



Applying Implementation Science to Improve Care

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Outline

➤ Part 1: Introduction, motivation

Part 2: Policy/practice foundations

Part 3: Implementation science frameworks

Part 4: Key resources, implications,
conclusions

What is implementation research?

1. Clinical research produces new evidence, innovation
2. Initial efforts to promote implementation
3. Measurement of rates of implementation – and implementation (quality) gaps
4. Research to develop and evaluate *implementation programs** to increase adoption

* *quality improvement programs, practice change programs (interventions)*

Chapter 1. New evidence

ORIGINAL CONTRIBUTION

JAMA-EXPRESS

Effects of Controlled-Release Metoprolol on Total Mortality, Hospitalizations, and Well-being in Patients With Heart Failure

The Metoprolol CR/XL Randomized Intervention Trial in Congestive Heart Failure (MERIT-HF)

Conclusions In this study of patients with symptomatic heart failure, metoprolol CR/XL improved survival, reduced the need for hospitalizations due to worsening heart failure, improved NYHA functional class, and had beneficial effects on patient well-being.

JAMA. 2000;283:1295-1302

www.jama.com

Chapter 2. *Advocacy* for adoption

JAMA[®]

The Journal of the American Medical Association

Vol. 283 No. 10, March 8, 2000

Editorial

β -Blocker Therapy for Heart Failure

The Evidence Is In, Now the Work Begins

Robert M. Califf, MD; Christopher M. O'Connor, MD

JAMA. 2000;283:1335-1337.

Chapter 2. *Guidance for adoption*

Circulation

JOURNAL OF THE AMERICAN HEART ASSOCIATION

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ACC/AHA 2005 Guideline Update for the Diagnosis and Management of Chronic Heart Failure in the Adult: A Report of the American College of Cardiology/American Heart Association Task Force on Practice Guidelines (Writing Committee to Update the 2001 Guidelines for the Evaluation and Management of Heart Failure): Developed in Collaboration With the American College of Chest Physicians and the International Society for Heart and Lung Transplantation: Endorsed by the Heart Rhythm Society

Sharon Ann Hunt, William T. Abraham, Marshall H. Chin, Arthur M. Feldman, Gary S. Francis, Theodore G. Ganiats, Mariell Jessup, Marvin A. Konstam, Donna M. Mancini, Keith Michl, John A. Oates, Peter S. Rahko, Marc A. Silver, Lynne Warner Stevenson, Clyde W. Yancy, Elliott M. Antman, Sidney C. Smith, Jr, Cynthia D. Adams, Jeffrey L. Anderson, David P. Faxon, Valentin Fuster, Jonathan L. Halperin, Loren F. Hiratzka, Sharon Ann Hunt, Alice K. Jacobs, Rick Nishimura, Joseph P. Ornato, Richard L. Page and Barbara Riegel

Circulation 2005;112:e154-e235; originally published online Sep 13, 2005;

Chapter 2. Medical society, healthcare system support for adoption

- American Heart Association “Get with the Guidelines”
- VA/DoD guideline development, implementation
- Kaiser Permanente, HealthPartners, other private systems

Chapter 3. Measurement of adoption rates (US 2002-03; UK 2005)

Adherence to Heart Failure Quality-of-Care Indicators in US Hospitals

Analysis of the ADHERE Registry Arch Intern Med. 2005;165:1469-1477

*Gregg C. Fonarow, MD; Clyde W. Yancy, MD; J. Thomas Heywood, MD;
for the ADHERE Scientific Advisory Committee, Study Group, and Investigators*

Trends and inequities in beta-blocker prescribing for heart failure

Sunil M Shah, Iain M Carey, Stephen DeWilde, Nicky Richards and Derek G Cook

British Journal of General Practice, December 2008

Chapter 4.

Trials of implementation programs

Health Services and Outcomes Research

Clinical Reminders Attached to Echocardiography Reports of Patients With Reduced Left Ventricular Ejection Fraction Increase Use of β -Blockers A Randomized Trial

Paul A. Heidenreich, MD, MS; Parisa Gholami, MPH; Anju Sahay, PhD;
Barry Massie, MD; Mary K. Goldstein, MD, MS

Conclusions—A reminder attached to the echocardiography report increased the use of β -blockers in patients with depressed left ventricular systolic function. (*Circulation*. 2007;115:2829-2834.)

