

Comparative Effectiveness Research: Opportunities for the Implementation Research Community

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Outline

(1) What is CER?

(1) Definitions

(2) Conceptual questions

(2) Why the attention on CER?

(1) Link to 2009 healthcare reform debate

(3) Current examples of CER

(1) AHRQ's Effective Health Program

(4) Role of Implementation Science

(1) Obvious roles

(2) Novel opportunities

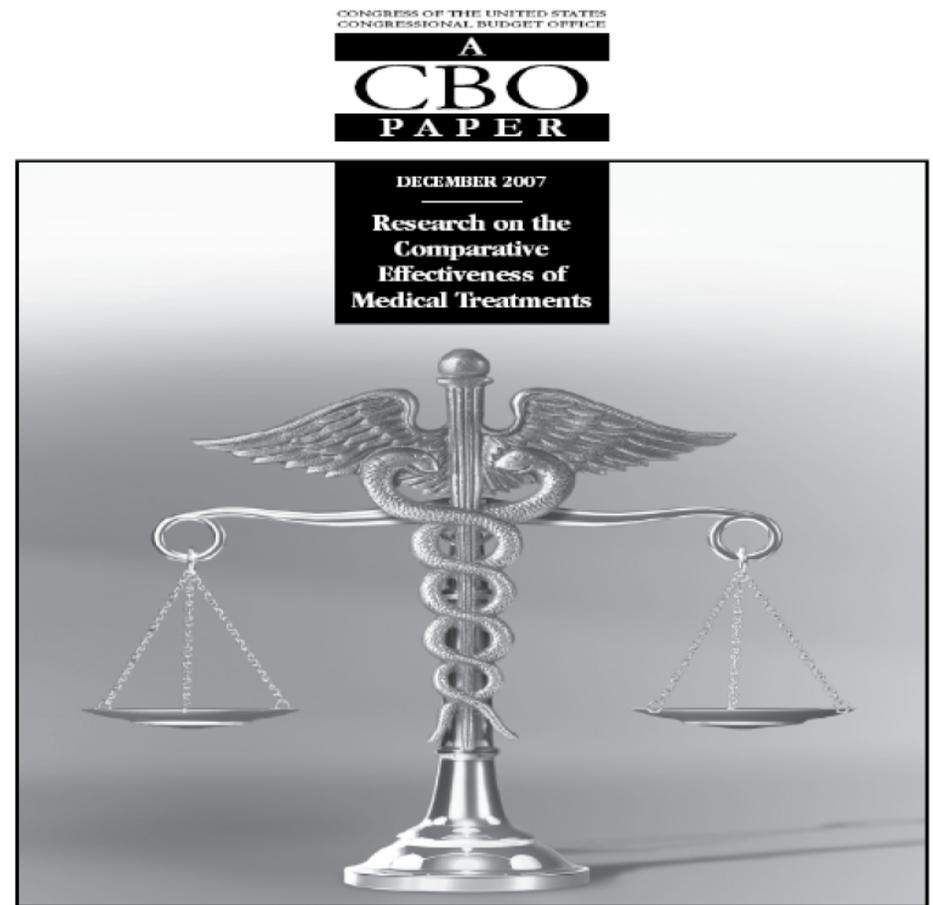
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Comparative Effectiveness

“...a rigorous evaluation of the impact of different options that are available for treating a given medical condition for a particular set of patients.”

CBO, 2007



CER Definition Extended

- Compare similar treatments--competing drugs, or different approaches--surgery versus drug therapy
- Analysis may focus on:
 - Relative medical benefits and risks of each option
 - Weigh costs and benefits of those options
- Key issue is determining benefits for different types of patients for a given treatment
- In settings providing same treatment, can address differences in
 - Diagnoses, systems of care, tests and follow-up

CER Bottom-line

- The core question of comparative effectiveness research—which treatment works best, for whom, and under what circumstances—is a fundamental concern for patients and clinicians confronting a health problem
- The direct comparison of existing health care interventions to determine which works best for which patients and which poses the greatest benefits and harms

Additional Considerations in Defining CER

- Strength of Evidence
 - What is the minimal level (threshold) of validity needed when comparing treatments?
- Applicability of Evidence
 - How specific to the clinical question does the evidence of effectiveness need to be?

An Important Conceptual Distinction When Defining CER

- Two distinct forms of comparative effectiveness research
 - A comparative effectiveness review
 - Evidence synthesis
 - A comparative effectiveness study
 - Evidence generation

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Why Comparative Effectiveness Research?

- The Federal government has a stake in CER
 - Private sector has limited incentives for CER
 - CER is not generally required for FDA approval as safe and effective
 - The Federal government plays a substantial role in financing health care in the U.S.
 - Obama administration believes CER will play a role in healthcare reform by better aligning benefits, costs & quality

Scope of the Opportunity in Health Care Reform

- Major challenges in 21st Century health care include evaluating all innovations and determining which:
 - Represent added value
 - Offer minimal enhancements over existing choices
 - Fail to reach their potential
 - Work for some patients and not for others

Current US Activities in CER

- AHRQ Effective Practice Centers 1998 to present
- AHRQ Effective Health Care Program 2005 to present
 - \$30 million in 08-09; \$50 million in 2009
- Department of Veterans Affairs (QUERI program)
- Drug Effectiveness Review Project (at OHSU)
- Other agencies: CMS, NIH (limited activities)
- Health plan and other private efforts (including Cochrane Collaboration)

American Recovery and Reinvestment Act 2009 and CER

- **Congress allocated \$1.1 Billion for CER:**
 - AHRQ: \$300M: Build on existing Effective Health Care program
 - NIH: \$400M (appropriated to AHRQ, transferred to NIH)
 - *RC1- Challenge grants
 - *RC2- Grand Opportunities grants
 - Office of the Secretary: \$400M (allocated at discretion)
 - The Federal Coordinating Council for CER created to offer guidance and coordination on the use of funds
 - Funds are available through 9/30/2010

