Implementing the NHLBI Strategic Vision in the Division of Cardiovascular Sciences

David Goff, MD, PhD
Director
Division of Cardiovascular Sciences

The material presented does not necessarily reflect the position of NHLBI, NIH, or DHHS.

WHI Investigator Meeting, 2019
Charting the Future Together: The NHLBI Strategic Vision, 2016

Accelerating our journey towards scientific and health advances in the next decade

- Understand Human Biology
- Reduce Human Disease
- Develop Workforce and Resources
- Advance Translational Research
NHLBI Strategic Objectives

Objective 1: Normal Biology

Objective 2: Pathobiology, Onset, & Progression of HLBS diseases

Objective 3: Population Differences

Objective 4: Precision Medicine

Objective 5: Novel Diagnostics & Therapeutics

Objective 6: Clinical & Implementation Research

Objective 7: Data Science

Objective 8: Workforce & Resources
Turning discovery into cardiovascular health

Current major initiatives map to NHLBI’s Strategic Vision

New initiatives for strategic investments guided by Strategic Vision, complemented by Big Goals
Strategic Vision Implementation: Landscape Analysis of Current Major DCVS Programs vs. Strategic Objectives

- Investigator-initiated research & support for ESIs & career development
- Early translation acceleration
- Precision medicine
- Stewardship of clinical trials, including large prevention trials
- Population cohort studies
- Data science
- Congenital heart disease
- Cardio-thoracic surgery
- Emergency medicine
- HIV/AIDS comorbidities
- Women’s health
- Late stage translational research & implementation science in collaboration with CTRIS
Prioritized Investments in Investigator-Initiated Science: Bending the Curve

<table>
<thead>
<tr>
<th>Grant Program</th>
<th>FY17 Paylines</th>
<th>FY17 # Awards (Success Rate)</th>
<th>FY18 Paylines</th>
<th>FY18 Projected # Awards (Success Rate)</th>
<th>FY19 Projected Paylines</th>
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<tbody>
<tr>
<td>R01</td>
<td>15%ile</td>
<td>708 (23.3%)</td>
<td>15%ile</td>
<td>711 (24.2%)</td>
<td>16%ile</td>
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<tr>
<td>ESI</td>
<td>25%ile</td>
<td>145 (30.3%)</td>
<td>25%ile</td>
<td>156 (32.7%)</td>
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<tr>
<td>K Awards</td>
<td>P.S. 32</td>
<td>179 (40.0%)</td>
<td>P.S. 32</td>
<td>193 (36.1%)</td>
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FY2018 budget increase enabled NHLBI to make more awards for Investigator-Initiated Science.
Leading Causes of Death in U.S., 1975 – 2015: Recent Stagnation in CVD Mortality?

Age-adjusted death rates for the top 5 leading causes of death, 1975 and 2015


Excel and PowerPoint: http://www.cdc.gov/nchs/hus/contents2016.htm#fg08
Disturbing Trends in Geographic Disparities of CVD Mortality: High Death Rates in America’s Heartland

Roth, et al. JAMA, May 16, 2017

CVD mortality rate declined by ~50% from 1980 to 2014, but...

- 4-fold difference in hypertensive heart disease mortality in 2014 for counties at 10th and 90th percentiles.
- Ratio for differences in 2014 mortality rates for ischemic heart disease and stroke were 2-fold and 1.7 fold, respectively.

Roth, et al. JAMA, May 16, 2017
DCVS Strategic Vision Implementation Lenses

- Think Big
  - Make no small plans
- SDOH Framework
- Life course perspective
- Translational spectrum
- Public health impact
  - Without ignoring rare diseases
Sustaining DCVS Leadership

Special Article

Implementing the National Heart, Lung, and Blood Institute’s Strategic Vision in the Division of Cardiovascular Sciences

for the writing group of Division of Cardiovascular Sciences’ Strategic Vision Implementation Plan.

Big Goals

- Addressing social determinants of CVH and health inequities
- Enhancing resilience
- Promoting CVH and preventing CVD across the lifespan
- Eliminating hypertension-related CVD
- Reducing the burden of heart failure
- Preventing vascular dementia

A Lifespan Perspective on Cardiovascular Health, Hypertension, Heart Failure and Vascular Cognitive Impairment and Dementia
A Lifespan Perspective on Cardiovascular Health, Hypertension, Heart Failure and Vascular Cognitive Impairment and Dementia
A Lifespan Perspective on Cardiovascular Health, Hypertension, Heart Failure and Vascular Cognitive Impairment and Dementia

- Ideal CVH
- Hypertension
- Heart Failure
- Vascular Dementia

Preserve and promote resilience across the lifespan.

