

Comparative Effectiveness Research: An Update on Funding and a Future Vision for CER and Cancer

March 10, 2010

Clinical Trials and Translational Research Advisory Committee

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Presentation Overview

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Overview

CER & ARRA

ARRA Funded CER Projects

Current CER priorities and Funding Opportunities

On-Going NCI Efforts to Conduct & Support CER

CER OVERVIEW

HHS Definition of CER

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The conduct and synthesis of research comparing the benefits and harms of different interventions and strategies to prevent, diagnose, treat and monitor health conditions in “real world” settings. The purpose of this research is to improve health outcomes by developing and disseminating evidence-based information to patients, clinicians, and other decision-makers, responding to their expressed needs, about which interventions are most effective for which patients under specific circumstances.

- To provide this information, comparative effectiveness research must assess a comprehensive array of health-related outcomes for diverse patient populations and subgroups.
- Defined interventions compared may include medications, procedures, medical and assistive devices and technologies, diagnostic testing, behavioral change, and delivery system strategies.
- This research necessitates the development, expansion, and use of a variety of data sources and methods to assess comparative effectiveness and actively disseminate the results.

What is CER?

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- Definition released by Federal Coordinating Council (FCC) currently used HHS-wide
 - Comparative Effectiveness Research and Patient-Centered Outcomes Research are being used interchangeably
 - The FCC released a report in June 2009, listing priorities for spending ARRA CER dollars
 - Replaced by CER-CIT (Coordination and Implementation Team) formed to coordinate overall CER investment and prevent duplication across HHS

What is CER?

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- Definition constantly evolving – Various interested parties
 - Government Entities
 - Congressional Budget Office (CBO)
 - Office of Management and Budget (OMB)
 - White House
 - Non-Government Entities
 - Personalized Medicine Coalition
 - Friends of Cancer Research
 - Grace Principles
 - Brookings
 - Others

Important Recommendations from Friends of Cancer Research

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1. A comprehensive CER program should be developed to better identify the most effective health care options
2. A comprehensive CER program should link data from public and private entities to build upon existing data collection efforts and research capabilities
3. CER studies should support the development of “personalized” or stratified medicine
4. Processes should be developed to ensure that information gained through CER is incorporated into clinical practice and better informs decisions made among patients, their health care providers, and payer

Types of CER at NIH

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- Clinical Trials
- Observational studies and modeling
- Secondary data analysis using registries and linked databases

Importance of CER

- CER and evidence-based medicine addressed in healthcare reform bills
- IC Directors agree unanimously that NIH has an important role to play in CER
- In total dollars, NIH funds the largest amount of CER in HHS
- The NCI Community has substantial experience, expertise, and infrastructure relevant to CER

CER & ARRA

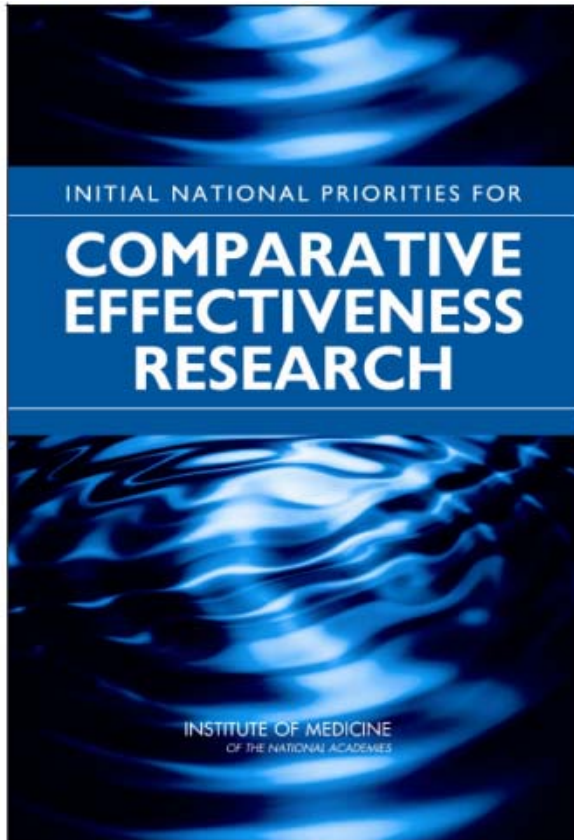
ARRA Bill Language

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- Conference Agreement and Bill Report noted that FCC can not mandate coverage, reimbursement, or other policies of public or private payers
- CER will not include national clinical guidelines or coverage determinations
- Called for IOM report on CER priorities

IOM CER Report

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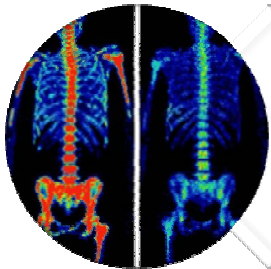
- Required under ARRA Legislation
- Released 6/30/09
- Lists 100 national priorities for CER
- Informed by testimonials given by advocacy, industry, and other groups
- Guides HHS CER funding decisions

IOM CER Report: Examples of Cancer Priorities

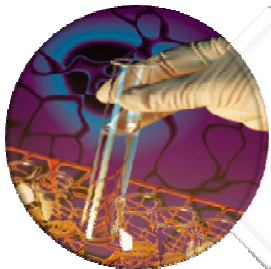
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Compare management strategies for localized prostate cancer on survival, recurrence, side effects, quality of life, and costs



Compare imaging technologies in diagnosing, staging, and monitoring patients with cancer including PET, MRI, and CT



Compare genetic and biomarker testing and usual care in preventing and treating breast, colorectal, prostate, lung, and ovarian cancer, and possibly other clinical conditions

CER & ARRA:

