inpatient and outpatient services
- Physician visits
- Dental visits
- Nursing home services for those more than 21 years old
- Home health

- Family planning and supplies
- Rural health clinics
- Laboratory tests and x-rays
- Services of an NP or a nurse midwife

Tricare

TRICARE is a health-care program serving active duty service members; National Guard and Reserve members; retirees; and their families, survivors, and certain former spouses worldwide. CHAMPUS, the Civilian Health and Medical Program for the Uniformed Services, is a cost-sharing program that is used to provide inpatient and outpatient care for dependents from civilian sources; it is for military retirees and families.
TRICARE has three plans with different benefits:

- TRICARE Prime:
  - Fewer out-of-pocket costs than other TRICARE options
  - Enhanced vision and preventive coverage
  - Priority access for care at military treatment facilities
  - Most care provided by an assigned primary care manager (PCM)
  - PCM referrals to specialists when necessary
  - No claims to file (in most cases)
  - Easy transfer of enrollment when moving
  - Time and distance access standards for care, including wait times for urgent, routine, and specialty care
- TRICARE Standard:
  - Freedom to choose any TRICARE-authorized provider
  - Referrals not required, but some care may require prior authorization
  - Highest out-of-pocket costs
  - Possible need to submit health-care claims
- TRICARE Extra:
  - Must visit a TRICARE network provider
  - Fewer out-of-pocket costs
  - Claims filed for patient by network providers
  - Care provided in a military treatment facility on a space-available basis only

Web sites for more information about ICD-10	
Centers for Disease Control	http://www.cdc.gov/nchs/icd/icd10.htm
Centers for Medicare and Medicaid Services	www.cms.gov/Medicare/Coding/ICD10/downloads/ICD10FAQs.pdf
World Health Organization	http://apps.who.int/classifications/apps/icd/icd10training/
Medicaid	http://www.medicaid.gov/Medicaid-CHIP-Program-Information/By-Topics/Data-and-Systems/ICD-Coding/ICD-10-Final-Regulation-and-Training.html

Medicare Documentation

According to the AAPC, "the Health Insurance Portability and Accountability Act (HIPAA) 5010 must be used when conducting electronic transactions. The new submission standard will accommodate the increased size and complexity of ICD-10 coding and relate almost entirely to health care transactions. The implementation of the 5010 standard will require changes to the software, systems, and procedures currently used to bill Medicare and other payers. Those affected by the upgrades include all HIPAA covered entities; this means providers, health plans and clearinghouses."

Key Components to Visit

- History, including chief complaint; history of present illness; review of systems; and past medical, surgical, family, and social histories
- Examination
- Decision making
- Counseling
- Coordination of care
- Nature of presenting problem and time

Level of Visit

Documentation of the level of the patient's visit is important because the higher the level of visit, the greater the reimbursement. However, if you do not meet the criteria for the higher level of visit, you can be charged with Medicare fraud. Levels of visits include:

- **Problem focused:** A limited examination of the affected body area or organ system
- **Expanded problem focused:** A limited examination of the affected body area or organ system and other symptomatic or related organ systems
- **Detailed**: An extended examination of the affected body areas and other symptomatic or related organ systems
- **Comprehensive:** A general multisystem examination or a complete examination of an organ system

Decision Matrix for New Office Patients

Code	History	Examination	Decision Making	Nature of Presenting Problem	Time in Minutes
99201	Problem focused	Problem focused	Straightforward	Self-limiting or minor	10
99202	Expanded problem focused	Expanded problem focused	Straightforward	Low to moderate	20
99203	Detailed	Detailed	Low	Moderate	30
99204	Comprehensive	Comprehensive	Moderate	Moderate	45
99205	Comprehensive	Comprehensive	High	High	60

Decision Matrix for Established Office Patients

Code	History	Examination	Decision Making	Nature of Presenting Problem	Time in Minutes
99211	Does not require an NP or physician	Nurse visit	BP check, blood sugar check	Minimal	5
99212	Problem focused	Problem focused	Straightforward	Self-limited or minor	10
99213	Expanded problem focused	Expanded problem focused	Low	Low to moderate	15
99214	Detailed	Detailed	Moderate	Moderate to high	25
99215	Comprehensive	Comprehensive	Moderate to high	Moderate to high	40

Pregnancy Category

This is a system of classifying drugs according to their established risks for use during pregnancy. This classification system is in place for all drugs receiving FDA approval prior to June 30, 2015.

- **Category A:** Controlled human studies have demonstrated no fetal risk.
- **Category B:** Animal studies indicate no fetal risk, but no human studies have been conducted; or adverse effects in animals but not in well-controlled human studies.
- **Category C:** No adequate human or animal studies exist; or no adverse fetal effects in animal studies but no available human data.
- **Category D:** Evidence of fetal risk, but benefits outweigh risks.
- **Category X:** Evidence of fetal risk. Risks outweigh benefits.

After June 30, 2015, all drugs submitted for FDA approval will have a summary statement related to safety in pregnancy and will not have the above category designation.

BEERS List of Medications

Use with extreme caution in older adults.

- First generation antihistamines such as Benadryl
- Triclyclic antidepressants such as Elavil Barbiturates such as Phenobarbital
- Sleeping aids such as Zolpidem or Ambien
- Pain medications such as NSAIDS Benzodiazepines such as Xanax, Valium, or Ativan
- Hormone therapy such as estrogen
- Pain medications such as opiods

Antibiotics

Used for treatment or prevention of bacterial infection. Which type of antibiotic to use depends on the type of bacteria present.

Aminoglycosides

- **Examples:** Gentamicin, tobramycin, streptomycin.
  Pregnancy Category D: Should not be used in nursing mothers.
- **Indications:** Bactericidal protein synthesis inhibitors binding to bacterial ribosomes to prevent the initiation of protein synthesis. Effective against *Enterobacter, Klebsiella, Salmonella, Shigella, Proteus, Staphylococcus aureus, Pseudomonas aeruginosa.*
- **Administration:** IV, cream, eye drops, ointment, by mouth.
- **Adverse reactions and side effects:** Aminoglycoside usage has been limited because prolonged use has been found to cause kidney damage and injury to the auditory nerves, leading to deafness. If used on skin, stinging may occur; with eye drops, conjunctivitis may occur. Hearing loss, dizziness, and roaring in the ears may occur at high doses; antibiotic-induced colitis, voice alteration, and cough may occur.
- **Contraindications:** Use with caution in patients who are pregnant, have renal impairment, are infants or elderly, or have muscle weakness. Absolutely contraindicated in patients with myasthenia gravis.

Cephalosporin

- **Examples:** First generation cephalexin, cefadroxil, cephradine; second generation cefuroxime, cefaclor; third generation cefotaxime, ceftazidime, cefixime—these give the best CNS penetration.
  Pregnancy Category B: May be used with nursing mothers.
- **Indications:** Beta lactam antibiotics: Used for biliary tract infection; throat infections; community-acquired pneumonia; and exacerbation of bronchitis, meningitis, pyelonephritis, and gonorrhea.
- **Administration:** IV, by mouth.
- **Adverse reactions and side effects:** Hypersensitivity reactions, diarrhea, colitis, reduction in effectiveness of oral contraceptives. Antacids can reduce absorption; diuretics increase plasma concentration of cephalosporin drugs; cephalosporin drugs increase warfarin levels.
- **Contraindications:** Known hypersensitivity to penicillin or cephalosporin; caution with patients with renal impairment because these drugs are excreted through the kidneys.

Fluoroquinolone

- **Examples:** Ciprofloxacin, ofloxacin, levofloxacin, gemifloxacin.
  Pregnancy Category C: Not recommended for nursing mothers.
- **Indications:** Synthetic antibiotics. Urinary tract and gynecologic infections, gonorrhea, prostatitis, respiratory tract infections, skin and skin structure infections, bone and joint infections, infectious diarrhea, intra-abdominal infections, febrile neutropenia, postexposure treatment of inhalational anthrax.
- **Administration:** Eye drops, ear drops, IV, by mouth.
- **Adverse reactions and side effects:** Seizures, dizziness, drowsiness, headache, pseudomembranous colitis, abdominal pain, diarrhea, nausea, Black box warning for tendon rupture or tendonitis. Also causes increased risk for QT prolongation, which could lead to death; Stevens-Johnson syndrome; increased blood levels of theophylline, warfarin. Calcium-containing substances such as dairy products and antacids may interfere with the absorption of fluoroquinolones. Cimetidine may interfere with elimination of fluoroquinolones.
- **Contraindications:** These drugs stop epiphyseal growth and should never be given to children younger than 18 years of age. Hypersensitivity reactions are contraindications.

Macrolides

- **Examples:** Azithromycin (Zithromax), erythromycin, clarithromycin (Biaxin).
  Pregnancy Category B for azithromycin and erythromycin. Pregnancy Category C for clarithromycin. Not recommended for nursing mothers.
- **Indications:** Effective against gram-positive bacteria and most gram-negative bacteria, *Neisseria, Legionella,* and *Haemophilus,* but not Enterobacteriaceae. Used for upper respiratory tract infections, bronchitis, pneumonia, skin and skin structure infections, nongonococcal urethritis, cervicitis, gonorrhea, chancroid; *Mycobacterium avium* complex infections in patients with HIV and bacterial endocarditis prevention.
- **Administration:** By mouth, IV, cream.
- **Adverse reactions and side effects:** Severe allergic reactions, cardiac arrhythmias, prolonged INR with warfarin use, gastrointestinal disturbances (nausea, vomiting, diarrhea, dyspepsia, abdominal pain

and cramps, headache, taste disturbance, eosinophilia, reversible hearing loss, hepatotoxicity infrequent occurrences with all the macrolides); Black box warning for QT prolongation, a potentially fatal condition.

- **Contraindications:** Known sensitivity to macrolide antibiotics.

Penicillin

- **Examples:** Penicillin G, Pen VK, amoxicillin, Trimox.
  Pregnancy Category B: May be used with nursing mothers.
- **Indications:** Beta lactam antibiotics used in the treatment of bacterial infections caused by susceptible, usually gram-positive, organisms; used for skin and skin structure infections, otitis media, sinusitis, upper respiratory infection, genitourinary infection, septicemia, endocarditis prophylaxis, ulcer disease from *Helicobacter pylori;* may be used for Lyme disease off label.
- **Administration:** By mouth
- **Adverse reactions and side effects:** Diarrhea, hypersensitivity, nausea, rash, neurotoxicity urticaria, superinfection (including candidiasis), fever, vomiting, erythema, dermatitis, angioedema, seizures (especially in patients with epilepsy), or pseudomembranous colitis; decreased effectiveness of oral contraceptives.
- **Contraindications:** Known sensitivity to penicillin.

Sulfa Antibacterial Drugs

- **Examples:** Sulfamethoxazole, Bactrim, Bactrim DS, Septra, Septra DS, sulfamethoxypyridazine.
  Pregnancy Category C: Do not use with nursing mothers.
- **Indications:** Ear infections, urinary tract infections, bronchitis, traveler's diarrhea, and *Pneumocystis carinii* pneumonia infections. Bactrim DS effective for MRSA.
- **Administration**: By mouth.
- **Adverse reactions and side effects:** Fever, headache, rash no matter how mild, cough, shortness of breath, diarrhea, restlessness, confusion, hallucinations, seizures, slow heart rate, severe tingling, numbness, muscle pain, nausea, stomach pain, loss of appetite, itchy skin, dark urine, clay-colored stool, jaundice, decreased urination. May increase or have toxic effect when combined with methotrexate, phenytoin, sulfonylureas, warfarin.
- **Contraindications:** Known sensitivity to sulfa medications.

Tetracycline/Doxycycline

- **Examples:** Tetracycline Sumycin, Terramycin, Tetracyn, and Panmycin. Doxycycline is a synthetic form of tetracycline; forms include Vibra-Tabs, Doryx, Monodox, Oracea, Vibramycin.
  Pregnancy Category D: Not recommended for pregnant women or nursing mothers.
- **Indications:** Broad-spectrum bacteriostatic agents most often used with severe acne. Doxycycline is used with sinusitis, prostatitis, syphilis, chlamydia, pelvic inflammatory disease. Effective for *Shigella*, Lyme disease, *Acinetobacter*, MRSA.
- **Administration:** By mouth; for doxycycline normal dose is 100 mg bid.
- **Adverse reactions and side effects:** Can stain teeth, skin photosensitivity, drug-induced lupus or hepatitis; dizziness. Do not use in children. Take on empty stomach; do not take with milk or other calcium-rich foods.
- **Contraindications:** Do not use with methotrexate. Do not use in children younger than 8 years old, and avoid during periods of tooth development.

Antihypertensives

Angiotensin-Converting Enzyme Inhibitors

- **Examples:** (Most end in "ril") Captopril (Capoten, Capozide), lisinopril (Prinivil, Zestril), enalapril (Vasotec), fosinopril (Monopril), benazepril (Lotensin), ramipril (Altace); also combined with an HCTZ (lisinopril/HCTZ).
  Pregnancy Category D: Should not be used in nursing mothers; should not be used in children younger than 6 years old.
- **Indications:** Hypertension, heart failure, left ventricular dysfunction, renal protection for diabetic patients.
- **Administration:** By mouth.
- **Adverse reactions and side effects:** Hyperkalemia, especially when used with potassium-sparing diuretics or potassium supplements. Cough main reason for discontinuation. Dizziness, renal impairment, nausea, angioedema. May increase lithium, phenothiazine, and digoxin levels. NSAIDs may decrease effect of ACE inhibitors.
- **Contraindications:** Previous angioedema, renal artery stenosis, hypovolemia, or dehydration; not to be used in pregnancy.

Angiotensin Receptor Blockers

- **Examples:** (Most end in "artan") Irbesartan (Avapro, Avalide), valsartan (Diovan), losartan (Cozaar, Hyzaar), candesartan (Atacand), olmesartan (Benicar).
  Pregnancy Category D: Should not be used in nursing mothers; should not be used in children younger than 6 years old.
- **Indications:** Hypertension, heart failure, left ventricular dysfunction, renal protection for patients with diabetes.
- **Administration:** By mouth.
- **Adverse reactions and side effects:** Dizziness, headache, hyperkalemia. First dose may cause orthostatic hypotension, rash, diarrhea, dyspepsia, abnormal liver function, muscle cramp, myalgia, back pain, insomnia, decreased hemoglobin levels, renal impairment, pharyngitis, nasal congestion.
- **Contraindications:** Known sensitivity to angiotensin receptor blockers.

Beta-Adrenergic Blocking Agents

- **Examples:** (Most end in "ol") Atenolol (Tenormin), metoprolol (Toprol XL, Lopressor), nadolol (Corgard), propranolol (Inderal).
  Pregnancy Category C: Not to be used in nursing mothers.
- **Indications:** Reduce morbidity and mortality. Decrease heart rate, myocardial contractility and conduction velocity of the heart. Reduced cardiac output. After myocardial infarction, heart failure.
- **Administration:** By mouth.
- **Adverse reactions and side effects:** Additive effect when given with negative inotropes or other antihypertensive agents. Therapy should not be abruptly stopped. Efficacy has not been established in children. Adverse effects include bradycardia, hypotension, worsening CHF, PVD, bronchospasm, impotence, masking the signs of hypoglycemia, dizziness, fatigue, and sleep disturbance.
- **Contraindications:** Severe bradycardia, heart block, cardiogenic shock, class IV heart failure, sick sinus syndrome.

Calcium Channel Blockers

- **Examples:** Dihydropyridine calcium channel blockers ending in "ipine" such as amlodipine (Azor, Caduet, Exforge, Lotrel, Norvasc), felodipine

(Plendil), nifedipine (Procardia, Adalat). Phenylalkylamine calcium channel blockers include verapamil. Benzothiazepine calcium channel blockers include diltiazem (Cardizem, Tiazac).
Pregnancy Category C: Not recommended for nursing mothers.