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CER at AHRQ

- Effective Health Care Program (EHP)
 - Authorized by Section 1013 of the Medicare Prescription Drug, Improvement, and Modernization Act of 2003
 - Formal AHRQ program created in 2005
- Legislation mandated AHRQ is to conduct and support research on:
 - “the outcomes, comparative clinical effectiveness, and appropriateness of health care items and services (including prescription drugs)”
 - EHP focus has been to provide patients, clinicians and policy-makers with reliable, evidence-based healthcare information

Improving Quality and Safety Risks

- EHP uses CER to impact physician-patient decisions based on these principles:
 - **Relevancy:** is focused on actual clinical decisions
 - **Timeliness:** is fast and up-to-date
 - **Transparency:** process involves public nomination and ongoing public comment
 - **Objectivity:** employs methods and scientific rigor in systematic reviews to ensure accurate and unbiased reports
 - **Impact** on priority populations and conditions

Priority Conditions for the Effective Health Care Program

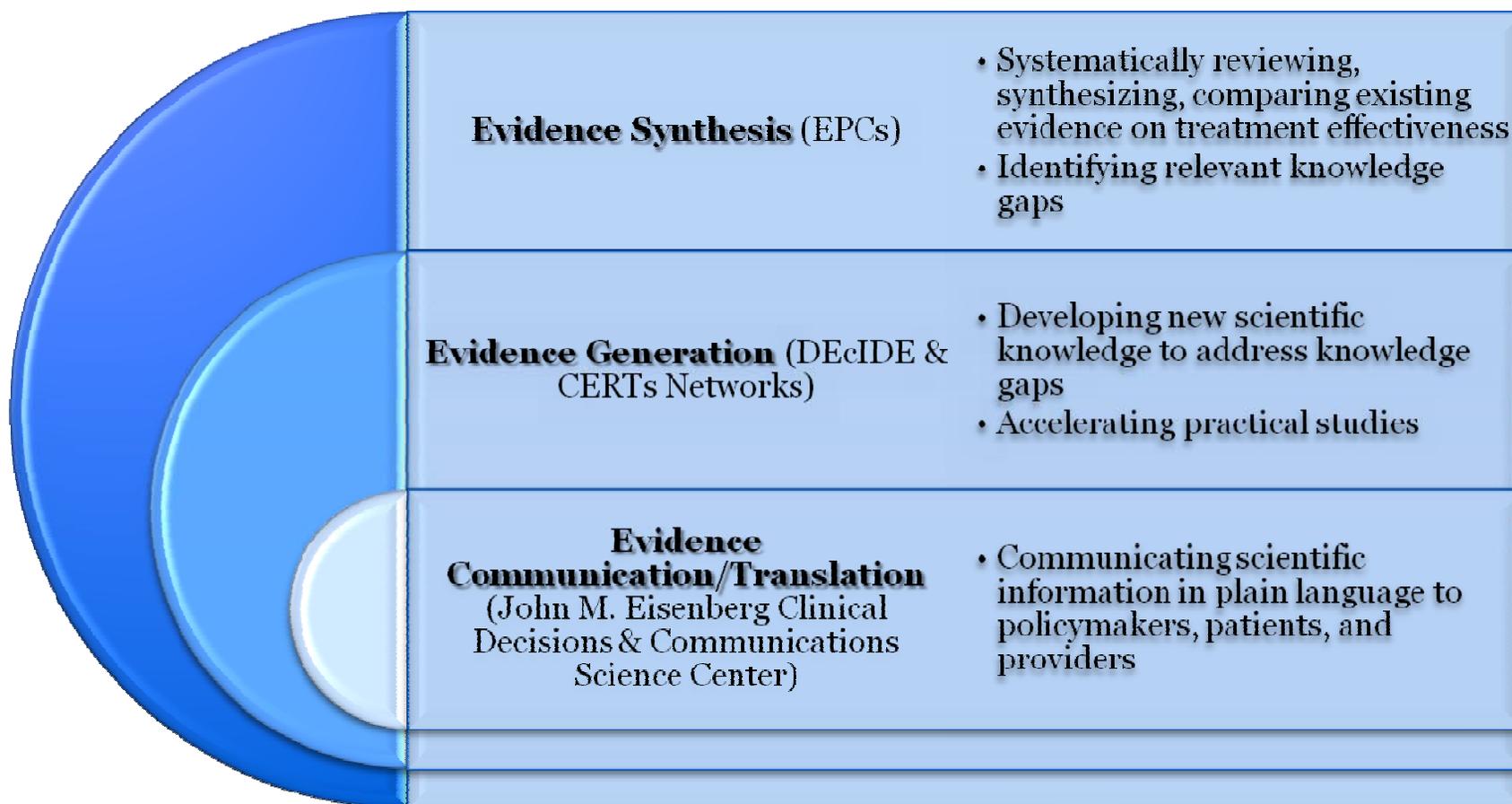
1. Arthritis and non-traumatic joint disorders
2. Cancer
3. Cardiovascular disease, including stroke and hypertension
4. Dementia, including Alzheimer's Disease
5. Depression and other mental health disorders
6. Developmental delays, ADHD and autism
7. Diabetes mellitus
8. Functional limitations and disability
9. Infectious diseases including HIV/AIDS
10. Obesity
11. Peptic ulcer disease and dyspepsia
12. Pregnancy including preterm birth
13. Pulmonary disease/asthma
14. Substance abuse

Who Conducts the Research?

