



Introduction to Practice-Based Research Networks

Jim Werner, PhD, Kurt Stange, MD, PhD
Case Western Reserve University School of Medicine



We'll cover...

- What are PBRNs?
- Why are they useful?
- What is their history?
- What types of research do they conduct?
- What challenges do PBRNs face?

What is a PBRN?

- A group of clinicians principally devoted to the care of patients and who are committed to studying and improving their specialty
- Affiliate with each other (and often with academic or professional organizations) to investigate the phenomena of clinical practice
- Voluntary; study participation is optional
- 5 primary components: clinicians, investigators, Board, Director, coordinator
- Characterized by an organizational structure that transcends a single study

PBRNs

- Engage clinicians on the frontlines of patient care
 - Develop or frame research questions
 - Gather data
 - Interpret findings
 - Implement findings
- Produce findings that are generalizable, transportable & readily translated into practice

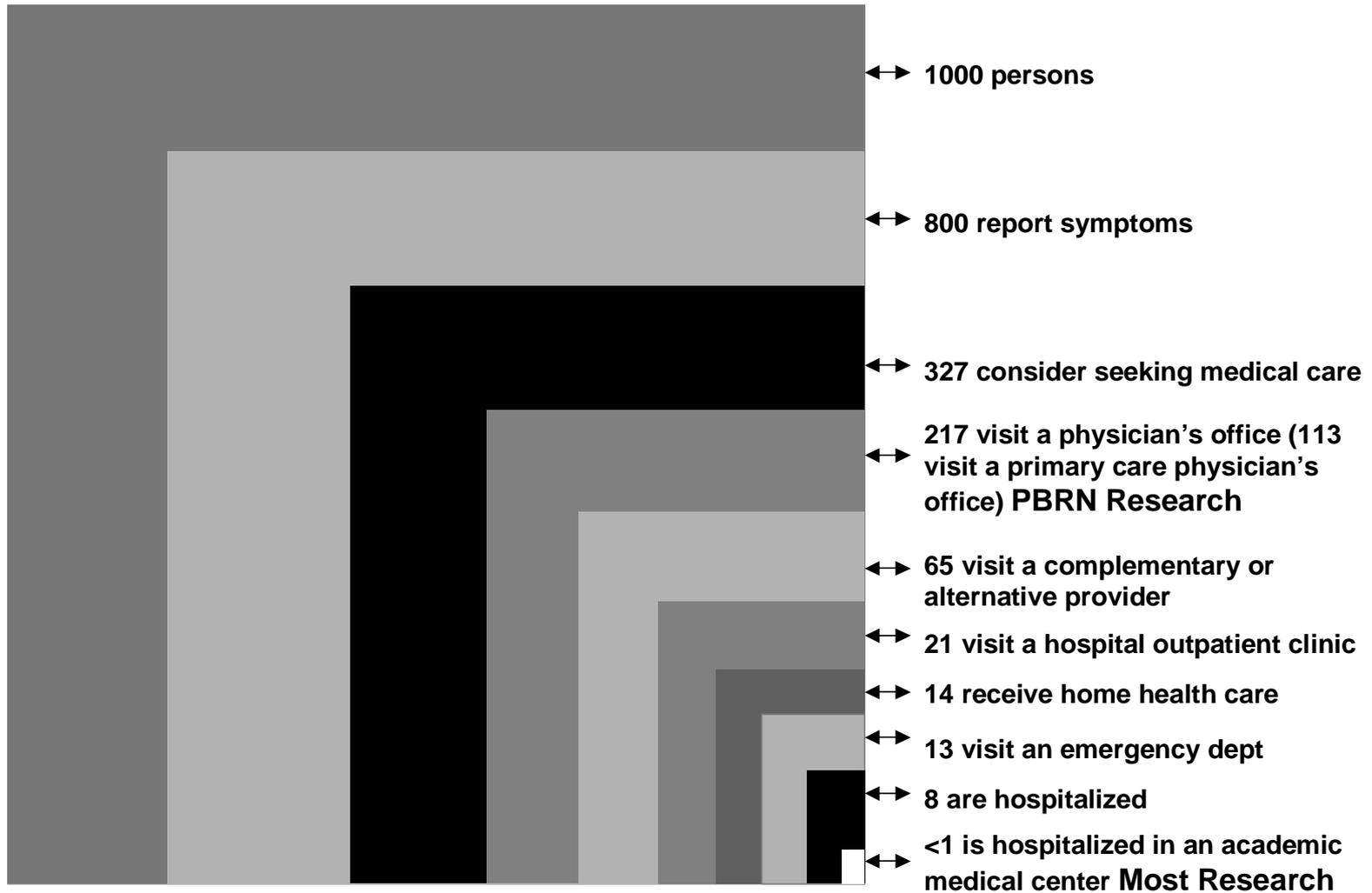
Source: <http://ahrq.gov/research/pbrnfact.htm>

Guidelines by AHRQ

- At least 15 ambulatory practices and/or 15 clinicians
- A statement of mission or purpose
- A Director; administrative, financial, planning
- A support staff of at least one person
- A mechanism to solicit feedback from patients and/or communities
- An organizational structure independent of any single study
- Processes for communication

Why are PBRNs Useful?