- **Indications:** Hypertension, supraventricular arrhythmias, atrial fibrillation, angina, hypertrophic cardiomyopathy.
- **Administration:** By mouth, IV.
- **Adverse reactions and side effects:** Myocardial depression when used with beta blockers. Safety and efficacy have not been established in children. Hypotension, peripheral edema, tachycardia, flushing, headache, GI upset. Contraindicated with second- or third-degree heart block.
- **Contraindications:** Advanced aortic stenosis, severe left ventricular dysfunction, hypotension, cardiogenic shock, sick sinus syndrome, heart block, atrial flutter or fibrillation, or accessory bypass tract.

Alpha Blockers

- **Examples:** (most end in "osin") Doxazosin (Cardura), terazosin (Hytrin).
Pregnancy Category C: Not for use with nursing mothers.
- **Indications:** Reduces alpha-adrenergic stimulus, thereby relaxing smooth muscle in blood vessels. Also improves glucose tolerance, increases insulin sensitivity. Not recommended as first-line monotherapy.
- **Administration:** By mouth.
- **Adverse reactions and side effects:** First-dose effect of orthostatic hypotension. Administer first dose at night. Safety and efficacy in children not known. Headache, peripheral edema, impotence, hypotension, somnolence, rare priapism. Caution when given with clarithromycin, ketoconazole, itraconazole.
- **Contraindications:** None.

Centrally and Peripherally Acting Antiadrenergic Agents

- **Examples:** Centrally acting agents include Catapres, Aldomet, and clonidine. Peripherally acting agents include reserpine and guanadrel.
Pregnancy Category C: Not recommended for use with nursing mothers.
- **Indications:** Centrally acting agents decrease dopamine and norepinephrine production in the brain, and peripherally acting agents decrease the release of epinephrine, both resulting in a decrease in

sympathetic nervous activity throughout the body. Blood pressure declines with the decrease in peripheral resistance. Used for severe hypertension not controlled by other medications.

- **Administration:** By mouth, IV.
- **Adverse reactions and side effects:** Action potentiated by beta blockers and vasodilators. Effect inhibited by phenothiazines, sympathomimetics, tricyclic antidepressants. Side effects include orthostatic hypotension, fluid retention, asthma, GI upset, depression, fatigue, headache, increased sensitivity to alcohol, fever, joint pain, dry eyes and mouth, decreased libido, impotence. Patients should be instructed not to discontinue therapy without consulting their health-care provider. Sudden cessation of these medications can cause nervousness and sudden increase in blood pressure.
- **Contraindications:** Should not be used with known sensitivity.

Antianxiety and Antidepressant Medications

All patients taking any type of antidepressant medication should be closely monitored for suicide ideation. The recommended regimen is to see the patient 1 week, 2 weeks, and 1 month after starting medication to determine suicide risk. Risk may be elevated when starting antidepressant medication because of the medication itself or because patients have more energy after starting the medication and are able to act on a suicide desire. It is imperative to document that suicide risk (desire, means, and plan) has been assessed at every visit and that, if there are any positive risks, appropriate immediate referral has been accomplished.

Benzodiazepines

- Examples: Alprazolam (Xanax), lorazepam (Ativan), chlordiazepoxide HCL (Librium), clonazepam (Klonopin), diazepam (Valium); scheduled narcotic drug.
  Pregnancy Category D: Not recommended for nursing mothers.
- **Indications:** Anxiety, panic disorder.
- **Administration:** By mouth.
- **Adverse reactions and side effects:** Dizziness, drowsiness, lethargy, confusion, hangover, headache, depression, paradoxical excitation, blurred vision, diarrhea, nausea, physical dependence, psychological

dependence, tolerance. Do not use with alcohol, opioid analgesics, kava, valerian, skullcap, chamomile, or hops because these can increase CNS depression.

- **Contraindications:** Hypersensitivity, narrow-angle glaucoma, preexisting CNS depression, uncontrolled pain.

Tricyclic Antidepressants

- **Examples:** Amitriptyline, clomipramine (Anafranil), doxepin (Sinequan), nortriptyline (Pamelor), trazodone.
  Pregnancy Category C: Not recommended in nursing mothers.
- **Indications:** Depression; unlabeled uses—insomnia and chronic pain syndromes.
- **Administration:** By mouth.
- **Adverse reactions and side effects:** Not recommended in children younger than age 10 years. Side effects: Causes increased ocular pressure with glaucoma, causes urinary retention, and increases seizure risk; mania/hypomania may occur. Avoid abrupt cessation. Monitor use with cimetidine, barbiturates, phenytoin, phenothiazines, SSRIs.
- **Contraindications:** Contraindicated with urinary retention, glaucoma, or post-MI. Avoid in cardiovascular disease, psychosis, diabetes. Avoid abrupt cessation. Contraindications in acute MI or within 14 days of MAO inhibitors.

Serotonin Reuptake Inhibitors

- Examples: Escitalopram (Lexapro), citalopram (Celexa), paroxetine (Paxil), fluoxetine (Prozac), sertraline (Zoloft), Brintellix.
  Pregnancy Category D: Not recommended for nursing mothers.
- **Indications:** Depression, general anxiety disorder, panic disorder, social anxiety disorder, obsessive compulsive disorder, post-traumatic stress syndrome.
- **Administration:** By mouth.
- **Adverse reactions and side effects:** Do not give with citalopram. Do not stop abruptly. Precautions: History of seizures, hepatic or renal impairment, altered metabolic or hemodynamic states, mania, cardiac disease, narrow-angle glaucoma, suicidal tendencies. Side effects include nausea, insomnia, ejaculation disorders, fatigue. Caution

with warfarin, NSAIDs, cimetidine, phenytoin, digoxin, phenobarbital, St. John's wort. Do not stop abruptly. Side effects include sweating, decreased appetite, GI upset, headache, decreased libido.

- **Contraindications:** Renal or hepatic dysfunction. Avoid abrupt cessation. Not used with or within 14 days of stopping MAO inhibitors.

Serotonin and Norepinephrine Reuptake Inhibitors

- **Examples:** Duloxetine (Cymbalta), venlafaxine (Effexor XR). Pregnancy Category C: Not recommended for nursing mothers.
- **Indications:** Depression, generalized anxiety disorder, social anxiety disorder, panic disorder.
- **Administration:** By mouth.
- **Adverse reactions and side effects:** Side effects include nausea, dry mouth, constipation, dizziness, fatigue, somnolence, sweating, mania, tremor, blurred vision, hot flashes, urinary retention. Avoid abrupt cessation of medications because this may cause flu-like symptoms, somnolence, insomnia, headache, nervousness, asthenia, sweating, dry mouth, vasodilatation, abnormal dreams, tremor, hypertension, sexual dysfunction. Avoid alcohol, tryptophan supplements, SRI, SNRIs triptans.
- **Contraindications:** Allow at least 14 days after MAOI discontinuance before starting these drugs. Contraindicated in narrow-angle glaucoma and with MAOIs. Precautions in severe renal impairment, hepatic insufficiency, chronic liver disease, alcohol abuse.

Other Types of Antidepressants

Bupropion (Wellbutrin, Zyban): Indicated for depression. Pregnancy Category C not recommended for nursing mothers. Indicated for depression and may be used in addition to an SSRI. Also used for smoking cessation. Common side effects of Wellbutrin XL may include weight loss, nausea, vomiting, insomnia, or even sore throat. Contraindicated for those individuals with a prior history of seizure disorders, alcohol abuse, eating disorders.

Olanzapine (Fluoxetine (Symbyax): Depressive episodes associated with bipolar disorder. Pregnancy Category C: Not recommended for nursing mothers. A gradual reduction in the dose rather than abrupt cessation is recommended whenever possible. If intolerable symptoms occur

following a decrease in the dose or on discontinuation of treatment, asthenia, edema, increased appetite, peripheral edema, pharyngitis, somnolence, abnormal thinking, tremor, weight gain may occur. May potentiate antihypertensive medications and cause hypotension. Contraindicated with MAOIs, antiseizure medications, pimozide, thioridazine.

Phenyltriazine (Lamictal): Maintenance treatment of bipolar disorder. Pregnancy Category C: Not recommended for nursing mothers. Side effects: Rash leading to Steven-Johnson syndrome and toxic epidermal necrolysis have occurred; other side effects include vomiting, nausea, ataxia, dizziness, headache, somnolence, blurred vision, diplopia. Some estrogen-containing oral contraceptives have been shown to decrease serum concentrations of lamotrigine. Contraindicated in patients who have demonstrated hypersensitivity to the drug or its ingredients.

MAOIs (Emsam, Marplan, Parnate): Depression that does not respond to other medications. Pregnancy Category D: Not recommended in pregnancy and for nursing mothers. Strict dietary regimen required. Patient should avoid liver, hard sausage, pickled herring, fava beans, sauerkraut, cheese, yogurt, any alcoholic beverage, yeast, chocolate, caffeine. Common side effects include dry mouth, lightheadedness, dizziness, low blood pressure.

Stop using the MAOI and get emergency help if you experience signs of dangerously high blood pressure including: severe chest pain, fast or slow heartbeat, severe headaches, severe dizziness or lightheadedness, increased sweating (possibly with fever or cold, clammy skin), nausea or vomiting, stiff or sore neck, swelling of feet or lower legs, increased sensitivity to light, and enlarged pupils. Rare side effects include dark urine, fever, skin rash, slurred speech, sore throat, staggering walk, yellow eyes or skin. Contraindications: Anesthesia, Wellbutrin, tryptophan. Should not be used in patients with heart, renal, or hepatic failure.

Azapirone/Buspirone (BuSpar): Anxiety and depression. Pregnancy Category B: Not recommended for nursing mothers. Common side effects are mild but include drowsiness, nausea, headaches, anxiety, lightheadedness, confusion, anger, diarrhea, muscle aches or pains, weakness. Contraindicated with MAOIs. Caution should be used in patients with renal or hepatic impairment.

Medications for Diabetes

Sulfonylurea

- **Examples:** Glimepiride (Amaryl), glipizide (Glucotrol, Glucotrol XL), Glynase, glyburide (DiaBeta, Micronase), chlorpropamide (Diabinese). Pregnancy Category C except for Glynase and Micronase, which are category B. Not recommended for nursing mothers because they may cause hypoglycemia in baby.
- **Indications:** Hyperglycemia. Most patients become resistant to these drugs over time and may require either dose adjustments or a switch to insulin.
- **Administration:** By mouth.
- **Adverse reactions and side effects:** Precautions: Impaired renal or hepatic function, adrenal or pituitary insufficiency, stress. Side effects include increased risk of cardiovascular mortality, hypoglycemia, dizziness, headache, nausea, skin allergic reactions. Sulfonylurea monotherapy for type 2 diabetes was associated with increased risks of all-cause death and congestive heart failure compared with metformin, a large, retrospective study showed.
- **Contraindications:** Known hypersensitivity to sulfonylureas, ketoacidosis, or allergy to sulfa.

Biguanide

- **Examples:** Metformin (Fortamet, Glucophage, Glumetza, Riomet). Pregnancy Category B: Safe for use in nursing mothers.
- **Indications:** Decreases the amount of glucose produced by the liver. Lowers blood glucose levels by making muscle tissue more sensitive to insulin so glucose can be absorbed. Used for hyperglycemia. Also used for polycystic ovarian syndrome.
- **Administration:** By mouth.
- **Adverse reactions and side effects:** Lactic acidosis most important side effect. Discontinue biguanide before using intravenous dyes. Diarrhea, dyspepsia, can cause hypoglycemia when prescribed with other drugs.
- **Contraindications:** Risk for lactic acidosis, renal disease (elevated creatinine levels).

Thiazolidinediones

- **Examples:** Rosiglitazone (Avandia), pioglitazone (Actos). Pregnancy Category C: Not recommended for nursing mothers. These drugs may cause ovulation in premenopausal women, and use of birth control methods should be advised to avoid pregnancy.
- **Indications**: Lowers blood glucose levels by making muscle tissue more sensitive to insulin so glucose can be absorbed. Used for hyperglycemia. Type 2 diabetes, used off label for polycystic ovarian syndrome.
- **Administration:** By mouth.
- **Adverse reactions and side effects:** Water retention and edema, headache, sinusitis, pharyngitis, myalgia, anemia, weight gain, hypoglycemia. Precautions: Hepatic disease, ALT level 2.5 × normal.
- **Contraindications:** Class III or IV heart failure.

Insulin

- **Examples:** Regular insulin (short acting), NPH insulin and Levemir (long acting), NovoLog 70/30 (70% NPH, 30% regular insulin), Humalog 72/25 (75% NPH, 25% regular insulin), Humalog 70/30 (70% NPH, 30% regular insulin), Humalog 50/50 (50% NHP, 50% regular insulin), Lantus insulin (once-a-day dosed insulin; do not mix with other insulins), Exubera (inhaled insulin).
- **Indications**: Hypoglycemia, type 1 diabetes.
- **Administration:** Subcutaneous injection except for Exubera, which is inhaled.
- **Adverse reactions and side effects:** Hypoglycemic, redness at injection site, weight gain, in rare cases tingling and swelling.
- **Contraindications**: Known sensitivity to insulin.

Combination Drugs

- **Examples:** Metformin plus thiazolidinedione (Actoplus MET, Avandamet), thiazolidinedione plus sulfonylurea (Avandaryl, Duetact), dipeptidyl peptidase 4 inhibitor plus biguanide (Janumet), sulfonylurea plus biguanide (Metaglip, Glucovance), glucosidase inhibitor plus sulfonylurea (Glyset).
- **Indications**: Fewer pills with combined therapeutic effect.
- **Administration:** By mouth.

- **Adverse reactions and side effects:** Same as with each of the classifications of medications individually.
- **Contraindications:** Same as with each of the classifications of medications individually.

Other Diabetic Medications

Byetta (incretin mimetic): Adjunctive therapy to biguanides, sulfonylureas, or thiazolidinedione. Pregnancy Category C: Not recommended for nursing mothers. Side effects include GI upset, hypoglycemia, dizziness, headache, reduced appetite, weight loss, GERD, hyperhidrosis. Precautions: GI disorders, renal impairment Contraindications: Type 1 diabetes, ketoacidosis.

Dipeptidyl peptidase 4 inhibitor: Example: Sitagliptin (Januvia), Kanzano, Onglyza, and Tradjenta: Pregnancy Category B: Has not been studied in nursing mothers. This drug decreases glucagon release and increases insulin release and synthesis. Monitor renal function. Side effects include nasopharyngitis, URI, headache, rash. Contraindications: Type 1 diabetes, ketoacidosis.

Sodium-glucose cotransporter-2 (SGLT2) Inhibitors: Examples: Invokana, Xigduo, Farxiga. These drugs allow the kidney to excrete more sugar from the blood and lower blood sugar.

Glucagon: For acute hypoglycemia; causes liver to increase blood sugar levels. Pregnancy Category B: No data on using glucagons with nursing mothers, so caution is advised. Complications include GI upset, urticaria, respiratory distress, hypotension. Contraindicated in pheochromocytoma.

Prandin: Reduces glucose production. Can be used with biguanides and thiazolidinedione. Pregnancy Category C: Not recommended for nursing mothers. Side effects can include hypoglycemia infection, constipation, arthralgia, back or chest pain.

Glucosidase inhibitor: Example Acarbose (Precose). Inhibits absorption of carbohydrates by intestines. Pregnancy Category B: May be used in nursing women. Contraindications: Ketoacidosis, cirrhosis, inflammatory bowel disease, colonic irritation, disease with marked disorders of digestion and absorption. Side effects include transient flatulence, diarrhea, abdominal pain, type 1 diabetes, predisposition to intestinal obstruction and disorders of digestion or absorption. Adverse reactions with hypoglycemia. Side effects include GI upset with metformin, peripheral edema.

