Hypertension Awareness and Control Programs at the National Heart, Lung, and Blood and Institute (NHLBI)

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NHLBI Vision

Provide global leadership through research and education to enhance the health of all individuals so that they can live longer and more fulfilling lives.
Our Approach
Work in partnership in an ever evolving environment.
NHLBI Strategic Plan: Three Goals

**Goal 1 – From Form to Function**
To improve understanding of the molecular and physiological basis of health and disease and to use that understanding to develop improved approaches to disease diagnosis, treatment, and prevention.

**Goal 2 – From Function to Causes**
To improve understanding of the clinical mechanisms of disease and thereby enable better prevention, diagnosis, and treatment.

**Goal 3 – From Causes to Cures**
To generate an improved understanding of the processes involved in translating research into practice and use that understanding to enable improvements in public health and to stimulate further scientific discovery.
NHLBI Goals

• NHLBI has achieved major accomplishments in each of these three areas
• NHLBI’s work and accomplishments in goals 1 and 2 are well known
• Perhaps not as well known are NHLBI’s achievements and commitment to goal 3 activities, which are most relevant to this Committee’s charge
Goal 3: Key Questions

Key Questions

1. How can we move proven therapeutic advances into everyday practice?

2. How can we ensure that medical practice is based on up-to-date scientific evidence?

3. How can we reach high-risk communities?

4. How can we engage individuals as full participants in their healthcare and disease prevention?

5. How can we communicate research advances effectively to the public?
Division of Cardiovascular Diseases (DCVD)

- Vascular smooth muscle biology
- Endothelial cell biology – role in the regulation of blood pressure and pathogenesis of hypertension
- Vascular inflammation and its relationship to hypertension
- Renal control of hypertension
- Salt sensitivity and hypertension
- Obesity-associated hypertension
- Neural control of hypertension
- Genetics and hypertension
- Hypertension Specialized Centers of Research
DCVD Future Activities

• In 2008, DCVD embarked on implementing strategies outlined in NHLBI’s Strategic Plan by defining a series of goals.
• Among the 35 goals developed, 2 specifically address hypertension reduction and control:
  § Develop and evaluate preventive and therapeutic strategies for hypertension beginning in childhood
  § Develop and validate new strategies to prevent target organ damage in hypertension
Division of Prevention and Populations Sciences (DPPS)

- NHLBI supports components of the *National Health and Nutrition Examination Surveys (NHANES)* that measure blood pressure and gather information on awareness and treatment

- *Framingham Study* demonstrating that elevated blood pressure was a strong risk factor for the development of cardiovascular disease and stroke

- *Women’s Health Initiative* to address the most common causes of death, disability and impaired quality of life in postmenopausal women

- *Coronary Artery Disease Risk in Young Adults* study that provided evidence of the early harm from high blood pressure in younger adults

- *Hispanic Community Health Study* to identify the prevalence of, and risk factors for, a wide variety of diseases, disorders, and conditions in Hispanics. The study will also determine the role of cultural adaptation and disparities in the prevalence and development of disease.
Hypertension Prevention and Control

Division of Prevention and Populations Sciences (DPPS)

- NHLBI, with the VA and other NIH and PHS partners, has been a leader for four decades in successfully addressing major research questions in hypertension prevention and control, and in applying the gold standard of establishing causality—the randomized controlled trial.
- Some of the questions addressed include:
  - Does treating hypertension reduce morbidity and mortality?
  - Do important population sub-groups benefit?
  - What treatment regimens are most beneficial?
  - How much should blood pressure be lowered?
  - Can hypertension be prevented?
Hypertension Control

- **Hypertension Detection and Follow-up Program (HDFP)** reported in 1979 and thereafter that diuretic-based stepped care reduces total mortality, myocardial infarctions and stroke.

- **Systolic Hypertension in the Elderly Program (SHEP)** reported in 1991 that benefits for stroke and cardiac disease extend to the most common form of hypertension in older persons (age \( \geq 60 \) years), isolated systolic hypertension, using a moderately-dosed thiazide diuretic.