Why Practice-Based Research is Needed



Results of a reanalysis of the monthly prevalence of illness in the community and the roles of various sources of health care. Green LA et al., *N Engl J Med* 2001, 344:2021-2024.

Biomedical Research

- Diseases are studied in highly selected patients
- Isolates single diseases or disease processes
- Often excludes psychosocial context of patients' lives

PBRN Research

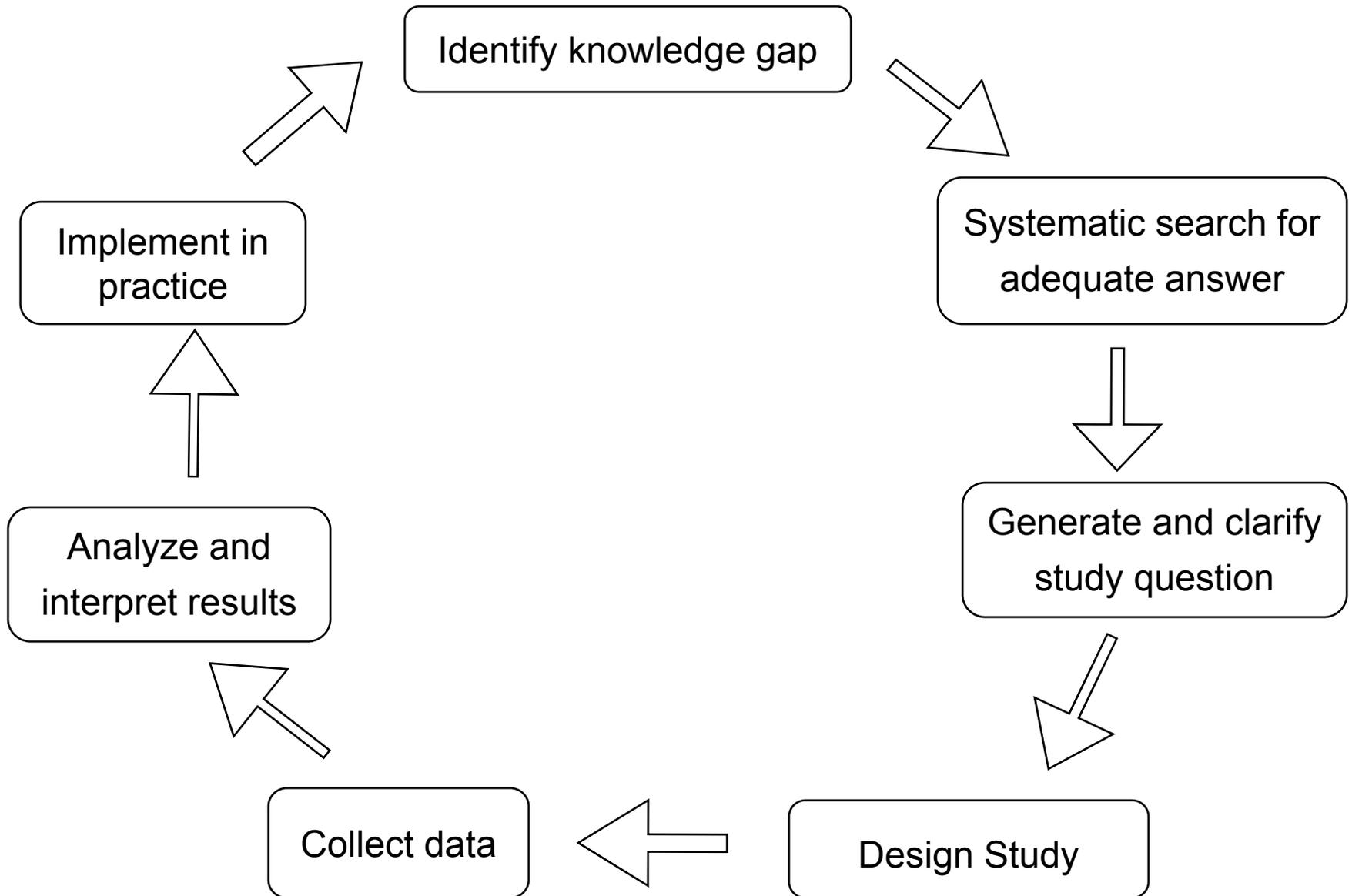
- Studies patients where most health care is delivered
- Comorbidities are common & included
- Psychosocial factors often studied
- Caveat: PBRNs can also participate in biomedical research

Practice-based research takes place
where most of the people get most
of their care most of the time.

