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Best Practices in Nursing Care to Older Adults

From The Hartford Institute for Geriatric Nursing, New York University, College of Nursing, and Preventive Cardiovascular Nurse's Association

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Vascular Risk Assessment of the Older Cardiovascular Patient: The Ankle-Brachial Index (ABI)

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WHY: Vascular disease encompasses a wide array of arterial and venous problems, including stroke, abdominal aortic aneurysm (AAA) and peripheral arterial disease, as well as acute and chronic venous disease. Stroke is the fifth leading cause of death and the primary cause of older adult disability in the U.S. and carotid artery disease is the single most important risk factor in the development of stroke. The prevalence of AAA in ages 75-84 years is 12.5% for men and 5.2% in women. Peripheral arterial disease (PAD) is uncommon before the age of 50 but rises sharply with 20% of persons older than 80 years exhibiting PAD (AHA, 2015). PAD has been identified as a marker for systemic arteriosclerosis and is associated with increased risk of cardiovascular events.

BEST TOOLS: The Ankle-Brachial Index (ABI) is a screening tool used to: 1) detect asymptomatic arterial disease in the legs to prevent progression to claudication or limb ischemia; and 2) detect individuals at high risk of cardiovascular events. The ABI is the ratio of systolic blood pressure at the ankle to that in the arm. It is measured with the patient supine using a sphygmomanometer and Doppler ultrasound probe. Systolic pressure is measured in both arms and at the posterior tibial and dorsalis pedis arteries in each ankle. The ABI is calculated as the higher pressure at the ankle divided by the higher of the left and right arm pressures. An ABI ratio above 0.90 is normal, 0.71-0.90 indicates mild obstruction, 0.41-0.70 indicates moderate obstruction, and <0.40 indicates severe obstruction.

TARGET POPULATION: Vascular risk factor assessment is important for any adult over the age of 40 years. The extent of assessment is dependent on family history, presence of cardiovascular disease (CVD) or PAD, other co-morbidities, and number of identifiable risk factors such as smoking, obesity, hypertension, dyslipidemia, claudication and physical inactivity.

VALIDITY AND RELIABILITY: An ABI cut-point of 0.90 has a sensitivity of 80% and a specificity of 97% in detecting peripheral arterial disease. In the NHANES Survey data, the prevalence of ABI <0.90 in older adults aged 70 years or greater was 20%. An ABI of <0.90 has been consistently associated with a two to four fold increased relative risk of cardiovascular events and death.

STRENGTHS AND LIMITATIONS: The ABI has been used extensively with men and women, with many ethnic groups and many age groups. The financial cost to perform an ABI is minimal and takes less than 15 minutes to perform. It is noninvasive and if a low ABI is detected early, cardiovascular risk-reduction measures can be implemented. The only limitation may be in the accuracy of performing the ABI if the examiner is rushed, distracted or unable to hear the Doppler.

MORE ON THE TOPIC:

Best practice information on care of older adults: http://consultgeri.org/

American Heart Association Statistical Update. Heart disease and stroke statistics-2015 Update. *Circulation, 131,* e29-e322. Available at https://circ.ahajournals.org/content/131/4/e29.full.pdf+html. doi: 10.1161/CIR.0000000000000152.

American Heart Association. (2015). Epidemiology of peripheral artery disease. *Circulation, 116,* 1509-1526. Available at http://circres.ahajournals.org/content/116/9/1509.short. doi: 10.1161/CRIRCRESAHA.116.303849.

Centers for Disease Control and Prevention, National Center for Chronic Disease Prevention and Health Promotion, Division for Heart Disease and Stroke Prevention. (2014). Peripheral arterial disease fact sheet. Available at: www.cdc.gov/dhdsp/data_statistics/fact_sheets/fs_pad.htm

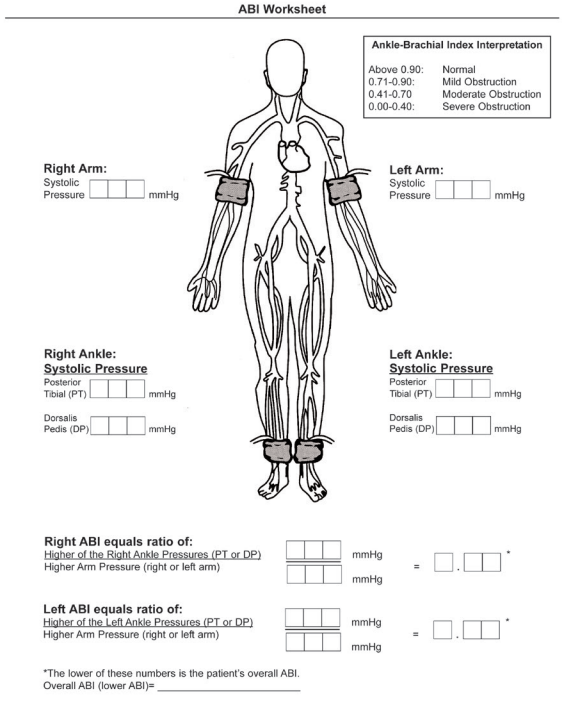
Moyer, V.A. (2013). Screening for peripheral artery disease and cardiovascular disease risk assessment with the Ankle-Brachial Index in adults: U. S. Preventive Services Task Force Recommendation Statement. *Annals of Internal Medicine, 159*(5), 342-349.

U. S. Department of Health and Human Services, National Institutes of Health, National Heart Lung and Blood Institute. (2006). Facts about peripheral arterial disease (P.A.D.). Available at: www.nhlbi.nih.gov/health/educational/pad/docs/pad_extfctsht_general_508.pdf

Vascular Assessment in Older Adults

Vascular assessment includes a comprehensive history and physical examination with emphasis on assessment of vital signs and pulses, as well as the use of risk assessment tools including the Ankle-Brachial Index (ABI). The health care provider may order diagnostic testing including arterial and venous Doppler ultrasound and plethysmography to determine blood volume change.

Pulses to be Assessed	Pulse Characteristics Palpation	Pulse Characteristics Auscultation	Extremity Characteristics with Disease Inspection and Palpation
Carotid Brachial Radial Ulnar Aorta Femoral Popliteal Dorsalis Pedis Posterior Tibial	Rate Bilateral Equality Regular or Irregular Strength: 0 = absent 1 = weak 2 = normal 3 = full, increased 4 = bounding Older adult norms: slower rate, pulses weak = 1	Bruit • Listen with stethoscope bell • Turbulent, low-pitched sound Jugular Venous Pressure • Level where pulsations of jugular vein are visible • Measure from the manubriosternal angle Normal = < 1 inch rise in pulsations from angle with regular, wavelike pulsations	Venous: • Normal pulses • Normal hair distribution • Thick, pigmented skin • Normal nails • Ulcers on medial ankles, legs • Normal temperature • No pain • Edema present when extremity dependent Arterial: • Diminished/absent pulses • Hair loss • Thin, smooth, shiny skin • Thick, brittle nails • Ulcers on toes, heels • Cool to touch • Painful • No edema Older adult norms: Cooler extremities; Blood vessels = dilated, prominent, tortuous



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