National Heart, Lung, and Blood Institute

National Cholesterol Education Program

Perspectives and Guidelines

National Cholesterol Education Program Coordinating Committee

- Agency for Healthcare Research and Quality
- American Academy of Family Physicians
- American Academy of Insurance Medicine
- American Academy of Pediatrics
- American Association of Occupational Health Nurses
- American Association of Office Nurses
- American College of Cardiology
- American College of Chest Physicians
- American College of Nutrition
- American College of Obstetricians and Gynecologists
- American College of Occupational and Environmental Medicine
- American College of Preventive Medicine
- American Diabetes Association, Inc.
- American Dietetic Association
- American Heart Association
- American Hospital Association
- American Medical Association
- American Nurses Association
- American Osteopathic Association
- American Pharmaceutical Association
- American Public Health Association
- American Red Cross
- Association of Black Cardiologists
- Association of State and Territorial Health Officials
- Centers for Disease Control and Prevention
- Citizens for Public Action on Blood Pressure and Cholesterol, Inc.
- Coordinating Committee for the Community Demonstration Studies
- Health Resources and Services Administration
- National Black Nurses Association, Inc.
- National Cancer Institute
- National Center for Health Statistics
- National Heart, Lung, and Blood Institute
- National Medical Association
- NHLBI Ad Hoc Committee on Minority Populations
- Office of Disease Prevention and Health Promotion
- Society for Nutrition Education
- Society for Public Health Education
- U.S. Department of Agriculture
- U.S. Department of Defense
- U.S. Department of Veterans Affairs (VA)
- U.S. Food and Drug Administration

CHD Outcomes in Clinical Trials of LDL Cholesterol-Lowering Therapy

Intervention	No. trials	No. treated	Person-years	Mean cholesterol reduction (%)	CHD Incidence (% change)	CHD Mortality (% change)
Surgery	1	421	4,084	22	**-43**	-30
Sequestrants	3	1,992	14,491	9	**-21**	-32
Diet	6	1,200	6,356	11	**-24**	-21
Statins	12	17,405	89,123	20	**-30**	**-29**

Source: This table is adapted from the meta-analysis of Gordon, 2000.

Risk Assessment

Count major risk factors

- For patients with multiple (2+) risk factors
  - Perform 10-year risk assessment
- For patients with 0–1 risk factor
  - 10 year risk assessment not required
  - Most patients have 10-year risk <10%

Major Risk Factors (Exclusive of LDL Cholesterol) That Modify LDL Goals

- Cigarette smoking
- Hypertension (BP ≥140/90 mmHg or on antihypertensive medication)
- Low HDL cholesterol (<40 mg/dL)†
- Family history of premature CHD
  - CHD in male first degree relative <55 years
  - CHD in female first degree relative <65 years
- Age (men ≥45 years; women ≥55 years)

† HDL cholesterol ≥60 mg/dL counts as a "negative" risk factor; its presence removes one risk factor from the total count.

Diabetes

In ATP III, diabetes is regarded as a CHD risk equivalent.

CHD Risk Equivalents

- Risk for major coronary events equal to that in established CHD
- 10-year risk for hard CHD >20%

Hard CHD = myocardial infarction + coronary death

Diabetes as a CHD Risk Equivalent

- 10-year risk for CHD ≅ 20%
- High mortality with established CHD
  - High mortality with acute MI
  - High mortality post acute MI

CHD Risk Equivalents

- Other clinical forms of atherosclerotic disease (peripheral arterial disease, abdominal aortic aneurysm, and carotid artery disease [symptomatic or >50% stenosis])
- Diabetes
- Multiple risk factors that confer a 10-year risk for CHD >20%

Three Categories of Risk that Modify LDL-Cholesterol Goals

Risk Category	LDL Goal (mg/dL)
CHD and CHD risk equivalents	<100
Multiple (2+) risk factors	<130
Zero to one risk factor	<160

LDL Cholesterol Goals and Cutpoints for Therapeutic Lifestyle Changes (TLC) and Drug Therapy in Different Risk Categories

Risk Category	LDL Goal (mg/dL)	LDL Level at Which to Initiate Therapeutic Lifestyle Changes (TLC) (mg/dL)	LDL Level at Which to Consider Drug Therapy (mg/dL)
CHD or CHD Risk Equivalents (10-year risk >20%)	<100	≥100	≥130 (100–129: drug options)
2+ Risk Factors (10-year risk ≤20%)	<130	≥130	10-year risk 10–20%: ≥130
			10-year risk <10%: ≥160
0–1 Risk Factor	<160	≥160	≥190 (160–189: LDL-lowering drug optional)

LDL Cholesterol Goals and Cutpoints for Therapeutic Lifestyle Changes (TLC) and Drug Therapy in Different Risk Categories

