

Complete Summary

GUIDELINE TITLE

Primary prevention of cardiovascular disease in nursing practice: focus on children and youth.

BIBLIOGRAPHIC SOURCE(S)

Hayman LL, Meininger JC, Daniels SR, McCrindle BW, Helden L, Ross J, Dennison BA, Steinberger J, Williams CL, American Heart Association Committee on Atherosclerosis, Hypertension, and, American Heart Association Council on Cardiovascular Nursing, American Heart Association Council on Epidemiology and Prevention, American Heart Association Council on Nutrition, Physical Activity, and Metabolism. Primary prevention of cardiovascular disease in nursing practice: focus on children and youth: a scientific statement [trunc]. Circulation 2007 Jul 17;116(3):344-57. [109 references] [PubMed](#)

GUIDELINE STATUS

This is the current release of the guideline.

COMPLETE SUMMARY CONTENT

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 METHODOLOGY - including Rating Scheme and Cost Analysis
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SCOPE

DISEASE/CONDITION(S)

Cardiovascular disease (CVD)

GUIDELINE CATEGORY

Counseling
 Management
 Prevention
 Risk Assessment

CLINICAL SPECIALTY

Cardiology
Family Practice
Nursing
Nutrition
Pediatrics
Preventive Medicine

INTENDED USERS

Advanced Practice Nurses

GUIDELINE OBJECTIVE(S)

- To provide an overview of the evidence and current science-based recommendations for the implementation of strategies consistent with population-based and individual/high-risk approaches to cardiovascular disease (CVD) prevention in children and youth
- To emphasize the role of advanced practice nurses in the implementation of strategies

TARGET POPULATION

Children and youth

INTERVENTIONS AND PRACTICES CONSIDERED

Risk Factor Assessment

1. Family history
2. Lipid and lipoprotein levels (total cholesterol, low-density lipoproteins, high-density lipoproteins, triglycerides)
3. Blood pressure (systolic and diastolic)
4. Body mass index
5. Health behavior (tobacco use, physical activity, diet)

Risk Reduction

1. Diet change with emphasis on increasing fiber (grains, fruits, vegetables) and decreasing sugar and salt
2. Pharmacologic intervention for dyslipidemia and hypertension
3. Evaluation for secondary causes of dyslipidemia (thyroid-stimulating hormone, liver and renal function tests, urinalysis)
4. Education/goal setting
5. Assessment of behavioral, psychological, and social correlates
6. Increase in physical activity

MAJOR OUTCOMES CONSIDERED

Correlation of heart disease with:

- Changes in lipid and lipid protein levels
- Changes in blood pressure
- Changes in body mass index
- Other obesity-related morbidities (eg, diabetes)
- Health behaviors, including diet and physical activity

METHODOLOGY

METHODS USED TO COLLECT/SELECT EVIDENCE

Searches of Electronic Databases

DESCRIPTION OF METHODS USED TO COLLECT/SELECT THE EVIDENCE

Not stated

NUMBER OF SOURCE DOCUMENTS

Not stated

METHODS USED TO ASSESS THE QUALITY AND STRENGTH OF THE EVIDENCE

Not stated

RATING SCHEME FOR THE STRENGTH OF THE EVIDENCE

Not applicable

METHODS USED TO ANALYZE THE EVIDENCE

Review

DESCRIPTION OF THE METHODS USED TO ANALYZE THE EVIDENCE

Not stated

METHODS USED TO FORMULATE THE RECOMMENDATIONS

Not stated

RATING SCHEME FOR THE STRENGTH OF THE RECOMMENDATIONS

Not applicable

COST ANALYSIS

A formal cost analysis was not performed and published cost analyses were not reviewed.

METHOD OF GUIDELINE VALIDATION

Internal Peer Review

DESCRIPTION OF METHOD OF GUIDELINE VALIDATION

- Expert peer review of American Heart Association (AHA) Scientific Statements is conducted at the AHA National Center.
- The statement was approved by the AHA Science Advisory and Coordinating Committee on March 19, 2007.