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Effectiveness of implementation and QI programs varies, but is generally low

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- ❖ *Translational roadblocks; implementation gap*

- ❖ *Quality chasm*

Part 3: Implementation science frameworks

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The *Clinical Research Crisis*

- AAMC Clinical Research Summit: *Clinical Research: A National Call to Action* (Nov 1999)
- IoM Clinical Research Roundtable (2000-2004)

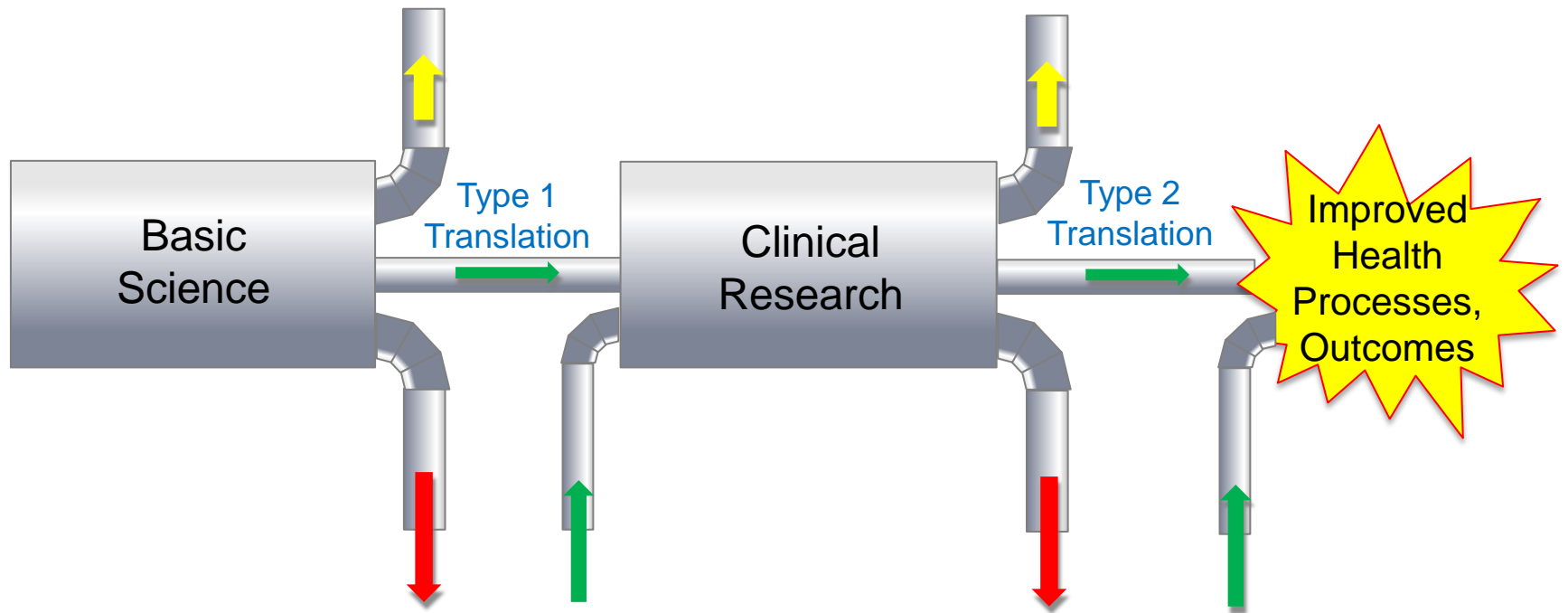
Central Challenges Facing the National Clinical Research Enterprise *JAMA. 2003;289:1278-1287*

