

UPDATE OF THE SMRB WORKING GROUP ON THE VALUE OF BIOMEDICAL RESEARCH

*Gilbert Omenn, MD, PhD
Member, VOBR Working Group*

Charge to the SMRB

The VOBR Working Group of the SMRB is charged with:

- Undertaking a comprehensive analysis of the methods and strategies used in assessing the value of biomedical research;
- Defining the fundamental principles that should underpin any strategy for assessing the value of investing in NIH; and
- Identifying strategies for assessing the value of NIH that are both scientifically sound and reflect the diverse outcomes related to this investment.

Working Group Roster

NON-FEDERAL

- Gail Cassell, PhD (*Chair*)
- Norman Augustine
- William Brody, MD, PhD
- Hon. Daniel Goldin
- Garry Neil, MD
- Gilbert Omenn, MD, PhD
- William Roper, MD, MPH
- Arthur Rubenstein, MBBCh

FEDERAL

- Alan Guttmacher, MD
- Richard Hodes, MD
- Stephen Katz, MD, PhD
- Griffin Rodgers, MD, MACP
- Martha Somerman, DDS, PhD

Impetus for Assessing NIH's Value

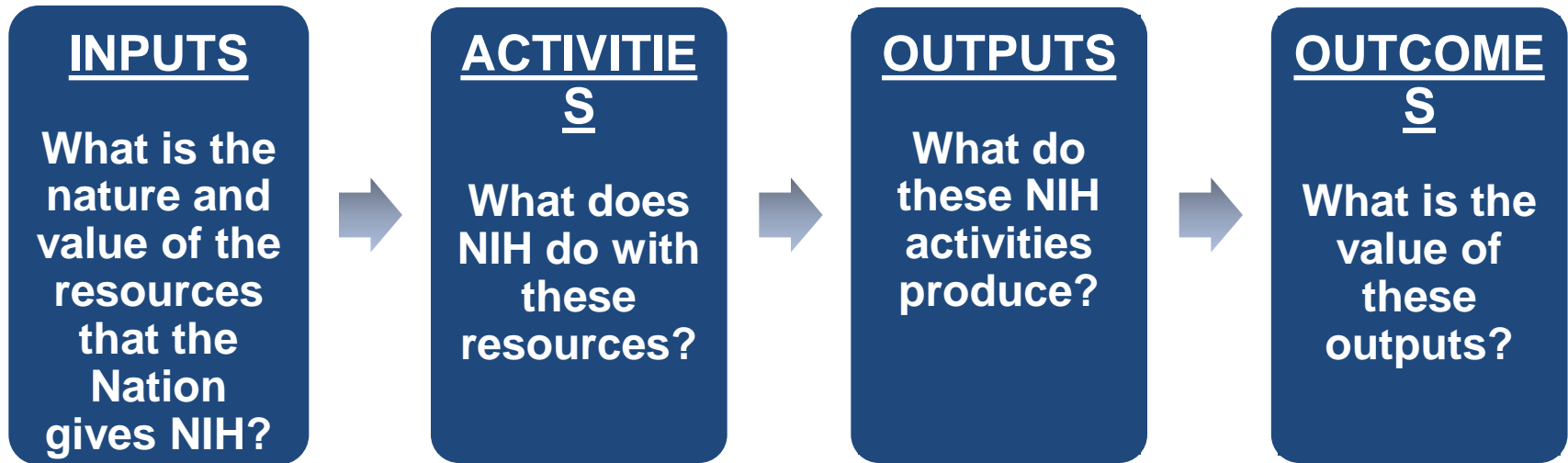
- As the Nation's largest biomedical research agency, NIH is entrusted with much of the public's investment in biomedical research.
- As a steward of this investment, NIH is responsible for ensuring that these funds are used in ways that provide value to the public.
- The current economic climate underscores the need to demonstrate the value of investing in NIH.

Nation's Investment in NIH

- Average per capita NIH investment is \$100/year:
 - \$30.9B FY12 NIH budget/314,000,000 US citizens = approx. \$100 per person (FY12=\$98)
- In FY12, the proportion of NIH budget to total federal expenditures was 0.8%, or less than 1 cent of the average tax payer dollar
 - $\$30.9B / \$3.8T = 0.00813$
- In FY12, the NIH budget was 3.5% of the total DHHS budget, which is 39% of DHHS discretionary budget.