RECOMMENDATIONS

MAJOR RECOMMENDATIONS

TABLE: Cardiovascular Risk Profile

Assessment: Risk Factors/Risk Indicators	Recommendations
Family history	Integrate with well-child care; update regularly: multigenerational family history of cardiovascular disease (CVD), diabetes, obesity, hypertension, dyslipidemia, cigarette smoking (Kavey et al., 2003; Williams et al., 2002)
Lipids and lipoproteins: levels of concern (National Cholesterol Education Program, 1991; Kavey et al., 2003)	
Total cholesterol: borderline, >170 milligrams per deciliter (mg/dL); elevated, >200 mg/dL	Targeted screening of fasting lipids in children ≥ 2 years of age with family history of premature CVD, diabetes, dyslipidemia; screen children with other risk factors (i.e., overweight) and children whose family history of CVD, diabetes, and/or dyslipidemia is unknown (National Cholesterol Education Program, 1991; Kavey et al., 2003; McCrindle et al., 2007)
Low-density	Averaged results of 2 fasting lipid profiles guide treatment

Assessment: Risk Factors/Risk Indicators	Recommendations
<p>lipoprotein cholesterol (LDL-C): borderline, >110 mg/dL; elevated, >130 mg/dL</p> <p>Triglycerides: >110 mg/dL</p> <p>High-density lipoprotein cholesterol (HDL-C): <40 mg/dL</p> <p>Note: LDL-C should be <100 mg/dL in children with diabetes</p>	<p>decisions (see Table below)</p>
<p>Systolic and diastolic blood pressure (SBP and DBP): levels of concern</p>	<p>SBP and DBP >90th percentile for age, gender, and height</p> <p>BP measurements should be interpreted on the basis of age, gender, and height (National High Blood Pressure Education Program Working Group, 2004) (BP percentiles are available at http://www.nhlbi.nih.gov/guidelines/hypertension/child_tbl.pdf)</p> <p>Note: Hypertension is defined as average SBP and/or DBP that is ≥ 95th percentile for gender, age, and height on</p> <p>BP should be measured beginning at age 3 years and in accordance with recent guidelines (National High Blood Pressure Education Program Working Group, 2004) (see Table below for clinical management)</p>

Assessment: Risk Factors/Risk Indicators	Recommendations
<p> ≥ 3 separate occasions; BP levels that are ≥ 90th percentile and < 95th percentile are now termed prehypertension (National High Blood Pressure Education Program Working Group, 2004) </p>	
<p>Body size: levels of concern</p>	
<p> Risk of overweight, body mass index (BMI) ≥ 85th percentile; overweight, ≥ 95th percentile </p>	<p>Body size should be charted by BMI (norms for BMI percentiles are available at http://www.cdc.gov/growthcharts)</p>
<p>Health behaviors: areas of concern</p>	
<p>Tobacco use and/or exposure to second-hand smoke: any</p>	<p>Assess health behaviors at every visit, including tobacco use and exposure to second-hand smoke by child/family/peers; advise participation in 60 minutes/day moderate to vigorous physical activity such as active outdoor play, walking/biking to school and sports activities, active school recess; resistance training (10-15 repetitions at moderate intensity) can be combined with aerobic activity in an overall activity program for older school-age children and adolescents; assess patterns of dietary intake at every visit; match energy intake with energy needs for growth and developmental processes (Kavey et al., 2003; Williams et al., 2002; Gidding et al., 2005; Council on Sports Medicine and Fitness, 2006)</p>
<p>Physical activity: < 60 minutes/day moderate to vigorous physical</p>	

Assessment: Risk Factors/Risk Indicators	Recommendations
<p>activity; >2 hours/day sedentary activities</p> <p>Dietary intake: excess sugar, excess soft drinks and fruit juices, saturated fat, and salt; <5 servings/day of fruits and vegetables; <3 servings/day of dairy; <6 servings/day of whole grain and grain products; skipping breakfast; few family meals; large portion sizes</p>	

TABLE: Guidelines for CVD Risk Reduction Intervention for Children and Adolescents With Identified Risk*

Risk Intervention	Recommendations
Blood cholesterol management	If LDL-C is above goals, initiate additional therapeutic lifestyle changes, including diet (<7% of calories from saturated fat; <200 mg cholesterol/day), in conjunction with a trained dietitian.
Goals	Consider LDL-C-lowering dietary options (increase total dietary fiber with emphasis on viscous fibers (i.e., oat bran, pectin) by using age (in years) plus 5 g up to age 20, when the total remains at 25 g/day