Clinical Research in the United States at a Crossroads

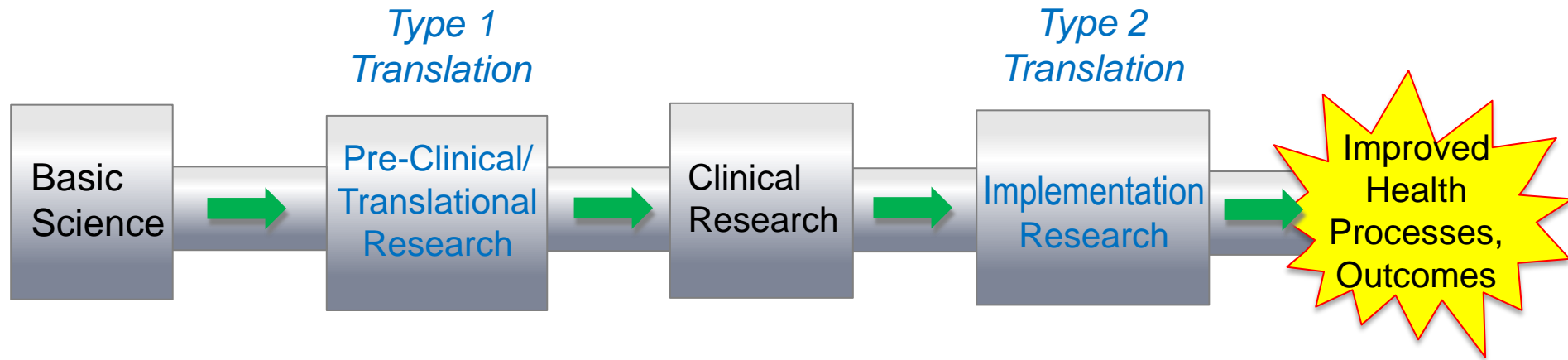
Proposal for a Novel Public-Private Partnership to Establish a National Clinical Research Enterprise *JAMA. 2004;291:1120-1126*

- UK *Cooksey Report* (2006), other US and non-US reports

Translational research



Translational research



Implementation science definition

Implementation research is the scientific study of methods to promote the systematic uptake of research findings and other evidence-based practices into routine practice, and, hence, to improve the quality and effectiveness of **health services**.

It includes the study of influences on **healthcare** professional and organizational behavior.

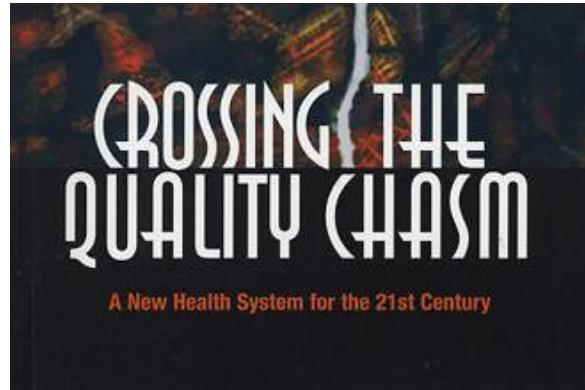
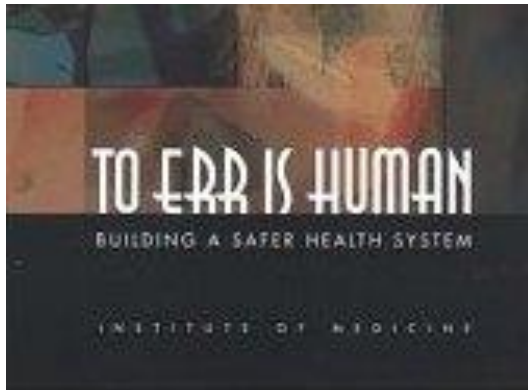
Eccles and Mittman, 2006

The *Tower of Babel* problem

- Knowledge translation, translational research
- Research utilization, knowledge utilization
- Knowledge-to-action, knowledge transfer & exchange
- Technology transfer
- Dissemination research
- Quality improvement research, improvement science
- Delivery system science
- T-1, T-2, T-3, T-4
- Etc.

The “Quality Chasm”

- Institute of Medicine (1999, 2001)



- Quality “report cards” (US, international)

The Quality of Health Care Delivered to Adults in the United States

Elizabeth A. McGlynn, Ph.D., Steven M. Asch, M.D., M.P.H., John Adams, Ph.D.,
Joan Keesey, B.A., Jennifer Hicks, M.P.H., Ph.D., Alison DeCristofaro, M.P.H.,
and Eve A. Kerr, M.D., M.P.H. N Engl J Med 2003;348:2635-45.

Implementation science, improvement science, delivery system science

- ◎ QI often focuses on the “here and now,” addressing a specific quality gap via rapid-cycle, iterative improvement
- ◎ IS often attempts to close an implementation gap by developing and rigorously evaluating a fixed implementation strategy across multiple sites, emphasizing theory, contextual factors, (sometimes) mediators, moderators, mechanisms
- ◎ Delivery system science is the “basic science” of implementation and improvement, examining the structure, operation and impacts of delivery systems and delivery system arrangements