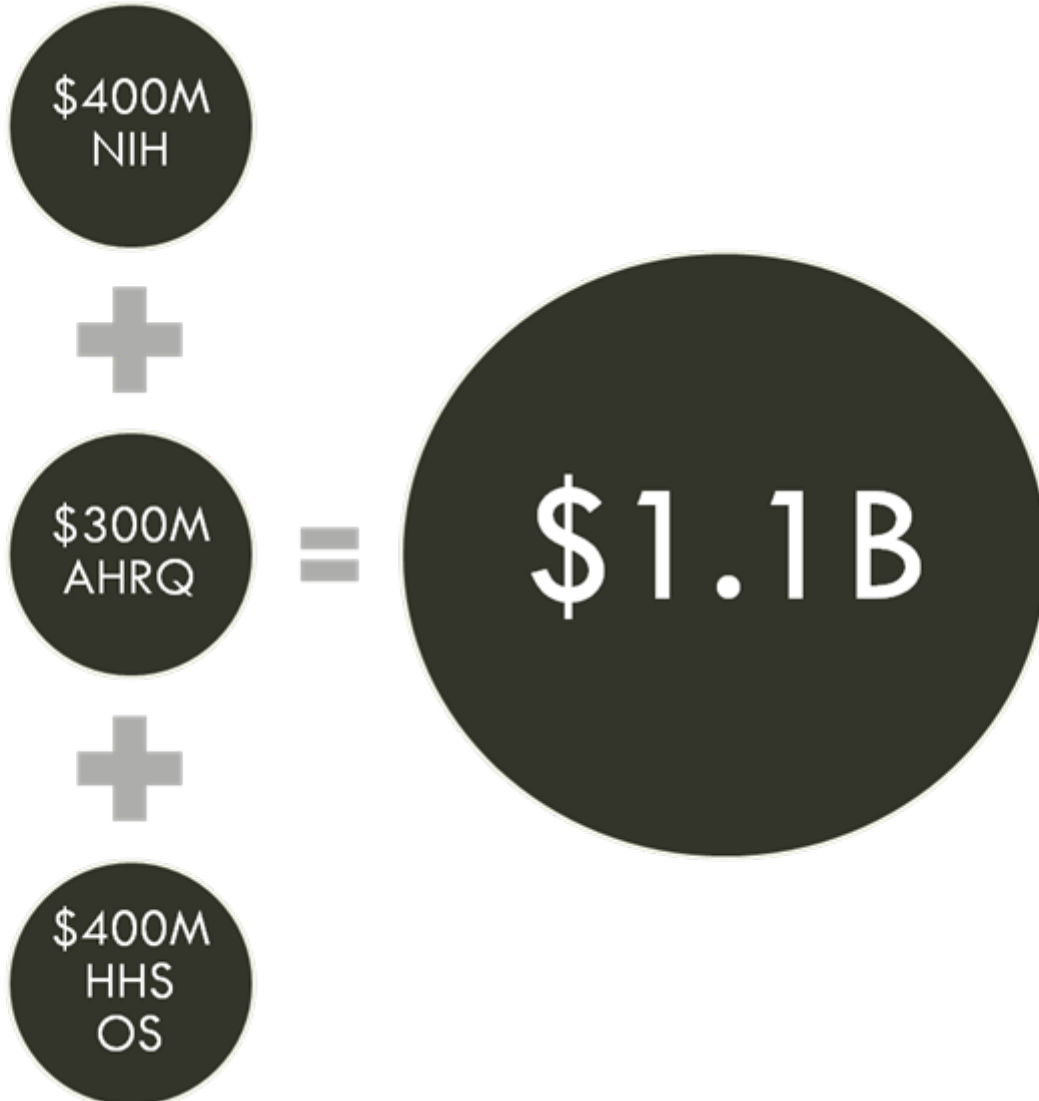
IOM Recommendations for long-term investment

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- Ensuring meaningful consumer, patient, and caregiver participation
- Building robust information systems and research methods
- Development and support of a highly skilled CER workforce
- Support efforts to translate CER knowledge into everyday clinical practice.

Allocation of Funds

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NIH CER Committee (NIH CC)

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- NIH CER Committee (NIH CC) formed to guide process
 - Original Committee Chairs:
 - Dr. Betsy Nabel and Dr. Richard Hodes
 - Current Committee Chairs
 - Dr. Michael Lauer and Dr. Richard Hodes

ARRA FUNDED CER PROJECTS



Spending Areas

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CER related grants with scores beyond institute paylines

