

An Introduction to Practice-based Research

Paul A. Nutting, MD, MSPH
Center for Research Strategies
Denver, Colorado

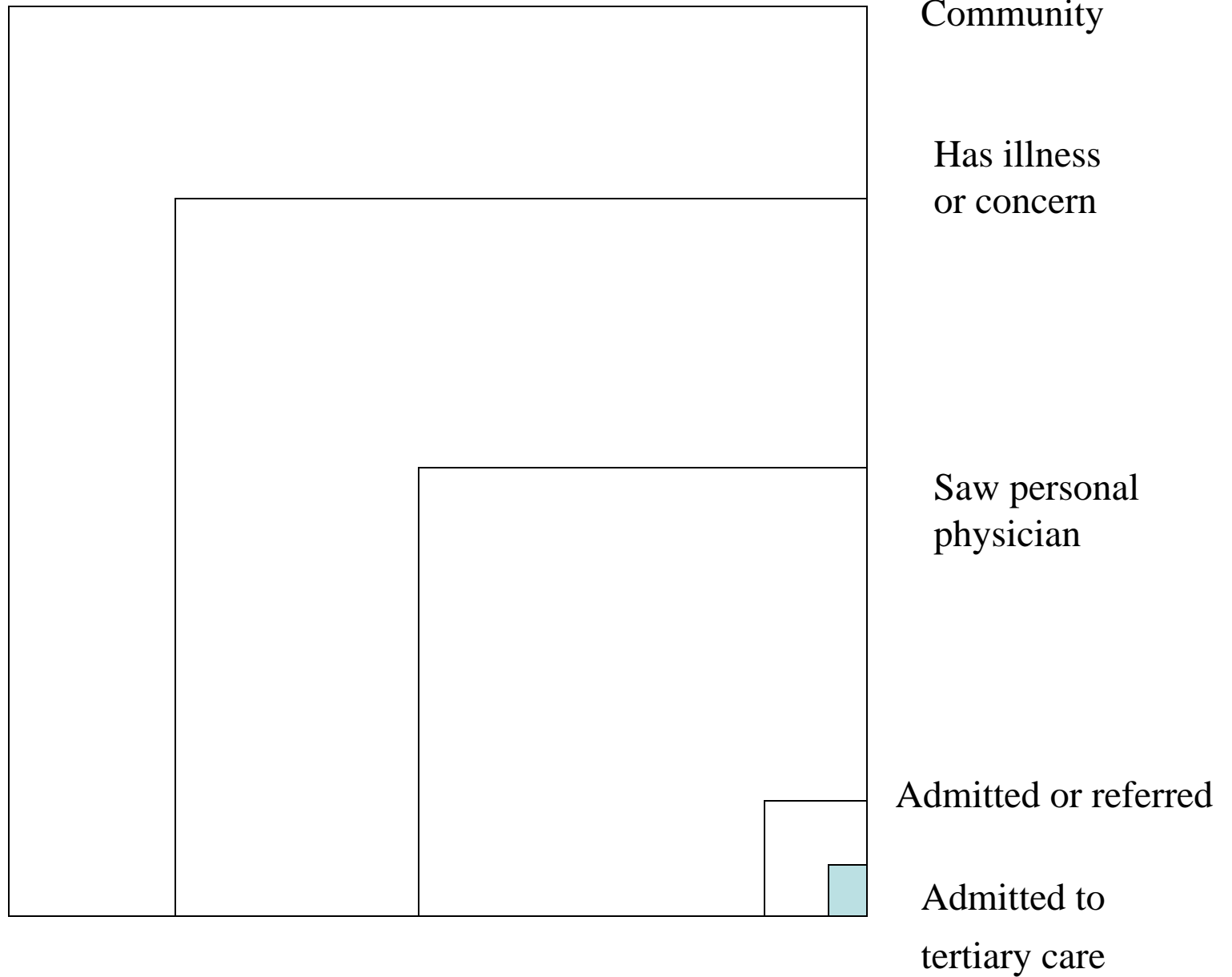
We'll cover:

- Conceptual foundation of practice-based research. (Why do we do it?)
- Brief history of PBR and PBRNs
- Methods used in PBRN (How do we do it?)
- Challenges for the future

Assertion #1

Primary care research informs the care that most people receive most of the time.