- Coordinated by AHRQ personnel
- Contracts with multiple independent partners:
 - Stakeholder Group
 - Scientific Resource Center (at OHSC)
 - Evidence-based Practice Centers (EPCs) – 15 national centers
 - Developing Evidence to Inform Decisions about Effectiveness Centers (DEcIDEs) – 13 national centers
 - Centers for Education & Research on Therapeutics (CERTs) – 14 national centers
 - John M. Eisenberg Clinical Decisions and Communications Science Center - (transitioning from OHSC to Baylor)

AHRQ

Effective Health Care Program



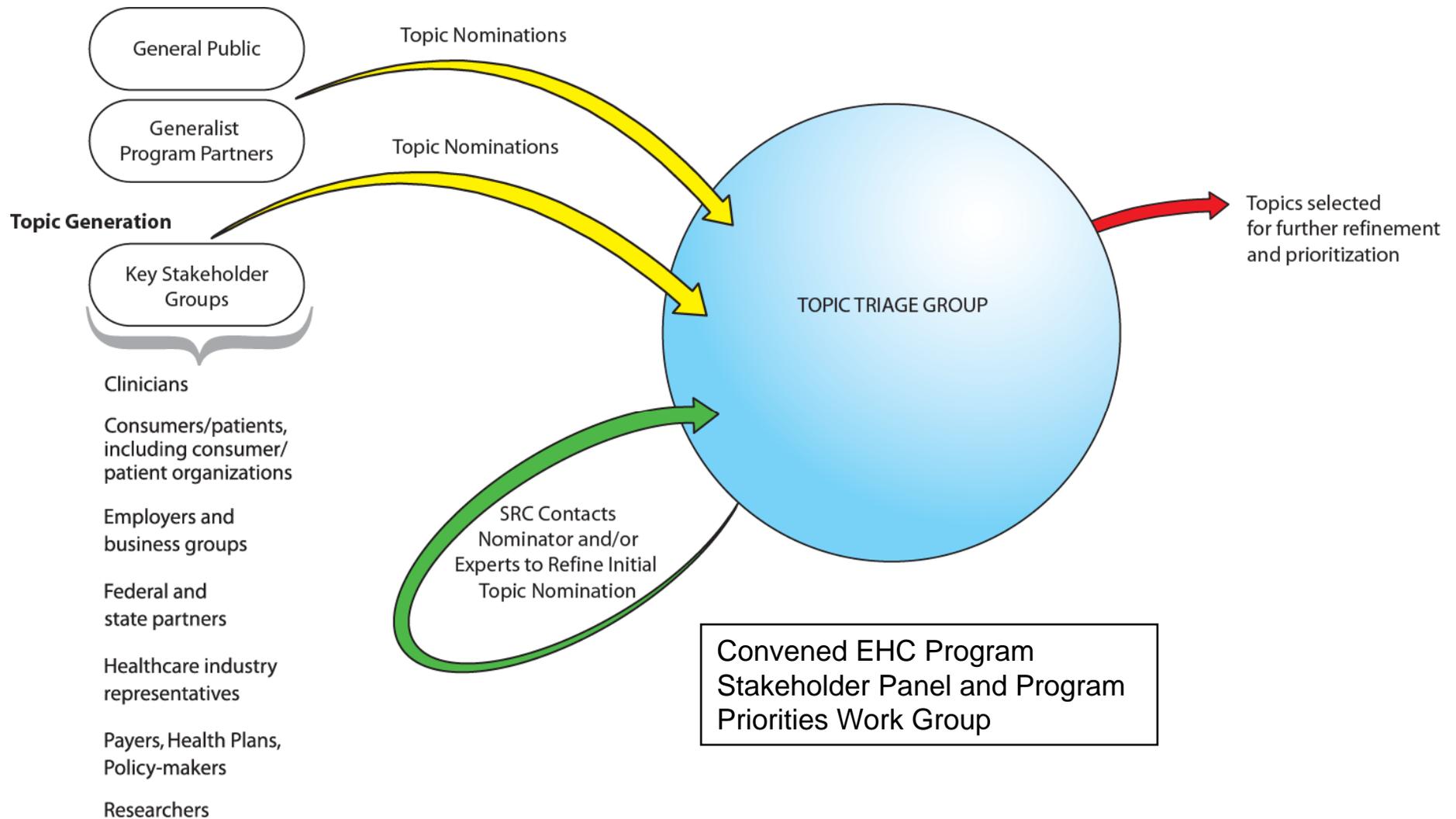
The John M. Eisenberg Center for Clinical Decisions and Communications Sciences

- Data synthesis results in the production of comparative effectiveness reviews
- The Eisenberg Center uses reviews to construct key messages that are disseminated into products tailored for three populations:
 - a. Providers
 - b. Patients
 - c. Policy-makers