Outline

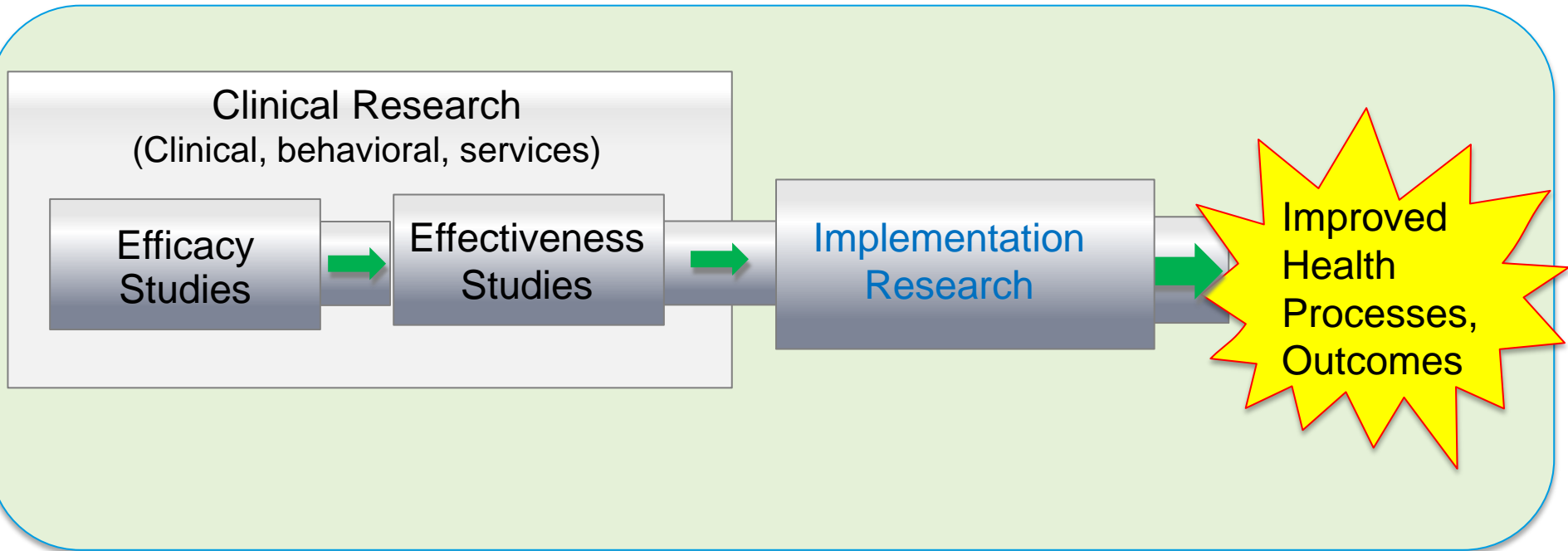
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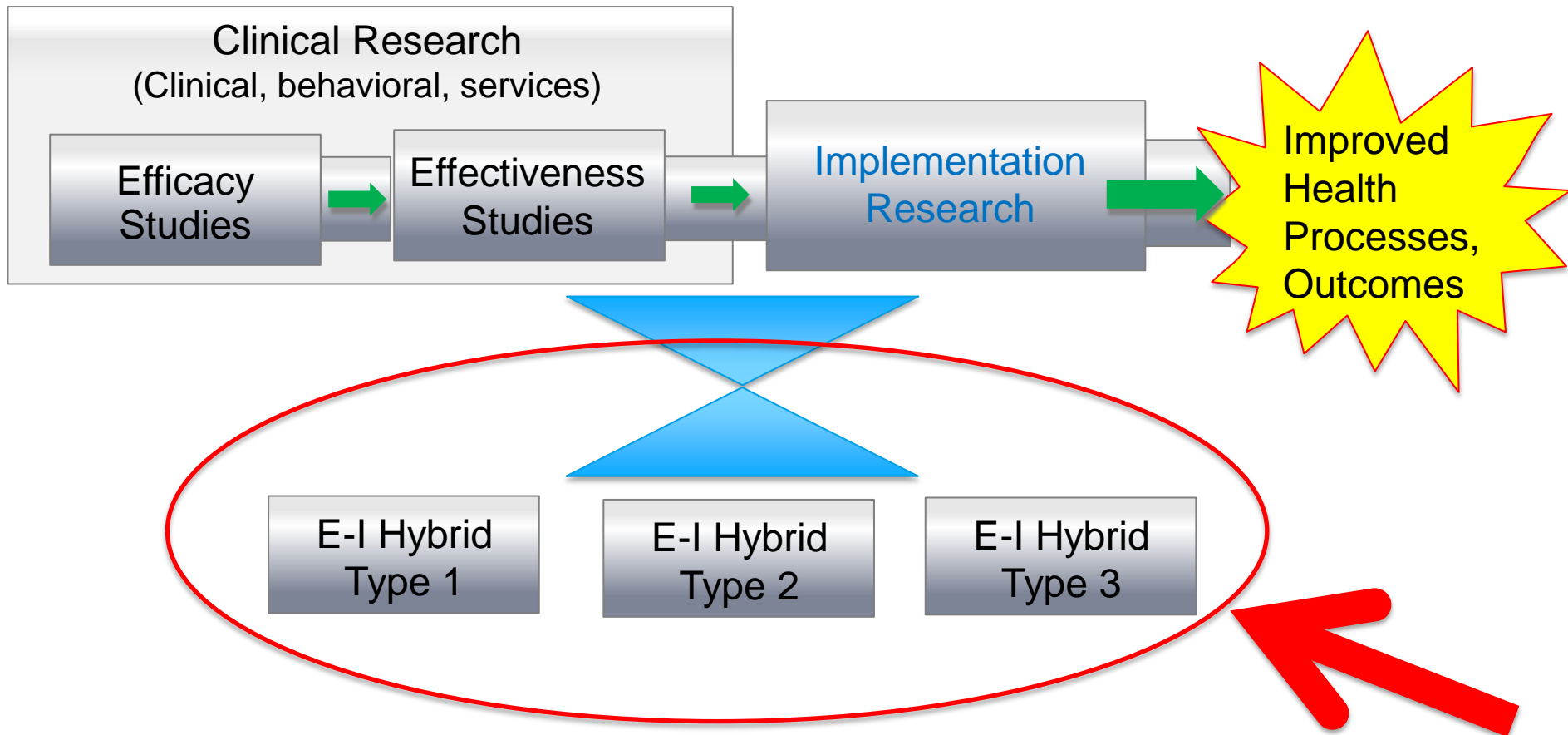
Gaps in the pipeline: *Efficacy vs. effectiveness studies*



