Prevention, Diagnosis and Management of Coronary Artery Disease

Purpose
To identify and promote the essential elements to preventing, diagnosing, and managing coronary artery disease in adults.

Key Recommendations

- Conduct aggressive risk factor management for coronary artery disease beginning at age 20.
- Advise patients about importance of lifestyle as the foundation for risk reduction prior to and during cholesterol-lowering therapy: heart healthy diet; maintenance of a healthy weight; regular aerobic physical activity.
- Avoidance of tobacco products (including electronic nicotine delivery systems [ENDS}/cessation of tobacco use and reducing exposure to second-hand smoke.)
- Initiate beta-blockers, ACE inhibitors, and antiplatelet agents. ACE inhibitors and antiplatelet agents should be considered for indefinite use if no contraindication. The duration of therapy with beta-blockers must be weighed against the potential for adverse effects associated with these agents. Assessing the need for ongoing beta-blocker therapy should be on a case-by-case basis.
- ASA Therapy: As of 2015, the United States Preventive Services Task Force updated its 2009 recommendation for Aspirin for the Prevention of Cardiovascular Disease – Primary Prevention:

  1) *Primary Prevention* – The Food and Drug Administration does not recommend aspirin therapy as preventive medicine in people who have not already had a heart attack, stroke or other cardiovascular conditions. The USPSTF recommends low dose aspirin for persons aged 50-59 years for primary prevention of cardiovascular disease who have a 10% or greater 10 year CVD risk, are not at increased risk for bleeding, have a life expectancy of at least 10 years, and are willing to take low-dose aspirin daily for at least 10 years.

  ☐

  2) *Secondary Prevention* – 2 or more risk factors, especially those with CHD 10 yr risk of ≥ 10%, and no contraindications, prescribe 81-162 mg/QD.
- Monitor blood pressure. Treat to blood pressure target levels: <130/80 mm Hg and <140/90 mm Hg with no diabetes and no kidney disease. [A]

NOTE: The 2017 ACA/AHA Guideline for the Prevention, Detection, Evaluation and Management of High Blood Pressure in Adults classifies hypertension as a BP reading of 130/80 mm Hg or higher. In very high-risk patients, according to SPRINT a goal of <120/80 has been associated with improved cardiovascular outcomes with no difference in adverse events.

a. ACC/AHA Task Force on Clinical Practice Guidelines November 13, 2017

Guidelines are intended to be flexible. They serve as reference points or recommendations, not rigid criteria. Guidelines should be followed in most cases, but there is an understanding that, depending on the patient, the setting, the circumstances, or other factors, care can and should be tailored to fit individual needs.

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High Risk Populations/Disparities
- Cancer and heart disease are the leading causes of premature death (average years of potential life lost before age 75 (YPLL) in Monroe County from 2010 to 2014 County-wide, the average YPLL is 6.4 years. The average YPLL is two times higher in the city compared to the suburbs and more than 3 times higher among African American and Latino residents compared to White residents.[1]
- Two conditions that are risk factors for heart disease include diabetes and high blood pressure. Ten percent (10%) of Monroe County adults have diabetes, and 32% have high blood pressure.[1]

Rates are higher among those age 35 and older and there are significant disparities by race/ethnicity and geography as shown in the table below.

*Statistical significance p<0.05, City compared to Suburbs, ** Statistical significance p<0.05 African American and Latino compared to White.*

Percent of Population

Ever Told by a Doctor or Health Professional that they have Diabetes or High Blood Pressure, Adults Ages 35+, 2012 (% of population)	City	Suburbs	African American	Latino	White
Diabetes	19*	12	24**	19**	12
High Blood Pressure	50*	39	64**	42	39