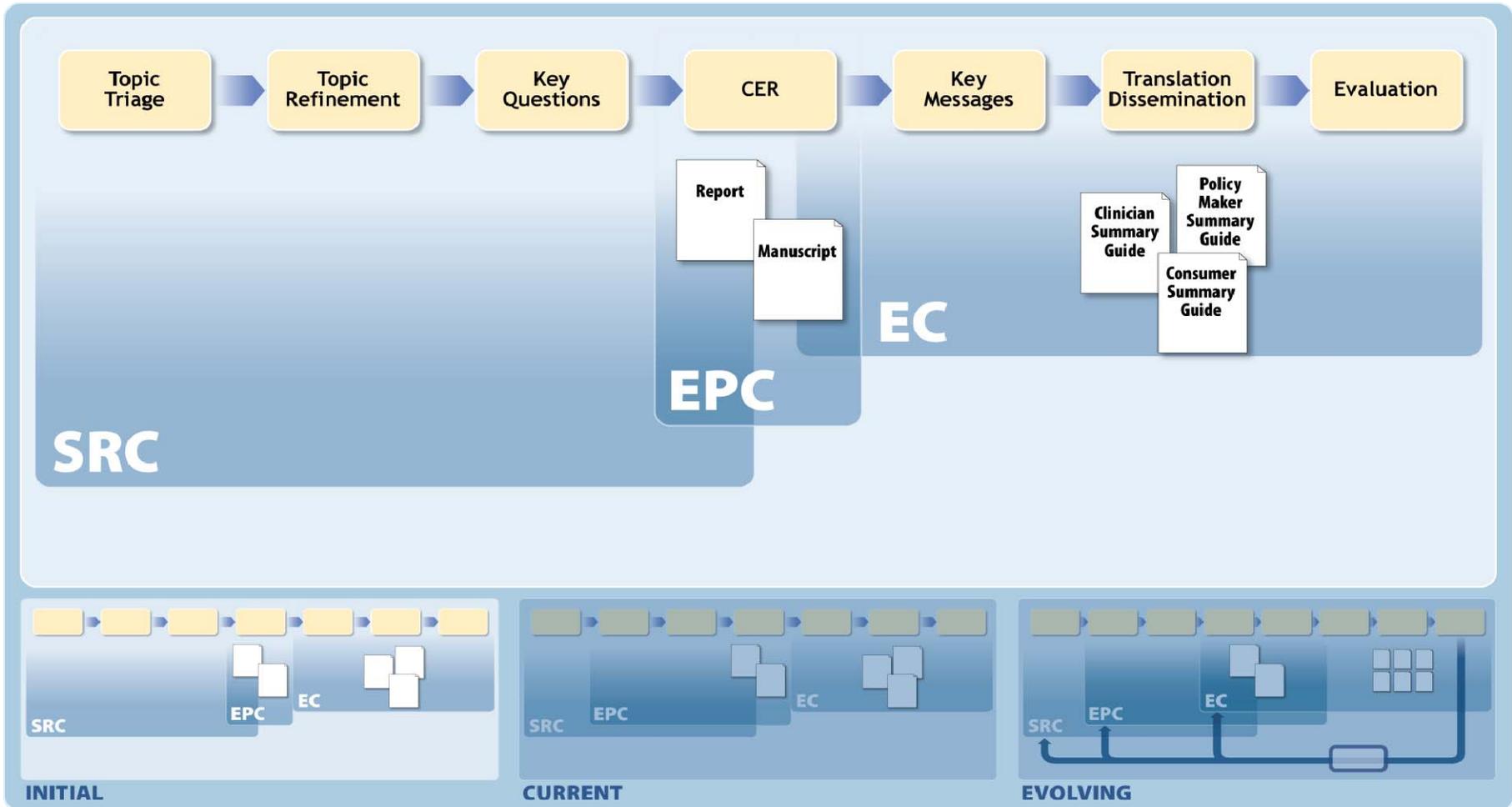
The Research Process



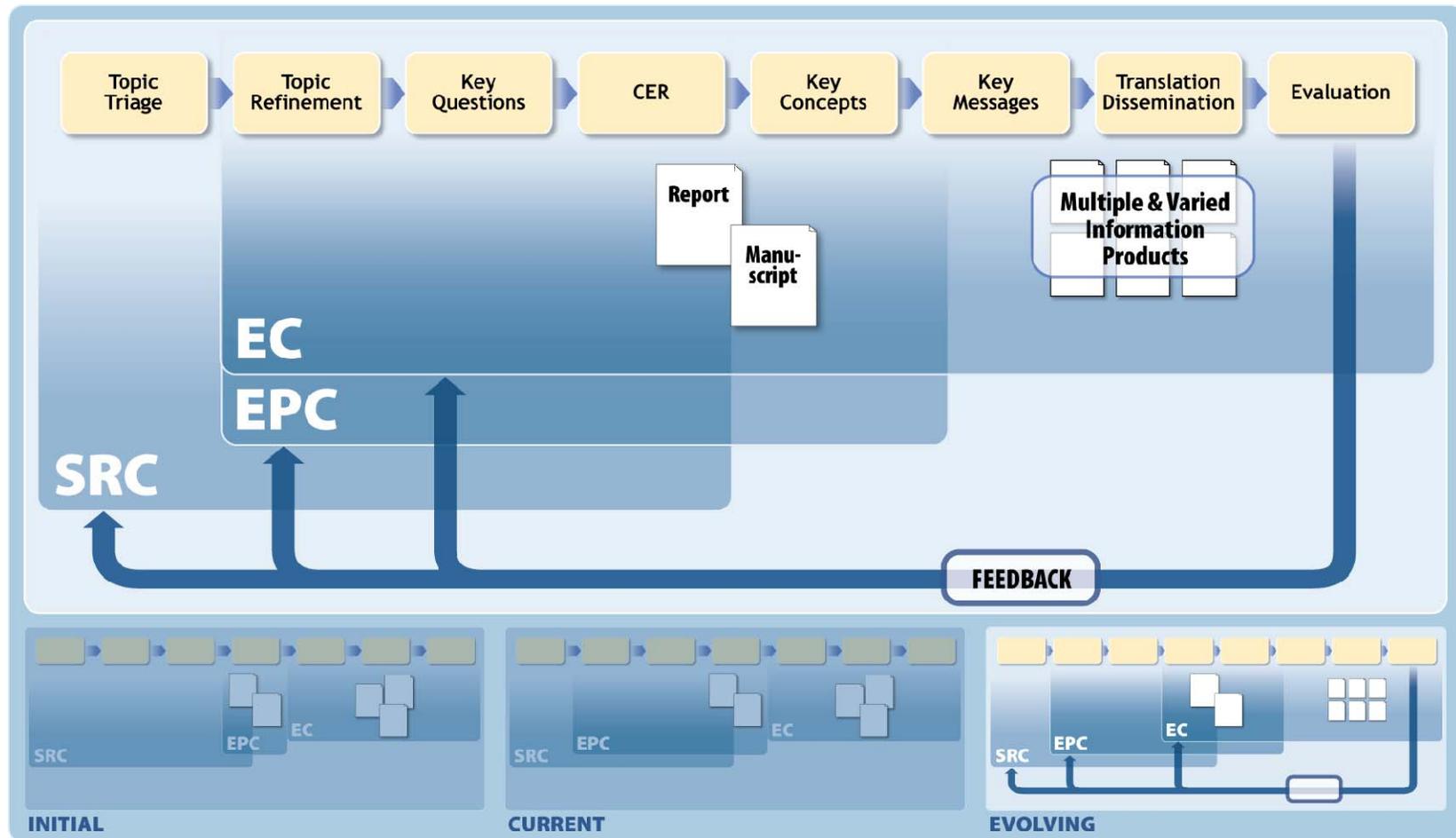
Engage Stakeholders in Topic Selection for the EHC Program