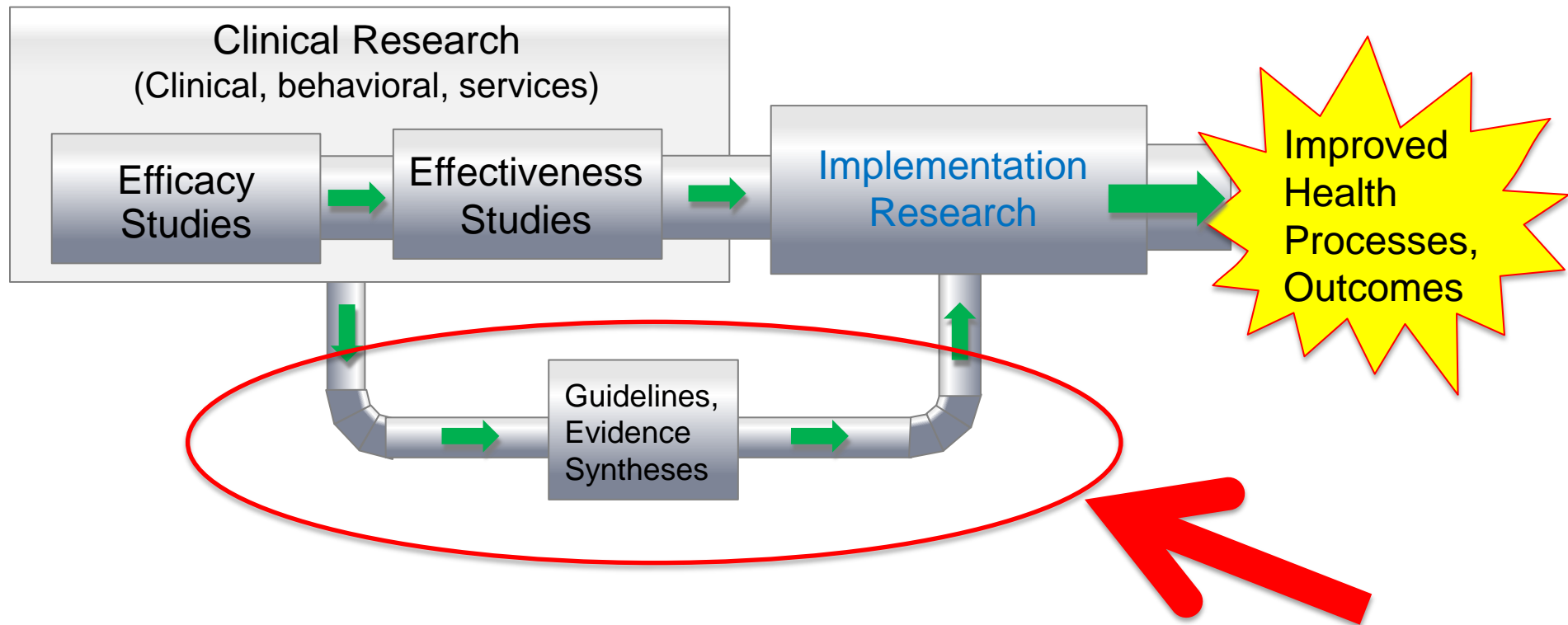
Clinical research vs. implementation research