Cholesterol-Lowering Drugs

HMG-CoA Reductase Inhibitors

- **Examples**: Atorvastatin (Lipitor), fluvastatin (Lescol), lovastatin (Mevacor, Altoprev), pravastatin (Pravachol), rosuvastatin calcium (Crestor), simvastatin (Zocor).
  Pregnancy Category X: Not recommended for nursing mothers.
- **Indications**: Primary hypercholesterolemia and mixed dyslipidemia.
- **Administration:** By mouth with evening meal.
- **Adverse reactions and side effects:** Use caution in renal impairment, myopathy, alcoholism, myositis including rhabdomyolysis (pain in muscles and joints). Increased liver enzymes (stop drug if AST or ALT increases by three times normal). Grapefruit juice may cause higher blood levels and increase risk for toxicity.
- **Contraindications:** Hypersensitivity, active liver disease, pregnancy or lactation, concurrent use of gemfibrozil or azole antifungals.

Selective Cholesterol Absorption Inhibitors

- **Examples**: Ezetimibe (Zetia), Vytorin (combination of ezetimibe and simvastatin).
  Pregnancy Category X: Not for use in nursing mothers.
- **Indications**: Adjunct to diet alone or in combination with a statin.
- **Administration:** By mouth.
- **Adverse reactions and side effects:** GI distress, flatulence, dyspepsia, anorexia, test liver function as with statin drugs.
- **Contraindications:** Active liver disease, unexplained persistent elevation in serum transaminases.

Resins

- **Examples:** Cholestyramine (Questran, Questran Light, Prevalite, LoCholest, LoCholest Light), colestipol (Colestid), colesevelam HCL (WelChol).
  Pregnancy Category D: Use with caution in pregnancy and with nursing mothers.

- **Indications:** These drugs reduce LDL. Often used off label for antibiotic-induced pseudomembranous colitis, infantile diarrhea, digoxin toxicity.
- **Administration:** Comes in powder—mix with juice, water, or cereal.
- **Adverse reactions and side effects:** May interfere with vitamin K absorption so monitor bleeding and bruising. Hyperchloremic acidosis, joint pain, urticaria, tongue irritation.
- **Contraindications:** Complete biliary obstruction.

Fibrates

- **Examples:** (Fibric acid derivatives) Gemfibrozil (Lopid) fenofibrate (Antara, Lofibra, Tricor, and Triglide), clofibrate (Atromid-S).
  Pregnancy Category C: Not recommended for nursing mothers.
- **Indications:** Reduces triglyceride production. Also reduces very-low-density lipoproteins.
- **Administration:** By mouth.
- **Adverse reactions and side effects:** Avoid combining with statins or monitor carefully if given with statins because increases possibility of myositis. Upset stomach, diarrhea, nausea.
- **Contraindications:** Hepatic or renal dysfunction. Primary biliary cirrhosis, gallbladder disease.

Niacin

- **Examples:** Nonprescription niacin and prescription Niaspan (timed-release formulation).
  Pregnancy Category C: Not recommended for nursing mothers.
- **Indications:** In patients with cardiovascular disease and high cholesterol, niacin in combination with other cholesterol medications can slow down or reduce atherosclerosis, the hardening of arteries resulting from plaque buildup.
- **Administration:** By mouth.
- **Adverse reactions and side effects:** It is important to check liver enzymes in patients taking these types of OTC medications. Flushing, GI distress, elevated liver enzymes, increased blood sugar, muscle pain or tenderness, liver enzyme increase, shortness of breath, chills, dizziness, pain, indigestion.
- **Contraindications:** Significant hepatic dysfunction, known sensitivity to niacin.

Contraceptive Medications

Combined Estrogen and Progestin Contraceptives

- **Examples:** Junel, Levlen, Nordette, Tri-Sprintec, Yaz.
- **Indications:** To prevent pregnancy, to regulate hormones and regulate menstrual cycle, acne. Some types have a consistent level of estrogen and progesterone throughout the cycle until the withdrawal period when the placebo pills are taken; some have different levels of estrogen and progesterone to be more like the woman's natural cycle.
- **Administration:** One pill daily. See pack insert for ways to take pills. If one pill missed, take pill when remembered and take scheduled pill as usual that day. If two pills missed in weeks 1–2, take two pills for the next 2 days; use back-up for rest of cycle. If two or more pills missed in week 3, take two pills daily for 7 days; use back-up until restart new pack and for first 7 days of new pack. If more than two pills are missed during the cycle, stop pills, start new pack within 7 days taking one pill daily; use back-up for first 7 days of that pack. Check for pregnancy. Back-up contraception may be needed for patient taking certain medications.
- **Adverse reactions and side effects:** Use with caution with smoking, obesity, current breast cancer, complicated or prolonged diabetes, lupus, severe migraines, breastfeeding. Use back-up contraceptive method when taking antibiotics. Breakthrough bleeding: Rule out disease; check for pregnancy; switch to pill with higher dosage of estrogen and progestin.
- **Contraindications:** Absolute contraindications: Pregnancy; high-risk for thrombotic disease (i.e., smokers >35 years old, history of DVT) ; breast or other estrogen or progestin-sensitive neoplasm; hepatic disease; undiagnosed abnormal bleeding.

Progestin-Only Pills

- **Examples:** Camila Orvette, Micronor, Nor-QD, Errin.
- **Indications:** To prevent pregnancy; when estrogen contraindicated as in lactation, any age smoker, history of DVT, valvular heart disease, focal neurologic migraines, seizures, gallbladder disorder, immobilization. May enhance sexual enjoyment. Rapid return to baseline fertility. Back-up contraception needed for patient taking certain medications.

- **Administration:** One pill daily at the same time each day. No catch-up regimen is effective.
- **Adverse reactions and side effects:** Amenorrhea, irregular bleeding, heavy bleeding, abdominal pain. Use with caution in patients with current or history of breast cancer, active hepatitis, hepatic failure, jaundice, colitis. Should not be taken with medications that increase hepatic clearance such as rifampin, carbamazepine, phenytoin, phenobarbital, primidone, St. John's wort, griseofulvin.
- **Contraindications:** Pregnancy, breast carcinoma, undiagnosed abnormal gynecologic bleeding, liver tumors, certain medications.

Depo-Provera Injection

- **Indications:** Prevention of pregnancy.
- **Administration:** One subcutaneous injection every 3 months (less painful than IM injection; has high efficacy; may be self-administered, saving office visits and costs).
- **Adverse reactions and side effects:** Generally well tolerated. Significant weight gain possible. Amenorrhea, irregular menses during first several months. Slow return to baseline fertility. Decreased bone mineral density (reversible). Causes increase in serum glucose, may cause severe headaches, acne, allergic reaction, hirsutism, hair loss; increases LDL cholesterol and decreases HDL cholesterol.
- **Contraindications:** Do not use with pregnancy, active viral hepatitis, breast cancer, MI, stroke, current VTE, undiagnosed vaginal bleeding, and some lipid abnormalities.

Vaginal Contractive Ring (NuvaRing)

- **Indications:** Prevention of pregnancy, combination estrogen and progestin—releases less estrogen daily than pills.
- **Administration:** Placed intravaginally and left in place for 3 weeks then removed for 1 week to allow withdrawal bleeding. Tampons, vaginal yeast creams, and lubricants can be used with ring in place. Fewer bleeding days occur with ring; some decrease in withdrawal symptoms, such as pelvic pain. Allows for off-label manipulation of hormone-free interval for noncontraceptive reasons if ring changed monthly.

- **Adverse reactions and side effects:** Complications similar to those with the combination pill. Do not douche with ring in place. Do not remove ring for intercourse.
- **Contraindications:** Same as with combination oral contraceptive pill.

Important Miscellaneous Medications

Proton Pump Inhibitors

- **Examples:** Esomeprazole (Nexium), lansoprazole (Prevacid), omeprazole (Prilosec, Zegerid), pantoprazole (Protonix).
  Pregnancy Category C: Not recommended for nursing mothers or for children.
- **Indications:** Used for gastroesophageal reflux or erosive esophagitis.
- **Administration:** By mouth.
- **Adverse reactions and side effects:** Headache, diarrhea, abdominal pain, constipation, cough.
- **Contraindications:** Metabolic alkalosis, hypocalcemia.
- **Follow-up**: Check bone density in women and men with long-term use. May need increased levels of vitamin D.

Levothyroxine

- **Examples:** Levothroid, Levoxyl, Synthroid.
- **Indications:** To replace thyroid hormone.
- **Administration:** By mouth. Start low and go slow. Repeat TSH monthly until in normal range.
- **Adverse reactions and side effects:** Absorption reduced by calcium, bile acid sequestrants, iron. Hyperthyroidism (racing pulse, headache), decreased bone mineral density, transient alopecia.
- **Contraindications:** Uncorrected adrenal insufficiency, untreated thyrotoxicosis, acute MI.

Asthma Medications

Beta$_2$ Agonists

Short-acting beta$_2$ agonists: Albuterol, bitolterol, pirbuterol, terbutaline.

- **Indications:** Useful in treating acute asthma attack.

Long-acting beta$_2$ agonists: Salmeterol, formoterol, sustained-release albuterol.

- **Indications:** Not for use with acute asthma attack.

Both short-acting and long-acting beta$_2$ agonists

- **Administration:** Multidose inhaler.
- **Adverse reactions and side effects:** Precautions in cardiovascular disease. Avoid MAOIs and tricyclics. Tremor, nervousness, headache, dizziness, hyperactivity, insomnia, weakness, tachycardia, epistaxis, hypokalemia, paradoxical bronchospasm.
- **Contraindications:** None.

Leukotriene Antagonists

- **Examples:** Zafirlukast, montelukast.

Pregnancy Category B: Not studied in nursing mothers.

- **Indications:** Prevention of asthma, not to be used for acute attacks.
- **Administration:** By mouth.
- **Adverse reactions and side effects:** Headache, fatigue, fever, GI upset.
- **Contraindications:** None.

Inhaled Corticosteroids

- **Examples:** Beclomethasone, budesonide, flunisolide, fluticasone, triamcinolone.
- **Indication:** Reduction of bronchial inflammation. Not used for acute attacks.
- **Administration:** Multidose inhaler, powered inhaler.
- **Adverse reactions and side effects:** GI upset, oral candidiasis, headache, upper respiratory infection, pharyngitis, GI distress, dizziness.
- **Contraindications:** Not for primary treatment of acute attack.

Anticholinergic Agents for Asthma and COPD

- **Examples:** Ipratropium (Atrovent)

Pregnancy Category B: Not well studied in nursing mothers.

- **Indication:** Additive benefit to inhaled beta$_2$ agonists in severe exacerbations.
- **Administration:** Multidose inhaler.
- **Adverse reactions and side effects:** Avoid in narrow-angle glaucoma. GI or GU obstruction.

Menopausal Hormone Replacement

- **Examples**: Oral (estrogen only, progesterone only, combined estrogen-progestin); vaginal cream and ring (estradiol acetate, conjugated estrogen); transdermal (17β-estradiol, ethinyl estradiol plus norethindrone acetate), vaginal gel (progesterone); intrauterine system (Levonorgestrel)
- **Indications**: Irregular bleeding (perimenopausal) or no vaginal bleeding for prior 12 months or surgical menopause, sleep disturbances, night sweats, hot flashes and flushes, painful coitus (dyspareunia), vaginal atrophy, urinary urgency/irritation; mood swings, fatigue, problems with family and at work; lost productivity or self-esteem.
- **Administration**: Dependent on method. Requires prior physical/pelvic/rectal examination, mammogram, Pap smear, STD/HIV screen, serum assays to verify menopause (FSH, testosterone). If indicated, endometrial biopsy, bone density DEXA, ultrasound, other laboratory tests such as THS, CBC, Hgb, Hct, lipids.
- **Adverse reactions and side effects**: Bleeding (withdrawal, irregular); estrogen and/or progestin/progesterone effects (i.e., breast tenderness, nausea, edema/bloating, weight gain, depression, corneal changes, dizziness, mood changes); oral therapy: hepatic effects on lipids, coagulation, inflammatory markers; transdermal: skin irritation; vaginal cream: messy to some; ring: difficult to insert. Breast cancer risk increases with long-term therapy.
- **Contraindications**: Pregnancy (known or suspected), bleeding undiagnosed; history of or current DVT/PE, stroke, liver disease/dysfunction, hypersensitivity to hormone therapy, breast/reproductive cancer, melanoma, certain medications such as anticoagulants, certain cancer treatments. Precautions: Migraine headaches, fibroid tumors, lipid disorders, family history of breast cancer or hormone-dependent cancers.

Complementary and Alternative Therapies

Complementary and alternative medicine is the term for medical products and practices that are not part of standard care. Alternative medicine includes treatments that fall outside of standard therapy. Complementary medicine means using nonstandard treatments alongside standard treatments, such as tai chi or massage, in addition to prescribed medication.

Many health-care institutions have begun integrating therapies that are not part of mainstream medicine into their treatment programs, and some medical and nursing schools now include education on nontraditional techniques in their curriculum. As complementary and alternative therapies prove effective, they are being combined more often with conventional care. This is known as integrative medicine.

The primary principles of complementary and alternative health care include the following:

- Prevention is key to good health.
- The body has the ability to heal itself.
- Learning and healing go hand in hand.
- The focus is on holistic care that treats the patient as a whole person greater than the sum of his or her parts.

Herbs

Many herbs and supplements (Hs/Ss) commonly used could not be presented in this section because of space limitations. When practicing, you should have current, reliable sources available to you because many of your clients will be using these substances in conjunction with prescribed drugs or in place of them. See the References found in the Tools tab for a few suggested sources.

Warnings

Clients often fear telling their practitioner they use Hs/Ss. Gain your clients' trust to assess for Hs/Ss that could be harmful to them or could interact with other drugs/Hs/Ss used or with certain foods. Grapefruit is known to alter dosages of many drugs and herbs, often increasing dose metabolized. Determine danger for particular herb/supplement. Most Hs/Ss are

not FDA approved. Remember: "Natural" does not equal "safe." Anything taken into one's body by any route is possibly harmful. Unsafe adulterants, substances substituted partially for another without acknowledgment, may be found in some Hs/Ss. Standardized doses are not guaranteed.

Advise the client to do the following:

- Buy products from reliable, well-known sources, such as by looking for U.S. Pharmacopeia on label.
- Check with reliable, professional sources for use, actions, contraindications, side effects, and interactions because data on Hs/Ss change frequently.
- Avoid products containing multiple herbs and supplements.
- Be aware of dangers of blood thinners.
- Check with provider about stopping products before surgery or dental procedures.
- Always tell the provider or pharmacist what herbs or supplements are being used or taken in addition to prescribed and OTC approved drugs.

Key

A = Strong scientific evidence for this use
B = Good scientific evidence for this use
C = Unclear scientific evidence for this use
D = Fair scientific evidence against this use
F = Strong scientific evidence against this use

Grades in this document may be for just a few of the indications for the herbs and supplements discussed.

Aloe Vera

- **Generally used for:** Topical therapy for skin irritations, burns, painful excoriations, lesions, ulcerations, psoriasis, frostbite, wound healing.
- **Contraindications:** None for topical application; long-term ingestion as cathartic may cause serious cardiac, GI, renal, other reactions or interactions.
- **Side effects and interactions:** May be contaminated with latex or anthraquinones; may cause rash if applied before sun exposure. If allergic to garlic, onions, tulips, or similar plants, aloe may cause allergy. Prolonged use of aloe gel may cause hives, rash.

- **Usual dosage and route**: *Topical:* Apply liberally three to five times daily prn.
- **Other:** Avoid aloe juice or aloe latex that comes from inside leaf lining; may contain anthraquinone glycosides. Consult provider/pharmacist if taking aloe as stimulant laxative/cathartic orally; oral route considered unsafe for children, for pregnant or lactating women, or for long-term use, and tolerance develops easily. Avoid any aloe injections; may be lethal.
- **Scientific evidence for use**: Grade B for genital herpes in men, psoriasis vulgaris, seborrhea, dandruff.