Grand Opportunity (GO) Grants

Challenge Grants

Competitive Revisions

Administrative Supplements

Other projects, such as NIH signature initiatives

Contracts

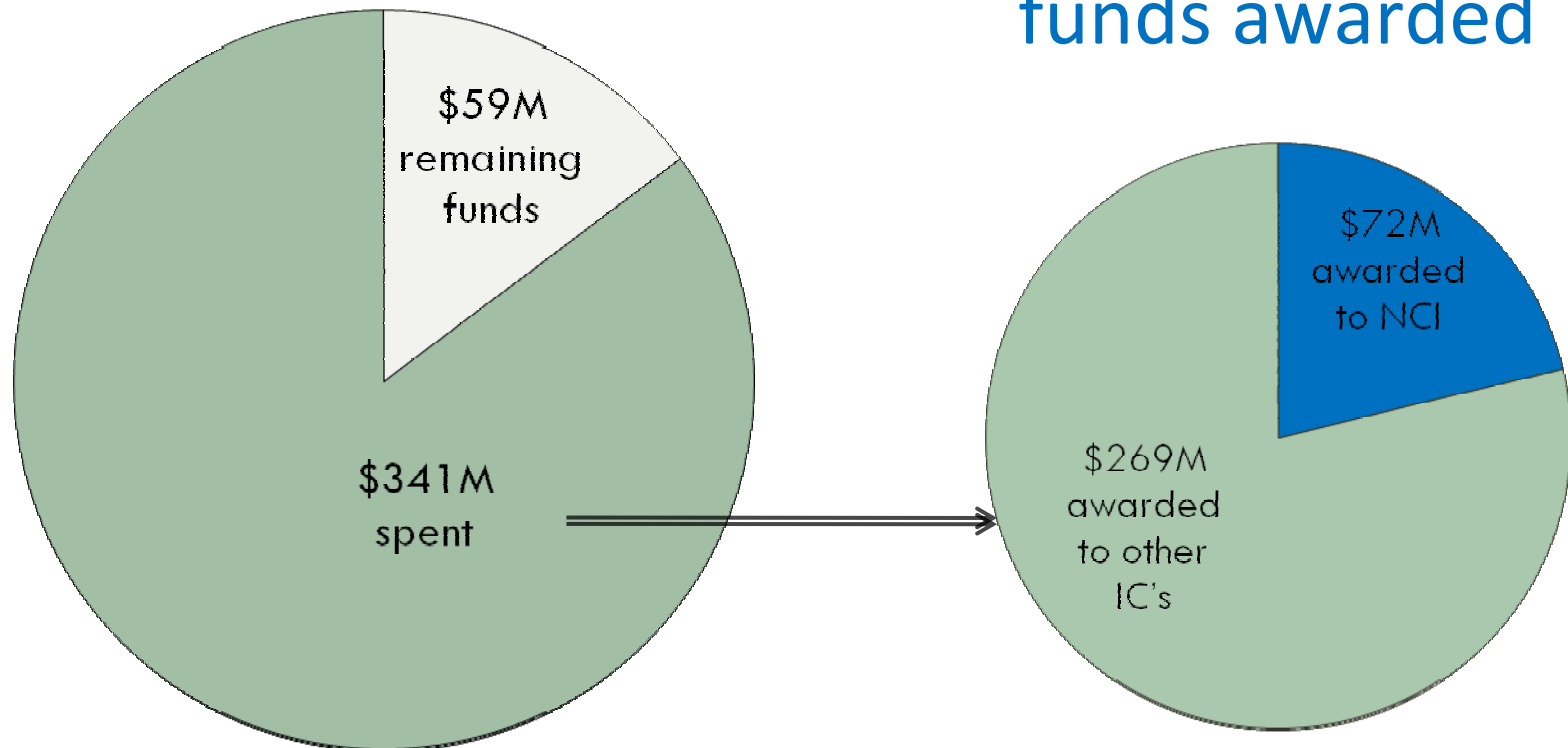
New FY10 Grant Mechanisms such as RC4

NCI FY 2009 Awards

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In FY 2009, NIH
Allocated 85% of the
\$400M received for CER

NCI received
over 20% of all
funds awarded



FY 2009 Spending

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| Funding Mechanism | Awarded by NIH* | Portion to NCI | % of Dollars Awarded to NCI |
|--------------------------------|-----------------|----------------|-----------------------------|
| Grand Opportunity Grants (RC2) | \$145 | \$42 | 29% |
| Challenge Grants (RC1) | \$76 | \$13 | 17% |
| Pay-line Expansions | \$36 | \$14 | 39% |
| “Other” | \$59 | \$0 | 0% |
| Competitive Revisions | \$7 | \$3 | 43% |
| Administrative Supplements | \$19 | \$0.5 | 3% |
| Total | \$341 | \$72 | 21% |

*All dollars in millions and rounded.

“Other” category includes contracts and grants, for example NIH signature projects.

Examples of Funded Challenge Grants

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Breast Cancer

- Role of Advanced Screening Technologies in Early Detection of Breast Cancer (Dana-Farber)

Colon Cancer

- Comparative effectiveness of FIT vs. colonoscopy for colon cancer screening (University of Iowa)

Prostate Cancer

- Comparative Analysis of Surgical Treatment Options for Localized Prostate Cancer (Sloan Kettering)

Examples of Funded GO Grants

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In response to NCI CER FOA in Genomic and Personalized Medicine

- Center for Comparative Effectiveness Research in Cancer Genomics (CANCERGEN) (Fred Hutchinson)
- Clinical validity and utility of genomic targeted chemoprevention of Pca (Wake Forest University Health Sciences)
- Programs in Clinical Effectiveness of Cancer Pharmacogenomics (Duke University)
- Comparative Effectiveness in Genomic Medicine (University of Pennsylvania)

Examples of Funded GO Grants

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In response to NCI CER FOA in Cancer Prevention, Screening and Treatment

- Building CER Capacity: Aligning CRN, CMS, and State Resources to Map Cancer Care (Dana Farber)
- CYCORE: Cyberinfrastructure for Comparative effectiveness Research (MD Anderson)
- ADVancing Innovative Comparative Effectiveness research-cancer diagnostics (ADVICE) (University of Washington)
- Comparative Effectiveness of Advanced Imaging in Cancer (Dartmouth)

Examples of Grants Funded using other Mechanisms

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- Cancer Center Support Grant Supplement aimed at promoting cancer CER through targeted faculty support, pilot projects, shared resources, and technology methodology innovation (Dartmouth)
- Clinical Trial - Multicenter Selective Lymphadenectomy Trials, MSLT I and MSLT II (John Wayne Cancer Institute)

CURRENT CER PRIORITIES AND FUNDING OPPORTUNITIES



FY 2010 – NIH Funding Opportunities

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Title: Recovery Act Limited Competition: Institutional Comparative Effectiveness Research Mentored Career Development Award (KM1)

Announcement Number:
[RFA-OD-10-011](#)

Release Date:
January 13, 2010

Receipt Date:
March 25, 2010

Description: The National Institutes of Health (NIH) invites applications from research-intensive institutions to support mentored career development in support of comparative effectiveness research (CER) in an interdisciplinary environment catering to the needs of diverse populations of scholars including (but not limited to) those with backgrounds in biostatistics, epidemiology, health economics, pharmacology, medicine, and dentistry. Scholars should be encouraged to register for higher degrees, where appropriate. Successful applicant institutions will be expected to include course development work in their proposal and make provision for expanding the pool of experienced CER mentors.

FY 2010 – NIH Funding Opportunities

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Title: Recovery Act Limited Competition: **Methodology Development** in Comparative Effectiveness Research (RC4)

Announcement Number:

[RFA-OD-10-009](#)

Release Date:

December 28, 2009

Receipt Dates:

February 26, 2010

CLOSED

Description: The National Institutes of Health (NIH) invites applications to enhance, develop, or evaluate methodologies to improve the efficiency, validity, and credibility of comparative effectiveness research (CER) studies. Research in methodology development focuses on approaches to design, implement, analyze, and report CER, as opposed to CER projects that focus on comparing specific interventions for preventing or treating a given medical condition. It is hoped that this line of research will lead to significantly greater efficiency, validity, and credibility of CER among researchers, health care providers, and policy makers, and therefore will enhance the quality of the nation's health. The definition of CER will adhere to that adopted by the Federal Coordinating Council given at <http://www.hhs.gov/recovery/programs/cer/cerannualrpt.pdf>.