Risk Intervention	Recommendations
<p>LDL-C <160 mg/dL (<130 mg/dL is better)</p>	<p>(William, Bollella, & Wynder, 1995) in conjunction with a trained dietitian.</p> <p>Emphasize weight management and increased physical activity.</p>
<p>For patients with diabetes, LDL-C <100 mg/dL</p>	<p>If LDL-C is persistently above goals, evaluate for secondary causes (thyroid-stimulating hormone, liver function tests, renal function tests, urinalysis).</p> <p>Consider pharmacological therapy for individuals with LDL-C >190 milligrams per deciliter (mg/dL) with no other risk factors for CVD; or >160 mg/dL with other risk factors present (BP elevation, diabetes, overweight, strong family history of premature CVD); or if treatment goals not realized after adequate trial of therapeutic lifestyle change.</p>
<p>Other lipids and lipoproteins</p>	<p>Pharmacological intervention for dyslipidemia should be accomplished in collaboration with a physician experienced in treatment of disorders of cholesterol in pediatric patients.</p>
<p>Goals</p>	<p>Elevated fasting triglycerides and reduced HDL-C are often seen in the context of overweight with insulin resistance. Therapeutic lifestyle change should include weight management with appropriate energy intake and expenditure. Decrease intake of energy-dense snack food high in sugar and sugar beverages such as soft drinks, fruit juices, and sports drinks.</p>
<p>Fasting triglycerides <150 mg/dL</p>	<p>If fasting triglycerides are persistently elevated, evaluate for secondary causes such as diabetes, thyroid disease, renal disease, and alcohol abuse. No pharmacological interventions are recommended in children for isolated elevation of fasting triglycerides unless this is very marked (treatment may be initiated</p>

Risk Intervention	Recommendations
<p>HDL-C >35 mg/dL</p>	<p>at triglycerides >400 mg/dL to protect against postprandial triglycerides of ≥ 1000 mg/dL, which may be associated with an increased risk of pancreatitis).</p>
<p>Management of BP elevation</p> <p>Goal</p> <p>SBP and DBP <95th percentile for age, sex, and height; with comorbidities, <90th percentile for age, gender, and height</p>	<p>Promote achievement of appropriate weight.</p> <p>Reduce sodium in the diet. Emphasize increased consumption of fruits and vegetables.</p> <p>If BP is persistently >95th percentile, consider secondary causes (i.e., renal disease, coarctation of the aorta).</p> <p>Consider pharmacological therapy for individuals >95th percentile if lifestyle modification brings no improvement and there is evidence of target organ changes (left ventricular hypertrophy, microalbuminuria, renal vascular abnormalities). Start BP medication individualized to other patient requirements and characteristics (i.e., age, race, need for drugs with specific benefits) and in collaboration with specialist in pediatric hypertension.</p>
<p>Weight management and treatment goals based on BMI percentile and health status</p> <p>BMI: <85th percentile (normal weight for height)</p> <p>Goal: Maintain BMI</p>	<p>Guiding principles</p> <p>Establish individual treatment goals and approaches based on the child's age,</p>

Risk Intervention	Recommendations
percentile to prevent overweight	degree of overweight, and presence of comorbidities.
BMI: 85th to 95th percentile for age and gender (at risk for overweight)	Involve the family or major caregivers in treatment.
Goal: Maintain BMI with aging to reduce BMI to <85th percentile; if BMI >25 (kg/m ² , weight maintenance	Provide assessment and monitoring frequently.
BMI: ≥95th percentile (overweight)	Consider behavioral, psychological, and social correlates of weight gain in the treatment plan.
Goal: Weight maintenance (younger children) or gradual weight loss (adolescents) to reduce BMI percentile	Provide recommendations for dietary changes, increasing daily physical activity and decreasing sedentary activities. Recommendations should be tailored to the characteristics, needs, and resources of the child and family, able to be implemented within the family environment, and designed to foster optimal child/family health, growth, and development.
BMI: ≥30 kg/m ² (adult obesity cut point)	
Goal: Gradual weight loss (1-2 kg per month [kg/mo]) to achieve healthier BMI	
BMI: ≥95th percentile and comorbidity present (overweight with comorbidity)	
Goal: Gradual weight loss (1-2 kg/mo) to	

Risk Intervention	Recommendations
achieve healthier BMI; assess need for additional treatment of associated conditions	

*Data derived from Kavey et al., 2003; Daniels et al., 2005; and McCrindle et al., 2007

TABLE: Behavioral Change Principles and Strategies for Children, Adolescents, and Families*

Basic Principles

Simplify and tailor the prescription for behavioral change to the individual and family characteristics, needs, and resources.