Study type Study feature	Clinical research	Implementation research
Aim: evaluate a / an ...	clinical intervention	implementation strategy
Typical intervention	drug, procedure, therapy	clinician, organizational practice change
Typical outcomes	symptoms, health outcomes, patient behavior	adoption, adherence, fidelity
Typical unit of analysis, randomization	patient	clinician, team, facility

Combining phases: *Hybrid effectiveness-implementation designs*



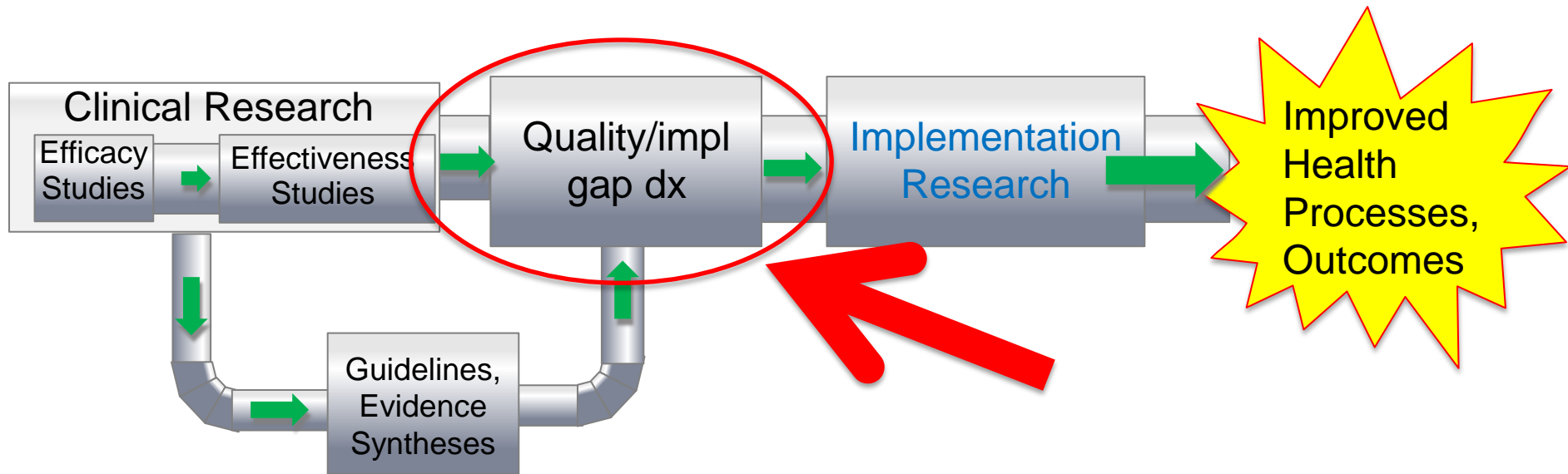
Gaps in the pipeline: *Evidence syntheses, guidelines*