FY 2010 – NIH Funding Opportunities

Title: Participation of NCI in RFA-OD-10-002, ARRAOS: Recovery Act Limited Competition: Behavioral Economics for Nudging the Implementation of Comparative Effectiveness Research: Pilot Research (RC4)

Announcement Number:
[NOT-CA-10-013](#)

Release Date:
January 12, 2010

Receipt Dates:
March 19, 2010

Description: The National Cancer Institute (NCI) invites applications to study how the principles of behavioral economics could be used to enhance the uptake of the results of comparative effectiveness research (CER) among health care providers in their practice. Applications should be thought of as large pilot or preliminary studies rather than definitive trials. This principles of behavior among health care patient populations Coordinating Council and behavioral economic psychologists, decision model economic d

Title: Participation of NCI in RFA-OD-10-001, ARRAOS: Recovery Act Limited Competition: Behavioral Economics for Nudging the Implementation of Comparative Effectiveness Research: Clinical Trials (RC4)

Announcement Number:
[NOT-CA-10-012](#)

Release Date:
January 12, 2010

Receipt Date:
April 7, 2010

Description: The National Cancer Institute (NCI) invites applications proposing clinical trials using the principles of behavioral economics to enhance the uptake of the results of comparative effectiveness research (CER) among health care providers in their practice. Applicants must propose controlled trials that randomize units (whether individuals or clusters such as practices, hospitals, or larger units) to conditions, resulting in a randomized clinical trial or cluster randomized trial. The definition of CER will adhere to that adopted by the Federal Coordinating Council given at <http://www.hhs.gov/recovery/programs/cer/cerannualrpt.pdf> and behavioral economics refers to the interdisciplinary efforts involving cognitive and social psychologists, decision scientists, and other social scientists

FY 2010 CER Funding Opportunities

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Title: Participation of NCI in RFA-OD-10-008, Recovery Act Limited Competition: Comparative Effectiveness Research on Upper Endoscopy in Gastroesophageal Reflux Disease (GERD), Eradication Methods for Methicillin Resistant Staphylococcus aureus (MRSA), and Dementia Detection and Management Strategies (RC4)

Announcement Number:
[NOT-CA-10-014](#)

Release Date:
January 12, 2010

Receipt Dates: **CLOSED**
February 26, 2010

Description: The National Cancer Institute (NCI) invites applications to conduct preliminary comparative effectiveness research (CER) projects in targeted, high-priority areas in which such efforts have been lacking. Applications should be thought of as large pilot or preliminary studies rather than definitive trials. The definition of comparative effectiveness research will adhere to that adopted by the Federal Coordinating Council given at <http://www.hhs.gov/recovery/programs/cer/execsummary.html>.

FY 2010 – NIH Funding Opportunities

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Title: Recovery Act Limited Competition: NIH Director's Opportunity for Research in **Five Thematic Areas (RC4)**

Announcement Number:
[RFA-OD-10-005](#)

Release Date:
December 28, 2009

Receipt Dates:
March 15, 2010

Description: The NIH has established a program entitled "NIH Director's Opportunity for Research in Five Thematic Areas". This program will support projects that address research endeavors in specific areas that will benefit from significant three-year funds without the expectation of continued NIH funding beyond this period. The research supported by the program should have high short-term impact, and a high likelihood of enabling growth and investment in biomedical research and development, public health, and health care delivery. Proposals should include development implementation of critical research innovations in one or more of the following five thematic areas: applying genomics and other high throughput technologies; translating basic science discoveries into new and better treatments; **using science to enable health care reform**; focusing on global health; and reinvigorating the biomedical research community.

Includes CER

FY 2010 – AHRQ Funding Opportunities

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ARRA OS: Recovery Act 2009 Limited Competition: **Enhanced Registries** for Quality Improvement and Comparative Effectiveness Research (R01)

Announcement Number:

[RFA-HS-10-020](#)

Release Date:

January 21, 2010

Receipt Date:

March 29, 2010

The goal of the FOA is to enhance the electronic clinical capability of an **existing** registry for two purposes: 1) create and analyze valid data for comparative effectiveness research, and 2) enhance the ability to monitor and advance quality improvement of clinical care. Many registries have been created for answering specific clinical and scientific questions in defined populations while others have been developed to improve quality of patient care. However, a variety of limitations have hampered their ability to generate adequate information for decision-making. The applicant will clarify the limitations of the existing registry, specify which limitations will be addressed by the proposal, and how the enhanced registry can rapidly and comprehensively address issues aimed at improving quality of care and the comparative effectiveness of clinical interventions. A secondary goal of this FOA is to address issues relevant to the scalability and sustainability of registries that improve quality of care and that can conduct comparative effectiveness research.

FY 2010 – AHRQ Funding Opportunities

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ARRA OS: Recovery Act 2009 Limited Competition: **Scalable Distributed Research Networks** for Comparative Effectiveness Research (R01)

Announcement Number:

[RFA-HS-10-015](#)

Release Date:

January 21, 2010

Receipt Date:

March 10, 2010

The goal of this FOA is to enhance the capability and capacity of electronic health networks designed for distributed research to conduct prospective, comparative effectiveness research on outcomes of clinical interventions. The clinical interventions include, but are not limited to, diagnostics, therapeutics (drugs and biologics), medical devices, behavioral interventions, and surgical procedures used in clinical care. These distributed research network projects will build on and expand existing electronic health infrastructure with the ultimate goal of implementing broad, scalable and sustainable systems that enable the collection of longitudinal and comprehensive data across diverse healthcare delivery settings (such as ambulatory, in-patient, and long-term care facilities) to evaluate effectiveness of clinical interventions for a diverse set of clinical conditions.

Other AHRQ opportunities

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- Additional AHRQ funding opportunities can be viewed at: <http://www.ahrq.gov/fund/grantix.htm>
- For example:
 - Accelerating Implementation of Comparative Effectiveness Findings on Clinical and Delivery System Interventions by Leveraging AHRQ Networks (R18)
 - Comparative Effectiveness Delivery System Evaluation Grants (R01)

ON-GOING NCI EFFORTS TO CONDUCT & SUPPORT CER



SEER –Medicare Linkage

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- Created by linking two population-based sources
 - cases from SEER and Medicare claims from CMS
 - Over 1.5 million persons with cancer
 - Can be used to examine health care before, during and after cancer diagnosis
- SEER data: detailed clinical, demographic and cause of death information for persons with cancer
- Medicare: longitudinal, claims for all covered health services from the time of eligibility to death
- Details at: <http://healthservices.cancer.gov/seermedicare/>

The linked data can be used for a number of analyses that span the course of cancer control activities

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Diagnosis/ Tx → Survivorship → Second Occurrence → Terminal Care

| | | | |
|------------------------------|--------------------------------|---|---|
| Patterns of care | Late effects of treatment | Rates of recurrence/ second primaries | Use of hospice services |
| Peri-operative complications | Post-diagnostic surveillance | Relationship of second events to initial treatment and ongoing surveillance | Patterns of care during the last year of life |
| Volume outcomes studies | Treatment of prevalent cancers | | |
| Extent of staging | Survival | | |
| Comorbidities | | | |