Ask about the behavior at every healthcare visit.

Involve the parents/family as partners in the behavioral change process.

Provide information in multiple developmentally and culturally appropriate venues.

Specific Strategies

Assess, monitor, and document patterns of behavior change at every healthcare visit.

Provide developmentally appropriate behavior-specific information tailored to the child's and family's cultural background, needs, and resources.

Identify realistic goals for behaviors with the child and family.

Include activities to assist families to monitor behaviors targeted for change.

Mobilize family and social support.

Provide self-efficacy enhancement and an atmosphere of clinical empathy.

Develop a health-promoting reward system for positive behavior change.

*Burke & Fair, 2003; Hayman & Reineke, 2003; Ockene et al., 2002

CLINICAL ALGORITHM(S)

None provided

EVIDENCE SUPPORTING THE RECOMMENDATIONS

REFERENCES SUPPORTING THE RECOMMENDATIONS

[References open in a new window](#)

TYPE OF EVIDENCE SUPPORTING THE RECOMMENDATIONS

The type of supporting evidence is not specifically stated for each recommendation.

BENEFITS/HARMS OF IMPLEMENTING THE GUIDELINE RECOMMENDATIONS

POTENTIAL BENEFITS

Appropriate prevention of cardiovascular disease in youth and adolescents

POTENTIAL HARMS

Not stated

IMPLEMENTATION OF THE GUIDELINE

DESCRIPTION OF IMPLEMENTATION STRATEGY

An implementation strategy was not provided.

INSTITUTE OF MEDICINE (IOM) NATIONAL HEALTHCARE QUALITY REPORT CATEGORIES

IOM CARE NEED

Getting Better
Staying Healthy

IOM DOMAIN

Effectiveness
Patient-centeredness

IDENTIFYING INFORMATION AND AVAILABILITY

BIBLIOGRAPHIC SOURCE(S)

Hayman LL, Meininger JC, Daniels SR, McCrindle BW, Helden L, Ross J, Dennison BA, Steinberger J, Williams CL, American Heart Association Committee on Atherosclerosis, Hypertension, and, American Heart Association Council on Cardiovascular Nursing, American Heart Association Council on Epidemiology and

Prevention, American Heart Association Council on Nutrition, Physical Activity, and Metabolism. Primary prevention of cardiovascular disease in nursing practice: focus on children and youth: a scientific statement [trunc]. Circulation 2007 Jul 17;116(3):344-57. [109 references] [PubMed](#)

ADAPTATION

Not applicable: The guideline was not adapted from another source.

DATE RELEASED

2007 June

GUIDELINE DEVELOPER(S)

American Heart Association - Professional Association

SOURCE(S) OF FUNDING

American Heart Association

GUIDELINE COMMITTEE

American Heart Association Committee on Atherosclerosis, Hypertension, and Obesity in Youth of the Council on Cardiovascular Disease in the Young
Council on Cardiovascular Nursing
Council on Epidemiology and Prevention
Council on Nutrition, Physical Activity, and Metabolism

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FINANCIAL DISCLOSURES/CONFLICTS OF INTEREST

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*Modest

**Significant

Reviewer Disclosures

Reviewer	Employment	Research Grant	Other Research Support	Speakers' Bureau/ Honoraria	Expert Witness	Ownership Interest	Consultant/ Advisory Board	Other

Reviewer	Employment	Research Grant	Other Research Support	Speakers' Bureau/ Honoraria	Expert Witness	Ownership Interest	Consultant/ Advisory Board	Other
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GUIDELINE STATUS

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GUIDELINE AVAILABILITY

Electronic copies: Available from the [American Heart Association Web site](#).

Print copies: Available from the American Heart Association, Public Information, 7272 Greenville Ave, Dallas, TX 75231-4596; Phone: 800-242-8721

AVAILABILITY OF COMPANION DOCUMENTS

None available

PATIENT RESOURCES

None available

NGC STATUS

This summary was completed by ECRI Institute on January 9, 2008. The information was verified by the guideline developer on February 12, 2008.

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