EHC Process – Initial



EHC Process – Evolving



How Products Are Used

- ✓ Inform clinical guideline development
- ✓ Identify future research priorities
- ✓ Inform policy, including coverage decisions
- ✓ Inform clinician and patient decisions



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Roles for the Implementation Research Community

- Obligation to build on dissemination
- Implementation community can redefine dissemination function
- Innovative opportunities to narrow translation gap

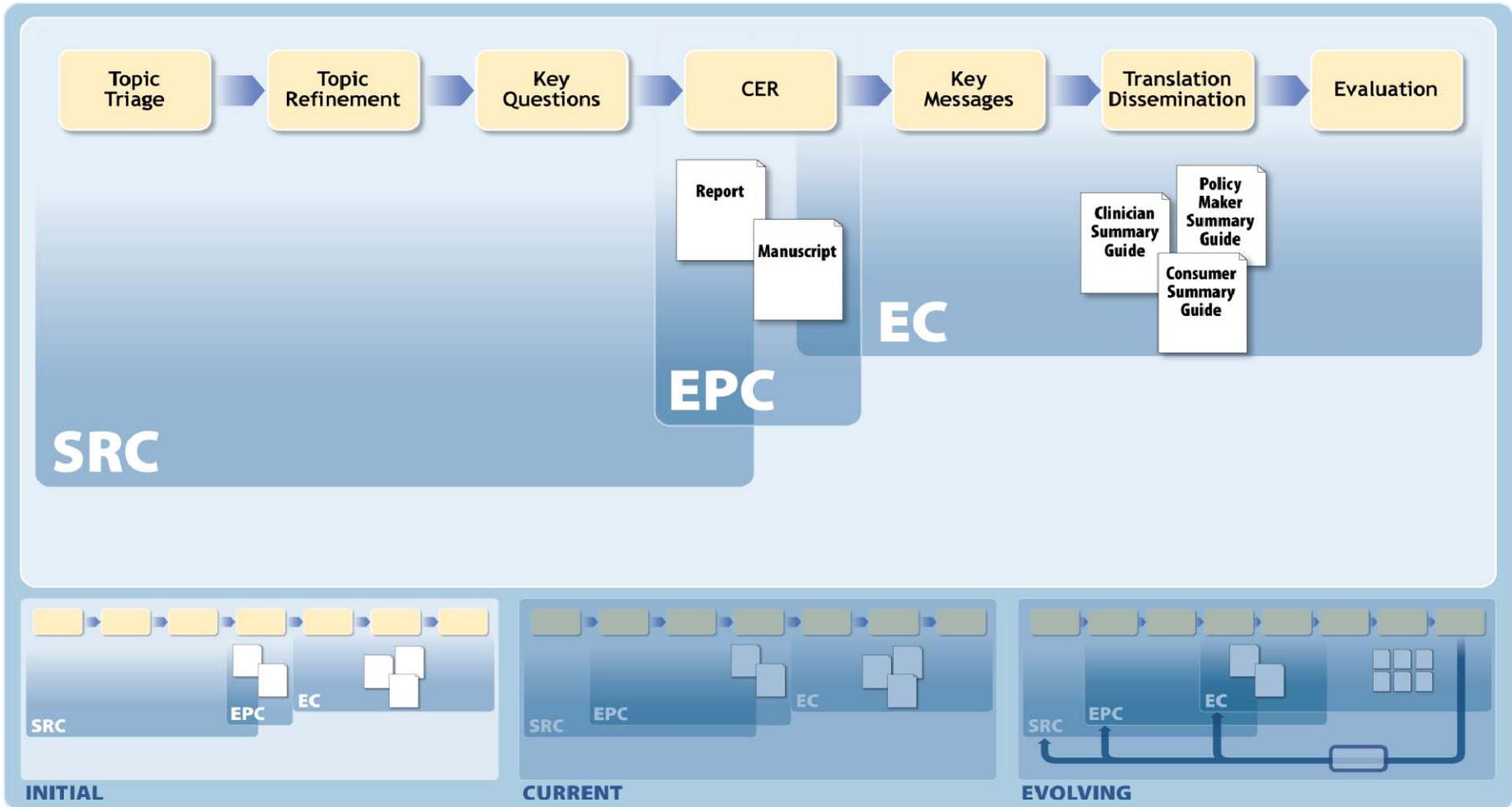
Implementation of key messages

- Passive recipient of CER key dissemination messages
- Traditional implementation role
 - VA QUERI Steps 4, 5, 6
- Obligation for implementation community
 - Dissemination is not adequate
 - Implementation science is necessary to ensure uptake of effectiveness data

Redefining Dissemination

- Actively make transition from dissemination to implementation seamless
- Work actively with dissemination leaders, e.g., Eisenberg Center
 - Potential roles
 - Design and evaluation of dissemination products
 - Shape development of key messages