Quality Measures Commonly Used by National Organizations
- Antiplatelet Therapy: Percentage of patients aged 18 years and older with a diagnosis of coronary artery disease (CAD) seen within a 12 month period who were prescribed aspirin or clopidogrel *(MIPS)*
- Beta-Blocker Therapy - Prior Myocardial Infarction (MI) or Left Ventricular Systolic Dysfunction (LVEF < 40%): Percentage of patients aged 18 years and older with a diagnosis of coronary artery disease seen within a 12 month period who also have a prior MI or a current or prior LVEF <40% who were prescribed beta-blocker therapy *(MIPS)*
- Angiotensin Converting Enzyme (ACE) Inhibitor or Angiotensin Receptor Blocker (ARB) Therapy: Percentage of patients aged 18 years and older with a diagnosis of coronary artery disease seen within a 12 month period who also have diabetes OR a current or prior Left Ventricular Ejection Fraction (LVEF) < 40% who were prescribed ACE inhibitor or ARB therapy *(MIPS)*
- Symptom Management: Percentage of patients aged 18 years and older with a diagnosis of coronary artery disease seen within a 12 month period with an evaluation of level of activity and an assessment of whether anginal symptoms are present or absent with appropriate management of anginal symptoms within a 12 month period. *(SIHD)*

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Prevention and Diagnosis

Initial Assessment of Risk Factors - Beginning at Age 20 to Include	
• Smoking Status and Readiness to Change • Family History • Blood Pressure • Fasting Lipid Panel • Dietary and Physical Activity Assessment	• BMI Calculation • Past Medical History Assessment (including history of atrial fibrillation and diabetes) • Waist Circumference • Other illnesses including (e.g.) HIV and psoriasis have been associated with an increased risk of CAD.
Clinical Identification of Metabolic Syndrome – Any 3 of the Following:	
• Waist Circumference ≥ 40" (men), ≥ 35" (women) • Blood Pressure ≥ 130/≥ 85 mm/Hg • Fasting Glucose ≥ 100 mg/dL	• Triglycerides ≥ 150 mg/dL • HDL Cholesterol < 40 mg/dL (men), < 50 mg/dL (women)
Assess and treat underlying causes	

| Blood Pressure |
|---|
| Treat to blood pressure target levels: < 130/80 mm Hg and < 140/90 mm Hg with no diabetes and no kidney disease and SPRINT states no CVD or ASCVD risk <10%.[1,2] In patients with very high risk of coronary and cerebrovascular events, a more aggressive target of <120/80 has been associated with improved outcomes without increased rates of adverse events.

•
• Prescribe life style modifications (e.g. effectiveness of regular aerobic exercise, moderation of sodium intake, a DASH eating plan or a <u>Mediterranean style diet</u> with emphasis on eating foods like fish, fruits, vegetables, beans, high-fiber breads and whole grains, nuts, and olive oil while limiting meats, cheeses, and sweets.   This can be equivalent to drug monotheraphy).
• Initial antihypertensive treatment:
   o In general nonblack population, including those with diabetes, initial antihypertensive treatment should include a thiazide-type diuretic, calcium channel blocker (CCB), angiotensin-converting enzyme inhibitor (ACEI), or angiotensin receptor (ARB).
   o In the general black population, including those with diabetes, initial antihypertensive treatment should include a thiazide-type diuretic or CCB.[3]
   o In the population aged ≥ 18 years with CKD (including all CKD patients with hypertension regardless of race or diabetes status), initial (or add-on) antihypertensive treatment should include an ACEI or ARB to improve kidney outcomes.

(See Monroe County Medical Society (MCMS) *Community-wide Guideline for Management of Hypertension* for complete *recommendations.*) |

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Approved Nov. 2020. Next scheduled review by Nov 2022.