- **Antihypertensive and Lipid Lowering Treatments to Prevent Heart Attack Trial (ALLHAT)** reported in 2002 that chlorthalidone-based treatment was as effective, and for some outcomes (e.g., heart failure) more effective, than treatment based on newer, more expensive drugs.

- **Action to Control Cardiovascular Risk in Diabetes (ACCORD)** is testing whether more intensive blood pressure lowering goals compared to usual treatment goals will further reduce major cardiovascular events.

- **Systolic Blood Pressure Intervention Trial (SPRINT)** will address this same question in the much larger non-diabetic population and focus especially on the important subset of individuals with chronic kidney disease.
Lifestyle Interventions for Hypertension Prevention and Control

- NHLBI trials on lifestyle interventions have provided important findings for prevention and control of hypertension.

- *Trials of Hypertension Prevention (TOHP)* (Phase I, II, III) showed that the most promising nonpharmacologic approaches identified in Phase I (weight loss and sodium reduction) were effective in reducing systolic BP and hypertension incidence over a 3-4 year period (Phase II).

- *TOHP III*, a 10-year follow-up of TOHP I and II participants, showed that those assigned to sodium reduction in the active phases experienced significantly fewer cardiovascular events in the trial and post-trial periods.


- *PREMIER* was a long-term dietary counseling trial which showed BP benefits from a lifestyle intervention aimed at weight, dietary sodium, physical activity, and alcohol intake; some additional benefit when a DASH diet was added.
Challenge 3.3

To promote the development and implementation of evidence-based guidelines in partnership with individuals, professional and patient communities, and health care systems and to communicate research advances effectively to the public.
Division for the Application of Research Discoveries

• Provide leadership for the vigorous pursuit of excellence in national as well as international research translation, dissemination, and utilization programs

• Speed the application of scientific advances in the prevention, detection, and treatment of cardiovascular, lung, and blood diseases

• Narrow the discovery-delivery gap
Joint National Committee on Detection, Evaluation, and Treatment of High Blood Pressure (JNC)

- JNC 7: 2003
- JNC 6: 1997
- JNC 5: 1992
- JNC 4: 1988
- JNC 3: 1984
- JNC 2: 1980
- JNC 1: 1976
Detection, Evaluation, and Treatment of High Blood Cholesterol in Adults (Adult Treatment Panel)

ATP III Update: 2004
ATP III: 2002
ATP II: 1993
ATP I: 1988
History of NHLBI CVD Clinical Guideline Development and Updates

New Clinical Guideline Initiatives for CVD

Lifespan Approach

- JNC blood pressure guideline update (JNC-8)
- ATP cholesterol guideline update (ATP-IV)
- Obesity/overweight guideline update (Obesity II)
- Adult integrated CVD risk reduction guideline
- Pediatric integrated CVD risk reduction guideline
New NHLBI Guideline Model

• Emphasis on identifying and meeting user needs
  § User friendly
  § Concise with clear focused messages – e.g., What’s the bottom line?
• Balanced representation of expertise and perspectives on the panels
• Evidence-based approach
  § Recommendations driven by evidence on important health outcomes
  § Explicit and transparent process
  § Rating the evidence and grading the strength of recommendations
• Consider implementation issues throughout the entire process
• Use of information and communication technology
  § For development, dissemination, implementation, and updates
  § Gap analysis
• Foster national and international collaboration, including the joint development and sharing of tools and resources
Establishment of Guideline Leadership Group

- Provide important direction and scope for guideline development process
- Review the framework for examination of the scientific evidence, including critical questions and evidence models
- Provide input on the structure and composition of the Expert Panels
- Nominate members to serve on the Expert Panels
- Provide ongoing input on the process for guideline development, review, dissemination, and implementation
### NHLBI GLG Stakeholder Representation

#### Professional Organizations
- American Academy of Nurse Practitioners
- American College of Cardiology
- American College of Sports Medicine
- American Heart Association
- American Academy of Family Physicians
- American Society of Hypertension
- National Lipid Association
- American College of Physicians
- American Medical Informatics Association
- American Academy of Physician Assistants
- American Dietetic Association
- American College of Rheumatology
- American Society of Nephrology
- American Diabetes Association
- The Obesity Society

#### Consumer Groups
- National Consumers League

#### NIH ICs
- NIDDK
- NINDS

#### Other Federal Agencies
- Centers for Medicare and Medicaid Services
- Centers for Disease Control and Prevention
- Agency for Healthcare Research and Quality
- Health Resource and Service Administration
- Food and Drug Administration
- Department of Veterans Affairs
- Department of Defense
- Indian Health Service

#### International/Global Organizations
- WHO/PAHO
- Representatives from Australia, Canada, China, India, and New Zealand
Current guideline efforts are part of a larger vision to develop and maintain a cardiovascular knowledge network (CKN).