An Analytic Framework

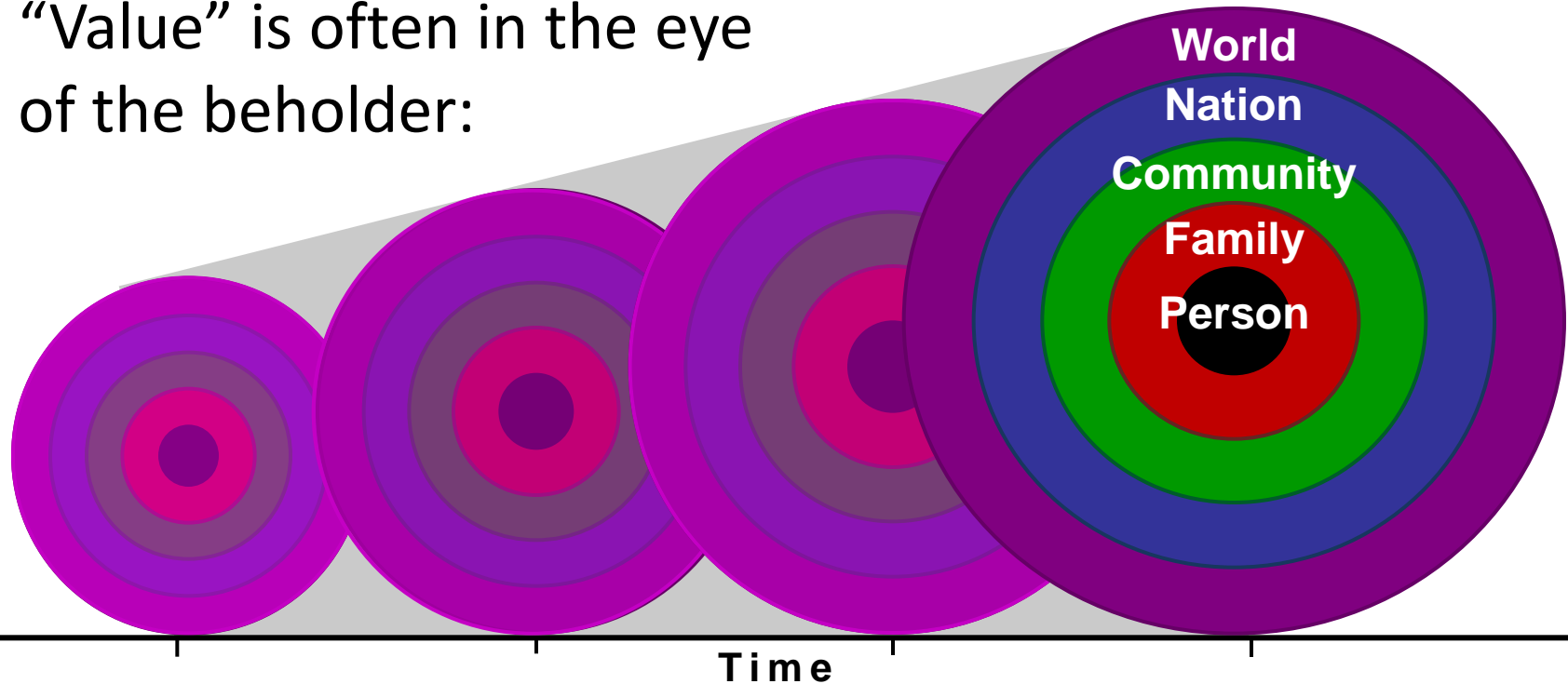


Defining Value

- Value is defined by the American Heritage Dictionary as:
 - An amount, as of goods, services, or money, considered to be a fair and suitable equivalent for something else; a fair price or return.
 - Monetary or material worth.
 - Worth in usefulness or importance to the possessor; utility or merit.
 - A principle, standard, or quality considered worthwhile or desirable.

Defining Value *(cont.)*

“Value” is often in the eye of the beholder:



What constitutes value, who makes that determination, and how can it be observed across time?