Risk Category	LDL Goal (mg/dL)	LDL Level at Which to Initiate Therapeutic Lifestyle Changes (TLC) (mg/dL)	LDL Level at Which to Consider Drug Therapy (mg/dL)
CHD or CHD Risk Equivalents (10-year risk >20%)	<100 (optional goal: <70)	≥100	≥100 (<100: drug options)
2+ Risk Factors (10-year risk ≤20%)	<130	≥130	10-year risk 10–20%: ≥130 (100-129: drug options)
			10-year risk <10%: ≥160
0–1 Risk Factor	<160	≥160	≥190 (160–189: LDL-lowering drug optional)

Therapeutic Lifestyle Changes in LDL-Lowering Therapy

Major Features

- TLC Diet
  - Reduced intake of cholesterol-raising nutrients (same as previous Step II Diet)
    - Saturated fats <7% of total calories
    - Dietary cholesterol <200 mg per day
  - LDL-lowering therapeutic options
    - Plant stanols/sterols (2 g per day)
    - Viscous (soluble) fiber (10–25 g per day)
- Weight reduction
- Increased physical activity

Benefit Beyond LDL Lowering: The Metabolic Syndrome as a Secondary Target of Therapy

General Features of the Metabolic Syndrome

- Abdominal obesity
- Atherogenic dyslipidemia
  - Elevated triglycerides
  - Small LDL particles
  - Low HDL cholesterol
- Raised blood pressure
- Insulin resistance (± glucose intolerance)
- Prothrombotic state
- Proinflammatory state

Diagnosis of the Metabolic Syndrome

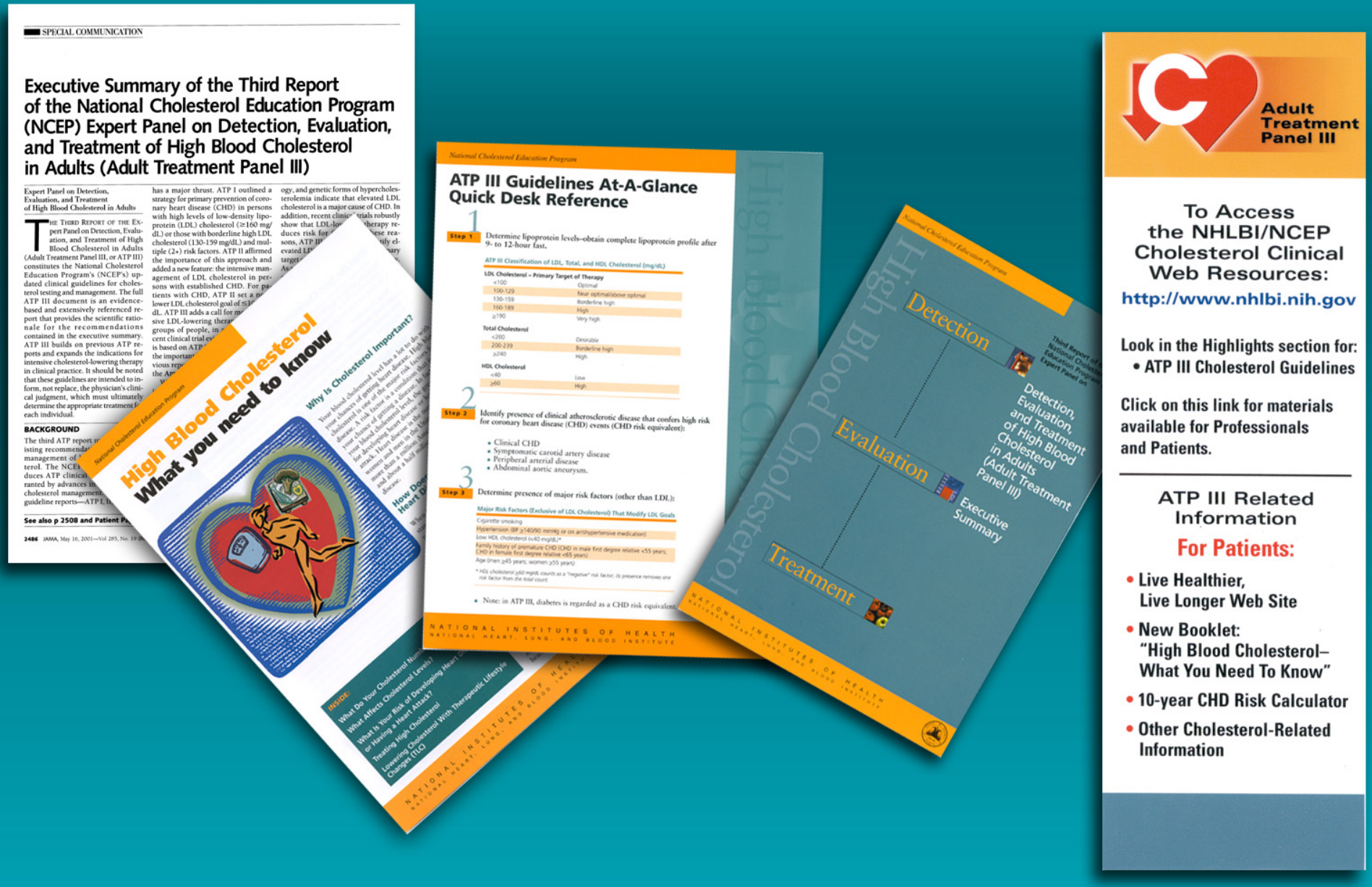
Any 3 of the following:

- Waist circumference >40 inches (men), >35 inches (women)
- Triglycerides ≥150 mg/dL
- HDL <40 mg/dL (men), <50 mg/dL (women)
- BP ≥130/≥85 mm Hg
- Fasting glucose ≥100 mg/dL

Metabolic Syndrome (continued)

Therapeutic Objectives

- To reduce underlying causes
  - Overweight and obesity
  - Physical inactivity
- To treat associated lipid and non-lipid risk factors
  - Hypertension
  - Prothrombotic state
  - Atherogenic dyslipidemia (lipid triad)


SPECIAL COMMUNICATION
Executive Summary of the Third Report of the National Cholesterol Education Program (NCEP) Expert Panel on Detection, Evaluation, and Treatment of High Blood Cholesterol in Adults (Adult Treatment Panel III)
National Cholesterol Education Program
High Blood Cholesterol
What you need to know
Why Is Cholesterol Important?
How Does Heart D
INSIDE:
What Do Your Cholesterol Numbers Mean?
What Affects Cholesterol Levels?
What Is Your Risk of Developing Heart Disease or Having a Heart Attack?
Treating High Cholesterol
Lowering Cholesterol With Therapeutic Lifestyle Changes (TLC)
NATIONAL INSTITUTES OF HEALTH
NATIONAL HEART, LUNG, AND BLOOD INSTITUTE
National Cholesterol Education Program
ATP III Guidelines At-A-Glance Quick Desk Reference
Step 1
Determine lipoprotein levels–obtain complete lipoprotein profile after 9- to 12-hour fast.
ATP III Classification of LDL, Total, and HDL Cholesterol (mg/dL)
LDL Cholesterol – Primary Target of Therapy
<100 Optimal
100-129 Near optimal/above optimal
130-159 Borderline high
160-189 High
≥190 Very high
Total Cholesterol
<200 Desirable
200-239 Borderline high
≥240 High
HDL Cholesterol
<40 Low
≥60 High
Step 2
Identify presence of clinical atherosclerotic disease that confers high risk for coronary heart disease (CHD) events (CHD risk equivalent):
Clinical CHD
Symptomatic carotid artery disease
Peripheral arterial disease
Abdominal aortic aneurysm.
Step 3
Determine presence of major risk factors (other than LDL):
Major Risk Factors (Exclusive of LDL Cholesterol) That Modify LDL Goals
Cigarette smoking
Hypertension (BP ≥140/90 mmHg or on antihypertensive medication)
Low HDL cholesterol (<40 mg/dL)*
Family history of premature CHD (CHD in male first degree relative <55 years; CHD in female first degree relative <65 years)
Age (men ≥45 years; women ≥55 years)
* HDL cholesterol ≥60 mg/dL counts as a "negative" risk factor; its presence removes one risk factor from the total count.
Note: in ATP III, diabetes is regarded as a CHD risk equivalent.
NATIONAL INSTITUTES OF HEALTH
NATIONAL HEART, LUNG, AND BLOOD INSTITUTE
National Cholesterol Education Program
High Blood Cholesterol
Detection
Evaluation
Treatment
Detection, Evaluation, and Treatment of High Blood Cholesterol in Adults (Adult Treatment Panel III)
Executive Summary
NATIONAL INSTITUTES OF HEALTH
NATIONAL HEART, LUNG, AND BLOOD INSTITUTE
Adult Treatment Panel III
To Access the NHLBI/NCEP Cholesterol Clinical Web Resources:
http://www.nhlbi.nih.gov
Look in the Highlights section for:
• ATP III Cholesterol Guidelines
Click on this link for materials available for Professionals and Patients.
ATP III Related Information
For Patients:
• Live Healthier, Live Longer Web Site
• New Booklet: "High Blood Cholesterol– What You Need To Know"
• 10-year CHD Risk Calculator
• Other Cholesterol-Related Information