Kerr White and the Ecology of Medical Care



Limitations of Traditional Biomedical Research

- Biomedical research isolates single diseases or disease processes--well developed, unambiguous.
- Disease is studied in highly selected patients.
- Designed to evaluate single interventions.
- Focus on "hard" outcomes, such as death and biophysical parameters
- Strong focus on disease mechanisms and magic bullet treatment

“I had not been long in the practice when I discovered how defective was my knowledge. I left college under the impression that every patient’s condition could be diagnosed. For some years I thought that this inability to diagnose my patients’ complaints was due to personal defects. But gradually, through consultation and other ways, I came to recognize that the kind of information I wanted did not exist.”

-James Mackenzie, 1884

(From) Mair A. Sir James Mackenzie, MD, 1853-1925: general practitioner. London: Royal College of General Practitioners; 1986.

Why Do Practice-based Research?

- Examine health and health care phenomena in typical patients in typical primary care settings
- Answer questions of great relevance to practicing primary care physicians
- Capture the wisdom, insight, and experience of practicing primary care physicians
- Reunite practice and research; clinician and academic; in a dynamic, learning specialty
- It's fun and energizes a practice

Assertion #2

Participation in a PBRN can enhance and energize practice

Life isn't only 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**

There is a sense that what we are doing is not only right, but is particularly important in these times of turmoil in medicine. As we try to solve our health care problems, it is becoming increasingly apparent that the answers lie in primary care and cost effective medicine, the understanding of which depends on practice based research.

**Tillman Farley
Brighton, Colorado**

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.

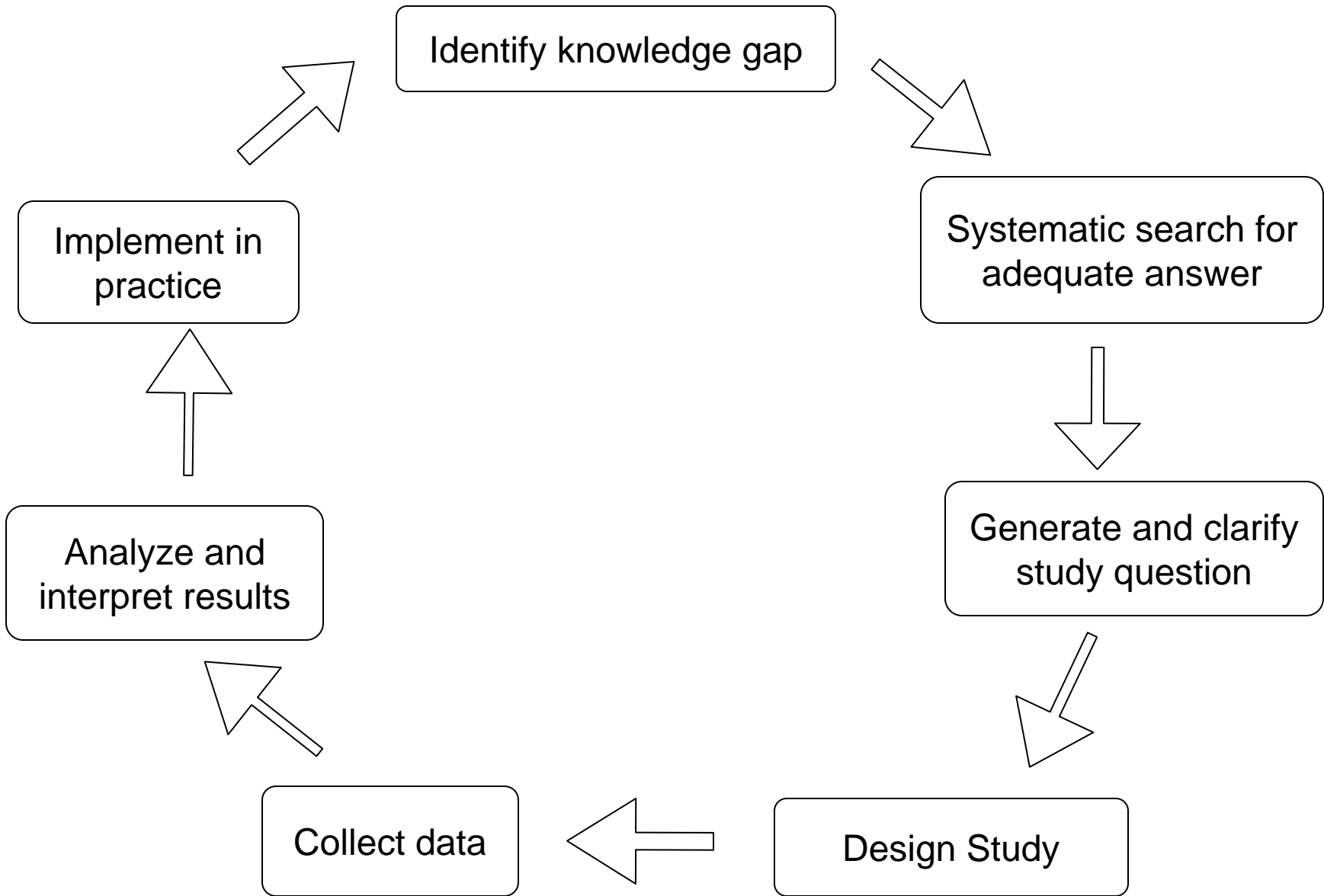
**Linda Stewart
Baton Rouge, Louisiana**