Address social determinants of CVH and health inequities.

Promote CVH and prevent CVD.

More HTN, HF, VCID.

Worse CVH.

Adverse social determinants, poor resilience.

Vascular Dementia

Heart Failure

Hypertension

Ideal CVH

NIH National Heart, Lung, and Blood Institute
A Positive Future Perspective on Cardiovascular Health, Hypertension, Heart Failure and Vascular Cognitive Impairment and Dementia

Address Social Determinants of CVH and Health Inequities

Preserve and Promote Resilience

Promote CVH & Prevent CVD Across the Lifespan

Percent

Age

Ideal CVH
Hypertension
Heart Failure
Vascular Dementia

Ideal CVH

90

20

0

0

20

40

60

80

100

National Heart, Lung, and Blood Institute
Sustaining DCVS Leadership: Recent workshops

- Challenges and opportunities for the prevention and treatment of CVD among young adults, 9/2017
- Research priorities in heart failure with preserved ejection fraction, 9/2017
- Understanding the combined effects of environmental chemical and nonchemical stressors: Atherosclerosis as a model, 4/2018
- Preventing vascular dementia, 5/2018
- Predicting, preventing, and treating preeclampsia, 5/2018
- Social determinants of health: contributions of early life adversity to CV disparities in adulthood, 5/2018
- Diversity training support at NHLBI, 5/2018
- Promoting cardiovascular health in early childhood and transitions through adolescence, 6/2018
- Enhancing resilience for cardiovascular health and wellness, 7/2018
- Precision medicine for the advancement of knowledge on heart, lung, blood, and sleep health and disease: exploring opportunities and addressing challenges using the All of Us Research Program, 7/2018
- Unlocking the secrets of mitochondria in the cardiovascular system: Path to a cure in heart failure, 8/2018
- Defining the NHLBI’s research priorities in the ethical, legal, and social implications of genomics, 9/2018
- The role of short-term training in HLBS workforce development, 10/2018
- Cardiovascular consequences of post-traumatic stress disorder, 11/2018
- Hypertension: Barriers to translation, 12/2018
<table>
<thead>
<tr>
<th>Workshop Title</th>
<th>Date</th>
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<tbody>
<tr>
<td>Promoting Cardiovascular Health in the Workplace: A Collaboration of NHLBI,</td>
<td>March 5-March 8, 2019</td>
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<td>CDC, and American Heart Association</td>
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<td>2019 NHLBI Epidemiology &amp; Prevention Trainee Session</td>
<td>March 6, 2019</td>
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<td>Social Determinants of Cardiometabolic Health, Disease, and Health Disparities: Setting an Agenda for Research</td>
<td>March 27-March 28, 2019</td>
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<td>Digital Clinical Trials: The Future is Now</td>
<td>April 1- April 2, 2019</td>
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<td>Impact of Contemporary Acute and Chronic Particulate Air Pollution on Vulnerable Populations: Research Gaps on Mechanisms of Cardiopulmonary and Disease Outcomes and Personal Intervention Strategies</td>
<td>May 29- May 30, 2019</td>
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<tr>
<td>Understanding Circadian Mechanisms of Sudden Cardiac Death</td>
<td>June 20-June 21, 2019</td>
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<td>NHLBI Working Group on Valvular Heart Disease</td>
<td>July 2019 (Date to be Determined)</td>
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<td>NHLBI K to R01 Meeting</td>
<td>July 11-July 12, 2019</td>
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Turning discovery into cardiovascular health

Current major initiatives map to Strategic Vision Objectives

Harnessing data science to drive precision medicine and population health

New initiatives for strategic investments guided by Strategic Vision and Big Goals
  - Addressing social determinants of CVH and health inequities
  - Enhancing resilience
  - Promoting CVH and preventing CVD across the lifespan
  - Eliminating hypertension-related CVD
  - Reducing the burden of heart failure
  - Preventing vascular dementia