← Health disparities, quality of care and cost of treatment →

CISNET - Cancer Intervention & Surveillance Modeling Network

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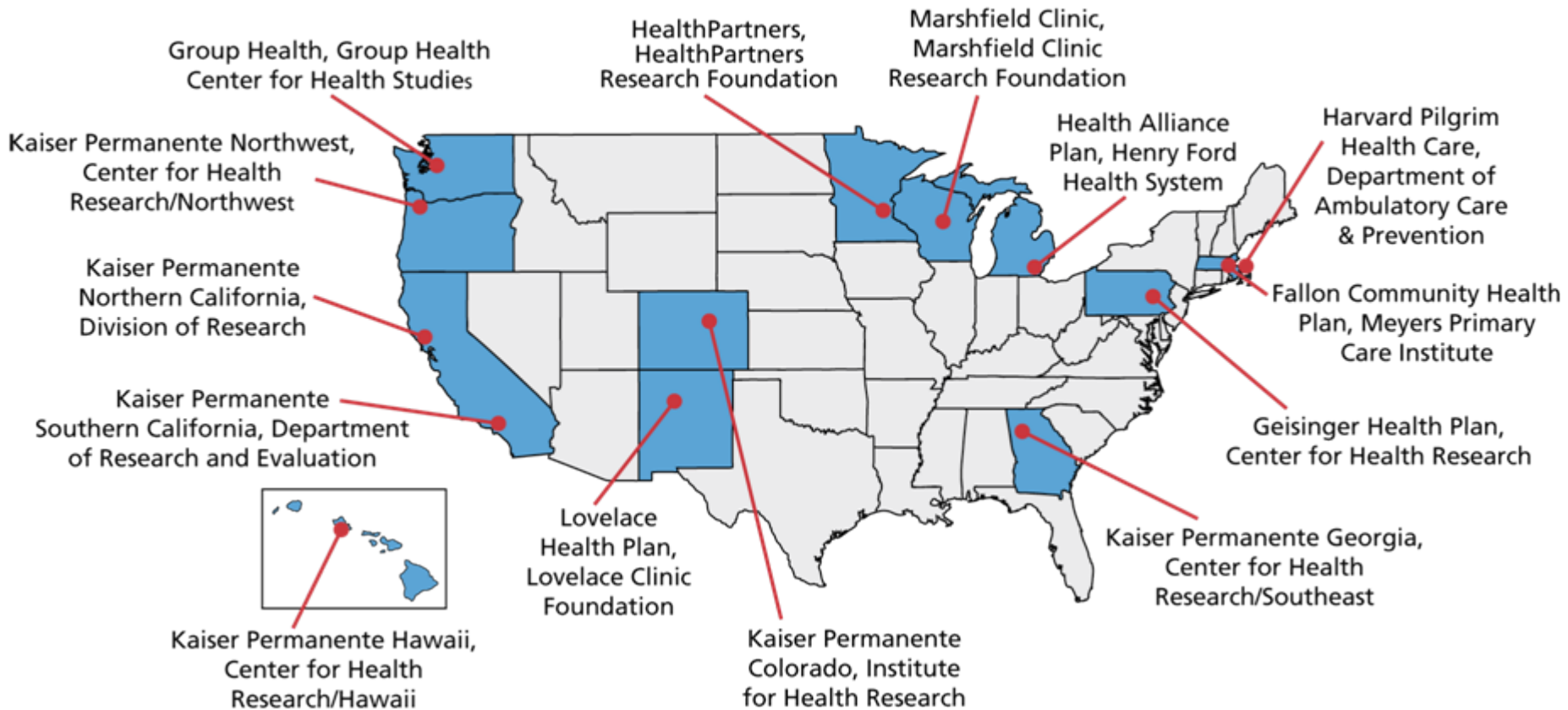
- NCI Sponsored Collaborative Consortium (U01) of Modelers in Breast, Prostate, Colorectal and Lung Cancer
- Focused on bringing the most sophisticated evidence-based decision tools to:
 - Understand the impact of cancer control interventions (screening, treatment, prevention) on current and future trends in incidence and mortality
 - Extrapolate evidence from RCT's, epidemiologic, and observational studies to determine the most efficient and cost-effective strategies for implementing technologies in the population
 - Be responsive to challenges due to the increased pace of technology, by helping to determine which new technologies are the most promising when scaled up to the population level

HMO Cancer Research Network (CRN)

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- Original RFA released by NCI in 1997
- 14 health care systems in HMORN participate
- Funded through a cooperative agreement grant and supplements
- Agency for Healthcare Research and Quality (AHRQ) is a co-sponsor
- Crn.cancer.gov

Cancer Research Network Sites



Physician Surveys: Examples

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- Physician Survey on Cancer Susceptibility Testing
- National Surveys of Colorectal Cancer Screening Policies & Practices
- Survey of Physician Attitudes Regarding the Care of Cancer Survivors (SPARCCS)
- National Survey of Energy Balance-related Care among Primary Care Physicians
- National Survey of Primary Care Physicians' Recommendations & Practice for Breast, Cervical, Colorectal, & Lung Cancer Screening



Breast Cancer Surveillance Consortium

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- Assesses the delivery and quality of breast cancer screening and related patient outcomes in U.S.
- Links to pathology and/or tumor registries
- Database of over 7.5M screening mammographic examinations of over 2M women
- 86,700 breast cancer cases
- Examines variation in radiologists' interpretative performance
- Co-funded by American Cancer Society

Cancer Care Outcomes Research and Surveillance Consortium (CanCORS)