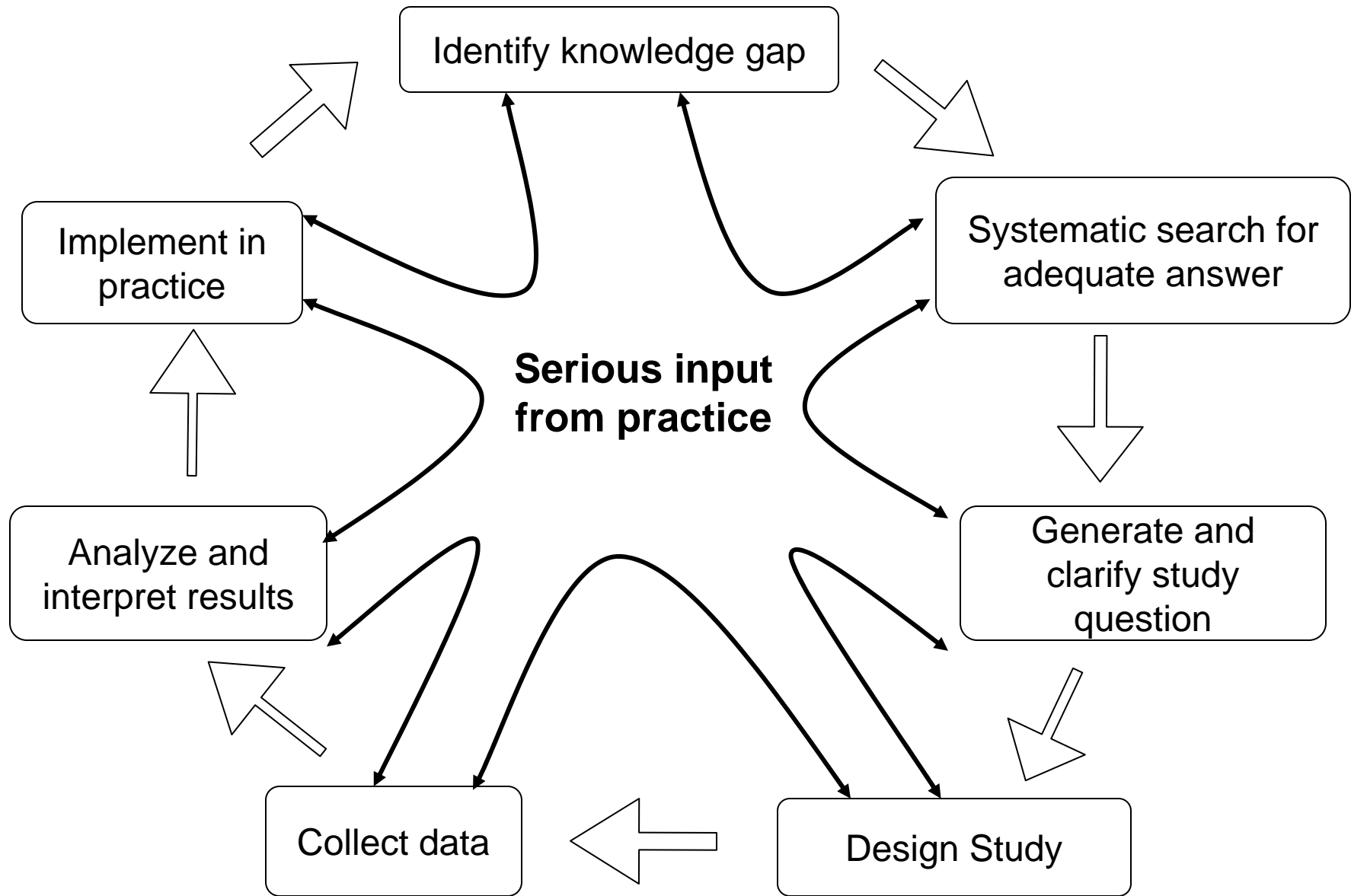
I also enjoy the recognition from patients and the community. Their belief about me as an involved clinician is that I try to do my best to give them what's best— and this is a very positive stroke.