EHC Process – Initial

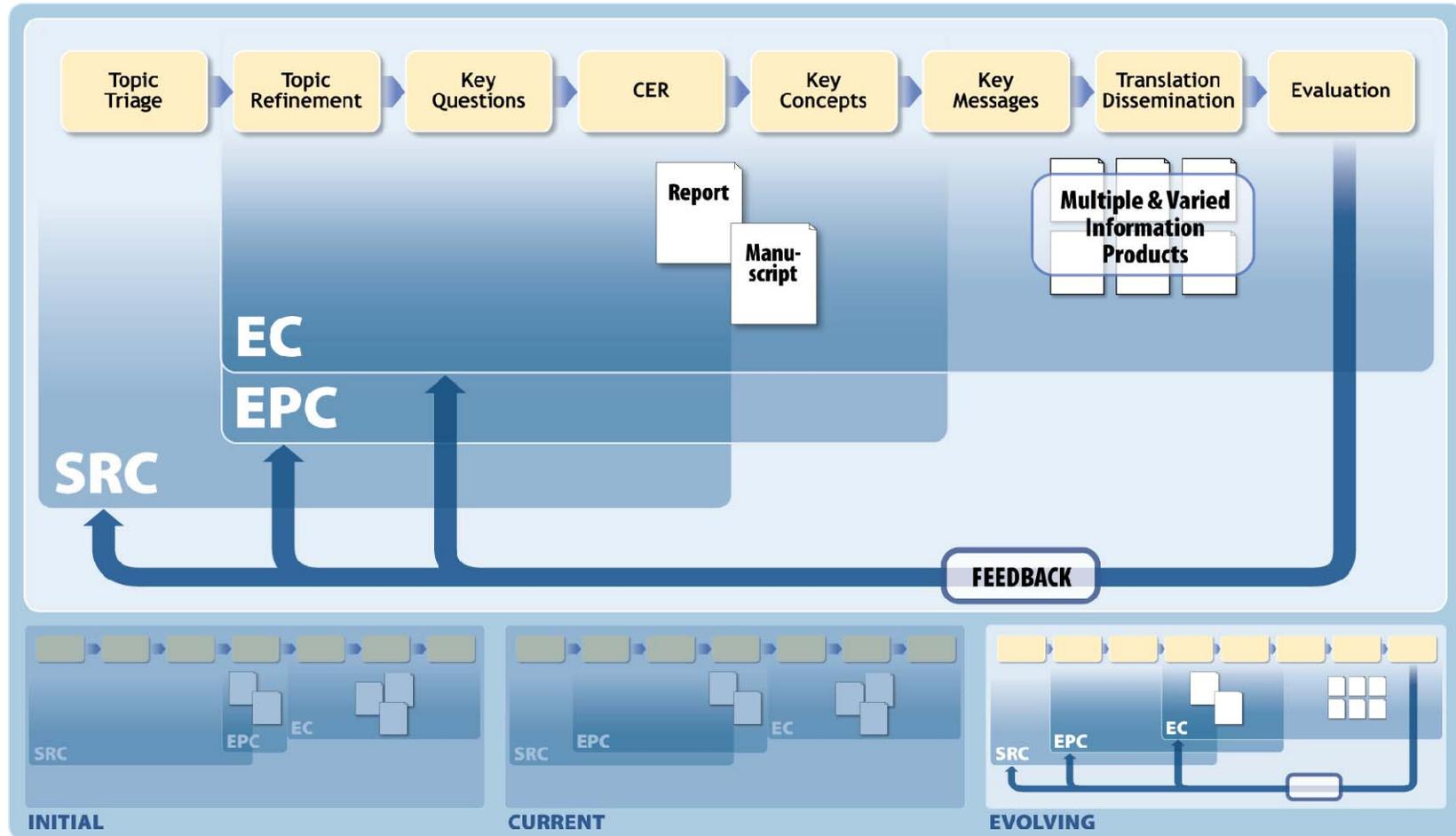


“From a Science of Dissemination to Science of Implementation”

Margarita Alegria *HSR. 44:5-14.*

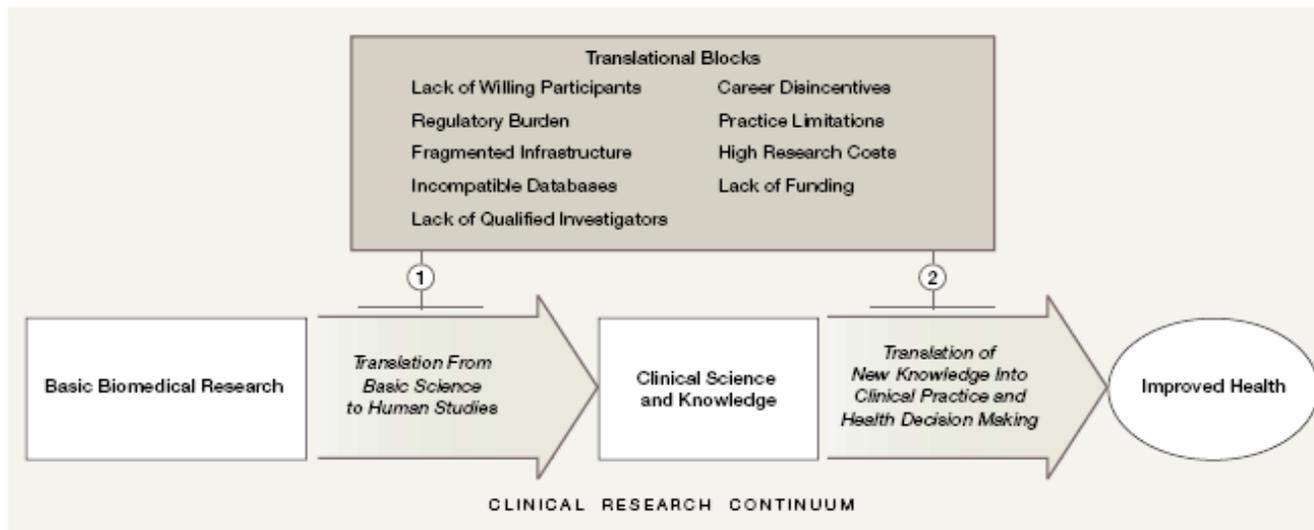
- Bring implementation variables into key message framing
 - Contextual and local variables
 - Measurement models
- Earlier consideration of implementation
 - Be a part of the discussion
 - Key concept development
 - Key clinical question development
 - Mirrors evolution of Eisenberg Center