Identifying Measurable NIH Outcomes

- NIH mission is to seek **fundamental knowledge** about the nature and behavior of living systems and the application of that knowledge to **enhance health, lengthen life, and reduce the burdens of illness and disability**.
 - How do we determine a subset of outcomes that best represent the goals embodied within this mission (e.g., development of new drugs, reduction in diabetes)?
 - How can these outcomes be assessed?
 - How do you determine their value?
- How do we identify the broader effects (e.g., economic, educational) of NIH activities?

Challenges

- Assessing the value of biomedical research is difficult due to challenges with assigning attribution and causality.
 - Multiple factors and sectors influence the downstream effects of NIH activities.
 - It is difficult to estimate and account for the lag time between research and impact.
 - There are myriad challenges in collecting and analyzing data that accurately capture the outcomes of NIH activities.
 - Is there anything unique for NIH, compared with other R&D agencies, in these challenges?

Many Existing Reports to Analyze

SPECIAL ARTICLE

The Value of Medical Spending in the United States, 1960–2000

David M. Cutler, Ph.D., Allison B. Rosen, M.D., M.P.H., Sc.D., and Sandeep Vijan, M.D.
N Engl J Med 2006; 355:920-927 | August 31, 2006 | DOI: 10.1056/NEJMsa054744

The Role of Public-Sector Research in the Discovery of Drugs and Vaccines

Ashley J. Stevens, D.Phil., Jonathan J. Jensen, M.B.A., Katrine Wyller, M.B.E., Patrick C. Kilgore, B.S., Sabarni Chatterjee, M.B.A., Ph.D., and Mark L. Rohrbaugh, Ph.D., J.D.

Estimating Long-term Economic Returns of NIH Funding on Output in the Biosciences

The effect of government contracting on academic research
Does the source of funding affect scientific output?

Brent Goldfarb
Robert H. Smith School of Business, University of Maryland, 4548 Van Munching Hall, College Park, MD 20742, Unit

In Your Own Backyard:

How NIH Funding Helps Your State's Economy

A REPORT BY Families USA's Global Health Initiative

Does Public Scientific Research Complement Private Investment in Research and Development in the Pharmaceutical Industry?

Andrew A. Toole Rutgers University

Economic Impact of the Human Genome Project

How a \$3.8 billion investment drove \$796 billion in economic impact, created 310,000 jobs and launched the genomic revolution

Prepared by Battelle Technology Partnership Practice

Does Targeted, Disease-Specific Research Funding Influence Pharmaceutical Innovation?

AN ECONOMIC ENGINE
NIH Research, Employment, and the Future of the Medical Innovation Sector

NIH'S ROLE IN SUSTAINING THE U.S. ECONOMY

A 2011 Update Authored by Dr. Everett Ehrlich

Medical Research: What's it worth?

Estimating the economic benefits from medical research in the UK

An analysis of bibliometric indicators, National Institutes of Health funding, and faculty size at Association of American Medical Colleges medical schools, 1997–2007

Dean Hendrix, MLIS

Effect of a US National Institutes of Health programme of clinical trials on public health and costs

Dr S.Claiborne Johnston MD a b, John D Rootenberg MD a, Shereen Katrak BS a, Wade S Smith MD a, Jacob S Elkins MD a

What NIH Hopes to Gain

- Identification of strategies that will yield assessments of NIH's value that are:
 - Responsive
 - Scientifically rigorous
 - Credible
 - Comprehensive
 - Dynamic

Panel Presentations & Discussion

Exploring the Health, Scientific, and Economic Values of Biomedical Research: Economic Dimensions

- William B. Rouse, PhD
Chair of Economics and Engineering, Stevens Institute of Technology
- Andrew A. Toole, PhD
Economist, Economic Research Service, U.S. Department of Agriculture
- Simon Tripp
Senior Director, Technology Partnership Practice, Battelle Memorial Institute

Goals for Today

- Learn from experts about the economic values of biomedical research, including:
 - Strengths and gaps of prior studies
 - Landscape of current efforts
 - Outlook for future endeavors
- Discuss the relevance of these findings to NIH