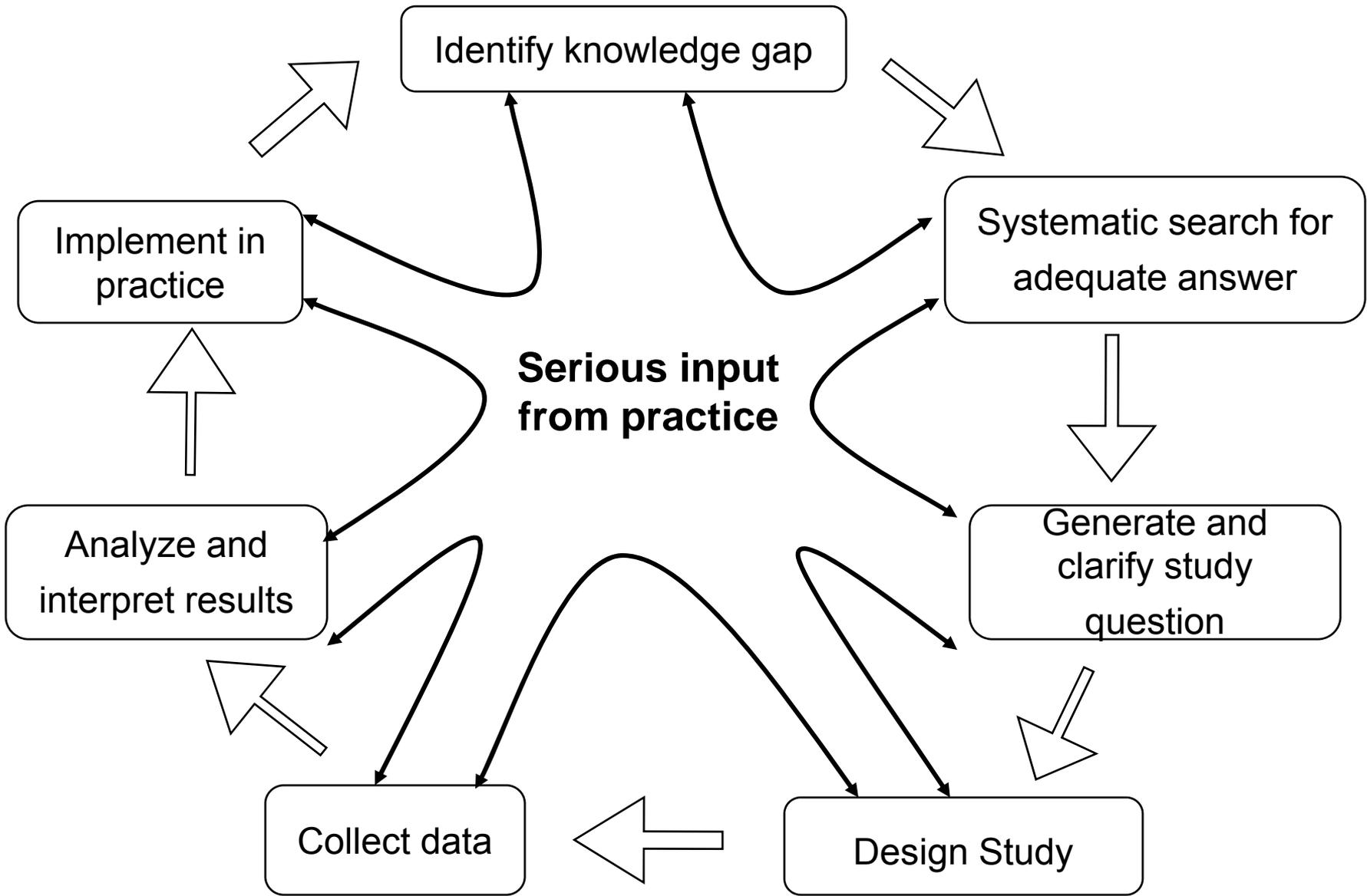
- L.A. Green, MD

Practice-based research is NOT
merely clinical research
conducted in practice settings

The Clinical Research Process



The Practice-Based Research Process





A Brief History of Practice-based Research

- Many general practitioners have independently studied patient's problems with scientific rigor
 - James Mackenzie
 - F.J.A. Huygen



“The life of a general practitioner is not considered one that can help much in the advance of medicine...you know well that if a man aspires to do research he is sent to work in the laboratories or the hospital wards.

I take a very different view, and assert with confidence that medicine will make but halting progress, while whole fields essential to the progress of medicine will remain unexplored, until the general practitioner takes his place as investigator.

