

Cardiovascular Screening

(Coronary Heart Disease, Stroke, and Hypertension)

Guideline: Each person should be evaluated for the risk for coronary heart disease (CHD) and stroke according to the recommendations of nationally recognized health organizations.

The following Guideline is intended to help physicians, nurses, and others involved in clinical decision-making by describing the recommended course of action for screening individuals served by SCDDSN for risks of coronary heart disease and stroke. As much as possible, the recommendations reflect the strength of evidence and magnitude of net benefit (benefits minus harms) as reported by the U.S. Preventive Services Task Force, the American Heart Association, Center for Disease Control and Prevention; the National Heart, Lung, and Blood Institute and other nationally recognized health organizations. Decisions about screening should be based on clinical history, assessment, and other factors unique to the individual. When, because of behavioral or physical conditions, it would be necessary to use conscious sedation or general anesthesia to complete screening procedures, screenings should be completed at the discretion of the primary care provider and interdisciplinary team including the individual and his/her surrogate consent giver. A deferral should only be done after a risk/benefit analysis has been completed and documented. The risk/benefit analysis documentation should include the specific risks and benefits reviewed. Risks that would prohibit the procedure should include medical and psychological conditions and should not be based solely on the presence of an intellectual or related disability. As much as possible, the recommendations reflect the strength of evidence and magnitude of net benefit (benefits minus harms) as reported by the U.S. Preventive Services Task Force and nationally recognized health organizations.

DEFINITIONS:

Fasting: Not consuming food, beverages and medications, usually for nine to 12 hours before blood tests.

Health screening: The process of assessing the present health status of an individual through periodic health examinations.

Individual's record: A permanent legal document that provides comprehensive information about the individual's health care status.

Medical progress notes: The section of the individual's record where primary care prescribers document their findings and provide rationale for treatment plans.

Primary care providers: Physicians, nurse practitioners, and physician assistants who provide primary care services and are authorized to prescribe medications and treatments for people on their assigned caseloads.

Risk factor: Anything that increases a person's chance of getting a disease. However, when a person develops a disease, it is not possible to say with certainty that a particular risk factor was the cause.

RATIONALE:

1. Heart disease is the number one killer of American men and women.
2. The purpose of cholesterol screening is to help identify people who are at risk for heart disease due to high blood cholesterol and other risk factors.
3. A high level of cholesterol in the blood (hypercholesterolemia) is a major risk factor for heart disease which leads to heart attacks.
5. Treatment of heart disease is most successful when detected and treated early.
6. Stroke is the fifth most common cause of death in the United States.¹
7. Uncontrolled blood pressure can lead to stroke, heart attack, congestive heart failure or kidney failure.
8. High blood pressure is the most important risk factor for stroke.

EXPECTED OUTCOMES:

1. Staff should be aware of the common warning signs of a heart attack.
 - a. Some heart attacks are sudden and intense but most start slowly with mild pain or discomfort.
 - b. Chest pain - Uncomfortable pressure, feeling of fullness, squeezing-type pain in the center of the chest that lasts for more than a few minutes.
 - c. Discomfort in other areas of the upper body – Symptoms can include pain or discomfort in one or both arms, the back, neck, jaw or stomach.
 - d. Shortness of breath may occur with or without chest pain.
 - e. Other signs may include breaking out in a cold sweat, lightheadedness, or nausea.
2. Staff should be aware of the common warning signs of stroke.
 - a. Sudden numbness or weakness of the face, arm or leg, especially on one side of the body.
 - b. Sudden confusion, trouble speaking, or understanding.
 - c. Sudden trouble seeing in one or both eyes.
 - d. Sudden trouble walking, dizziness, loss of balance or coordination
 - e. Sudden, severe headache with no known cause.
3. Changes in a person’s appearance, activity-level, or behavior that may suggest early signs or symptoms of heart disease or stroke should be reported promptly to health personnel. The nurse should document reported information and observations in the nursing notes.
4. Prompt and thorough follow-up should be completed and documented when signs and/or symptoms of heart disease, high blood pressure, or stroke are detected.
 - a. The medical plan of care should be documented in the medical progress notes.
 - b. Nursing strategies, interventions, and follow-up should be documented in the nursing notes.