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Diagnosis of Patients with Suspected Coronary Artery Disease*
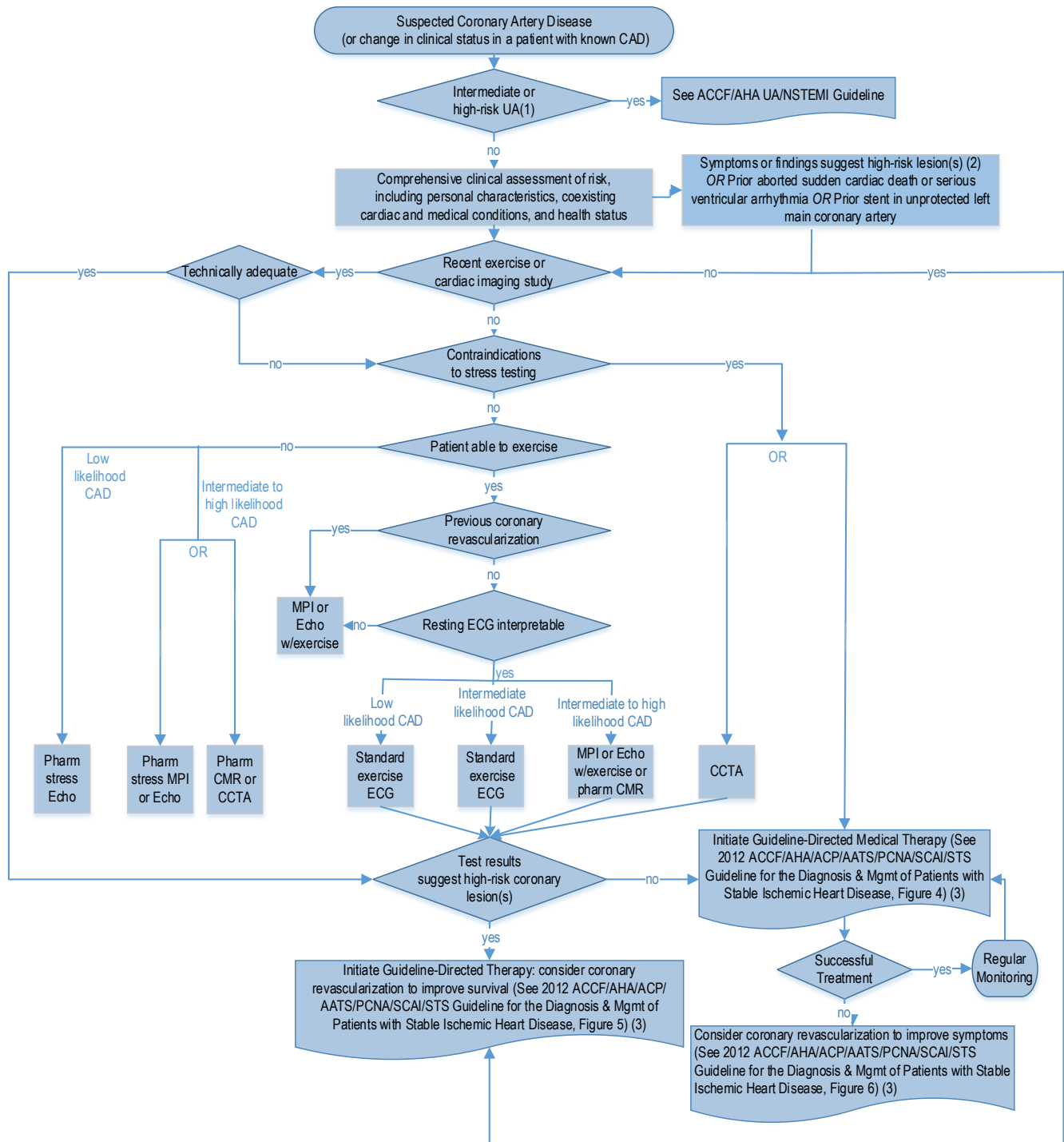
- (1) See Table 2 in 2012 ACCF/AHA/ACP/AATS/PCNA/SCAI/STS Guideline for the Diagnosis and Management of Patients With Stable Ischemic Heart Disease for short-term risk of death or nonfatal MI in patients with UA/NSTEMI. (2) 2012 ACCF/AHA Focused Update: Guideline for the Mgmt of Patients With UA/NSTEMI. (3) CCTA is reasonable only for patients with intermediate probability of CAD. (4) 2012 ACCF/AHA/ACP/AATS/PCNA/SCAI/STS Guideline for the Diagnosis and Management of Patients With Stable Ischemic Heart Disease