The reason for this is that he has opportunities which no other worker possesses – opportunities which are necessary to the solution of problems essential to the advance of medicine...” - **Sir James Mackenzie**

Mackenzie, James. The principles of diagnosis and treatment of heart affections. 1st Edn. 1916, 2nd Edn. 1923, 3rd Edn. 1926.



“I recalled my personal experiences from memory and realized the precious value of the meticulous notes I had kept since 1943 of all contacts with my patients in their family record file. Perhaps I could use these to tell students of the medical life history of families, and elaborate on the social implications...”

- FJA Huygen

Huygen, FJA. Family medicine: The medical life history of families. New York, NY. Brunner Mazel, 1982.

Adding the “N” in PBRN

- Clinicians began to network together to study important questions in the early 1980s
- Recognized the power in numbers
- Created synergy by forming learning communities of full-time clinicians and academics

Early PBRNs

- Sentinel Networks in the UK and Netherlands
- Ambulatory Sentinel Practice Network (ASPN)
- Dartmouth Cooperative Information Project (COOP)
- Pediatric Research in Office Settings (PROS)
- Wisconsin Research Network (WReN)

Growth In U.S. PBRNs

- 1994: 28 active PBRNs in North America
- 2008: More than 110 active PBRNs

Grants & Publications

- 1983: PBRN articles began appearing in literature
- 1994: Theme issue of Journal Fam Practice
- 1998: Issue of JFP devoted to DOPC study
- 2001: Issue of JFP devoted to Nebraska study
- 2001: AHRQ provided infrastructure development funding to 45 networks; more than \$8 million
- 2001: AHRQ-funded PBRN Resource Center
- 2003: RWJ funded 17 Prescription for Health Projects
- 2005: Supplement to Annals of Family Medicine
- 2006: Theme issue of J Amer Board Fam Med
- 2006: NIH-funded CTSA's include PBRNs
- 2008: Theme issue of J Amer Board Fam Med



Organizational Models

- Local, regional, national, multi-national
- Based at an academic medical center
- Coordinated by a State academy chapter
- Organizational component of a national academy: AAFP, AAP
- Healthcare System-Based
- Independent Non-Profit
- Shared Resource at NIH-funded center
- CTSA-supported

Why Do Clinicians Participate?

I had grown tired of standing alone in the wilderness, wondering if I really had to culture everything that comes in the office. Until network research began, there was no place I could go to get credible data on issues like this. Now I can contribute to it.

**Linda Stewart
Baton Rouge, Louisiana**

Why Do Clinicians Participate?

...my professional life isn't only about seeing sick kids, old people with many medical problems in nursing homes, and patients set on a path of self destruction. It is being able to ask a question about a medical problem, and arriving at a conclusion by doing a study with our peers. It's avoiding "burn out" while expanding our horizons and helping patients.

**Catherine Kroll
Gwinn, Michigan**

Why Do Clinicians Participate?

- Intellectual curiosity and professional growth
- To make important scientific contributions
- Opportunities to collaborate with researchers and like-minded clinicians
- Share their research ideas and hypotheses
- Authorship opportunities and acknowledgement in publications
- Acquire research skills
- Far down on the list... stipends and compensation

Creating a Community is Key

- The experience of being a part of a learning community
- Connecting with like-minded clinicians and academics
- Discovering new truths or confirming clinical hunches
- Contributing to the 'science-base' of primary care
- Having fun together

The Range of PBRN Research

- Designs
 - Observational, survey, RCT, quasi-experimental, qualitative, mixed-method
- Examples of types of research conducted in PBRNs
 - Translational effectiveness research
 - Quality improvement and best practices
 - Effects of health system factors on delivery of care
 - Doctor-patient relationships
 - Patient health behavior change
 - Practice-enhancement interventions
 - EHR-based research

Examples of Local PBRN Research

- Observational
 - Direct Observation of Primary Care
- Survey
 - Supplemental calcium intake
- RCT
 - STEP-UP (mixed methods)
- Qualitative
 - Diabetes interview study

The challenge is no longer to show that something works, we now have to figure out how it works in everyday practice.

- Paul Nutting, MD, MSPH

Translating Research into Practice

- On average, it takes 17 years for 14% of new discoveries to enter day-to-day clinical practice
- Americans receive only 50% of recommended preventive, acute, and long-term health care
 - Approx. 50% of Americans have received appropriate colorectal cancer screening
 - 25 years after proven effective, β -blockers widely underused after acute MI