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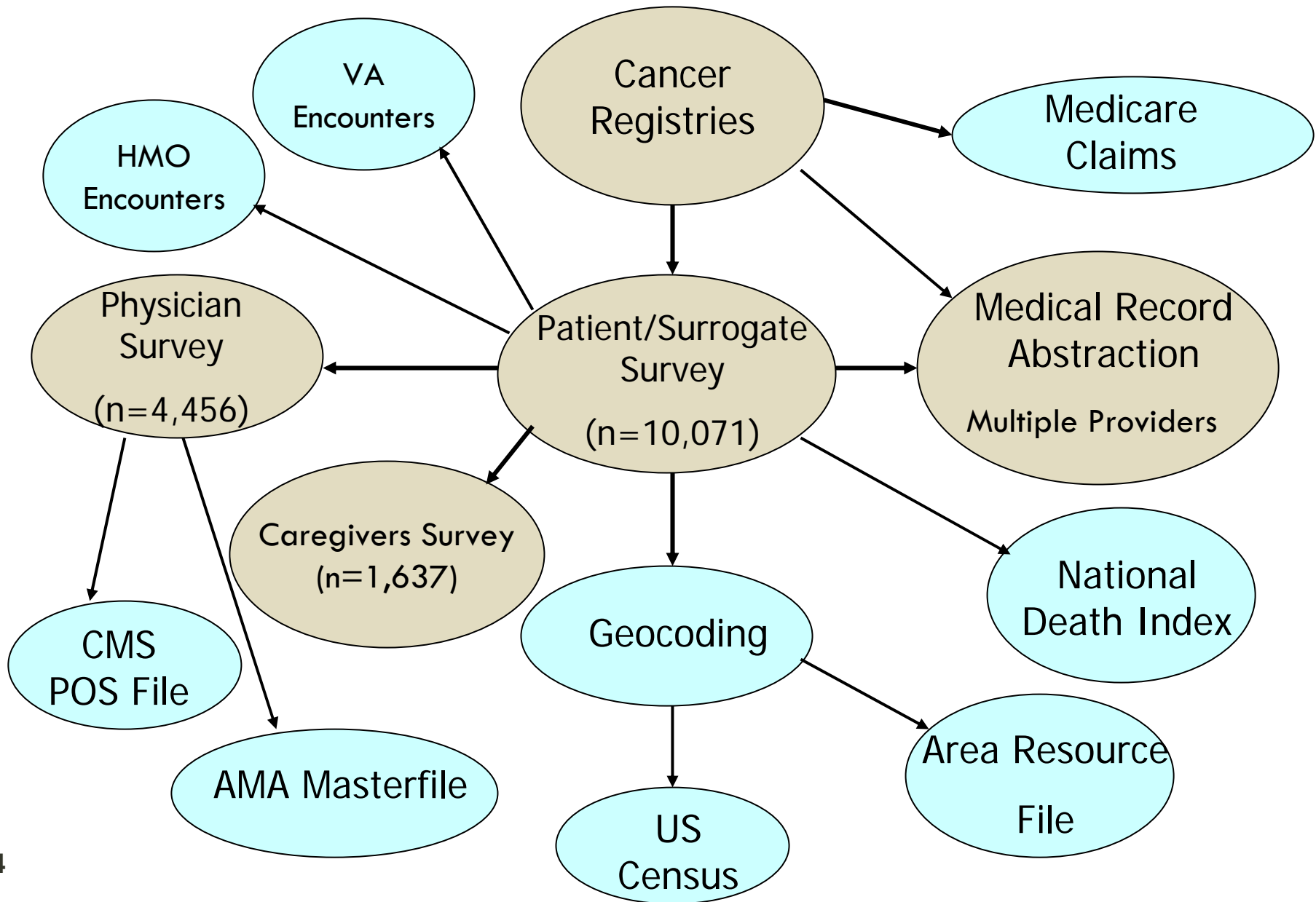
- Goal: Understand variation in care delivered to 5,000 patients with lung cancer and 5,000 with colorectal cancer
- Evaluates how characteristics of physicians, patients, caregivers, and delivery systems affect quality of care and outcomes
<http://healthservices.cancer.gov/cancors>

CanCORS Sites



- Patients from population-based cohorts in geographic areas
- Patients from integrated health-care delivery systems
- Patients at Veterans Health Administration hospitals

CanCORS Data Sources and Linkages

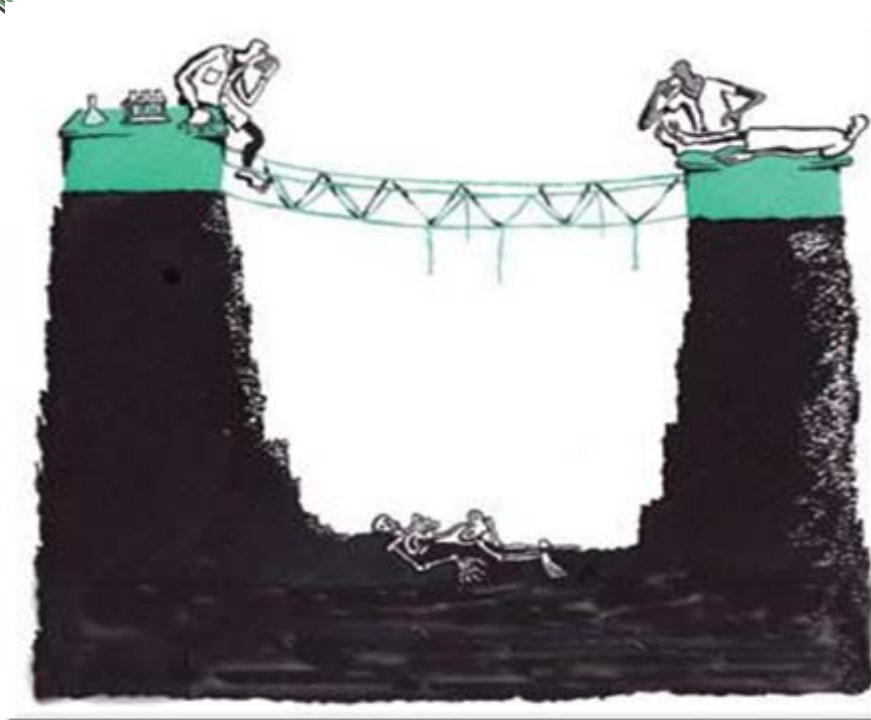


Public Health Genomics: Focus on the Full Translation Continuum

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Discoveries
(e.g. genetic
risk factor)