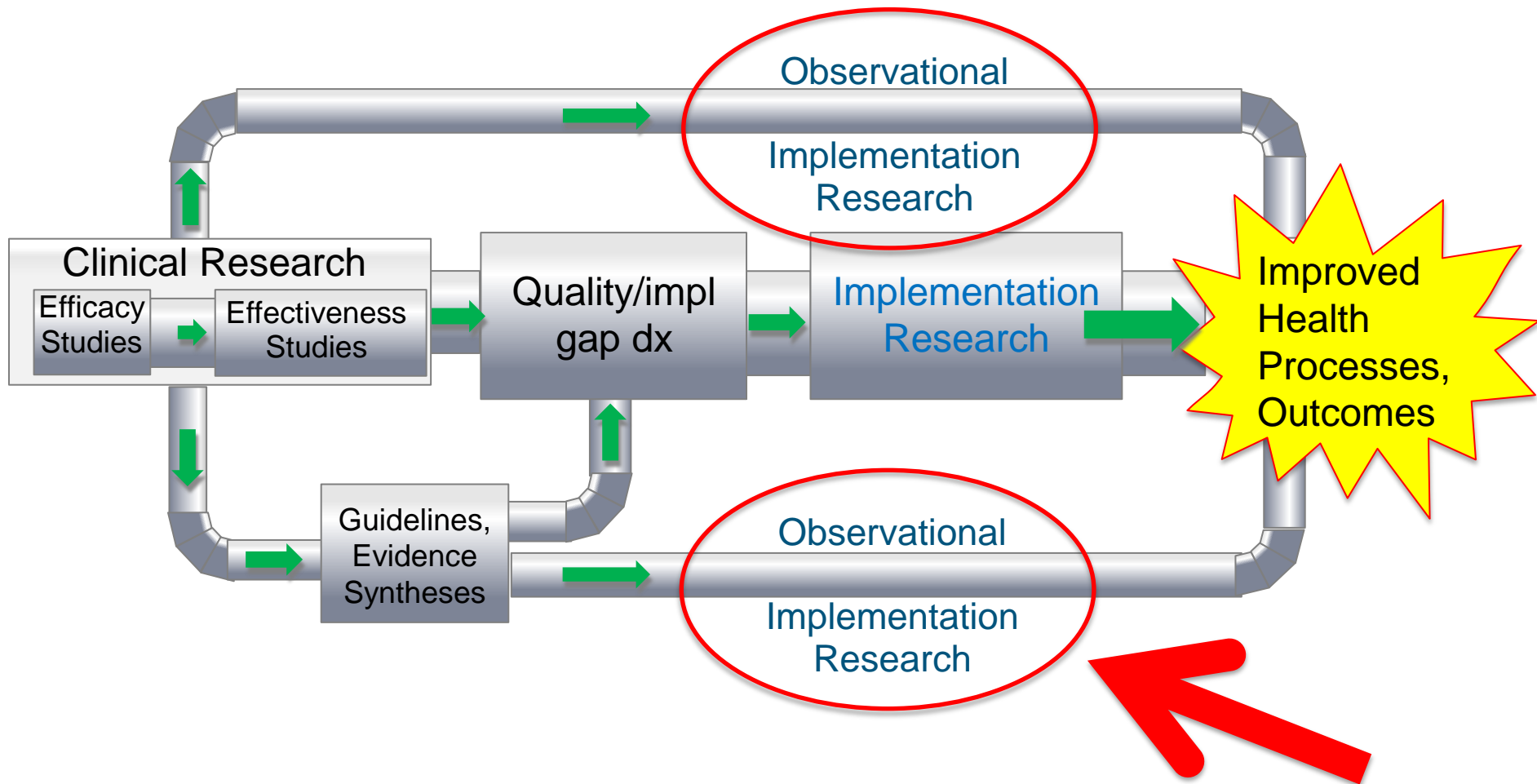
Gaps in the pipeline:

Pre-implementation studies

(document, diagnose quality/implementation gaps)