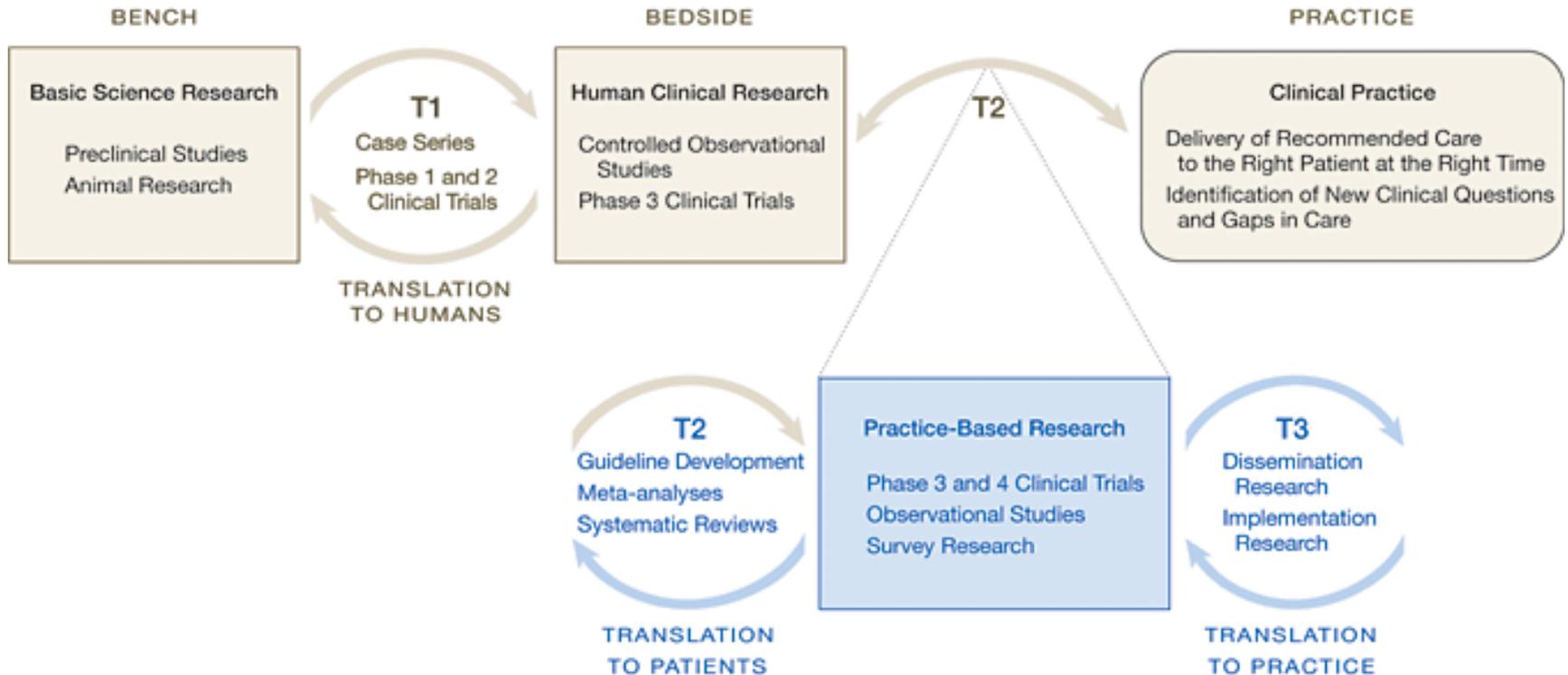
Balas EA, Boren SA. *Yearbook of Medical Informatics: Managing Clinical Knowledge for Health Care Improvement*. Stuttgart, Germany: Schattauer Verlagsgesellschaft mbH; 2000.

McGlynn EA, Asch SM, Adams J, et al. The quality of health care delivered to adults in the United States. *N Engl J Med*. 2003;348:2635-2645.

Coughlin SS, Thompson TD. Colorectal cancer screening practices among men and women in rural and nonrural areas of the United States, 1999. *J Rural Health*. 2004;20:118-124.

Bradley EH, Herrin J, Mattera JA, et al. Quality improvement efforts and hospital performance: rates of beta blocker prescription after acute myocardial infarction. *Med Care*. 2005;43:282-292.

PBRNs in Translational Research



Westfall, J. M. et al. JAMA 2007;297:403-406.

The Role of PBRNs in Translational Research

- Identify problems in daily practice that create gaps between recommended care & actual care
- Demonstrate whether treatments with proven efficacy are effective & sustainable in real world practice
- Provide an environment for testing health system improvements in primary care
- Connect basic and clinical researchers to community-based practices and patients

Challenges Facing PBRNs

- Infrastructure support
- Competing demands on clinicians' time
- Vagaries of the funding environment

Reasons for Optimism

- Recognition that translational research in community-based settings is essential
- Growing body of excellent PBRN research literature
- Increasing influence through CTSA's



Reflective Practice

for asking & answering clinical questions

- Action / Reflection Cycles
- Mostly we emphasize action
- Re-focusing on reflection
 - Reduce error and burnout
 - Open us to novelty and surprise
 - Uncover tacit knowledge
 - Identify research questions & hypotheses

Questions During Patient Care

- Random sample of 103 Iowa family physicians
- Between visits, over 2½ days, observer recorded:
 - Clear-cut questions
 - Vague, fleeting uncertainties
 - Excluded facts that could be obtained from the patient or chart

Ely JW, Osheroff JA, Ebell MH, et al. Analysis of questions asked by family doctors regarding patient care. *BMJ* 1999. 319:358-361.

