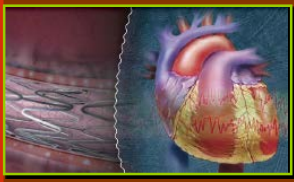


Strengths and Weaknesses of Standardized Collection of Cardiovascular Risk Data at Baseline

Anupam Agarwal, MD, MPH

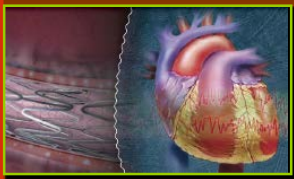
Zogenix, Inc.

October 25, 2017



Risks for Myocardial Infarction

- ▶ Age, > 45 y in males, > 55 y in females
- ▶ Sex, Male
- ▶ Smoking
- ▶ Hypertension
- ▶ Hypercholesterolemia
- ▶ Diabetes Mellitus
- ▶ Family History of Early Atherosclerotic CV Disease
 - Parent, grandparent, aunt, uncle, or sibling with heart attack, treated angina, CABG/stent/angioplasty, stroke, or sudden cardiac death at < 55 y in males, < 65 y in females

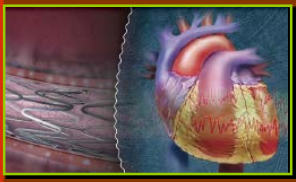


Risks for Stroke

- ▶ Age, >65 y
- ▶ Sex, Male
- ▶ Smoking
- ▶ Hypertension
- ▶ Dyslipidemia
- ▶ Diabetes Mellitus
- ▶ Family History (parents, grandparents, sister or brother had a stroke before 65 y)
- ▶ Race (African-American, Hispanics and Latinos)
- ▶ Carotid Artery Disease
- ▶ Atrial Fibrillation

Arboix A. Cardiovascular risk factors for acute stroke: Risk profiles in the different subtypes of ischemic stroke. *World J Clin Cases* 2015; 3(5): 418-429

RL Sacco et. al. Risk factors, *Stroke*, *Stroke*. 1997;28:1507-1517

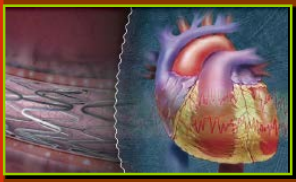


Risks for Stroke (contd.)

- ▶ Sickle Cell Disease
- ▶ Other Heart Disease (Valvular Heart Disease, Dilated Cardiomyopathy, congenital Heart Disease)
- ▶ Prior Stroke or TIA
- ▶ Drug Abuse (Cocaine, Amphetamine and heroine)
- ▶ Alcohol Abuse (Chronic heavy alcohol consumption > 60 g/day)
- ▶ Obesity
- ▶ Asymptomatic Carotid Stenosis
- ▶ Peripheral Vascular Disease
- ▶ Postmenopausal Hormone Therapy
- ▶ Oral Contraceptive use
- ▶ Migraine

Arboix A. Cardiovascular risk factors for acute stroke: Risk profiles in the different subtypes of ischemic stroke. *World J Clin Cases* 2015; 3(5): 418-429

RL Sacco et. al. Risk factors, *Stroke*, *Stroke*. 1997;28:1507-1517

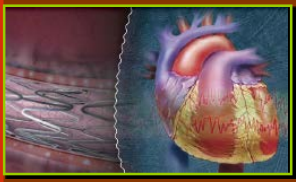


Risk For Sudden cardiac Death

▶ Ischemic Heart Disease

- Coronary artery disease with myocardial infarction or angina
- Coronary artery embolism
- Nonatherogenic coronary artery disease (arteritis, dissection, congenital coronary artery anomalies)
- Coronary artery spasm

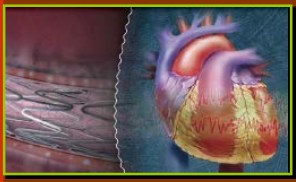
Mensah GA.et.al. Sudden cardiac death in the United States, 1989 to 1998. Circulation. 2001 Oct 30;104(18):2158-63



Risk For Sudden cardiac Death

▶ Nonischemic Heart Disease

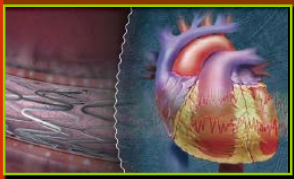
- Hypertrophic cardiomyopathy
- Dilated cardiomyopathy
- Valvular heart disease
- Congenital heart disease
- Arrhythmogenic right ventricular dysplasia
- Myocarditis
- Acute pericardial tamponade
- Acute myocardial rupture
- Aortic dissection



