



Complete Summary

GUIDELINE TITLE

Detection of chronic kidney disease in patients with or at increased risk of cardiovascular disease. A science advisory from the American Heart Association Kidney and Cardiovascular Disease Council; the Councils on High Blood Pressure Research, Cardiovascular Disease in the Young, and Epidemiology and Prevention; and the Quality of Care and Outcomes Research Interdisciplinary Working Group: Developed in Collaboration With the National Kidney Foundation.

BIBLIOGRAPHIC SOURCE(S)

Brosius FC 3rd, Hostetter TH, Kelepouris E, Mitsnefes MM, Moe SM, Moore MA, Pennathur S, Smith GL, Wilson PW, American Heart Association Kidney and Cardiovascular Disease Council, Council on High Blood Pressure Research, Council on Cardiovascular Disease in the Young, Council on Epidemiology and Prevention, Quality of Care and Outcomes Research Interdisciplinary Working Group. Detection of chronic kidney disease in patients with or at increased risk of cardiovascular disease: a science advisory from the American Heart Association Kidney and Cardiovascular Disease Council [trunc]. *Circulation* 2006 Sep 5;114(10):1083-7. [28 references] [PubMed](#)

GUIDELINE STATUS

This is the current release of the guideline.

COMPLETE SUMMARY CONTENT

SCOPE
METHODOLOGY - including Rating Scheme and Cost Analysis
RECOMMENDATIONS
EVIDENCE SUPPORTING THE RECOMMENDATIONS
BENEFITS/HARMS OF IMPLEMENTING THE GUIDELINE RECOMMENDATIONS
IMPLEMENTATION OF THE GUIDELINE
INSTITUTE OF MEDICINE (IOM) NATIONAL HEALTHCARE QUALITY REPORT
CATEGORIES
IDENTIFYING INFORMATION AND AVAILABILITY
DISCLAIMER

SCOPE

DISEASE/CONDITION(S)

- Cardiovascular disease (CVD)
- Chronic kidney disease (CKD)

GUIDELINE CATEGORY

Diagnosis
Risk Assessment
Screening

CLINICAL SPECIALTY

Cardiology
Family Practice
Internal Medicine
Nephrology

INTENDED USERS

Health Care Providers
Physicians
Public Health Departments

GUIDELINE OBJECTIVE(S)

- To provide recommendations for the detection of chronic kidney disease (CKD) in patients with cardiovascular disease
- To address currently available methods and make recommendations about the most appropriate screening tests for CKD

TARGET POPULATION

All patients with or at increased risk of cardiovascular disease

INTERVENTIONS AND PRACTICES CONSIDERED

1. Modification of Diet in Renal Disease (MDRD) equation to estimate glomerular filtration rate (GFR)
 - Original equation
 - Abbreviated version
2. Albumin-to-creatinine ratio determination

MAJOR OUTCOMES CONSIDERED

Sensitivity and specificity of diagnostic tests

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

Weighting According to a Rating Scheme (Scheme Given)

RATING SCHEME FOR THE STRENGTH OF THE EVIDENCE

Level of Evidence

Level of Evidence A Data derived from multiple randomized clinical trials or meta-analyses.

Level of Evidence B Data derived from a single randomized trial or nonrandomized studies.

Level of Evidence C Only consensus opinion of experts, case studies, or standard-of-care.

METHODS USED TO ANALYZE THE EVIDENCE

Review

DESCRIPTION OF THE METHODS USED TO ANALYZE THE EVIDENCE

Not stated

METHODS USED TO FORMULATE THE RECOMMENDATIONS

Expert Consensus

DESCRIPTION OF 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.

This advisory was approved by the AHA Science Advisory and Coordinating Committee on June 28, 2006.

RECOMMENDATIONS

MAJOR RECOMMENDATIONS

Definitions for the weight of the evidence (Level A-C) can be found at the end of the "Major Recommendations" field.

Class I

1. The Modification of Diet in Renal Disease (MDRD) equation should be used to estimate glomerular filtration rate in adult patients with cardiovascular disease. Values <60 mL/min per 1.73 square meters body surface area should be regarded as abnormal. (**Level of Evidence: B**)

Table: MDRD Study Equations for Calculating Glomerular Filtration Rate (GFR)

MDRD 1	$GFR = 170 \times [SCr]^{-0.999} \times [Age]^{-0.176}$ $\times [0.762 \text{ if patient is female}] \times [1.18 \text{ if patient is black}]$ $\times [BUN]^{-0.170} \times [Alb]^{0.318}$
MDRD2 (Abbreviated)	$GFR = 186 \times [SCr]^{-1.154} \times [Age]^{-0.203}$ $\times [0.742 \text{ if patient is female}] \times [1.21 \text{ if patient is black}]$

SCr indicates serum creatinine; BUN; blood urea nitrogen; and Alb, serum albumin.