1101 Questions

- 36%: drug rx, ob/gyn, adult ID
- 69 category taxonomy
- Most common categories (24% of questions)
 - What is the cause of symptom X?
 - What is the dose of drug X?
 - How should I manage disease or finding X?

1101 Questions

- Answers to most (64%) not pursued
- Of pursued questions
 - Answers found to 80%
 - Used available print & human sources
 - 2 questions led to formal lit searches

Ely JW, Osheroff JA, Ebell MH, et al. Analysis of questions asked by family doctors regarding patient care. *BMJ* 1999. 319:358-361.

Mindful Practice

- Attending in a nonjudgmental way to physical & mental processes during everyday tasks.
- Critical self-reflection
 - Explicit knowledge
 - Tacit knowledge

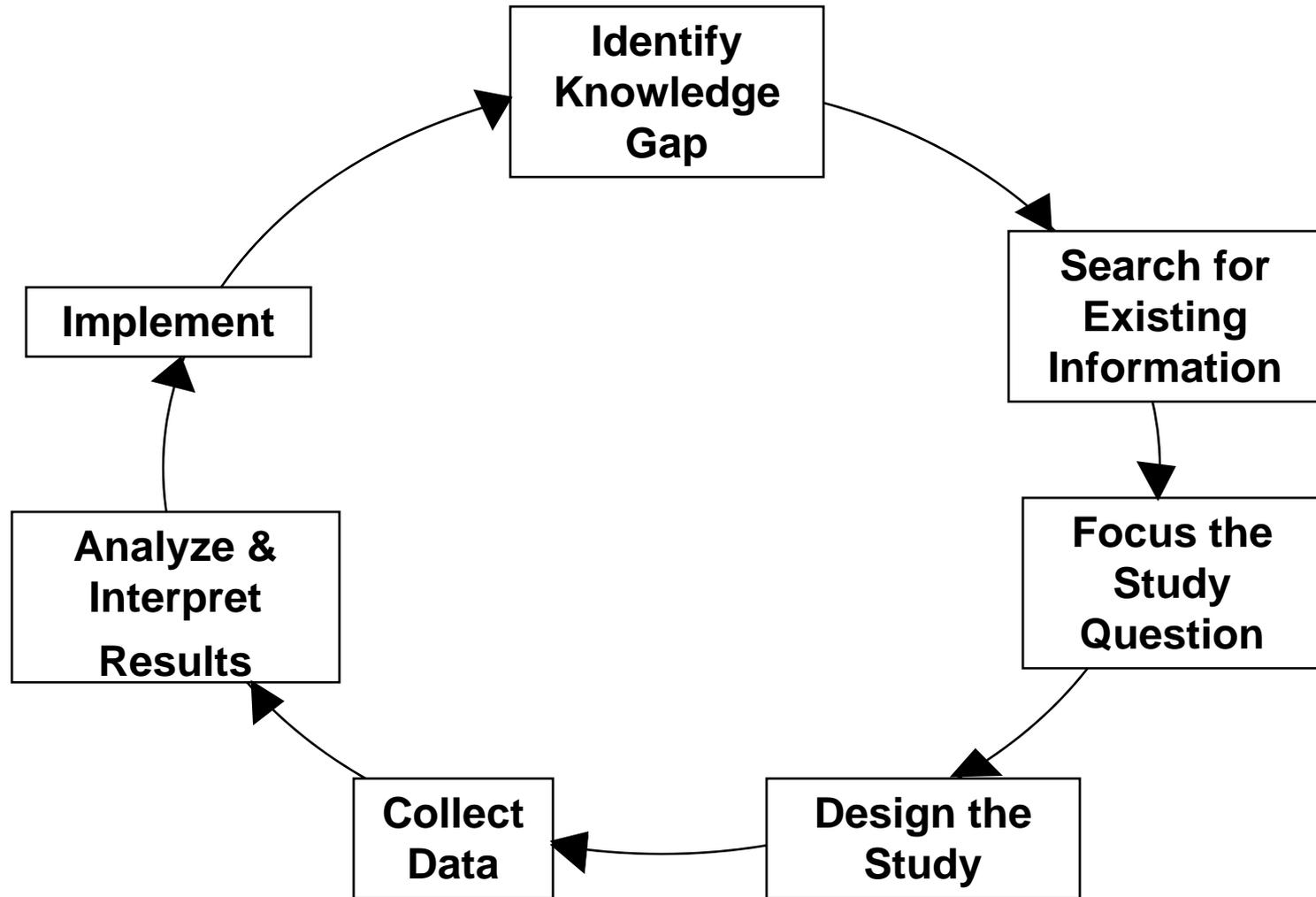
Mindful Practice

- Pragmatic interaction of action, cognition, memory & emotion
- Enhanced by
 - Moment-to-moment self-monitoring
 - Bringing to consciousness tacit personal knowledge & deeply held values
 - Combining focal & subsidiary awareness
 - Being curious in ordinary & novel situations