EHC Process – Evolving



Translation Barriers

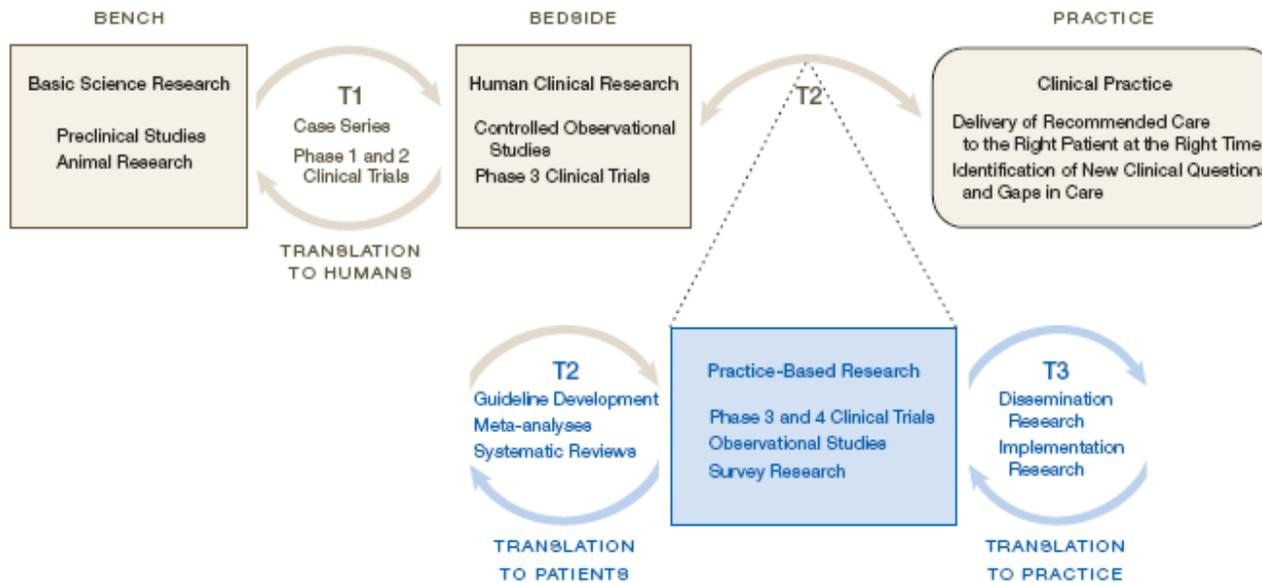
Figure 1. The 2 Translational Blocks in the Clinical Research Continuum



Sung et al. JAMA. 2003, 289(10)

Translation Highway

Figure. "Blue Highways" on the NIH Roadmap



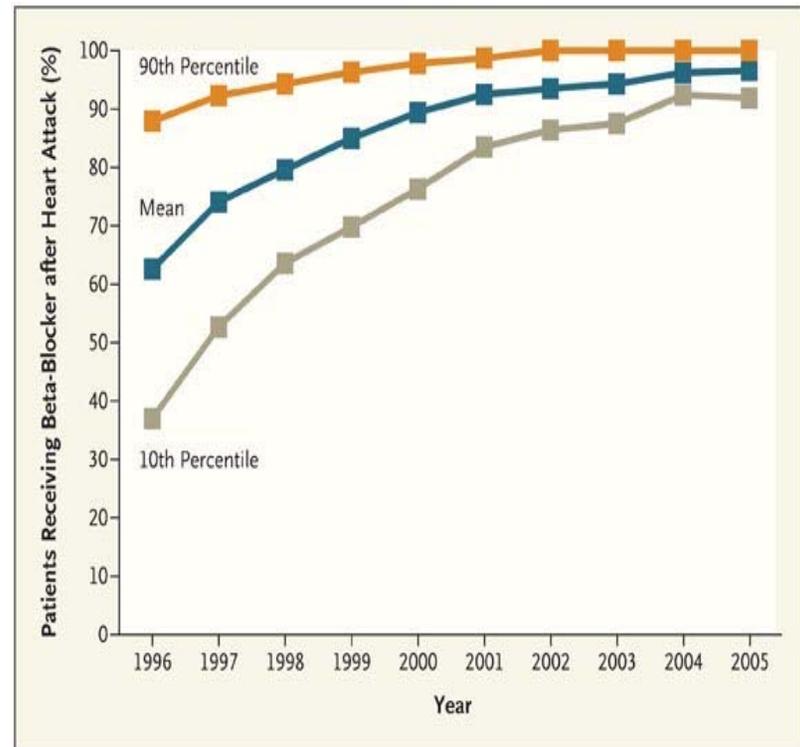
Westfall et al. JAMA. 2007, 297(44)

Translation Time Lag

- 17 year lag from first publication to highly cited clinical trial

Contopoulos-Ioannidis et al. *Science* 321:1298-99

- B-Blockers in MI
 - 16 year lag 1980 - 1996 between BHAT trial and designation as quality measure
 - In 1996, only 62.5%
 - In 2005, over 90%



Lee TH. *NEJM*. 357(12)