This formula can be downloaded to a PDA by visiting <http://www.kidney.org/professionals/kdoqi/cap.cfm>

Class IIa

1. The albumin-to-creatinine ratio should be used to screen for the presence of kidney damage in adult patients with cardiovascular disease. Values >30 mg albumin per 1 g creatinine should be regarded as abnormal. (**Level of Evidence: B**)
2. All adult patients with cardiovascular disease should be screened for evidence of kidney disease with determinations of estimated glomerular filtration rate

using the MDRD equation and albumin-to-creatinine ratio. (**Level of Evidence: C**)

Table: Screening for Chronic Kidney Disease (CKD)

<ol style="list-style-type: none">1. Measure serum creatinine and calculate estimated GFR by the MDRD study equation (see Table above titled "MDRD Study Equations for Calculating GFR"). If estimated GFR is <60 mL/min per 1.73 m², repeat in 3 months.*2. Obtain a random ("spot") urine for albumin-to-creatinine ratio determination. If albumin-to-creatinine is >30 mg albumin/g creatinine, repeat in 3 months.*<ul style="list-style-type: none">• If either test is positive and persists for 3 months, the patient should be considered to have CKD. Appropriate evaluation and treatment should be undertaken as recommended in clinical practice guidelines.• If tests are both negative, they should be repeated annually.• If estimated GFR is <30 mL/min per 1.73 m² or rapidly decreasing, or if urinary albumin-to-creatinine is >300 mg albumin/g creatinine, the patient should be referred to a nephrologist.

*If clinically indicated, repeat test sooner than 3 months as well as at 3-month mark.

GFR indicates glomerular filtration rate; MDRD, Modification of Diet in Renal Disease

Definitions:

Levels of Evidence

Level A (highest): multiple randomized clinical trials

Level B (intermediate): limited number of randomized trials, nonrandomized studies, and observational registries

Level C (lowest): primary expert consensus

CLINICAL ALGORITHM(S)

None provided

EVIDENCE SUPPORTING THE RECOMMENDATIONS

TYPE OF EVIDENCE SUPPORTING THE RECOMMENDATIONS

The type of supporting evidence is identified and graded for each recommendation (see "Major Recommendations").

BENEFITS/HARMS OF IMPLEMENTING THE GUIDELINE RECOMMENDATIONS

POTENTIAL BENEFITS

Appropriate screening and detection of chronic kidney disease (CKD) in patients with or at increased risk of cardiovascular disease to enable appropriate intervention

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

Staying Healthy

IOM DOMAIN

Effectiveness

IDENTIFYING INFORMATION AND AVAILABILITY

BIBLIOGRAPHIC SOURCE(S)

Brosius FC 3rd, Hostetter TH, Kelepouris E, Mitsnefes MM, Moe SM, Moore MA, Pennathur S, Smith GL, Wilson PW, American Heart Association Kidney and Cardiovascular Disease Council, Council on High Blood Pressure Research, Council on Cardiovascular Disease in the Young, Council on Epidemiology and Prevention, Quality of Care and Outcomes Research Interdisciplinary Working Group. Detection of chronic kidney disease in patients with or at increased risk of cardiovascular disease: a science advisory from the American Heart Association Kidney and Cardiovascular Disease Council [trunc]. *Circulation* 2006 Sep 5;114(10):1083-7. [28 references] [PubMed](#)

ADAPTATION

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

DATE RELEASED

2006 Sep 5

GUIDELINE DEVELOPER(S)

American Heart Association - Professional Association
National Kidney Foundation - Disease Specific Society

SOURCE(S) OF FUNDING

American Heart Association

GUIDELINE COMMITTEE

American Heart Association Kidney and Cardiovascular Disease Council

Councils on High Blood Pressure Research, Cardiovascular Disease in the Young,
and Epidemiology and Prevention

Quality of Care and Outcomes Research Interdisciplinary Working Group

COMPOSITION OF GROUP THAT AUTHORED THE GUIDELINE

Primary Authors: Frank C. Brosius, III, MD, FAHA (Chair); Thomas H. Hostetter, MD; Ellie Kelepouris, MD, FAHA; Mark M. Mitsnefes, MD; Sharon M. Moe, MD, FAHA; Michael A. Moore, MD; Subramaniam Pennathur, MD; Grace L. Smith, MPH; Peter W.F. Wilson, MD, FAHA

FINANCIAL DISCLOSURES/CONFLICTS OF INTEREST

The American Heart Association makes every effort to avoid any actual or potential conflicts of interest that may arise as a result of an outside relationship or a personal, professional, or business interest of a member of the writing panel. Specifically, all members of the writing group are required to complete and submit a Disclosure Questionnaire showing all such relationships that might be perceived as real or potential conflicts of interest.

Writing Group Disclosures

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This table represents the relationships of writing group members that may be perceived as actual or reasonably perceived conflicts of interest as reported on the Disclosure Questionnaire, which all members of the writing group are required to complete and submit.

Reviewer Disclosures

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Reviewer	Employment (Institution)	Research Grant	Other Research Support	Speakers' Bureau/Honoraria	Ownership Interest	Consultant/Advisory Board
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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

The following is available:

- Methodology manual for ACC/AHA guideline writing committees. Available from the [American Heart Association Web site](#).

PATIENT RESOURCES

None available

NGC STATUS

This summary was completed by ECRI on March 13, 2007. The information was verified by the guideline developer on April 20, 2007.

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