Mindfulness – Extension to Research-Reflective Practice

- What do I know, feel, do with this patient?
- What is known more broadly
 - My prior knowledge
 - What is known in the field
 - Relevance of what is known
 - Holes in knowledge
 - Opportunity to fill the hole
 - Myself
 - In collaboration with others

The Research Process



Adapted from: Nutting, PA, Stange, KC. Practice-based research: The opportunity to create a learning discipline. In: *The Textbook of Family Practice, 6th Edition*. Rakel RE (ed.), W. B. Saunders Company, 2002.

Example Clinical Questions That Were Answered with Practice-Based Research

- Stange KC, Little DW, Blatnick B. Adverse reactions to amantadine prophylaxis of influenza in a retirement home. *J Am Geriatr Soc*, 1991; 39:700-705.
- Caceres VM, Stange KC, Kikano GE, Zyzanski SJ. The clinical utility of a day of hospital observation after switching from intravenous to oral antibiotic therapy in the treatment of pyelonephritis. *J Fam Pract*, 1994; 39:337-339.
- Beasley JW, Hankey TH, Erickson R, Stange KC, Mundt M, Elliott M, Wiesen P, Bobula J. How many problems do family physicians manage at each encounter? *Ann Fam Med*, 2004; 2: 405-410.
- Scott JG, Cohen D, DiCicco-Bloom B, Stange K, Miller W, Crabtree B. Understanding healing relationships in primary care. *Ann Fam Med* 2008; 6: 315-322.

Example Clinical Questions Answered by RAP Clinicians

- Bloom HR, Zyzanski SJ, Kelley L, Tapolyai A, Stange KC. Clinical judgment predicts culture results in upper respiratory tract infections. *J Am Board Fam Pract*, 2002; 15:93-100.
- Blankfield RP, Sulzmann C, Fradley LG, Tapolyai AA, Zyzanski SJ. Therapeutic touch in the treatment of carpal tunnel syndrome. *J Am Board Fam Pract*. 2001;14:335-42.

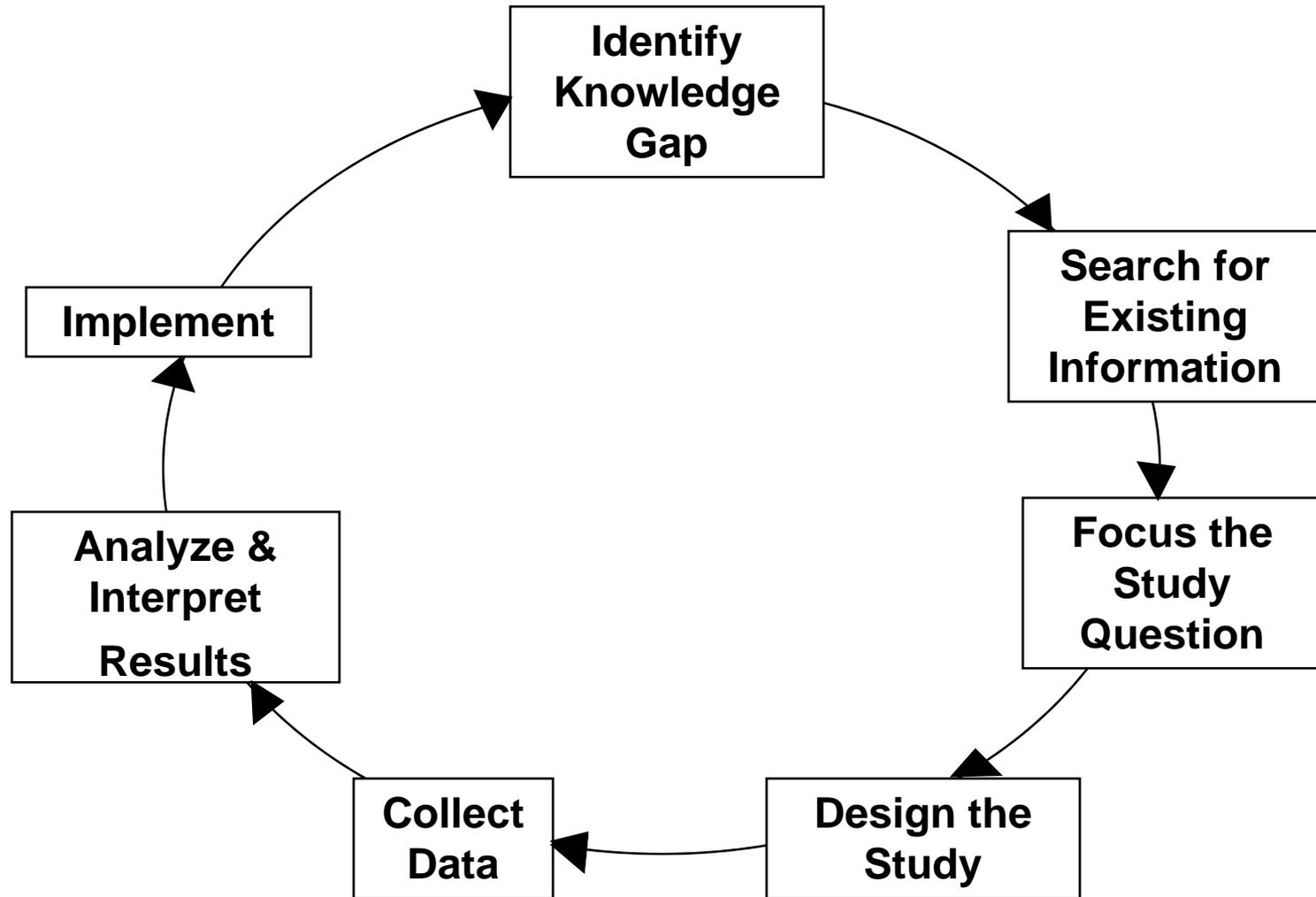
Example Clinical Questions That Were Answered with 2^o Analysis of PBRN Data