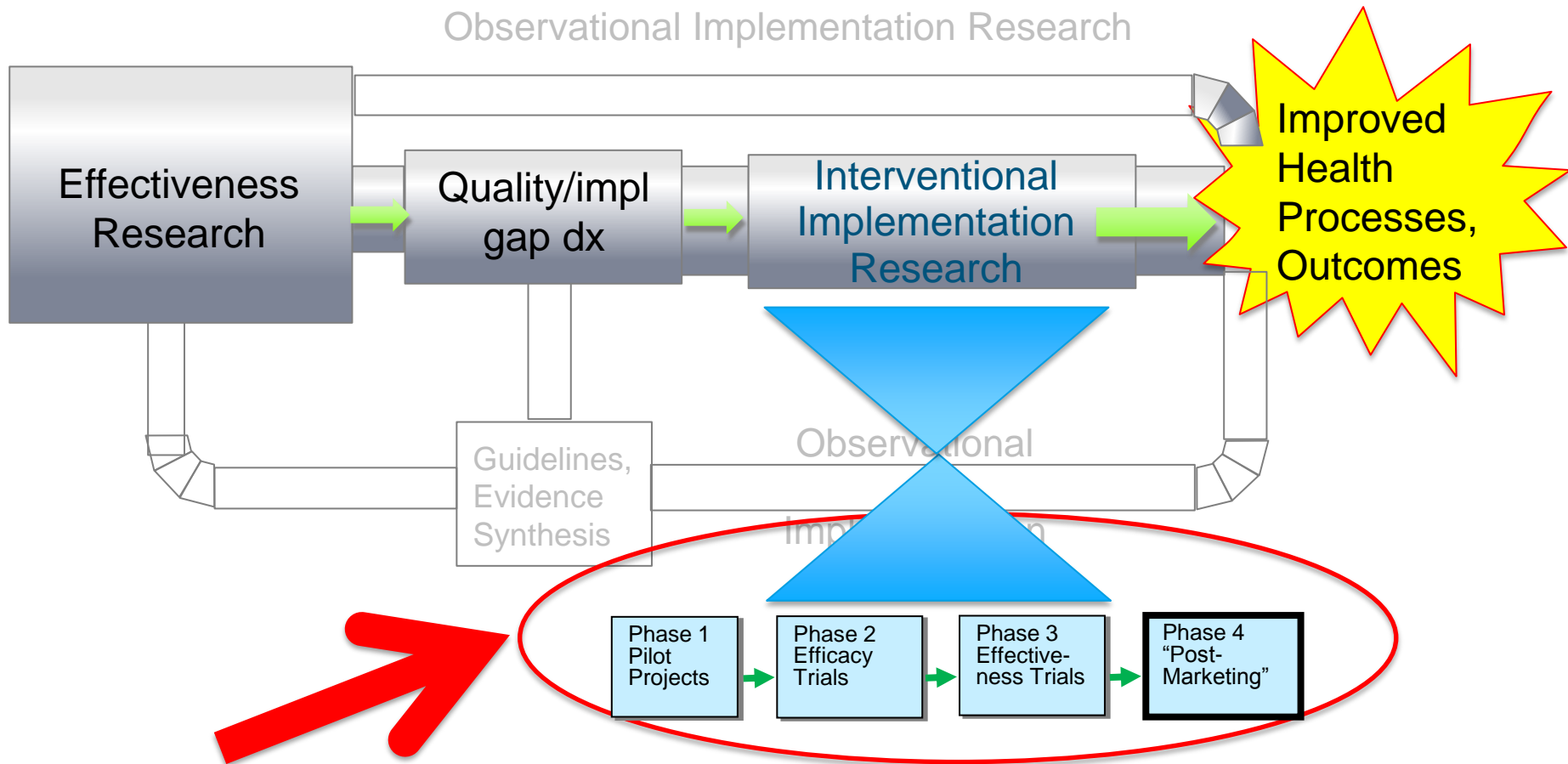
Gaps in the pipeline: *Observational implementation studies*



Observational implementation studies

- Naturally-occurring (policy/practice-led) vs. artificial (researcher-led) implementation processes
- Maximize external validity
- Large sample sizes; maximize power to detect contextual influences
- Examine local adaptation processes and effects

Gaps in the pipeline: *Phased implementation trials*



Gaps in the pipeline:

Phased implementation trials

<u>Phase</u>	<u>Study Type</u>	<u>Form of Evaluation</u>
Pre-trial	Program design	Conceptual design of implementation program and underlying (logic) model from theory, prior empirical research
Phase 1	Pilot / formative	Pilot test, assess feasibility, formative evaluation and refinement, develop intervention/evaluation protocols
Phase 2	Efficacy	Small-scale rigorous trial in controlled settings with ongoing intervention support; emphasis on internal validity
Phase 3	Effectiveness	Large-scale rigorous trial under routine conditions in varied settings; emphasis on external validity
Phase 4	Monitoring	Ongoing monitoring and feedback

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US, international resources

- NIH Conference on the Science of Dissemination and Implementation (2007–2014)
- NIH grant funding, review committee, training programs
- Journals: Implementation Science, Translational Behavioral Medicine, special issues of general and specialty journals
- NIH CTSAAs (selected), PBRNs (AHRQ, other), VA QUERI, NIH-funded Dental PBRN
- Patient-Centered Outcomes Research Institute (PCORI), AAMC Research on Care Community (ROCC)
- Knowledge Translation Canada, other CIHR programs

Critical resources

- Practice-based research network or other “laboratory”
- Fully engaged stakeholders
- Partnerships and partnership research approaches
- Social/behavioral science expertise
- Management/leadership skills, training, aptitude:
local, regional, national policy/practice engagement
- Academic recognition