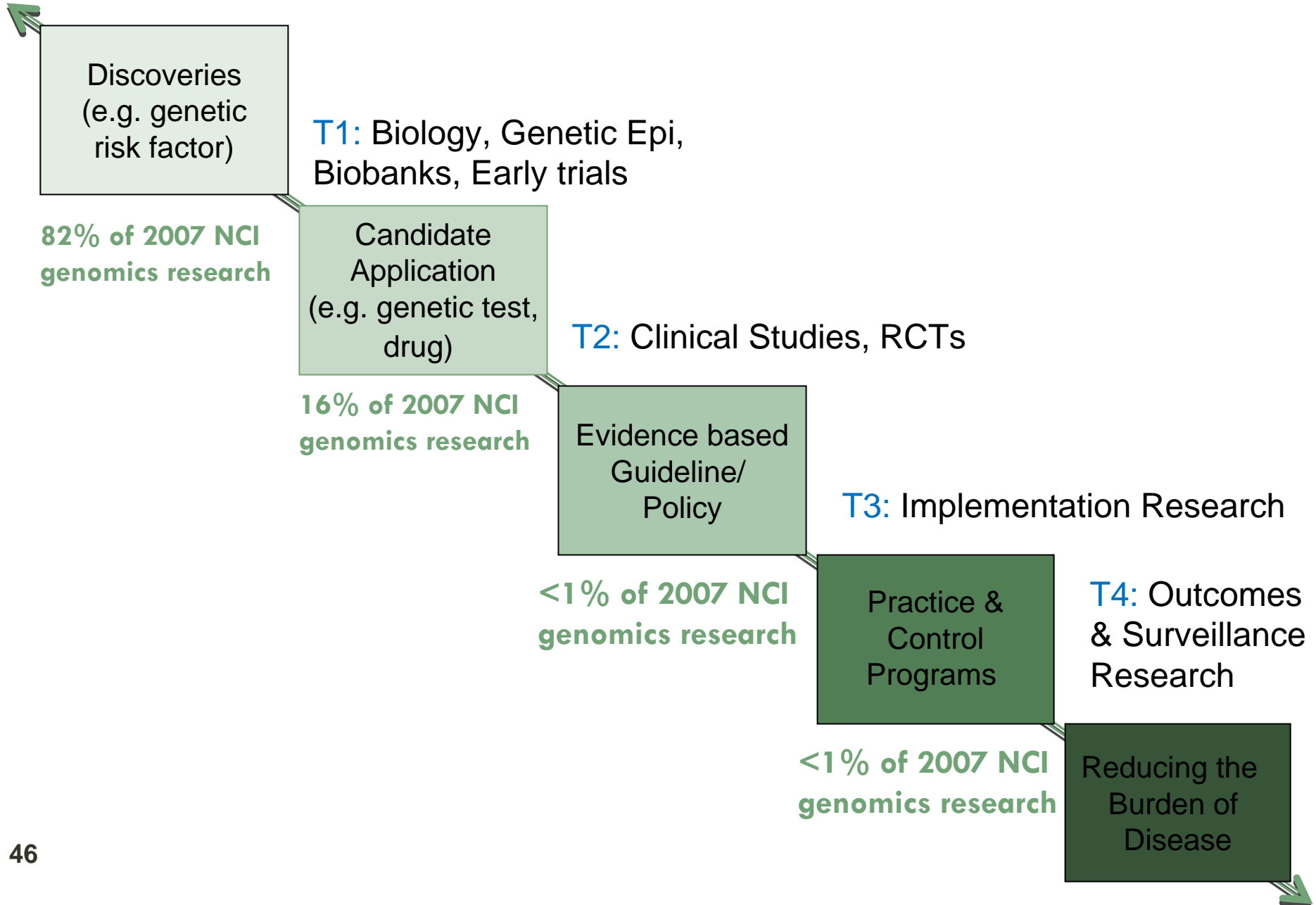
“Crossing the Valley of Death”