Black Cohosh

Derived from rhizome and root of North American buttercup family.

- **Generally used for:** Alternative to estrogen therapy in menopause; some research says it helps with menopause symptoms, such as hot flashes, migraine headache, sleep disturbance, mood lability, vaginal dryness, heart palpitations, increased perspiration.
- **Contraindications**: Liver disease because use may cause liver damage or failure. Unclear whether safe with hormone-sensitive conditions, such as breast cancer, uterine cancer, endometriosis. Avoid use if allergic to black cohosh, salicylates, buttercup, or crowfoot plant family. Safety in pregnancy and lactation not established. Do not give to children.
- **Side effects and interactions**: Usually tolerated well in advised dosages up to 6 months. Reported side effects are constipation, loss of bone mass, slow or irregular heartbeat, low BP, nausea and vomiting, muscle damage or heaviness in legs, and possible vaginal bleeding. With high dosages, frontal headache, visual disturbances, dizziness, and perspiration may occur. May interact with drugs or herbs that act as antiplatelets or anticoagulants, thus increasing risk of bleeding. Avoid using black cohosh with tamoxifen or any hormone-based drug; with antidepressants, antihistamines, antioxidants; may change the way the liver metabolizes drugs. Avoid use in patients with seizures.
- **Usual dosage and route**: Usual dosage: 40–80 mg bid.
- **Other**: Blue cohosh and white cohosh are plants unrelated to black cohosh.
- **Scientific evidence for use**: Grade C for menopausal symptoms and menstrual migraine; more studies recommended.

Chamomile

Derived from dried heads of German/Hungarian chamomile flower.

- **Generally used for:** Antispasmodic, anti-inflammatory, antimicrobial, antiflatulent, mild sedative, calmative; often used to quiet GI spasms and upset; may be useful for wound healing.
- **Contraindications:** Do not use with children, in pregnancy, and during lactation; do not use if allergic to asters, ragweed, chrysanthemums—may cause severe allergic response/anaphylaxis.
- **Side effects and interactions:** Vomiting with highly concentrated tea; drowsiness may occur; could increase bleeding if taken with anti-platelets, anticoagulants, NSAIDs; atopic dermatitis reported.
- **Usual dosage and route:** Usually consumed as tea, 1–4 cups daily; if taken as capsule or tablet, divided doses of 400–1,600 mg daily. Tinctures may contain alcohol.
- **Scientific evidence for use:** Grade C for all studied uses; additional research suggested.

Cranberry

Comes from the American cranberry in juice or extract form.

- **Generally used for:** Urinary tract infection (UTI) prevention; said to interfere with bacteria adhering to cells lining bladder. Not effective to treat UTI.
- **Contraindications:** Individuals allergic to cranberries or blueberries.
- **Side effects and interactions:** Ingestion of large amounts may cause GI disturbances. Cranberry products taken with warfarin or other such drugs or substances may increase bleeding risk. Avoid use in patients with abnormal hepatic function or taking drugs metabolized by cytochrome P-450 pathway.
- **Scientific evidence for use:** Grade B for UTI prevention. Grade D for prevention in children with neurogenic bladder and prostate cancer radiation therapy side effects. Grade C for all other studied indications.

Garlic

Comes from lily family bulbs (dried or fresh). Primary active ingredient, allicin, released when garlic crushed.

- **Generally used for:** Reducing total cholesterol, LDL, and triglyceride levels. Some reports of reduction in blood pressure.
- **Contraindications:** Bleeding disorders; stop 1–2 weeks before surgery or dental procedures that involve bleeding risk; restrict use with other drugs or substances that increase risk of bleeding. Avoid garlic if known allergic response to garlic or other members of lily family.
- **Side effects and interactions:** Allergic reactions (rash or skin burns); asthmatic episodes, fever, chills, itching, runny nose, dizziness, sweating, headaches, bad breath, body odor, GI upset. May lower blood sugar or thyroid hormone. May interact to increase bleeding if taken with other substances that affect bleeding; may alter liver enzyme system.
- **Usual dosage and route:** For hyperlipidemia and hypertension: 600–1,200 mg in divided doses tid; advise non–enteric-coated dehydrated garlic powder standardized to 1.3% allicin content.
- **Other:** If consumed in normal amounts in food, may be safe in pregnancy, lactation, and children. May increase human growth hormone excretion.
- **Scientific evidence for use:** Grade A for small reductions of hyperlipidemia and hypertension. Grade B for small reductions of high cholesterol. Most other indications received Grade C. Grade D for diabetes, gastric/duodenal ulcers.

Ginkgo

Comes from maidenhair tree (*Ginkgo biloba*) of ginkgo family.

- **Generally used for:** Intermittent claudication; memory, cognitive, social functioning impairment; dementia of Alzheimer's disease; vascular dementia or cerebral insufficiency from atherosclerosis; Parkinson's disease; PMS symptoms, age-related eye disorders.
- **Contraindications:** Avoid in pregnancy, lactation, children. Should be stopped 2 weeks before surgery or for other provider-designated periods. Use caution in persons with bleeding disorders.

- **Side effects and interactions:** Side effects less than 1%, generally well tolerated. Side effects include GI disturbances, headache, dizziness, vertigo, skin hypersensitivity. May interact with drugs or herbs that act as anticoagulants, antiplatelets, MAOIs, diuretics, anticonvulsants.
- **Usual dosage and route:** Dementia: 120–360 mg of 24% ginkgo flavonoid glycosides and 6% terpene lactones bid to tid. For healthy adults, same dose range suggested. Common dose is 40 mg tid or 80 mg bid.
- **Scientific evidence for use:** Grade A for claudication, multi-infarct dementia of Alzheimer's disease. Grade B for cerebral insufficiency. Grade C for age-associated memory impairment, memory enhancement in healthy persons, PMS, altitude sickness, and a number of other conditions. Several conditions studied with small samples; one study received D grade. A 2012 study (*Lancet Neurology*) found that ginkgo biloba did not prevent Alzheimer's disease in elders.

Ginseng

Comes from root of ginseng plant; also known as *Panax ginseng*.

- **Generally used for:** Improved mental performance and alertness, stress resistance, type 2 diabetes, exercise performance, fatigue, hypertension, immune system enhancement, sense of well-being. Do not confuse Siberian ginseng with *Panax* ginseng—very different herbs.
- **Contraindications:** Avoid if allergic to plants in Araliaceae family. Use with caution in persons with coagulation, hypertension, cardiac, diabetic, hypoglycemic, insomnia, schizophrenic disorders. Avoid in pregnancy, lactation, children, and 1–2 weeks before any surgery or dental work.
- **Side effects and interactions:** Skin rash, itching, sore throat, appetite loss, excitability, anxiety, depression, insomnia, and diarrhea; may cause blood sugar level decrease, estrogen-type effects (bleeding, breast tenderness or enlargement, altered menses), nosebleeds, interference with warfarin effects, erection difficulties, manic symptoms, change in heart rhythm, hypertension/hypotension.
- **Usual dosage and route:** Capsules: 100–500 mg of 4% ginsenosides (standardized extract) once or twice daily. See References for specific dosages for conditions and other routes and dosages.

- **Scientific evidence for use:** Grade B for improved mental performance, learning, immune system enhancement, and hyperglycemia in healthy persons.

Red Yeast Rice

Grown on rice fermented with *Monascus purpureus* yeast.

- **Generally used for:** Primarily, to lower total cholesterol, LDL cholesterol, and triglycerides. Other uses are to improve coronary heart disease, circulation, diabetes, GI problems. Contains statin substances, mainly lovastatin.
- **Contraindications:** In clients with liver disease. Caution if bleeding disorder or taking drugs, herbs, supplements that increase risk of bleeding. Do not use with prescription cholesterol-lowering drugs, alcohol, or drugs toxic to liver. Avoid use with cyclosporine, ranitidine, some antibiotics that increase risk of rhabdomyolysis.
- **Side effects and interactions:** Gastritis, abdominal pain, headache, and side effects similar to those with lovastatin. May cause additive effects with GABA-affecting drugs, alter blood sugar levels, interact with niacin, thyroid medications, digoxin, some vitamins, herbs, and supplements such as St. John's wort, vitamin A, coenzyme Q10. Grapefruit can increase red rice levels.
- **Usual dosage and route:** *Capsules:* 1,200 mg concentrated powder bid orally with food.
- **Scientific evidence for use:** Grade A for lowering cholesterol, LDL, triglycerides. Grade C for coronary heart disease, circulation, diabetes.

Saw Palmetto

Comes from dried fruits of southern U.S. palm tree.

- **Generally used for:** Primarily for BPH; male-pattern hair loss, prostate cancer, prostatitis, chronic pelvic pain, bladder disorders (underactive bladder); also used as mild diuretic, anti-inflammatory, antiseptic, sedative. Similar in action to finasteride.
- **Contraindications:** Avoid in children, pregnancy, lactation; caution with clients with stomach, liver, heart, lung, bleeding disorders or if taking hormones or having surgery or dental procedure.

- **Side effects and interactions:** GI upset, occasional allergic response; other reported side effects include ulcer, jaundice, headache, dizziness, depression, muscle pain, insomnia, heart rhythm irregularity/disorder, breathing problems, hypertension, chest pain.
- **Usual dosage and route:** 160 mg bid or 320 once daily of 80%–90% liposterolic extract. Liquid or dry extract, tea, or whole berries also used; see References for more information.
- **Scientific evidence for use:** Grade A for BPH. Grade C for male-pattern hair loss, prostate cancer, prostatitis, chronic pelvic pain syndrome, bladder problems.

St. John's Wort

Comes from dried flower tops of St. John's family plant.

- **Generally used for:** Primarily mild or moderate depression; also used for anxiety, stress, PMS, perimenopausal symptoms, SAD, OCD, severe depression, atopic dermatitis.
- **Contraindications:** Do not use for severe major depression; has inadequate effect that may increase client's risk of suicide. Do not use with drugs to treat HIV/AIDS (decreases effectiveness); with other antidepressants (wait 2 weeks to use St. John's wort after discontinuing any antidepressant or vice versa); with transplant clients (decreases blood levels of cyclosporine); 5 days before any surgery with anesthesia (may prolong sedation); with imatinib (increases clearance); or with any drug or substance that increases bleeding. Do not use with children, pregnant or lactating women.
- **Side effects and interactions:** Incidence of side effects: photosensitivity, GI upset, insomnia, anxiety, headache, fatigue, sedation, skin rash, sexual dysfunction, dry mouth, dizziness, altered menses, bleeding, decreased effectiveness of birth control pills leading to unwanted pregnancy.
- **Usual dosage and route:** *Capsules:* 300 mg of 0.3% hypericin (active ingredient) tid. For other forms and dosages, see References.
- **Scientific evidence for use:** Grade A for mild to moderate depressive disorder. Grade B for somatoform disorders. Grade C for all other studied uses *except* Grade D for HIV or AIDS, social phobia, and severe depression.

Valerian

Comes from root (dried or fresh) of valerian family plant.

- **Generally used for:** Sleep aid for insomnia or antianxiety therapy. Said to be sedative.
- **Contraindications:** Do not use in children, pregnancy, lactation. Avoid use with drugs that increase sedation or if operating machinery.
- **Side effects and interactions:** Usually well tolerated. Liver toxicity reported in a few cases. Side effects include GI upset, headache, feeling uneasy or excited, dizziness, ataxia, hypothermia, reduced concentration or cognitive function; insomnia with chronic use. Hangover effect with high doses. May interact negatively with sedatives, narcotics, SSRIs, tranquilizers, and St. John's wort.
- **Usual dosage and route:** Taken 30–60 minutes before bedtime: *Capsules:* 300–1,800 mg; *Liquid extract:* 400–900 mg. Extract may contain alcohol. Also used as tea.
- **Scientific evidence for use:** Grade B for insomnia. Grade C for anxiety. Grade D for sedation. Grade C for insomnia, anxiety, and sedation.

Supplements

Supplements are used to provide daily requirements of vitamins and minerals not in the diet. Supplements are beneficial as long as doses over the normal daily requirement are not used for long periods. Remember fat-soluble vitamins (vitamin A, D, E, and K) can remain in the body for long periods because they are excreted more slowly. This can cause toxicity and must be monitored.

Calcium

A mineral that is chemically combined with another substance (called chelation), such as carbonate, citrate, or lactate, to form supplement preparations. Also available in many foods, such as milk, cheese, green leafy vegetables, whole grains, egg yolk, nuts, legumes.

- **Generally used for:** Necessary in body for strong structure of bones and teeth (99%); other 1% used in blood clotting, nerve function and

transmission, muscle contraction, blood vessel constriction, cell membrane permeability, hormone and enzyme secretion. Supplemental calcium used to ensure adequate availability for body needs, prevent bone loss, deficiency, high blood phosphorus level, osteoporosis prevention and therapy, magnesium toxicity, high blood potassium level, hypertension, PMS, colorectal cancer.

- **Contraindications:** Hyperparathyroidism, hypercalcemia, hypercalciuria, hypervitaminosis D, renal insufficiency; calculi; sarcoidosis, bone tumors, digitalis toxicity, ventricular fibrillation, known allergy or hypersensitivity to calcium supplements or ingredients.
- **Side effects and interactions:** Considered safe for adults, in pregnancy, lactation in recommended dosages. Risk of calculi if taken without food or in high doses when prone to stones. Smoking may reduce absorption and bone mineral density. May affect cardiac rhythm if client has arrhythmia. Excess calcium associated with increased risk for heart attack, GI symptoms, thirst, abdominal pain, dry mouth, urinary frequency, calcium deposition in heart and kidneys. If deficient calcium, numbness, tingling, muscle twitches and spasms.
- **Usual dosage and route:** Vitamin D essential for calcium absorption. Adults 50 years or older need 1,200–1,500 mg daily via diet or supplement in divided dosages, such as 500 mg tid.
- **Other:** From oyster or shell sources; may contain lead.
- **Scientific evidence for use:** Grade A for gastric hyperacidity (antacid), bone loss prevention, calcium deficiency. To help prevent/treat osteoporosis, to lower high magnesium levels. Grade B for hypertension, PMS, for muscle cramps with black widow spider bite. All other studied uses have Grades C or D.

Chondroitin Sulfate

Made from shark or beef cartilage, bovine trachea, or synthetic sources.

- **Generally used for:** Symptoms of OA joint degeneration; used alone or in combination with glucosamine sulfate (see Glucosamine Sulfate); bladder control in disorders such as interstitial cystitis, overactive bladder, unstable bladder.
- **Contraindications:** Avoid use in pregnancy, lactation.
- **Side effects and interactions:** Generally well tolerated for several years. Rare reports of headache, hives, rash, motor problems, euphoria,

breathing problems, photosensitivity, asthma symptoms, elevated BP, edema, chest pain, GI changes or upset.

- **Usual dosage and route:** *Adults:* 200–400 mg orally bid to tid or 800–1,200 mg once daily.
- **Scientific evidence for use:** Grade A for osteoarthritis. Grade B for bladder control. Grade C for other studied uses.

Glucosamine Sulfate

Found in healthy cartilage and synovial fluid; made from exoskeletons of marine animals or synthetic formulations.

- **Generally used for:** Proven to improve symptoms of mild to moderate knee OA. Other uses include OA of other joints, chronic venous insufficiency, leg pain, RA, inflammatory bowel disease, TMJ.
- **Contraindications:** In children, pregnancy, lactation. Use with caution for clients with kidney disorders, diabetes, or hypoglycemia because it may alter blood sugar levels. Use with caution in patients with bleeding disorders or taking drugs that may alter bleeding.
- **Side effects and interactions:** Generally well tolerated. Reported side effects include GI alterations and upset, insomnia or drowsiness, headache, skin rash or reactions, nail changes, photosensitivity, temporary BP, temporary heart rate increases.
- **Usual dosage and route:** *Adults:* 500 mg tid daily (tabs or caps). Limited research on 1,500 mg once daily. Studies of use several weeks up to 3 years.
- **Scientific evidence for use:** Grade A for knee OA. Grade B for general OA. Grade C for all other studied uses.