- Williams RL, Flocke SA, Stange KC. Race and preventive services delivery among black patients and white patients seen in primary care. *Med Care*, 2001; 39:1260-1267.
- Barzilai DA, Goodwin MA, Zyzanski SJ, Stange KC. Does health habit counseling affect patient satisfaction? *Prev Med*, 2001; 33:595-599.
- Oliver MN, Goodwin MA, Gotler, RS, Gregory PM, Stange KC. Time use in clinical encounters: Are African-American patients treated differently? *J Nat Med Assoc*, 2001; 93:380-385.
- Kikano GE, Snyder CW, Callahan EJ, Goodwin MA, Stange KC. A comparison of ambulatory services for patients with managed care and fee-for-service insurance. *Am J Manag Care*, 2002; 8:181-186.
- Blankfield RP, Goodwin M, Jaén CR, Stange KC. Addressing the unique challenges of inner-city practice: A direct observation study of inner city, rural, and suburban family practices. *J Urban Health*, 2002; 79:173-185.

A Practice-Based Line of Inquiry

- Iftikhar I, Ahmed M, Tarr S, Zyzanski SJ, Blankfield RP. Comparison of obstructive sleep apnea patients with and without leg edema. *Sleep Med.* 2008; Feb 11. [Epub ahead of print]
- Blankfield RP, Ahmed M, Zyzanski SJ. Effect of nasal continuous positive airway pressure on edema in patients with obstructive sleep apnea. *Sleep Med.* 2004;5(6):589-92.
- Blankfield RP, Ahmed M, Zyzanski SJ. Idiopathic edema is associated with obstructive sleep apnea in women. *Sleep Med.* 2004;5:583-7.
- Blankfield RP, Zyzanski SJ. Bilateral leg edema, pulmonary hypertension, and obstructive sleep apnea: a cross-sectional study. *J Fam Pract.* 2002;51:561-4.
- Blankfield RP, Hudgel DW, Tapolyai AA, Zyzanski SJ. Bilateral leg edema, obesity, pulmonary hypertension, and obstructive sleep apnea. *Arch Intern Med.* 2000;160:2357-62.
- Blankfield RP, Finkelhor RS, Alexander JJ, Flocke SA, Maiocco J, Goodwin M, Zyzanski SJ. Etiology and diagnosis of bilateral leg edema in primary care. *Am J Med.* 1998;105:192-7.

The Research Process



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7 Questions to Get Started

1. What is your research question?
2. What already is known, and how can this help you to refine your question?
3. Who would be the participants for the study (for example, patients in your practice) ?
4. What would the study measure?
5. How would you collect data?
6. How can feasibility considerations (money, effort, time, skills, potential collaborators, etc.) help you to refine your question and research plan?
7. Why is the study worth doing?



Next Week

- Keys to PBRN initiation and development
- Getting clinician buy-in
- Facilitating clinician-initiated projects
- Developing PBRN communication tools

Presentations available at:

- <http://blog.case.edu/jjw17/>

Thank you.