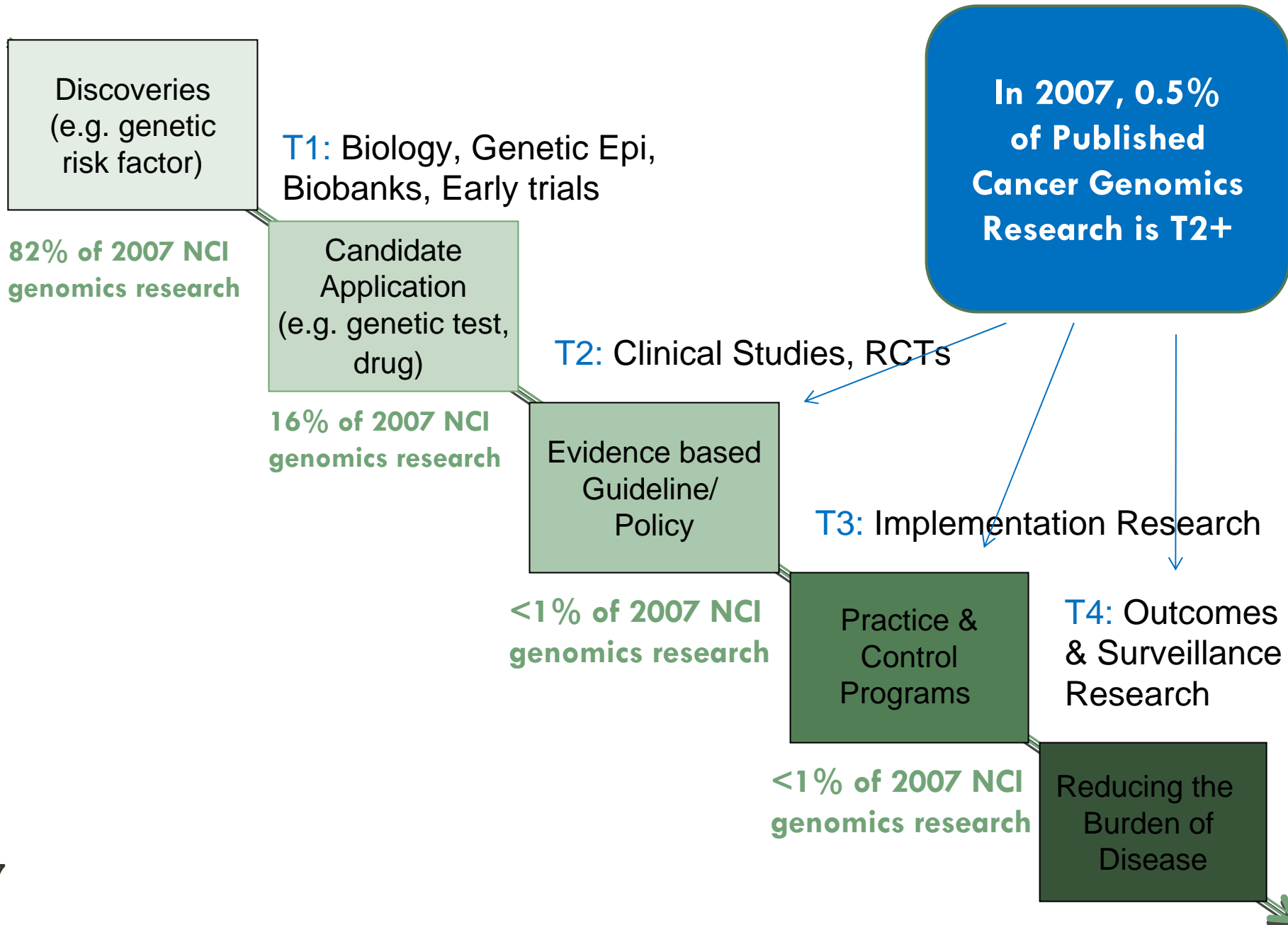
Reducing the
Burden of
Disease

D. Butler, Nature 2008

Public health Genomics: Focus on the Full Translation Continuum



Public health Genomics: Focus on the Full Translation Continuum



Continuing across the Divide



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□ CER in Genomics and Personalize Medicine



- Building on the CER portfolio
 - Comparative effectiveness research and evidence assessment of GPM applications
 - Implementation research of validated GPM applications
 - Training and education of the workforce, patients and the public

KEY ISSUES: CER & CANCER RESEARCH

Key Issues for the future

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- Cost
 - Current spending on health care
 - 18% of GDP in 2009 (2.5 trillion)
 - Insurance Coverage/Reimbursement

- Personalized Medicine and CER
 - The extent to which PM can be incorporated into CER will result in more relevant and useful evidence

Synergy of CER and Personalized Medicine

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- “Population-based evidence must be complemented by personalized evidence that accounts for how patients’ genomic and other personal traits affect their responses to health care. Considered alone, neither population-based evidence derived from CER nor personalized evidence derived from PGx and other research suffice. Research priorities, design and conduct of data collection, reporting of results, and translation of CER and PM into practice and policy should be fully integrated. This can achieve alignment, and even synergy, of CER and PM.”

Key Issues

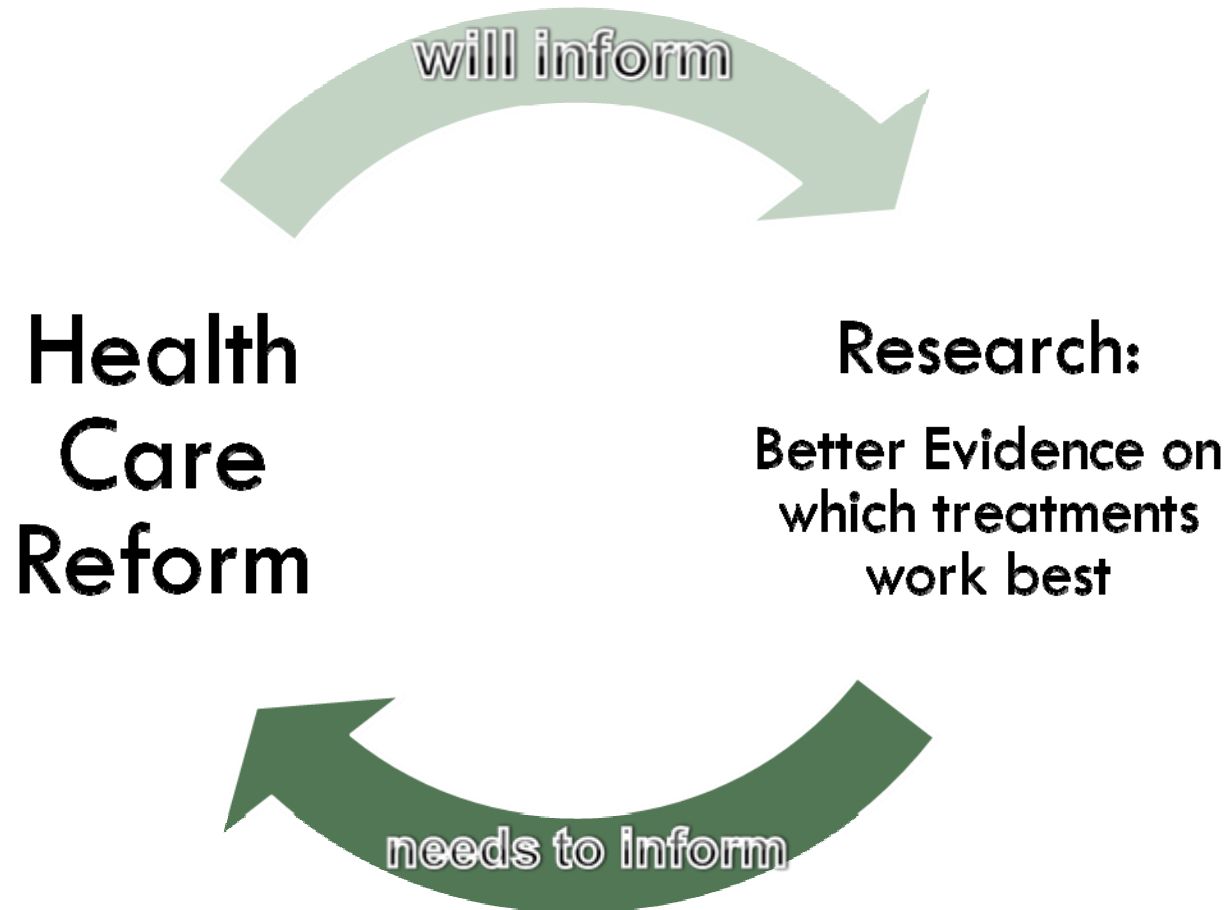
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- CER will require a variety of settings and populations
 - Emphasis on minority or underserved patients

- Data Networks
 - Need to link of data from public and private entities to build on existing data
 - Electronic Health Records

Key Issues: Health Care Reform

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Health Care Reform and CER

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- H.R.3200- Affordable Health Choices Act of 2009 (House)
 - Establishes the Center for Comparative Effectiveness Research within AHRQ
 - Establishes an independent Commission to oversee and evaluate Center for CER
 - AHRQ and the Commission submit an annual report to Congress

Health Care Reform and CER

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- S.1679-Affordable Health Choices Act of 2009 (Senate)
 - Establishes the Center for Health Outcomes Research and Evaluation
 - Establishes an advisory council through AHRQ's National Advisory Council
 - AHRQ will submit an annual report to Congress