Melatonin

This is a natural product produced in the human brain by the pineal gland during darkness, which is generally during sleep. Synthetic melatonin made in laboratories.

- **Generally used for:** Mainly for sleep disorders including jet lag, delayed sleep phase syndrome, insomnia, sleep disturbances, sleep enhancement, Alzheimer's disease sleep disorders.
- **Contraindications:** Avoid when operating any dangerous machinery, in pregnancy, and during lactation.

- **Side effects and interactions:** Generally considered safe for short-term use at recommended dosages. Side effects reported: GI upset, mood lability, headache, dizziness, fatigue, sleepiness, irritability, sleep-cycle alterations, vivid dreams, sleep walking, confusion, disorientation, ataxia, skin reactions, bleeding alterations, seizure risk increase, psychotic symptoms with overdose. May improve or worsen some eye disorders such as glaucoma.
- **Usual dosage and route:** *For sleep disturbances:* 0.1–5.0 mg at bedtime; for jet lag 0.5–5.0-mg fast-release melatonin taken at bedtime for 4 days after traveling east. Fast-release formulations appear to be more effective than extended-release melatonin for jet lag/sleep problems.
- **Other:** Small doses such as 0.1 mg may be effective for sleep disturbances; urge clients to first try small doses for trial time frame.
- **Scientific evidence for use:** Grade A for jet lag. Grade B for delayed sleep syndrome, insomnia in elderly individuals, sleep disturbances in children with neuropsychiatric disorders, and betterment of sleep in healthy persons. Grade C for all other studied uses.

Omega-3 Fatty Acids

Fish and fish oil contain DHA plus EPA; nuts and vegetable oils contain ALA. EPA and DHA come from fatty fish.

- **Generally used for:** High BP; hypertriglyceridemia; elevated CRP; cardiovascular disease, both primary and secondary; cyclosporine toxicity with transplants; rheumatoid arthritis; angina pectoris; asthma; cancer prevention; cardiac arrhythmias; colon cancer and other cancers; and numerous other studied uses.
- **Contraindications:** For EPA/DHA source, avoid in clients with bleeding disorders.
- **Side effects and interactions:** Most common are GI disturbances or complaints; rarely skin reactions; some psychiatric alterations. Liver function tests may be altered.
- **Usual dosage and route:** *For healthy adults:* Eat fatty fish twice per week or take one or two 1.0–1.2-g capsules daily with meals. Recommended dosage of daily EPA-DHA is 0.3–0.5 g; of daily alpha-linolenic acid, 0.8–1.1 g.
- **Scientific evidence for use:** Grade A to reduce high BP but necessary high dose may cause bleeding; EPA + DHA/fish oil decrease triglyceride

levels and may lower risk of second heart attack. Grade B because regularly eating fish may lower mortality rate from heart disease, help protect transplant patients from cyclosporine toxicity, and improve some symptoms of rheumatoid arthritis. Most other studied uses received Grade C. Grade D for hypercholesterolemia, diabetes, prevention of heart or kidney transplant rejection.

Resveratrol

Comes from a plant *Polygonum cuspidatus;* is a powerful antioxidant. Resveratrol has also been linked to prevention of age-related problems such as heart disease and insulin resistance. Researchers believe that resveratrol activates the *SIRT1* gene, a biological mechanism that seems to protect the body against the harmful effects of obesity and the diseases of aging.

- **Generally used for:** Daily supplement. Some evidence for prevention of oxidation of LDL cholesterol, antiplatelet effect, protection from neuro-plaque that causes Alzheimer's disease, reduction of insulin resistance.
- **Contraindications:** Should not be taken with other blood thinning medications (warfarin, aspirin, etc).
- **Side effects and interactions:** So far no side effects have been uncovered in studies of resveratrol.
- **Usual dosage and route:** 250 to 2000 mg per day.
- **Scientific evidence for use:** Until more high-quality research is available, experts say they cannot recommend resveratrol supplements for antiaging or disease prevention.

Vitamin B_6 (Pyridoxine)

- **Generally used for:** Required for serotonin and norepinephrine synthesis and myelin formation, treating anemia, neuritis, preventing adverse effects of some antibiotics, seizures in newborns from high maternal doses or genetic pyridoxine dependency. Other uses studied include use in elderly individuals to improve immune function, to lower high homocysteine levels and C-reactive protein. Also used to correct vitamin B_6 deficiency in women using hormonal contraception.

- **Side effects and interactions:** Usually safe in recommended dosages; reactions to vitamin B_6 reported such as acne, skin reactions, photosensitivity; other side effects include GI upset, headache, sleepiness, sensory neuropathy, paresthesia, breast tenderness or growth, elevated AST, SGOT, seizures if large doses taken.
- **Usual dosage and route:** As maximum supplement for certain conditions above recommended RDAs. *Adults and pregnant or lactating women older than age 18 years:* Recommended maximum supplement for daily intake 100 mg. *Children younger than 18 years:* Consult References.
- **Other:** *Good sources from food:* Vegetables such as carrots, spinach, peas; cereal grains; potatoes; dairy products such as milk and cheese; eggs; fish; meat; liver; flour.
- **Scientific evidence for use:** Grade A for pyridoxine deficiency, neuritis, hereditary sideroblastic anemia, people taking cycloserine to prevent adverse effects, newborn pyridoxine-dependent seizures.

Vitamin B_9 (Folic Acid)

- **Generally used for:** Folate deficiency, megaloblastic anemia, prevention of birth defects such as neural tube defects, pregnancy loss.
- **Contraindications:** If allergic to product ingredients, rule out pernicious, aplastic, and normocytic anemias from vitamin B_{12} deficiency because vitamin B_9 may mask symptoms. Avoid in persons with seizure disorders.
- **Side effects and interactions:** Tolerated well; side effects reported include stomatitis, alopecia, zinc depletion, erythema, pruritus, flushing of skin, rash, itching, urticaria, nausea, bloating, cramps, diarrhea, flatulence, change in urine color. Central nervous system symptoms, impairment, side effects seen with high doses.
- **Usual dosage and route:** 400 mcg daily for adults. Pregnant adult women 600 mcg daily. For lactating adult women 500 mcg daily; maximum allowable levels 800–1,000 mcg daily
- **Other:** *Good food sources:* Many foods fortified today such as cereals, baked goods; other sources include dark leafy vegetables such as spinach; broccoli; lettuce; asparagus; okra; fruits such as lemons, melons, and bananas; legumes; beef organ meat, such as liver and kidney; some juices such as orange and tomato; and mushrooms. Found in combination with other B vitamins in many supplements.

- **Scientific evidence for use**: Grade A for folate deficiency, megaloblastic anemia from folate deficiency, pregnancy complications from deficiency such as birth defects and pregnancy loss. Grade B for methotrexate toxicity. Most other studied uses Grade C. Grade D for Down's syndrome and lometrexol toxicity. Grade F for fragile X syndrome.

Vitamin C

- **Generally used for**: growth and repair of tissues, form an important protein used to make skin, tendons, ligaments, and blood vessels, heal wounds and form scar tissue, repair and maintain cartilage, bones, and teeth. Vitamin C is one of many antioxidants.
- **Contraindications**: Hypersensitivity to vitamin C or renal impairment.
- **Side effects and interactions**: Serious side effects from too much vitamin C are very rare because the body cannot store the vitamin. However, amounts greater than 2,000 mg/day are not recommended because such high doses can lead to stomach upset and diarrhea.
- **Usual dosage and route**: Adults 75 mg daily; smokers and women who are breastfeeding should take an extra 35 mg per day.
- **Foods with vitamin C**: Citrus fruits, cantaloupe, mango, strawberries, blueberries, raspberries, cranberries, broccoli, Brussels sprouts, cauliflower, peppers, spinach, cabbage, turnips, tomatoes, winter squash.
- **Scientific evidence for use**: Grade A for scurvy, which is caused by a dietary deficiency of vitamin C. Grade B for common cold prevention, urinary tract infection prevention, iron absorption enhancement. Grade C for anemia, arthritis, Alzheimer's disease, asthma, autism, burns.

Vitamin D_3

- **Generally used for**: Vitamin D helps the body absorb calcium. The body makes vitamin D when the skin is directly exposed to the sun. That is why it is often called the "sunshine" vitamin. Most people meet at least some of their vitamin D needs this way. Very few foods naturally contain vitamin D. As a result, many foods are fortified with vitamin D. Fortified means that vitamins have been added to the food.
- **Contraindications**: Vitamin D is an oil-soluble vitamin; therefore, the body is not able to "get rid" of an overabundance of vitamin D. Should not be taken in overdose for this reason.

- **Side effects and interactions**: Too much vitamin D can make the intestines absorb too much calcium. This may cause high levels of calcium in the blood.
- **Usual dosage and route**: Different for different age groups, genders, races.
- **Scientific evidence for use**: Grade A recommendation in familial hypophosphatemia, Fanconi syndrome–related hypophosphatemia, hyperparathyroidism from low vitamin D levels, hypocalcemia from hypoparathyroidism, osteomalacia (adult rickets), psoriasis (vitamin D analogues), rickets, vitamin D deficiency. Grade B recommendation for fall prevention, muscle weakness, osteoporosis, renal osteodystrophy.

Zinc

Zinc is an "essential trace element" because very small amounts of zinc are necessary for human health.

- **Generally used for**: Boosts the immune system, treating the common cold and recurrent ear infections, as well as preventing lower respiratory infections, macular degeneration, night blindness, cataracts, asthma, diabetes, high blood pressure, acquired immunodeficiency syndrome (AIDS); and skin conditions such as psoriasis, eczema, acne. Zinc has been used for attention deficit–hyperactivity disorder (ADHD), Alzheimer's disease, ulcerative colitis, peptic ulcers, anorexia, benign prostatic hyperplasia.
- **Contraindications:** Allergy to zinc, pregnancy, or lactation.
- **Side effects and interactions**: Many zinc products also contain metal called cadmium. This is because zinc and cadmium are chemically similar and often occur together in nature. Exposure to high levels of cadmium over a long time can lead to kidney failure. Taking high amounts of zinc is LIKELY UNSAFE. High doses above the recommended amounts may cause fever, coughing, stomach pain, fatigue, many other problems.
- **Usual dosage and route**: Zinc can be taken in a nose spray for colds or orally. Doses range between 25 and 200 mg daily.
- **Scientific evidence for use**: Grade A recommendation for zinc deficiency, gastric ulcers and diarrhea in children. Grade B recommendation for ADHD, acne, herpes simplex, sickle cell anemia, Wilson's disease, age-related macular degeneration.

Complementary Therapies

Acupuncture and Acupressure

Acupuncture and acupressure are techniques of inserting and manipulating fine filiform needles into specific points on the body with the aim of relieving pain and for therapeutic purposes. According to traditional Chinese acupuncture theory, these acupuncture points lie along meridians along which qi, the body's vital energy, flows. Acupuncture originated in China and is most commonly associated with traditional Chinese medicine (TCM). The acupuncturist decides which points to treat by observing and questioning the patient to make a diagnosis according to the acupuncturist's practice tradition. Some of the conditions successfully treated with acupuncture include headache, hypertension, muscle and joint pain, fibromyalgia, depression, irritable bowel syndrome, drug dependence, and smoking cessation. Acupuncturists must be licensed in each state in which they practice.

- **Efficacy:** In research studies acupuncture has been shown to decrease pain; improve acne outbreaks; decrease asthma exacerbations; decrease chronic pain including lower back pain, dental pain, and postoperative pain; improve depression symptoms; improve gout; decrease exacerbations of migraine headaches; relieve the pain of arthritis and tendonitis; and improve wound healing.

Aromatherapy

Aromatherapy is the art and science of helping living things toward wholeness and balance using the essential oils that can be extracted from living plants. Essential oils are liquids obtained from plants that evaporate at room temperature with characteristic aromas. Aromatherapy use was documented as early as ancient Babylonia in 5,000 BC. Research has demonstrated that aromatherapy is effective for anxiety, depression, insomnia, and postoperative nausea and vomiting.

- **Efficacy:** In research studies, aromatherapy has been shown to decrease anxiety and stress; decrease postoperative and pregnancy-induced nausea; decrease depression, blood pressure, and insomnia; clear sinuses; increase the immune system by increasing white blood cell production; and improve symptoms of premenstrual syndrome.

Chinese Medicine

Traditional Chinese medicine is a medical system that has been used for thousands of years to prevent, diagnose, and treat disease. It is based on the belief that qi (the body's vital energy) flows along 20 meridians (channels) throughout the body and keeps a person's spiritual, emotional, mental, and physical health in balance. TCM aims to restore the body's balance and harmony between the natural opposing forces of yin and yang, which can block qi and cause disease. It includes such treatments as herbal medicine, acupuncture, dietary therapy, Tui na and Shiatsu massage, qigong, and tai chi. TCM theory is extremely complex and originated thousands of years ago through meticulous observation of nature, the cosmos, and the human body. Included in Chinese medicine are herbal therapy and acupuncture.

Chiropractic Medicine

Chiropractic medicine is grounded in the principle that the body can heal itself when the skeletal system is correctly aligned and the nervous system is functioning properly. To achieve this, the practitioner uses his or her hands or an adjusting tool to perform specific manipulations of the vertebrae. When these bones of the spine are not correctly articulated, resulting in a condition known as sublimation, the theory is that nerve transmission is disrupted; this disruption can cause pain in the back and other areas of the body. Chiropractic is one of the most popular alternative therapies currently available. Research has also supported the use of spinal manipulation for acute low back pain. Some anecdotal evidence suggests recommending chiropractic treatment for ailments unrelated to musculoskeletal problems, but there are not enough research-based data to support this. However, a chiropractor may be able to treat problems and diseases unrelated to the skeletal structure by using therapies other than spinal manipulation.

- **Efficacy:** Chiropractic medicine that uses spinal manipulation has been shown to reduce pain and muscle spasms, increase immune globulins, and improve posture.

Guided Imagery

Guided imagery is a program of directed thoughts and suggestions that guide your imagination toward a relaxed, focused state.

- **Efficacy:** Guided imagery can be used in combination with other therapies such as music therapy or meditation. Guided imagery has been effective in reducing anxiety even in patients with post-traumatic stress disorder, improving mood, and reducing depression.

Healing Touch

Healing touch is a practice derived from an ancient technique called laying on of hands. It is based on the premise that the healing force of the therapist affects the patient's recovery and that healing is promoted when the body's energies are in balance. Practitioners of healing touch believe that by passing their hands over the patient, healers can identify energy imbalances. The major effects of therapeutic touch are relaxation, pain reduction, accelerated healing, and alleviation of psychosomatic symptoms. Studies have shown that therapeutic touch also has a beneficial effect on the blood because it has the ability to raise hemoglobin values. It also affects brain waves to induce relaxation.

- **Efficacy:** Studies have shown that healing touch is effective in reducing anxiety and stress, increases the function of the immune and adrenal systems, decreases blood pressure, improves depression and pain symptoms, increases endorphins, and improves cognition.

Homeopathy

Homeopathy is a form of alternative medicine first defined by Samuel Hahnemann in the 18th century. A central thesis of homeopathy is that an ill person can be treated using a substance that can produce, in a healthy person, symptoms similar to those of the illness. Practitioners select treatments according to a patient consultation that explores the physical and psychological state of the patient, both of which are considered important to selecting the remedy. Claims about the efficacy of

homeopathic treatment beyond the placebo effect are unsupported by the collective weight of scientific and clinical evidence.

- **Efficacy:** Oscillococcinum, a homeopathic remedy, has been shown to decrease length and symptoms of flu. Other remedies have reduced GI distress in children, especially diarrhea, and for arthritis.