The CKN will provide clinicians, researchers, patients, and others with information, decision support tools, educational materials and other resources to assist in the management of cardiovascular disease.
Prevent and Control High Blood Pressure: Mission Possible

• A Public Health Strategy to mobilize all sectors in the fight against high blood pressure
• Components of the Strategy
  § Call to Action about the problem and the need to forge new efforts to address high blood pressure and meet Healthy People 2010 objectives
  § Package of professionally produced educational materials to engage a variety of stakeholders – to become new partners
    § State health departments, health care professionals, insurance and managed care organizations, businesses, food industry, faith-based organizations, organizations serving minority and high-risk populations, communities and schools, etc.
  § Website to share materials, elicit new partners, stimulate interaction and sharing of activities – designed to mobilize all Americans in the fight against high blood pressure and reduce the burden of disease
Web site provides access to materials to download as well as opportunities for partners to register their prevention activities.

A partnership among NHLBI, CDC, and the State Chronic Disease Directors Cardiovascular Health (CVH) Council and 22 states signed on to promote improved high blood pressure prevention and control among high-risk audiences. In addition, RR Donnelley & Sons (RRD), the world's premier provider of printing and business services, joined Mission Possible to improve blood pressure control among its employees.

A Public Health Strategy to Address Disparities in Hypertension Prevention and Control in Racial/Ethnic Communities

- Public health strategy to reach racial/ethnic populations that suffer disproportionately from hypertension
- CV Health (CVH) Approach: Educating community residents about risk factor awareness, healthy lifestyle behaviors, and follow-up care to enhance adherence
- Strategy: Train and use Community-Health Workers (CHWs) as: 1) trainers of others; 2) to educate community members; and 3) to work as a member of a health care team to help improve adherence to clinical and educational recommendations

**Action Steps:**

- NHLBI developed several CVH curricula to train CHWs. These trained individuals then become community educators.
- The curricula have 11 sessions. One session focuses specifically on hypertension.
- NHLBI formed Federal partnerships to reach out and engage various target audiences.
  - HRSA—community health centers working with Latinos, African-Americans, and Filipino populations
  - IHS—Health Promotion and Disease Prevention programs to reach tribal communities
  - HUD—HOPE VI housing authorities to reach public housing residents
- These partnerships help NHLBI reach vulnerable populations through existing federally supported clinical and community outreach systems—where these individuals live, work, and congregate.
• CHW initiative is being implemented in several sites along the U.S.–Mexico border as well as three sites in Latin America

• 5 sites in collaboration with HUD (African-American)

• 4 sites in collaboration with HRSA (2 each for African-Americans and Filipinos)

• 7 sites in collaboration with IHS
Address Disparities in Hypertension Prevention and Control in Racial/Ethnic Communities

• The session on blood pressure provides opportunities for residents to learn how to prevent and control hypertension.
• Provides practical, hands-on role playing and heart healthy food demonstrations presented in a culturally-tailored and language appropriate manner.
• In addition to the educational curricula, there are risk factor and health-promoting behavior behavior booklets to help community residents reinforce the information learned either in a group or individual educational session.
Other NIH Institutes Involved in Hypertension Activities

• While NHLBI has the largest portfolio of hypertension-related activities in the NIH, other Institutes have made important contributions to hypertension research, awareness, and control

  § National Institute of Neurological Disorders and Stroke (NINDS) – relating to stroke and other neurological disorders

  § National Institute of Digestive, Diabetes, and Kidney Disorders (NIDDK) – relating to diabetes and renal diseases

  § National Institute on Aging (NIA) – relating to the elderly, in whom hypertension is common and coexists with many other conditions
Thank you!

Questions?