Linear Approach to Translation

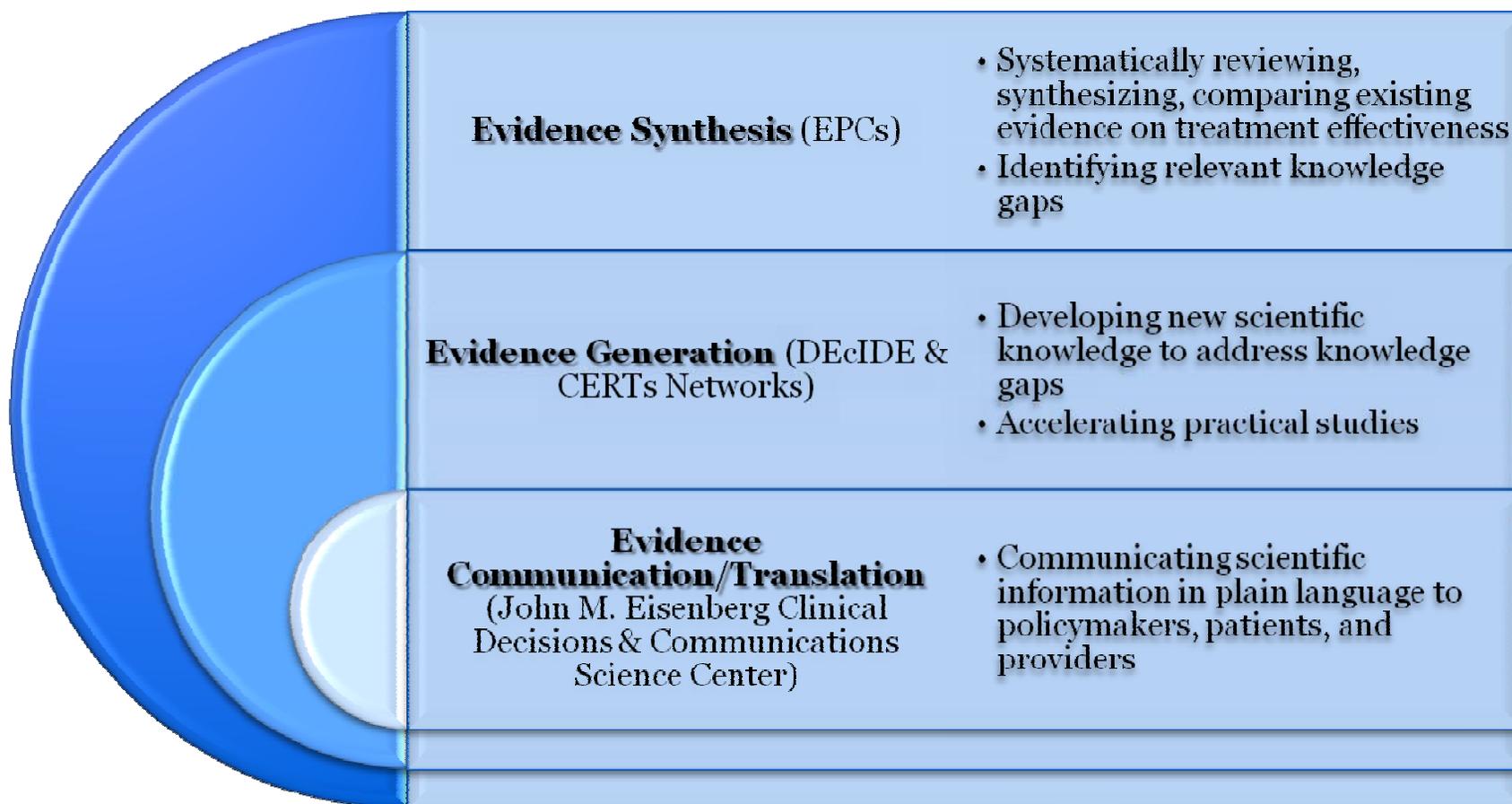
- T1 → T2
 - 17 years for undisputed clinical trials
- T2 → T3
 - 10 years for widespread guideline implementation
- Does the linear approach to translation contribute to the excessive lag in implementation?

Novel Opportunities

- Implementation Research Community can use novel (non-linear) approaches
 - Integrate Implementation variables into CE reports (synthesis)
 - Include Implementation outcomes as analytic components of CER (generation)

AHRQ

Effective Health Care Program



Implementation and Comparative Effectiveness Reviews

- Include implementation variables within CE reviews
 - Contextual factors, geographic and subgroup variance, measures of reach/penetration
- Incorporate these variables as part of the the cost-benefit calculations
 - This could actually change key dissemination messages

Implementation and CE Research

- Integrate Implementation into CER studies
 - Understand how implementation variables can change the analysis of CER results

(Berwick JAMA 2008: Rapid Response Teams)

 - Barriers to intervention uptake, adoption
 - Unexpected outcome event rates
 - Include implementation process and outcome measures as comparative effectiveness outcomes during CER generation

Implementation Should Redefine Comparative Effectiveness

- Efficacy is the measurement of validity in highly controlled settings
- Effectiveness is the measurement of validity in the real-world
 - Implementation should be the bridge
 - Implementation science should establish the bounds for comparative effectiveness
 - Constant feedback between CER and observations of implementation effects

Recasting Translation Pathway

The Three Translations Required to Improve the Quality of Primary Percutaneous Coronary Intervention (PCI) in Patients with Acute Myocardial Infarction.		
Translational Tier	Type of Research	Products of Research
T1	Clinical efficacy research	Proof that primary PCI is more effective than fibrinolytic therapy in controlled clinical trials
T2	Comparative-effectiveness and health services research	Establishment of a 90-minute standard for the interval between arrival in the emergency department and the initiation of coronary intervention
T3	Implementation research	Identification of hospital-based strategies to reduce the time to PCI and establishment of consortium to guide local integration of strategies

Naik and Petersen. NEJM 2009

- Not really an example of linear translation
 - Identification “door-to-balloon time” was an implementation outcome
 - Implementation scientists identified process measures to enhance this outcome
 - Continuous cycles of efficacy & implementation

For Further Discussion

- 1) Integrating implementation within the CER dissemination products
- 2) Incorporating implementation outcomes in reviews of comparative effectiveness
- 3) Making implementation variables a part of comparative effectiveness studies

ACKNOWLEDGEMENTS

- Chantele Singleton—clinical research manager at HSRD CoE and the John M. Eisenberg Center for Clinical Decisions and Communications Sciences at Baylor College of Medicine.

Comments & Questions