Reiki

Reiki (pronounced ray-key) is a system of enlightenment and hands-on healing art developed in the early 1900s by Mikao Usui in Japan. It is an art that is passed from master to student. The word *Reiki* comes from two Japanese words, *Rei* and *Ki,* meaning universal life force energy. It is a form of energy healing that is used to reduce stress and increase energy, peace, and feelings of well-being.

- **Efficacy:** In research studies, Reiki has been shown to reduce blood pressure and heart rate, decrease anxiety, improve the immune system by increasing salivary IgA, decrease postoperative pain, and improve function in older adults.

Tai Chi

Tai Chi is an ancient Chinese exercise system that uses slow, smooth body movements to achieve a state of relaxation of both body and mind. Tai chi has five essential qualities: slowness to develop awareness, lightness to make movements flow, balance to prevent body strain, calmness to maintain continuity, and clarity to focus the mind.

- **Efficacy:** Tai chi has been shown to improve balance especially in older adults, decrease fatigue, and increase cognition and mental alertness.

Yoga

Yoga is an Indian word for "union." It indicates a state of union between two opposites, either the body and mind or the individual and universal consciousness. It also refers to a process of uniting the opposing forces in the body and mind to achieve supreme awareness and enlightenment. Yoga is a posturing and breathing technique to induce relaxation. Yoga is

a Hindu discipline aimed at achieving a state of perfect spiritual insight and tranquility. In the West, the term is most commonly understood as the physical exercises that are practiced as part of this discipline. Different types of yoga include Hatha yoga, Vinyasa yoga, Ashtanga yoga, Bikram yoga, and Iyengar yoga. Each type has different exercises and postures that assist with relaxation and spiritual insight.

- **Efficacy:** Yoga has been studied and demonstrates positive effects for hypertension, stress, exercise tolerance, depression, fatigue, chronic back pain, and visual discomfort.

Probiotics

Probiotics, which in Greek means "for life," are products containing *living* microbes that assist with restoring balance between beneficial and pathogenic microflora that live in the intestinal tract. These bacteria protect the gut by interacting in the human immune system to prevent pathogenic bacterial invasion. Probiotics are used for the following:

- Diarrhea.
- Other suggested preventions or duration reductions: atopic diseases in infants, allergies, common cold, influenza, healthy people with some bowel irregularity.
- **Contraindications:** Probiotic products are not regulated by the FDA. Advise caution in unsupervised use; may interact adversely with prescribed and OTC drugs and supplements; may cause side effects and an allergic response; long-term effects unknown.
- **Other:** Considered generally safe because normally reside in human intestine.
- **Scientific evidence for use:** A true probiotic must contain a predetermined dose of living, active bacteria as shown on the label and must be supported by evidence from valid and reliable clinical trials that show a suggested benefit. Research is ongoing to show effects of probiotic products with colon cancer, other causes of diarrhea or infections in the digestive system, heart disease, other cancers, lipid metabolism, and more.

Equivalents

- 1 centimeter = 0.4 inches
- 1 inch = 2.5 centimeters
- 1 meter = 39.4 inches
- 1 teaspoon = 5 milliliters
- 1 tablespoon = 15 milliliters
- 1 ounce = 30 milliliters
- 8 ounces = 1 cup = 240 milliliters
- 1 quart = 946 milliliters
- 1 grain (gr) = 60 milligrams
- 30 grams = 1 ounce
- 1 gram = 15 grains
- 1,000 micrograms = 1 milligram
- 1,000 milligrams = 1 gram

Abbreviations

Many health-care facilities have a specific list of abbreviations that are acceptable. Always check approved abbreviation lists before using.

Abbreviation	Definition
ADC Vaan Dimsl	Mnemonic for admitting orders: A—Admit D—Diagnosis C—Condition V—Vitals A—Activity A—Allergies N—Nursing procedures D—Diet I—In and out recorded M—Medications S—Special tests (EKG, MRI) L—Laboratory tests

Continued

Abbreviation	Definition
AAA	Abdominal aortic aneurysm
AC	Before eating (Latin: ante cibum)
ACE	Angiotensin-converting enzyme
A&O	Alert and oriented
ADLs	Activites of daily living
AFP	Alpha-fetoprotein
AIDS	Acquired immunodeficiency syndrome
ALA	Alpha-linolenic acid
ALT	Alanine aminotransferase
ANA	Antinuclear antibody
AOB	Alcohol on breath
ARB	Angiotensin receptor blocker
ARDS	Adult respiratory distress syndrome
ARF	Acute renal failure
AS	Aortic stenosis
ASCVD	Atherosclerotic cardiovascular disease
ASO	Antistreptolysin O
AST	Aspartate aminotransferase
ATP	Adult treatment panel
BMD	Bone mineral density
BMI	Body mass index
BMR	Basal metabolic rate
BP	Blood pressure
BPH	Benign prostatic hypertrophy
BRBPR	Bright red blood per rectum
BX	Biopsy
CAM	Complementary and alternative medicine
CBC	Complete blood count
CBE	Clinical breast examination
CEA	Carcinoembryonic antigen
C&S	Culture and sensitivity
CC	Chief complaint

Continued

Abbreviation	Definition
CCU	Clean catch urine
CHD	Coronary heart disease
CHO	Carbohydrate
CHS	Current health status
COPD	Chronic obstructive pulmonary disease
CPAP	Continuous positive airway pressure
CPR	Cardiopulmonary resuscitation
CRCL	Creatinine clearance
CRP	C-reactive protein
CT	Computed tomography
CVA	Cerebrovascular accident
CVA	Costovertebral angle
CVAT	Costovertebral angle tenderness
CMV	Cytomegalovirus
CNS	Central nervous system
C&S	Culture and sensitivity
DAT	Diet as tolerated
DAW	Dispense as written
DBP	Diastolic blood pressure
DCBE	Double-contrast barium enema
DDx	Differential diagnosis
DEXA	Dual-energy x-ray absorptiometry
DIC	Disseminated intravascular coagulation
DIP	Distal interphalangeal joint
DKA	Diabetic ketoacidosis
DHA	Docosahexaenoic acid
DNA	Deoxyribonucleic acid
DOE	Dyspnea on exertion
DPT	Diphtheria, pertussis, tetanus
DRE	Digital rectal examination
DTR	Deep tendon reflexes

Continued

Abbreviation	Definition
DVT	Deep vein thrombosis
Dx	Diagnosis
EBL	Estimated blood loss
EDD	Estimated date of delivery
EKG	Electrocardiogram
ELISA	Enzyme-linked immunosorbent assay
EMG	Electromyogram
EOM	Extraocular muscles
EPA	Eicosapentaenoic acid
EPO	Exclusive provider organization
ESR	Erythrocyte sedimentation rate
ETOH	Alcohol
FBS	Fasting blood glucose
FDA	Food and Drug Administration
FEV	Forced expiratory volume
FH	Family history
FRC	Functional residual capacity
FTA-ABS	Fluorescent treponemal antibody-absorbed (definitive test for syphilis)
FTT	Failure to thrive
FU	Follow-up
FUO	Fever of unknown origin
FVC	Forced vital capacity
Fx	Fracture
G	Gravida
GC	Gonorrhea
GERD	Gastroesophageal reflux disease
GFR	Glomerular filtration rate
GI	Gastrointestinal
gr	Grain
GSW	Gunshot wound
gtt	Drops

Continued

Abbreviation	Definition
GTT	Glucose tolerance test
GU	Genitourinary
GXT	Graded exercise tolerance test (stress test)
HA	Headache
HAA	Hepatitis-associated antigen
HAV	Hepatitis A virus
HBc	Hepatitis B core antigen
HBeAg	Hepatitis B e antigen
HBsAg	Hepatitis B surface antigen
HBV	Hepatitis B virus
HCG	Human chorionic gonadotropin
Hct	Hematocrit
HDL	High-density lipoprotein
HEENT	Head, ears, eyes, nose, throat
HELLP	Hemolysis, elevated liver enzymes, and low platelet count
Hgb	Hemoglobin
HIV	Human immunodeficiency virus
HMO	Health maintenance organization
HO	History of
HJR	Hepatojugular reflex
HLA	Histocompatibility locus antigen
HPI	History of presenting illness
HRCT	High-resolution computed tomography
HSV	Herpes simplex virus
HTN	Hypertension
Hx	History
IC	Interstitial cystitis
ID	Identifying data
ID	Infectious disease
IDDM	Insulin-dependent diabetes mellitus

Continued

Abbreviation	Definition
Ig	Immunoglobulin
IHSS	Idiopathic hypertrophic subaortic stenosis
INR	International normalized ratio
IPA	Independent practice association
ITP	Idiopathic thrombocytopenia purpura
IVC	Intravenous cholangiogram
IVP	Intravenous pyelogram
JVD	Jugular venous distention
JVP	Jugular venous pressure
KUB	Kidneys, ureters, and bladder
LAE	Left atrial enlargement
LDL	Low-density lipoprotein
LE	Lupus erythematosus
LIH	Left inguinal hernia
LMP	Last menstrual period
LNMP	Last normal menstrual period
LUQ	Left upper quadrant
MAO	Monoamine (or *monamine*) oxidase
MAOI	Monoamine (or *monamine*) oxidase inhibitor
MCH	Mean corpuscular hemoglobin
MCHC	Mean corpuscular hemoglobin concentration
MCL	Midclavicular line
MCP	Mucopurulent
MCV	Mean corpuscular volume
MI	Myocardial infarction
MLE	Midline episiotomy
MMR	Measles-mumps-rubella
MRI	Magnetic resonance imaging
MRSA	Methicillin-resistant *Staphylococcus aureus*
MS	Multiple sclerosis

Continued

Abbreviation	Definition
NAACP	Mnemonic for eosinophilia, allergy, Addison's disease, collagen vascular disease, parasites (all of these cause eosinophilia)
NAD	No apparent distress, or no active disease
NCV	Nerve conduction velocity
NIDDM	Non–insulin-dependent diabetes mellitus
NKA	No known allergies
NSAID	Nonsteroidal anti-inflammatory drug
OA	Osteoarthritis
OAB	Overactive bladder
OCD	Obsessive compulsive disorder
OD	Right eye (Latin: *oculus dexter*)
OM	Otitis media
OPV	Oral polio vaccine
OS	Left eye (Latin: *oculus sinister*)
OTC	Over-the-counter
OU	Both eyes (Latin: *oculi unitas*)
P	Para
PA	Posteroanterior
Pa_{O_2}	Partial pressure of arterial oxygen
PAT	Paroxysmal arterial tachycardia
PC	After eating (Latin: *post cibum*)
PDA	Patent ductus arteriosus
PEEP	Positive end-expiratory pressure
PID	Pelvic inflammatory disease
PERRLADC	Pupils equal, round, reactive to light accommodation directly and consentually
PFT	Pulmonary function test
PKU	Phenylketonuria
PMH	Past medical history
PMI	Point of maximal impulse
PMP	Past menstrual period

Continued

Abbreviation	Definition
PMS	Premenstrual syndrome
PND	Paroxysmal nocturnal dyspnea
PP	Postprandial
PPO	Preferred provider organization
PSA	Prostate-specific antigen
PSH	Past health status
PT	Prothrombin time
PTCA	Percutaneous transluminal coronary angioplasty
PTH	Parathyroid hormone
PTT	Partial thromboplastin time
PUD	Peptic ulcer disease
PVD	Peripheral vascular disease
QNS	Quantity not sufficient
RA	Rheumatoid arthritis
RBC	Red blood cell
RDA	Recommended dietary allowance
RDW	Red cell distribution width
RFV	Reason for visit
RIA	Radioimmunoassay
RIH	Right inguinal hernia
RLL	Right lower lobe
RLQ	Right lower quadrant
RMCL	Right midclavicular line
RML	Right middle lobe
R/O	Rule out
ROM	Range of motion
ROS	Review of symptoms
RPG	Retrograde pyelogram
RRR	Regular rate and rhythm
RTC	Return to clinic
RUL	Right upper lobe

Continued

Abbreviation	Definition
RUQ	Right upper quadrant
RV	Residual volume
Rx	Treatment
SAB	Miscarriage
SAD	Seasonal affective disorder
SB	Stillbirth
SBE	Subacute bacterial endocarditis
SBP	Systolic blood pressure
SEM	Systolic ejection murmur
SGA	Small for gestational age
SGOT	Serum glutamic oxaloacetic transaminase
SIADH	Syndrome of inappropriate antidiuretic hormone (ADH)
Sig	Write on label (Latin: *signa*)
SJW	St. John's wort
SL	Sublingual
SLE	Systemic lupus erythematosus
SNAQ	Simplified nutrition assessment questionnaire
SOB	Shortness of breath
SQ	Subcutaneous
SSRI	Selective serotonin reuptake inhibitor
SVD	Spontaneous vaginal delivery
STD	Sexually transmitted disease
STI	Sexually transmitted infection
TAH	Total abdominal hysterectomy
TAH BSO	Total abdominal hysterectomy and bilateral salpingo-oophorectomy
TBLC	Term birth, living child
TCM	Traditional Chinese medicine
Td	Tetanus-diphtheria toxoid
TIA	Transient ischemia attack
TIBC	Total iron-binding capacity

Continued

Abbreviation	Definition
TIg	Tetanus immune globulin
TLC	Therapeutic lifestyle changes
TLC	Total lung capacity
TM	Tympanic membrane
TMJ	Temporomandibular joint
TNTC	Too numerous to count
TOP	Termination of pregnancy
TOPV	Trivalent oral polio vaccine
TORCH	Toxoplasma, rubella, cytomegalovirus, herpesvirus (O = other such as syphilis) (These are all infectious causes of congenital abnormalities.)
TSH	Thyroid-stimulating hormone
TVH	Total vaginal hysterectomy
Tw	Twice a week
Tx	Treatment
UAO	Upper airway obstruction
Ud	As directed (Latin: *ud dictum*)
UFH	Unfractionated heparin
UI	Urinary incontinence
URI	Upper respiratory infection
URQ	Upper right quadrant
VC	Vital capacity
VCT	Venous clotting time
VDRL	Venereal Disease Research Laboratory (test for syphilis)
VMA	Vanillyl mandelic acid (high levels with pheochromocytoma)
VRE	Vancomycin-resistant enterococci
VSS	Vital signs stable
VV	Varicose veins
VZV	Varicella-zoster virus
WBC	White blood cell

Continued

Abbreviation	Definition
WBR	Whole-body radiation
WD	Well developed
WF	White female
WID	Widow, or widower
WM	White male
WNL	Within normal limits
WOP	Without pain
W-T-D	Wet to dry
W/U	Workup
XL	Extended release
XOM	Extraocular movements
XS	Excessive
XULN	Times upper limits of normal
YOB	Year of birth
YTD	Year-to-date
ZE	Zollinger-Ellison syndrome
Zn	Zinc

Physical Signs and Eponyms

Apgar Score

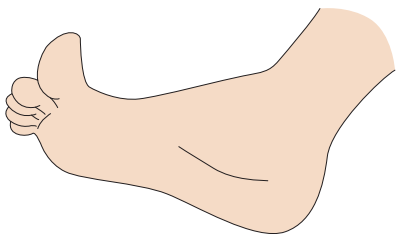
The Apgar score is a system for point score evaluation of the physical condition of a newborn 1 minute after birth. The heart rate, respiration rate, muscle tone, responses to stimuli, and color are each rated 0, 1, or 2. The maximum total score is 10. A score of 7 or less indicates a problem requiring immediate attention if the baby is to survive. The test may be repeated at 5 or more minutes after birth in order to judge recovery of infants with low scores.