Cholesterol Screening Guidelines

Two kinds of lipoproteins carry cholesterol throughout your body: low-density lipoproteins (LDL) and high-density lipoproteins (HDL). Having healthy levels of both types of lipoproteins is important.

1. Everyone 20 years of age and older should have their cholesterol measured every 4-6 years.²
 - a. The lipoprotein profile is the test of choice. The blood test is done after a 9 to 12 hour fast and provides information on:
 - Total Cholesterol
 - LDL (bad) cholesterol – the main source of cholesterol buildup and blockage in the arteries
 - HDL (good) cholesterol – helps keep cholesterol from building up in the arteries
 - Triglycerides – another form of fat in the blood.
 - b. If the individual isn’t fasting when the blood sample is drawn, only the values for total cholesterol and HDL cholesterol will be usable because the amount of LDL (bad) cholesterol level and triglycerides can be affected by what has been recently consumed.
2. Children and adolescents
 - a. Universal screening is not recommended.
 - b. The only need for cholesterol screening in children and adolescents is to identify pediatric patients with familial hypercholesterolemia (FH), since early disease detection is crucial to facilitate treatment to prevent coronary artery disease.

3. Tables 1 and 2 provide cholesterol and triglyceride levels for adults with interpretive ranges.

Table 1: Lipoprotein levels after 9 to 12 hour fast³

Total Cholesterol Level	Total Cholesterol Category
Less than 200 mg/dL	Desirable
200–239 mg/dL	Borderline high
240 mg/dL and higher	High
LDL Cholesterol Level	LDL Cholesterol Category
Less than 100 mg/dL	Optimal
100–129 mg/dL	Near optimal/above optimal
130–159 mg/dL	Borderline high
160–189 mg/dL	High
190 mg/dL and higher	Very high
HDL Cholesterol Level	HDL Cholesterol Category
Less than 40 mg/dL	A major risk factor for heart disease
40–59 mg/dL	The higher, the better
60 mg/dL and higher	Considered protective against heart disease

Table 2. Triglyceride levels after 9 to 12 hour fast⁴

Less than 150 mg/dL	NORMAL TRIGLYCERIDES
150 – 199 mg/dL	Borderline-high triglycerides
200 – 499 mg/dL	High triglycerides
500 mg/dL and higher	Very high triglycerides

Blood Pressure Screening Guidelines

1. Blood pressure should be taken at the time of the annual physical examination and more frequently if deemed necessary by the primary care provider or nurse.
2. Diagnosis of high blood pressure is based on the average of two or more readings taken at each of two or more sittings after initial screening.
3. The person should avoid exercise and smoking for 30 minutes prior to blood pressure assessment.
4. Blood pressure should be taken only after the person has been at rest for 5 minutes prior to measurement.
5. When possible the client should be sitting in a chair when the blood pressure is taken.
6. Blood pressure readings should be documented in appropriate place in the individual's record.
7. Classification of blood pressure for adults (age 18 and older) with recommended follow- up is summarized on Table 3.

Table 3. Classification of Blood Pressure and Follow-up (Adults)^{5, 6}

Blood Pressure Category	Systolic mm Hg (upper number)		Diastolic mm HG (lower number)	Recommended Follow-up
Normal	Less than 120	and	Less than 80	Recheck at annual physical
Prehypertension	120-139	or	80-89	Recheck at annual physical
High Blood Pressure				
Hypertension - Stage 1	140-159	or	90-99	Confirm within 2 months
Hypertension - Stage 2	160 or higher	or	100 or higher	Evaluate within 1 month
Hypertensive Crisis	Higher than 180	or	Higher than 110	Evaluate immediately

Risk Factors for Heart Disease⁷Uncontrollable Risk Factors:

1. Increasing age
2. Gender: men at higher risk
3. Heredity

Risk Factors that can be lowered by modification, treatment or control:

Conditions:

1. High blood pressure
2. High blood cholesterol levels
3. Diabetes mellitus
4. Stress

Health Disease Behaviors:

1. Diets high in saturated fats, cholesterol, and sodium
2. Lack of physical activity
3. Overweight and obesity
4. Excessive alcohol consumption
5. Exposure to tobacco
 - a. Cigarette, pipe, and cigar smoking
 - b. Environmental tobacco smoke (second hand smoke)
6. Exposure to tobacco smoke
 - a. Cigarette smoking, cigar, and pipe smoking
 - b. Environmental tobacco smoke (constant exposure to other people's smoke)

Risk Factors for Stroke⁸

Uncontrollable risk factors

1. Increasing age
2. Gender: More men have strokes than women but women are more likely to die from stroke than men.
3. Genetics and family history
4. Blacks, Hispanics, American Indians and Alaska Natives are at higher risk than non-Hispanic whites or Asians
5. Prior stroke or Transient Ischemic Attack (TIA)

Risk factors that can be changed, treated or controlled

1. High Blood Pressure
2. Diabetes mellitus
3. Coronary Artery Disease
4. Atrial fibrillation
5. Carotid artery disease

Risk factors that require a lifestyle change

1. Tobacco use and exposure to second hand smoke – Cigarette smoking is the number one preventable risk factor for stroke.
2. Physical inactivity
3. Excessive alcohol use
4. Unhealthy diet
5. Obesity

Risk Factors for High Blood Pressure⁹

Uncontrollable risk factors

1. Genetics and family history
2. Race – Blacks more likely to have high blood pressure than Caucasians.
3. Increasing age

Risk factors that can be changed, treated or controlled

1. Diabetes, gout, kidney disease
2. Pregnancy

Risk factors that require a lifestyle change

1. Diets high in salt or sodium; diets low in potassium
2. Obesity
3. Sedentary or inactive lifestyle
4. Heavy alcohol consumption
5. Tobacco use
6. Use of some oral contraceptives and some other medications

REFERENCES

1. National Center for Chronic Disease Prevention and Health Promotion, Division for Heart Disease and Stroke Prevention (November 3, 2015). Stroke. <http://www.cdc.gov/stroke/>.
2. American Heart Association (April 21, 2014). What your cholesterol levels mean. http://www.heart.org/HEARTORG/Conditions/Cholesterol/AboutCholesterol/What-Your-Cholesterol-Levels-Mean_UCM_305562_Article.jsp#.VtcKO7r2Y5s.
3. National Heart, Lung, and Blood Institute (November 16, 2014). How is high blood cholesterol diagnosed? <http://www.nhlbi.nih.gov/health/health-topics/topics/hbc/diagnosis>.
4. WebMD (October 13, 2014.) Cholesterol & Triglycerides Health Center. <http://www.webmd.com/cholesterol-management/lowering-triglyceride-levels?page=2>.
5. American Heart Association (December 18, 2015). Understanding Blood Pressure. http://www.heart.org/HEARTORG/Conditions/HighBloodPressure/AboutHighBloodPressure/Understanding-Blood-Pressure-Readings_UCM_301764_Article.jsp#.VpuUMrr2ZD8
6. Potter, P.A. & Perry, A.G. (2014) Fundamentals of Nursing (8th ed.). Chapter 5 – Vital Signs. St. Louis: Mosby.
7. National Center for Chronic Disease Prevention and Health Promotion, Division for Heart Disease and Stroke Prevention (August 10, 2015). Heart Disease Risk Factors. http://www.cdc.gov/heartdisease/risk_factors.htm.
8. National Center for Chronic Disease Prevention and Health Promotion, Division for Heart Disease and Stroke Prevention (March 17, 2015). Risk Factors. http://www.cdc.gov/stroke/risk_factors.htm
9. National Center for Chronic Disease Prevention and Health Promotion, Division for Heart Disease and Stroke Prevention (July 7, 2014). High Blood Pressure Risk Factors. http://www.cdc.gov/bloodpressure/risk_factors.htm