- *CCTA*: computed coronary tomography angiography; *CMR*: cardiac magnetic resonance; *ECG*: electrocardiogram; *Echo*: echocardiography; *IHD*: Ischemic Heart Disease; *MI*: myocardial infarction; *MPT*: myocardial perfusion imaging; *Pharm*: pharmacological; *UA*: unstable angina; *UA/NSTEMI*: unstable angina/non-ST-segment elevation myocardial infarction

- Recommendations remain unchanged in the 2014 ACC/AHA/AATS/PCNA/SCAI/STS Focused Update of the Guideline for the Diagnosis and Management of Patients With Stable Ischemic Heart Disease. Available from www.ncbi.nlm.nih.gov/pubmed/2507786

* Figure reprinted with permission from *Journal of the American College of Cardiology*, 60/24, Fihn SD, Gardin JM, Abrams J, Berra K, Blankenship JC, Dallas P, et al. 2012 ACCF/AHA/ACP/AATS/PCNA/SCAI/STS Guideline for the Diagnosis and Management of Patients With Stable Ischemic Heart Disease, e44–e164, (2012), with permission from Elsevier. Available at: http://www.sciencedirect.com/science/article/pii/S0735109712027027.

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Lipid Management*		
Moderate to high-intensity statin therapy for individuals at increased risk for ASCVD who are likely to benefit from risk reduction are stratified into 4 statin benefit groups.		
Use the ASCVD risk estimator at https://www.acc.org/~/media/Non-Clinical/Files-PDFs-Excel-MS-Word-etc/Guidelines/2018/Guidelines-Made-Simple-Tool-2018-Cholesterol.pdf to determine 10 year and lifetime risks. A patient/physician risk discussion should follow any calculation of risk.		
Statin Benefit Patient Groups(1)		**Recommended Statin Treatment**
Clinical ASCVD(2) - secondary prevention	Age ≤75 yrs with no statin-related safety concerns	High-intensity statin (Goal: LDL-C ≥50%) (Class I)
	Age >75 yrs or not a candidate for high-intensity statins	Initiation of moderate or high-intensity statin is reasonable (Class IIa)
Individuals with primary elevations of LDL-C ≥190 mg/dL and without clinical ASCVD - primary prevention	Familial hyhpercholesterolemia (candidates for statin therapy)	High-intensity statin. (If not a candidate for high-intensity statin, moderate tolerated statin)
Individuals with diabetes, ages 40-75, with LDL-C >70-<190 mg/dL and without clinical ASCVD - primary prevention	Estimated 10-yr ASCVD risk <7.5%	Moderate-intensity statin therapy Class (IIb)
	Estimated 10-yr ASCVD risk ≥7.5-<20%	If risk estimate + risk enhancers favor statin, initiate moderate-intensity statin to reduce LDL-C by 30% - 49% Class (I)
Individuals with no diabetes, ages 40-75, with LDL-C >70-<190 mg/dL and without clinical ASCVD - primary prevention	Estimated 10-yr ASCVD risk ≥7.5%	Moderate-intensity statin to reduce LDL-C by 30-49% Class (I)
	Estimated 10-yr ASCVD risk 5 – < 7.5%	If Risk enhancers present then risk discussion regarding moderate-intensity statin therapy

		Class (IIb). Discuss risks/benefits with patent.)
For patients who do not fall into the above statin-benefit groups, physicians and patients should engage in a discussion regarding the risks and benefits of PCSK9 therapy and Ezetimibe.		
Consider pill splitting or generic equivalents as available to increase patient compliance.		