- **A:** Appearance (skin color)
  - **0 points:** blue-gray, pale all over
  - **1 point:** normal, except for extremities
  - **2 points:** normal over entire body

- **P:** Pulse
  - **0 points:** absent
  - **1 point:** below 100 bpm
  - **2 points:** above 100 bpm
- **G:** Grimace (reflex irritability)
  - **0 points:** no response
  - **1 point:** grimace
  - **2 points:** sneeze, cough, pulls away
- **A:** Activity (muscle tone)
  - **0 points:** absent
  - **1 point:** arms and legs flexed
  - **2 points:** active movement
- **R:** Respiration
  - **0 points:** absent
  - **1 point:** slow, irregular
  - **2 points:** good, crying

Babinski's Sign

- Extension of the large toe, instead of the normal flexion, with stimulation of the plantar surface of the foot
- Indicative of pyramidal tract disease



Baker's Cyst

- Hernia-like cyst in synovial membranes, especially of the knee joints, produced by synovial fluid escaping from a joint through a natural channel or through a hernial opening in the synovial membrane
- Limited extension with mild aching and stiffness of knee
- Occurs at any age but more frequent in male patients 15 to 30 years of age
- Etiology unknown
- Inheritance reported in a family

Barrett's Esophagus

- Condition in which the esophageal lining changes, becoming similar to the tissue that lines the intestine
- A complication of GERD
- More likely to occur in patients who experienced GERD at a young age, had nighttime symptoms, or had complications such as bleeding or stricture (narrowing resulting from scarring)

Battle's Sign

- Ecchymosis behind the ear associated with basilar skull fracture

Bence Jones Protein

- Abnormal, heat-sensitive, low molecular weight paraprotein consisting exclusively of monoclonal light chains of gamma globulin molecules
- Occurring in urine in patients with multiple myeloma and occasionally in patients with other diseases of the reticuloendothelial system
- When urine samples are heated between 50°C and 60°C, a precipitate forms. It disappears when the urine is boiled and reappears when the urine cools.
- Demonstrated by electrophoresis

Boas' Sign

- A tender area left of the 12th thoracic vertebra in patients with gastric ulcer

Bouchard's Nodes

- Hard, nontender, painless nodules on the dorsolateral aspects of the proximal interphalangeal joints
- Associated with osteoarthritis
- Resulting from hypertrophy of the bone

Braxton Hicks Contractions

- Also called contractions insensibiles uteri gravidarum, false labor, and practice contractions
- Painless intermittent uterine contractions that may occur after 3 months of pregnancy in intervals of 10 to 20 minutes
- Not representing true labor pains but are often so interpreted
- Not present in every pregnancy

Brudzinski's Sign

- Flexion of the neck causing the hips to flex in meningitis



Chandelier Sign

- Extreme pain elicited with movement of the cervix during bimanual pelvic examination
- Indicating pelvic inflammatory disease

Chvostek's Sign

- Tapping over the facial nerve causing facial spasm in hypocalcemic states (tetany)

Gilbert's Disease

- One of the most common syndromes known
- Hereditary, congenital, benign, chronic, intermittent hyperbilirubinemia
- Fluctuating jaundice in the absence of any specific symptoms but with an excess of unconjugated bilirubin present in the urine
- Affects both sexes (male-to-female ratio, 4:1)
- Jaundice detected shortly after birth or later in life
- Scleral jaundice a constant factor
- Asthenia, fatigue, anxiety, nausea, and abdominal pain occurring in most cases
- Symptoms precipitated by exertion, alcohol, or infection
- Commonly diagnosed by chance investigation
- Familial disorder transmitted as an autosomal dominant trait

Heberden's Nodes

- Hard, nontender, painless nodules on the dorsolateral aspects of the distal interphalangeal joints
- Associated with osteoarthritis and a result of hypertrophy of the bone



Hegar's Sign

- Softening of the distal uterus
- A reliable sign of pregnancy

Homans' Sign

- Calf pain with forcible dorsiflexion of the foot
- Associated with venous thrombosis



Assessing for Homans' sign

Janeway's Lesion

- Erythematous or hemorrhagic lesion seen on the palm or sole with subacute bacterial endocarditis

Kernig's Sign

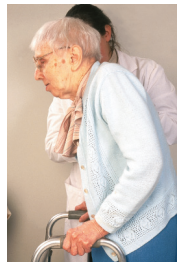
- Inability to extend leg completely when the thigh is flexed at a right angle
- Seen with meningitis



Assessing for Kernig's sign

Kyphosis

- Excessive rounding of the thoracic spinal convexity
- Seen with osteoporosis in older women



Senile kyphosis

Lordosis

- Accentuated normal concavity of the lumbar spine
- Normal in pregnancy



Mallory-Weiss Tear

- A tear in the gastric mucosa where the esophagus meets the stomach that may cause gastric bleeding

McBurney's Point and Sign

- Located one third the distance from the anterior superior iliac spine to the umbilicus on the right
- Tenderness associated with acute appendicitis



McBurney's point

Moro's Reflex

- A defensive reflex seen in the first 6 months of life
- In response to a loud noise, passive movement of the child's head, or striking the surface on which the infant rests, the infant draws his or her arms across the chest in an embracing manner
- Absence of this reflex under 6 months of age suggesting diffuse central nervous system damage, and asymmetric responses seen with all forms of palsies
- Its presence after 6 months of age suggesting cortical disturbance



Murphy's Sign

- Severe pain and inspiratory arrest with palpation of the right upper quadrant
- Associated with cholecystitis



Palpating at right midclavicular line to elicit Murphy's sign

Nabothian Cysts

- Retention cysts formed by the nabothian glands at the neck of the uterus that result from occlusion of the lumina of glands in the mucosa of the uterine cervix and cause the glands to be distended with retained secretion
- Always benign
- Very common

Obturator Sign

- Flexion and lateral rotation of the thigh eliciting hypogastric pain in cases of inflammation of the obturator internus
- Positive result with pelvic abscess or appendicitis



Obturator muscle test

Oddi's Syndrome

- Spasm of the sphincter of Oddi that causes pain and sometimes jaundice and that mimics a gallstone in the common duct

Phalen's Test

- Prolonged maximum flexion of the wrists while opposing the dorsal surfaces of each hand against one another
- Pain and tingling in the distribution of the median nerve indicating carpal tunnel syndrome



Psoas Sign

- Pain produced by extension and elevation of the right leg in cases of inflammation of the psoas muscle
- A sign of appendicitis

Reiter's Disease

- A syndrome consisting of urethritis, arthritis, and conjunctivitis in its full-blown picture
- Urethritis usually occurring first
- Polyarthritis the most dominant of countless clinical symptoms
- Characterized by pain, swelling, redness, and heat in the joints

Romberg's Test

- Used to test position sense or cerebellar function
- Patient standing with heels and toes together
- Normal balance with eyes open and loss of balance with eyes closed indicating loss of position sense



Eyes Open



Eyes Closed

Skene's Glands

- Numerous mucous glands in the wall of the female urethra that are localized so that their openings are just inside the urinary meatus
- Almost always infected in acute gonorrhea

Still's Murmur

- Early systolic murmur heard near the left sternal edge in children and young adolescents
- Usually disappearing at puberty

Tinel's Sign

- Radiation of an electric shock sensation in the distal distribution of the median nerve elicited by percussion of the flexor surface of the wrists when fully extended
- Seen in carpal tunnel syndrome



Assessing for Tinel's sign

Trousseau's Sign

- Carpal spasm produced by inflating a blood pressure cuff around the arm to above the level of systolic blood pressure
- Indicating hypocalcemia

Weber-Rinne Test

This combination of tests involves placing a tuning fork on the middle of the skull to determine whether the sound lateralizes

Rinne's Test

- With the tuning fork held against the mastoid process (bone conduction [BC]) and the opposite ear covered, the patient indicates when the sound is gone.
- The tuning fork is then held next to the ear, and the patient indicates when the sound (air conduction [AC]) disappears.



Performing Rinne's test on mastoid



Performing Rinne's test in front of ear

Weber's Test

- With sensorineural hearing loss, the test lateralizes to the less affected ear and AC is greater than BC.
- With conduction hearing loss, the test lateralizes to the more affected ear and BC is greater than AC.



Performing Weber's test on head



Performing Weber's test on forehead

Zollinger-Ellison Syndrome

- This condition comprises a clinical triad of:
  - Hypersecretion of gastrin
  - Multiple, atypically located, often recurrent peptic ulcers
  - A non–insulin-producing islet cell tumor of the pancreas (about 60% are malignant)
- Affecting males slightly more frequently than females
- Autosomal dominant inheritance
- Known as the multiple endocrine neoplasia I syndrome when associated with familial multiple endocrine adenomatosis

Cranial Nerve Assessment

Nerve	Name	Function	Test
I	Olfactory	Smell	Identify familiar odors (e.g., coffee, peppermint).
II	Optic	Visual acuity	Assess visual acuity using eye chart.
		Visual field	Assess peripheral vision.
III	Oculomotor	Pupillary reaction	Assess pupils for equality and reactivity to light.
IV	Trochlear	Eye movement	Patient follows finger without moving head.
V	Trigeminal	Facial sensation	Touch face and assess for sharp and dull sensation.
		Motor function	Have patient hold mouth open.
VI	Abducens	Motor function	Patient follows finger without moving head.
VII	Facial	Motor function	Have patient smile, wrinkle face, puff cheeks.
		Sensory	Patient differentiates between sweet and salty taste.
VIII	Acoustic	Hearing	Snap fingers close to the patient's ears.
		Balance	Feet are together, arms at side, eyes closed for 5 sec.
IX	Glossopharyngeal	Swallowing and voice	Have patient swallow and then say "Ah."
X	Vagus	Gag reflex	Use tongue depressor or swab to elicit gag reflex.
XI	Spinal accessory	Neck motion	Patient shrugs or turns head against resistance.
XII	Hypoglossal	Tongue movement	Patient sticks out tongue and moves it from side to side.

English/Spanish Medical Translations: Anatomy Terms

English Term	Spanish Term
Abdomen	Vientre
Ankle	Tobillo
Arm	Brazo
Back	Espalda
Bladder	Vejiga
Buttocks	Nalgas
Calf	Pantorrilla
Chest	Pecho
Ear	Oreja
Elbow	Codo
Eye	Ojo
Face	Cara
Finger	Dedo de la mano
Foot	Pie
Groin	Ingle
Hair	Cabello
Hand	Mano
Head	Cabeza
Heel	Talón
Hip	Cadera
Knee	Rodilla
Leg	Pierna
Liver	Higado
Mouth	Boca
Neck	Cuello
Nose	Nariz
Rectum	Recto
Shin	Espinilla de la pierna
Shoulder	Hombro

Continued

English/Spanish Medical Translations: Anatomy Terms—cont'd

English Term	Spanish Term
Stomach	Estómago
Thigh	Muslo
Throat	Garganta
Toe	Dedo del pie
Tongue	Lengua
Vagina	Vagina
Wrist	Muñeca

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The "Common Symbols Used to Develop Genetic Pedigrees" and "Pedigree Line Definitions" figures in Tab 1: Screening are from Bennett, R.L., Steinhaus, K.A., Uhrich, S.B., et al: Recommendations

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The "Dermatomes" figure in Tab 2: Assessment is from Myers, E., Hopkins, T.: *LPN Notes,* 2nd ed. Philadelphia, F.A. Davis, 2007.

The "Food Guide Pyramid" in Tab 2: Assessment is from the USDA's Web site at www.MyPyramid.gov

With the exception of the first figure, all figures in Tab 8: Tools are from Dillon, P.M.: *Nursing Health Assessment: A Critical Thinking, Case Studies Approach*, 2nd ed. Philadelphia, F.A. Davis, 2007.

Medical History Questions

English Phrase	Spanish Phrase
What medications do you take?	¿Que medicamentos toma?
Do you have them with you?	¿Los trajo con Ud.?
When was your last menstrual period?	¿Cuando fue la última regla o el último período menstrual?
Can you point with one finger to where the pain is?	¿Puede señalar con el dedo donde siente el dolor?
Is the pain constant or intermittent?	¿Constante o intermitente?
Do you have a cough? Dry?	¿Tiene tos? Seca?
Do you cough up sputum?	¿Tiene tos con flema?
What color is it?	¿De que color es?
Do you have difficulty swallowing?	¿Tiene dificultad al tragar?
Do you get dizzy?	¿Tiene mareos?
Do you get headaches?	¿Tiene dolores de cabeza?
Have you vomited? How often?	¿Ha vomitado? ¿Con que frecuencia?
Do you have diarrhea? How often?	Tiene diarrea? ¿Con que frecuencia?
Do you get a burning sensation when you urinate?	¿Tiene sensación de ardor o dolor cuando orina?
Have you ever been pregnant?	¿Ha estado embarazada alguna vez?
Have you had a miscarriage or an abortion?	¿Alguna vez ha tenido un aborto espontáneo o inducido?
Do you have a vaginal discharge?	¿Tiene alguna descarga vaginal?
Have you noticed any sores or ulcers?	¿Ha notado alguna llaga o ulceras?
Do you have pain in your penis, testes, or scrotum?	¿Tiene dolor en el pene, los testiculos, o el escroto?
How long have you had it?	¿Hace cuanto tiempo que la ha tenido?
Have you ever had an STI?	¿Ha tenido alguna vez una enfermedad transmitida sexualmente?
Do you have blurred vision?	¿Tiene visión borrosa?
Do you have a history of high blood pressure or diabetes?	¿Tiene historia de presión alta o de diabetes?
Are you taking blood thinners?	¿Esta tomando medicamentos para licuar la sangre?

Index

Page numbers followed by t indicate table

A
Abbreviations, 239–249
Abdomen
  computed tomography of, 115
  physical examination, 63–64
Acne, 141
Acupuncture/acupressure, 234
Acute blood loss anemia, 85
African Americans, 77
Alcohol use screening, 4
Alcoholism
  MAST questionnaire, 17–18
  RAFT questionnaire, 18
Aloe vera, 219–220
Alpha blockers, 203
Alternative medicine. *See* Complementary and alternative medicine
Aminoglycosides, 198
Anaphylaxis, 106
Anatomy terms, English/Spanish translations, 265–266
Anemia workup, 128
Anemias, 82–86
Angina, 143–144
Angiotensin-converting enzyme inhibitors, 201
Angiotensin receptor blockers, 202
Animal bites, 108–109
Anorectal examination, 93
Anorexia nervosa, 144–146
Antiadrenergic agents, centrally/peripherally acting, 203–204
Antianxiety/antidepressant medications, 204
  benzodiazepines, 204–205
  miscellaneous drugs, 206–207
  serotonin/norepinephrine reuptake inhibitors, 206
  serotonin reuptake inhibitors, 205–206
  tricyclic antidepressants, 205
Antibiotics, 197
  aminoglycosides, 198
  cephalosporin, 198
  fluoroquinolone, 199
  macrolides, 199–200
  penicillin, 200
  sulfa drugs, 200
  tetracycline/doxycycline, 200
Anticholinergic agents, for asthma/COPD, 216
Antidepressant medications. *See* Antianxiety/antidepressant medications
Antihypertensives
  angiotensin-converting enzyme inhibitors, 201
  angiotensin receptor blockers, 202
  beta-adrenergic blocking agents, 202
  calcium channel blockers, 202–203
Apgar score, 249–250
Aplastic anemia, 83
Appearance/behavior, 66–67
Appendicitis, 103–104
Aromatherapy, 234
Asians, 77
Asthma, 146–147
  medications for, 215–216
Axillae, physical examination, 60
Azapirone/buspirone, 207

B
Babinski's sign, 250
Back pain, 148
Baker's cyst, 251
Barrett's esophagus, 251
Battle's sign, 251
Bence Jones protein, 251
Benign prostatic hypertrophy, 151–152
Benzodiazepines, 204–205
Beta-adrenergic blocking agents, 202
Beta$_2$ agonists, 215–216
Biguanide, 208
Bile acid sequestrants, 15
Bimanual pelvic examination, 92
Biot's respirations, 58
Bipolar disorder, 150–151
Bites, 108–109
Black cohosh, 220
Blacks, 77
Blood pressure, 54
  age-specific ranges for, 55
Boas' sign, 251
Body mass index, 26
Body temperature, 53, 55
Bone densitometry, 112
Bone health, 8
Bouchard's nodes, 252
Bradypnea, 58
Braxton Hicks contractions, 252
Breasts, 8
  mammogram, 112–113
  physical examination, 60
  review of symptoms, 47
Breath sounds, 59–60
Bronchophony, 60
Brudzinski's sign, 96, 252
Bulimia, 144–146
Bupropion, 206
Burns, 107–108
Byetta (incretin mimetic), 210