Risk For Sudden cardiac Death

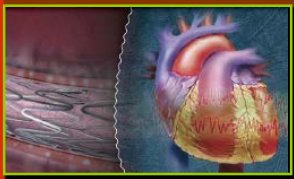
▶ No structural Heart Disease

- Primary electrical disease (idiopathic ventricular fibrillation)
- Brugada syndrome (right bundle branch block and ST segment elevation in leads V1 to V3)
- Long QT syndrome
- Preexcitation syndrome
- Complete heart block
- Familial sudden cardiac death



Risks for Acute Heart Failure

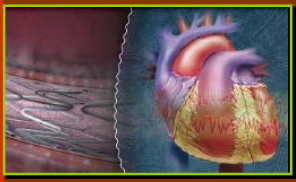
- ▶ Acute coronary syndrome.
- ▶ Excessive rise in blood pressure
- ▶ Infection (e.g. pneumonia, infective endocarditis, sepsis)
- ▶ Bradyarrhythmia
- ▶ Toxic substances (alcohol, recreational drugs)
- ▶ Drugs (e.g. NSAIDs, corticosteroids, negative inotropic substances, cardiotoxic chemotherapeutics)
- ▶ Exacerbation of chronic obstructive pulmonary disease
- ▶ Pulmonary embolism
- ▶ Surgery and perioperative complications
- ▶ Increased sympathetic drive, stress-related cardiomyopathy



Risks for Acute Heart Failure

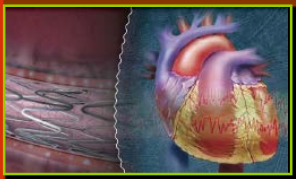
- ▶ Metabolic/hormonal derangements (e.g. thyroid dysfunction, diabetic ketosis, adrenal dysfunction, pregnancy and peripartum related abnormalities)
- ▶ Cerebrovascular insult
- ▶ Acute mechanical cause: myocardial rupture complicating ACS (free wall rupture, ventricular septal defect, acute mitral regurgitation), chest trauma or cardiac intervention, acute native or prosthetic valve incompetence secondary to endocarditis, aortic dissection or thrombosis

Whelton PK et. al. Risk factors for congestive heart failure in US men and women: NHANES I epidemiologic follow-up study. Arch Intern Med. 2001;161(7):996

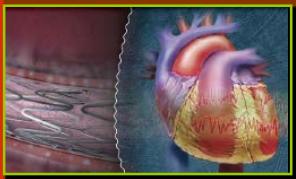


MedDRA Coding

- ▶ Not all the terms related with medical history are in the dictionary
 - Smoking
 - Family History of Early Atherosclerotic CV Disease

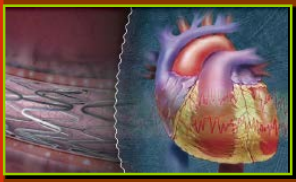


Back up



Cardioaortic Risks for Ischemic Stroke

- ▶ Atrial fibrillation/Atrial flutter
- ▶ Left atrial thrombus/Left atrial myxoma
- ▶ Left ventricular thrombus
- ▶ Sick sinus syndrome
- ▶ Recent myocardial infarction (within one month prior to stroke)
- ▶ Mitral stenosis or rheumatic valve disease
- ▶ Bioprosthetic and mechanical heart valves
- ▶ Chronic myocardial infarction together with low ejection fraction (<28 percent)
- ▶ Dilated cardiomyopathy (prior established diagnosis or left ventricular dilatation with an ejection fraction of <40 percent or fractional shortening of <25 percent)
- ▶ Nonbacterial thrombotic endocarditis
- ▶ Infective endocarditis
- ▶ Papillary fibroelastoma



Risks for Heart Failure

- ▶ Coronary heart disease
- ▶ Cigarette smoking
- ▶ Hypertension
- ▶ Obesity
- ▶ Diabetes
- ▶ Valvular heart disease
- ▶ Cigarette smoking

Levy D et. al. The epidemiology of heart failure: the Framingham Study. J Am Coll Cardiol. 1993;22(4 Suppl A):6A