Risk Intervention
Lifestyle Modifications
• Physical activity of at least 150 min/wk of moderate-intensity aerobic activity over at least 5 days/wk or 75 min/wk of vigorous-intensity aerobic activity over at least 3 days/wk and muscle-strengthening activities on 2 or more days/wk that work all major muscle groups. • Dietary Intake: Diet plays a role in management.; moderation of sodium intake, a DASH eating plan or a Mediterranean style diet can be beneficial and should be considered with emphasis on eating foods like fish, fruits, vegetables, beans, high-fiber breads and whole grains, nuts, and olive oil while limiting meats, cheeses, and sweets. http://www.heart.org/HEARTORG/HealthyLiving/HealthyEating/Nutrition/Making-Healthy-Choices_UCM_461295_Article.jsp#.Wo8L5W8rKAY • Weight Management to achieve and maintain BMI at 18.5 – 24.9 Kg/m, waist circumference at iliac crest level ≤ 40" in men & ≤ 35" in women. • Complete smoking cessation. Provide appropriate counseling, pharmacotherapy and referral to formal cessation programs. No exposure to environmental smoke. (See MCMC *Community-wide Guideline for Treating Tobacco Use and Dependence*).
Blood Lipid Management
Initiate therapeutic lifestyle changes and consider drug therapy.
Diabetes Management
Initiate appropriate therapy to achieve an A1c < 7.0% (Goals should be individualized based on age, comorbid conditions, duration of diabetes, individual patient considerations and other factors.) (See MCMS *Community-wide Guideline for Diabetes Care*). Every attempt should be made to identify patients at risk for diabetes (insulin resistance, glucose intolerance, obesity, family history, poor diet and exercise habits) to allow early intervention with diet and lifestyle changes to prevent the development of frank diabetes.
ASA Therapy

Adapted from 2013 ACC/AHA Guideline on the Treatment of Blood Cholesterol to Reduce Atherosclerotic Cardiovascular Risk in Adults: A Report of the American College of Cardiology/American Heart Association Task Force on Practice Guidelines
1. Characteristics that may predispose patients to statin adverse effects include, but are not limited to: multiple or serious comorbidities, including impaired renal, hepatic function; hx of previous statin intolerance or muscle disorders; unexplained ALT elevations >3 X ULN; age >75 yrs. 2. Atherosclerotic Cardiovascular Disease (ASCVD) defined as acute coronary syndrome, history of myocardial infarction, stable or unstable angina, prior coronary or other arterial revascularization, stroke, transient ischemic attack, or peripheral arterial disease presumed to be atherosclerotic.
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- Primary Prevention - The <u>Food and Drug Administration</u> does not recommend aspirin therapy as preventive medicine in people who have not already had a heart attack, stroke or other cardiovascular conditions. See USPSTF Aspirin Therapy for persons aged 50-59 year under Key Recommendations on page 1. As of 2015 the <u>United States Preventive Services Task Force</u> updated its recommendation for Aspirin for the Prevention of Cardiovascular Disease – Primary Prevention.
- Secondary Prevention - 2 or more risk factors, especially those with CHD 10yr risk of ≥10%, and no contraindications–prescribe 81-162 mg/QD.

Depression Screening
Screen for depression (See MCMS *Community-wide Guideline for Major Depressive Disorder*)
Disease Management Support
• One to one interaction for personal education and support.   • Resource tools to assist with self management of chronic conditions

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Patient Tracking Tool for Secondary CVD