C
C-reactive protein assay, 134
Calcium channel blockers, 202–203
Cardiovascular system, 47–48
Cataracts, 152–153
Centrally acting antiadrenergic agents, 203–204
Cephalosporin, 198
Chamomile, 221
CHAMPUS, 192
Chandelier sign, 252
Chest
  anterior thorax/lungs, 60
  computed tomography of, 114
  posterior thorax/lungs, 57–60
  review of symptoms, 47
Chest x-rays, 138–139
Cheyne-Stokes respirations, 58
Chief complaint, 40
Chinese medicine, 235
Chiropractic medicine, 235
Cholesterol, 132
  ATP III management guidelines, 13–14
  National Cholesterol Education Program guidelines, 13–14
  screening guidelines, 2
Cholesterol absorption inhibitor, 16
Cholesterol-lowering drugs
  fibrates, 211–212
  HMG-CoA reductase inhibitors, 211
  niacin, 212
  resins, 211–212
  selective cholesterol absorption inhibitors, 211
Chondroitin sulfate, 227–228
Chronic obstructive pulmonary disease (COPD), 153–154

Chvostek's sign, 253
Cognitive function assessment, 67–68
Colorectal health, 3, 10
Combination diabetes drugs, 209–210
Combined estrogen/progestin contraceptives, 213
Complementary and alternative medicine, 218
  herbs, 218–226
  probiotics, 238
  supplements, 226–233
  therapies, 234–238
Complete blood count, 117–119
Comprehensive metabolic panel, 119–126
Comprehensive physical examination. *See also specific organs/systems*
  equipment, 52
  general survey, 52–53
  overview/systemic approach, 51–52
  vital signs, 53–55
Computed tomography (CT), 113–115
Contraceptive drugs
  combined estrogen/progestin contraceptives, 213
  Depo-Provera injection, 214
  progestin-only pills, 213–214
  vaginal contractive ring (NuvaRing), 214
Coordination assessment, 94
Corticosteroids, inhaled, 216
Cranberry, 221
Cranial nerve assessment, 36–37, 69, 264
Cytomegalovirus (CMV), 136

D

Deep vein thrombosis (DVT), 101
Dementia, general, 142–143
Depo-Provera injection, 214
Depression/depression scales, 154–155
  Edinburgh Postnatal, 20–22
  geriatric, 24
  screening for, 5
  symptoms of, 100
  Zung Self-Rating, 19
Dermatomes, 73
Development
  Erikson's stages of, 98–99
  milestones, 87–88
Diabetes, 2, 8
  medications for, 208–210
  type 2, 156–157
Dipeptidyl peptidase 4 inhibitor, 210
Documentation
  guidelines for, 38–39
  for Medicare, 193–196
  SOAP method, 39
Domestic violence assessment, 27
Doxycycline, 200
Drugs/drug use. *See also* Medications; *specific drugs*
  affecting lipoprotein metabolism, 15–16
  pregnancy categories, 197
  RAFT questionnaire, 18

E

Ears. *See* Head, eyes, ears, nose/sinuses, and throat
Ebola virus disease (EVD), 189
Ectopic (tubal) pregnancy, 101
Edinburgh Postnatal Depression Scale, 20–22

Egophony, 60
Emergency care, 106–111
Emerging infectious diseases, 189–190
Endocrine system, 50–51
English/Spanish translations, 265–266
Epitrochlear nodes, 60
Equivalents, 239
Erikson's developmental stages, 98–99
Erythrocyte sedimentation rate, 134
Estrogen/progestin contraceptives, 213
Ethnicity, genetic/other health concerns by, 76–77
Extremities
  CT of, 115
  muscle strength testing, 70–71
  physical examination of, 115
  reflex testing, 73–74
Eyes. *See also* Head, eyes, ears, nose/sinuses, and throat
  vision testing, 34–35

F
Family history, 42
Female genitalia, 49–50
Fibrates, 16, 212
Fingernails, 86
Fluoroquinolone, 199
Folic acid (vitamin B_9), 231–232
Food allergies, 42

G
Gait, 94
Garlic, 222
Gastroesophageal reflux disease (GERD), 158
Gastrointestinal system, 48
Genetic pedigree chart
  developing, 28
  factual/health information to include in, 31
  pedigree line definitions, 30
  symbols used in, 29
Genitalia
  female, 49–50
  male, 49
Geriatric Depression Scale, 24
Gilbert's disease, 253
Ginkgo, 222–223
Ginseng, 223–224
Glucagon, 210
Glucosidase inhibitor, 210
Guided imagery, 236
Gynecological examination
  anorectal examination, 93
  bimanual pelvic examination, 92
  external genitalia assessment, 90–91
  preparation of equipment/room, 89
  preparation of patient, 90
  rectovaginal examination, 92–93
  responsibilities of examiner, 88–89
Gynecological history, 45

H
Head, eyes, ears, nose/sinuses, and throat
  physical examination, 56–57
  review of symptoms, 46
Headache, 159–160
Healing touch, 236
Health history, 39
  allergies, 42
  chief complaint/reason for visit, 40
  family history, 42
  history of present illness/current health status, 40–41

LQBTQ assessment, 44
medications/therapies, 41–42
past medical history/past health status, 41
personal/social history, 43
reproductive/gynecological history, 45
safety, 44–45
sexual history, 43
source of referral/reliability of person giving history, 40
violence history, 44
Health screenings
by test/age group, 1–5
for women, 6–10
Heart
CT of, 114
physical examination, 61–63
Heart rate/pulse, 53–54
ranges in, by age group, 55
Heberden's nodes, 253
Hegar's sign, 254
Hematological system, 50
Hemolytic anemia, 85
Hepatitis A, 161
Hepatitis B, 162
Hepatitis C, 3, 163–164
Hepatitis testing, 129
Herbs, 218
aloe vera, 219–220
black cohosh, 220
chamomile, 221
cranberry, 221
garlic, 222
ginkgo, 222–223
ginseng, 223–224
red yeast rice, 224
saw palmetto, 224–225
St. John's wort, 225
valerian, 225
warnings, 218–219
Herpes, 136
Hiccups, 110–111
High-density lipid profile, 132
Hispanics, 76
History. *See also* Health history
diet, 81
HMG-CoA reductase inhibitors, 15, 211
Homan's sign, 254
Homeopathy, 236–237
Human papillomavirus (HPV), 165
Hyperlipidemia, 166–167
Hyperpnea (hyperventilation), 58
Hypertension, 167–169
Hyperthyroidism, 169–170
Hyperventilation (hyperpnea), 58
Hypothyroidism, 105

I

ICD-10, 193
Immune system, 50
Immunizations
by age group, 5
general guidelines, 11
Incontinence, urinary, 184–186
Infants
Apgar score, 249–250
developmental milestones, 87–88
Moro's reflex, 257
Infectious diseases, emerging, 189–190
Insulin, 209
Integumentary system
physical examination, 56
review of systems, 56
International normalized ratio, 130–131

Interstitial cystitis, 170–172
Iron deficiency anemia, 82

J
Janeway's lesion, 254
Jugular venous pressure, 61–62

K
Kernig's sign, 96, 255
Kyphosis, 255

L
Language, 67
Leukotriene antagonists, 216
Levothyroxine, 215
LGBTQ history, 44
Lipid panel, 132–133
Lipoprotein metabolism, drugs affecting, 15–16
Lordosis, 256
Low-density lipid profile, 132
Lungs, 57–60

M
Macrocytic anemia, 82
Macrolides, 199–200
Magnetic resonance imaging (MRI), 115–116
Male genitalia, 49
Mallory-Weiss tear, 256
Mammogram, 112–113
MAOIs, 207
MAST (Michigan Alcoholism Screening Test) questionnaire, 17–18
McBurney's point/sign, 256
Medicaid, 191–192
Medicare
  covered services, 191
  documentation for, 193–196
  preventive services, 12
Medications. *See also specific medications*
  antianxiety/antidepressant, 204–207
  antibiotics, 197–201
  anticholinergic agents for asthma/COPD, 216
  antihypertensive, 201–204
  asthma, 215–216
  BEERS list of, 197
  cholesterol-lowering, 211–212
  contraceptive, 213–215
  diabetes, 208–210
  menopausal hormone replacement, 217
  pregnancy categories, 197
Melatonin, 228–229
Menopausal hormone replacement drugs, 217
Mental status/behavior assessment, 66–67
MERS, 189
Metabolic syndrome, 35–36
Methicillin-resistant *Staphylococcus aureus* (MRSA), 109, 172
Middle Easterners, 77
Mood, 67
Moro's reflex, 257
Motor pathways assessment, 69, 93
Murmur grading, 61
Murphy's sign, 257
Musculoskeletal system
  muscle strength testing, 71–72
  physical examination, 64–65
  review of symptoms, 50
MyPlate, 80

N
Nabothian cyst, 258
National Cholesterol Education Program guidelines, 35–36

Native Americans, 77
Neck, 47
Neurological system
  assessment of, 93–97
  cognitive function, 67–68
  cranial nerves/motor and sensory systems/reflexes, 68–69
  mental status/behavior, 66–67
  reflex testing, 74
  review of symptoms, 50
Nicotinic acid, 16
Nose. *See* Head, eyes, ears, nose/sinuses, and throat
Nutrition/nutritional assessment
  general considerations, 79–81
  Simplified Nutrition Assessment Questionnaire, 25
  symptoms of deficiencies, 23
  taking diet history, 81
NuvaRing (vaginal contractive ring), 214–215

O

Oddi's syndrome, 258
Olanzapine, 206–207
Omega-3 fatty acids, 229
Oral health, 4
Otitis externa, 173

P

Pacific Islanders, 77
Partial thromboplastin time, 130
Patient assessment, 38
Peanut allergy, 42
Pediatric assessment
  developmental milestones, 87–88
  Erikson's developmental stages, 98–99
Pedigree. *See* Genetic pedigree chart
Pedigree chart. *See* Generic pedigree chart
Penicillin, 200
Peptic ulcers, 174–175
Perceptions, 67
Peripheral vascular system
  assessment, 62–63
  review of symptoms, 48
Peripherally acting antiadrenergic agents, 203–204
Personal history, 43
Phalen's test, 259
Pharyngitis, 175–176
Phenyltriazine, 207
Physical examination. *See* Comprehensive physical examination
Pleural rub, 60
Pneumonia, 104–105, 176–177
  hypothyroidism, 105
Poisoning, 110
Postnatal depression, 20–22
PQRSTOA symptom assessment, 31–32
Prandin, 210
Preventive services, 32–34
Probiotics, 238
Progestin/estrogen contraceptives, 213
Progestin-only contraceptives, 213–214
Prostate health, 2
Prostate-specific antigen (PSA), 128
Prothrombin time, 130
Proton pump inhibitors, 215
Psoas sign, 259
Psychiatric assessment, 50
Pulse, 53–54
  ranges in, by age group, 55
Pyridoxine (vitamin B_6), 230–231

R
RAFT questionnaire, 18
Reason for visit, 40
Rectovaginal examination, 92–93
Red yeast rice, 224
Reflex testing, 72, 73–74
Reiki, 237
Reiter's disease, 259
Reproductive/gynecological history, 45
Reproductive health, 3, 9, 45
Resins, 211–212
Respiratory rate, 54
  ranges in, by age group, 55
Resveratrol, 230
Review of symptoms (ROS), 45–51
  breasts/axillae, 47
  cardiovascular, 47–48
  chest, 47
  endocrine, 50–51
  female genitalia, 49–50
  gastrointestinal, 48
  general, 46
  guidelines, 45
  head, eyes, ears, nose, and throat, 46
  hematological/immune, 50
  integumentary, 46
  male genitalia, 49
  musculoskeletal, 50
  neck, 47
  neurological/psychiatric, 50
  peripheral vascular, 48
  urinary, 48–49
Rheumatoid arthritis, 178
Romberg test, 69, 94
Romberg's test, 260
ROS. *See* Review of symptoms
Rubella, 135

S
SARS, 189
Saw palmetto, 224–225
Scabies, 179
Sensory assessment, 71–72, 95
  dermatomes, 73
  reflex testing, 73–74
Serotonin/norepinephrine reuptake inhibitors, 206
Serotonin reuptake inhibitors, 205–206
Sexual history, 43
Sexually transmitted disease (STD) tests, 10
Sinuses. *See* Head, eyes, ears, nose/sinuses, and throat
Sinusitis, 180
Skene's glands, 260
Skin cancer, 181–182
Skin health, 4
SOAP method, 39
Social history, 43
Sociocultural-spiritual assessment
  general guidelines, 75–76
  questions for, 77–79
Sodium-glucose cotransporter-2 (SGLT2) inhibitors, 210
Spanish/English translations, 265–266
Speech, 67, 96
Spinal reflex assessment, 93
Spiritual assessment. *See* Sociocultural-spiritual assessment
St. John's wort, 225
Statins. *See* HMG-CoA reductase inhibitors
Still's murmur, 260
Suicide assessment
  guidelines for assessment/intervention, 97
  high-risk populations, 98

Sulfa antibacterial drugs, 200
Sulfonylurea, 208
Supplements, 226
  calcium, 226–227
  chondroitin sulfate, 227–228
  melatonin, 228–229
  omega-3 fatty acids, 229
  resveratrol, 230
  vitamin B_9 (folic acid), 231–232
  vitamin B_6 (pyridoxine), 230–231
  vitamin C, 232
  vitamin D_3, 232–233
  zinc, 233
Syphilis, 182–183

T
Tachypnea, 58
Tai Chi, 237
Tetracycline, 200
Thalassemia, 84
Therapies, complementary
  acupuncture/acupressure, 234
  aromatherapy, 234
  Chinese medicine, 235
  chiropractic medicine, 235
  guided imagery, 236
  healing touch, 236
  homeopathy, 236–237
  Reiki, 237
  Tai Chi, 237
  yoga, 237–238
Thiazolidinediones, 209
Thorax
  anterior, 60
  posterior, 57–60
Thought processes, 67
Throat. *See* Head, eyes, ears, nose/sinuses, and throat
Thyroid panel, 126–127
Tinel's sign, 261
TORCH panel (Toxoplasmosis, Other, Rubella, Cytomegalovirus [CMV], and Herpes), 135–136
Toxoplasmosis, 135–136
Translations, English/Spanish, 265–266
Tremors, 96–97
TRICARE, 192
Trichomoniasis, 183–184
Tricyclic antidepressants, 205
Triglycerides, 133
Trousseau's sign, 261
Tubal (ectopic) pregnancy, 101

U
Ultrasound, 116
Upper respiratory infection, 102–103
Urinary system
  incontinence, 184–186
  infection, 186–188
  review of symptoms, 48–49

V
Vagina
  abnormal bleeding from, 140
  bacterial vaginosis, 149
Vaginal contractive ring (NuvaRing), 214–215
Valerian, 225
Violence history, 44
  domestic, 27
Vision testing, 34–35
Visual body map, 26
Vital signs, 53–54
  ranges in, by age group, 55
Vitamin B_9 (folic acid), 231–232
Vitamin B_6 (pyridoxine), 230–231

Vitamin C, 232
Vitamin D_3, 232–233

W
Weber-Rinne test, 262
Weber's test, 263
Whispered pectoriloquy, 60
White blood cell differential analysis, 137–138
Whites, 77

Y
Yoga, 237–238

Z
Zika virus, 190
Zinc, 233
Zollinger-Ellison syndrome, 263
Zung Self-Rating Depression Scale, 19