Name: _____

Date of Birth: _____ Age: _____ Sex: _____

Pre-existing: CVD conditions: _____ Diabetes: _____ Other: _____

RISK INTERVENTIONS	INITIAL STATUS	PATIENT GOAL	DATE:	DATE:	DATE:
Smoking Complete avoidance/ Cessation including ENDS	Smoker Non-smoker		Smoker Non-smoker	Smoker Non-smoker	Smoker Non-smoker
Blood Pressure < 130/80 mm Hg < 140/90 mm Hg with no diabetes & no kidney disease No CVD or ASCVD risk <10%	mmHg				
Cholesterol Initial screening w/lipid panel/therapy based on risk calculation (Screen for familial lipdemia to identify higher risk individuals), but likely drug therapy with known CVD					
Physical Activity 150 min/wk (moderate over at least 5 days) or 75 min/wk (vigorous over at least 3 days) plus muscle strengthening (2 or more days/wk)	Duration: Frequency:				
Weight Mgmt. BMI: < 25 Height: Waist Circumference: Men < 40" Women < 35"	Height: Weight: BMI: Waist Circ:				
Diabetes Management* HbA1c < 7.0%	HbA1c: FBG:				
Antiplatelet Agents/ Anticoagulants**	Yes/No	Compliant? Rx	Y/N Rx	Y/N Rx	Y/N Rx
Ace Inhibitors	Yes/No	Compliant? Rx	Y/N Rx	Y/N Rx	Y/N Rx
Beta-blockers	Yes/No	Compliant? Rx	Y/N Rx	Y/N Rx	Y/N Rx
Depression Screening	Yes/No		Y/N	Y/N	Y/N

*Goals should be individualized based on age/life expectancy, duration of diabetes, comorbid conditions, individual patient considerations and other factors.
**Consider annual reassessment of the need for antiplatelet/anticoagulant therapy.
METABOLIC SYNDROME INCLUDES ANY 3 OF THE 5 DIAGNOSITC MEASURES: *Waist Circumference* (men ≥40", women ≥35"); *BP* ≥130/≥85 mm Hg; *FBG* ≥100 mg/dL; *Triglycerides* ≥150 mg/dL; *HDL cholesterol* (men <40 mg/dL, women <50 mg/dL)

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Resources for Physicians

<u>American Heart Association</u> (The American Heart Association is a national voluntary health agency to help reduce disability and death from cardiovascular diseases and stroke.)
Provides featured science news, research, cardiovascular risk calculator and daily e-newsletter.

Centers for Disease Control
- <u>Million Hearts® Action Guide Series</u> – Provides evidence-based strategies for improving cardiovascular health.

Journal of the American College of Cardiology
- 2016 ACC/AHA Guideline Focused Update on Duration of Dual Antiplatelet Therapy in Patients With Coronary Artery Disease
- <u>https://www.acc.org/~/media/Non-Clinical/Files-PDFs-Excel-MS-Word-etc/Tools%20and%20Practice%20Support/Quality%20Programs/Anticoag-10-14/DAPT/1%20Levine%202016%20DAPT%20Guidelines.pdf?la=en</u>

Resources for Patients

<u>American Heart Association</u>
 (The American Heart Association is a national voluntary health agency to help reduce disability and death from cardiovascular diseases and stroke.)
- <u>Answers by Heart</u>: Downloadable Q & A patient information sheets, in English and Spanish, on cardiovascular conditions, tests and treatments and lifestyle and risk reduction.
- <u>Caregiver Resources</u>: online support communities, printable resources and monthly e-newsletter.

<u>Centers for Disease Control</u>
Information about physical activity for adults and older adults.

<u>DASH Eating Plan</u>
Online booklet with information about servings and food groups for the DASH eating plan; tips on switching to the DASH eating plan; lowering sodium intake, using herbs and spices, and comparing labels; and how to lose weight.

<u>Mediterranean Diet</u>
Information in English and Spanish from Medline Plus, a service of the <u>U.S. National Library of Medicine</u> <u>National Institutes of Health</u>.

<u>Million Hearts</u>
Information on ABCS of prevention, Practice Healthy Living Habits

<u>National Heart Lung & Blood Institute</u>
Tips for a lifelong approach to prevent and control coronary heart disease risk factors.

<u>USDA Choose My Plate</u>
- <u>Tips for increasing physical activity </u>– How to make physical activity a regular part of the day at home, work and play.

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- <u>How much physical activity is needed?</u>

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