**Terry Hankey
Waupaca, Wisconsin**

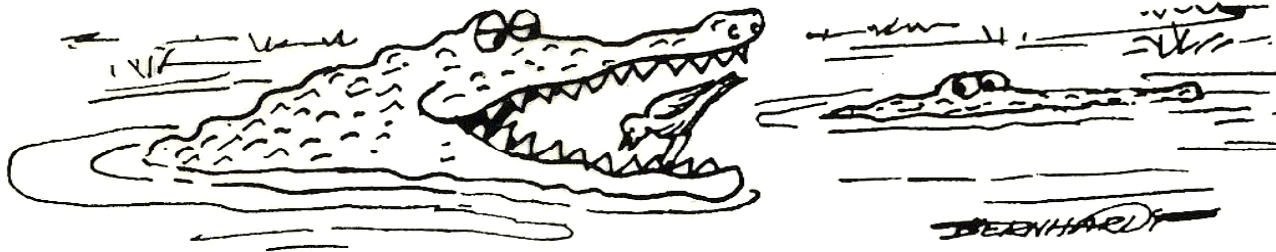
Assertion #3

Practice-based research is NOT merely
research in practice settings





Not what we have in mind!



We have a collaborative arrangement; he cleans my teeth and then I eat him.

Assertion #4

It is highly improbable that an academic researcher can do research that will enhance practice without major collaboration with practitioners

What is a Practice-based Research Network?

An organization of primary care clinicians and researchers, **united by a shared commitment to expand the science base of primary care** practice through systematic inquiry to better understand the health and health care events that unfold daily in their practices.

Assertion #5

Practice-based research in primary care is the most important innovation in health care research in the century

(and one in which family medicine should take great pride).

Early PBRNs in the U.S.

- 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 networks in North America
- 2005: More than 120 networks (AHRQ)
- 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
- 2005: Supplement to Annals of Family
Medicine

Early Pioneers in Practice-based Research

- James Mackenzie (1853-1925)

(Mair A. Sir James Mackenzie, MD, 1853-1925: general practitioner. London: Royal College of General Practitioners; 1986.)

- William Pickles (1885-1969)

(Pemberton J. Will Pickles of Wensleydale: the life of a country doctor. Exeter: Royal College of General Practitioners; 1984.)

Assertion #6

Research is easy once you get the question right. Getting the question right is very hard.

Research design should follow the question.

PBRNs have done well in matching methods to questions

Examples of Methods Diversity in PBRNs

- Descriptive study
- Randomized Controlled Trial
- Mixed Methods Observational Study
- Mixed Methods Intervention Trial
- Best Practices Research

Carpal Tunnel Syndrome (CTS)

Ambulatory Sentinal Practice Network (ASPN)

(Miller RS, Iverson DC, Fried RA, Green LA, Nutting PA. Carpal tunnel syndrome in primary care: A report from ASPN. J Fam Pract 1994; 38:337–44.)

- N=552 patients from 74 family practices
- Typical ‘ASPN card study’
- First study describing how patients thought to have CTS present to primary care and how they are initially evaluated and managed.
- In most patients, this condition was successfully managed by family doctors.
- Treatment was generally conservative

ASPEN card for CTS Study

_____ ASPEN WEEK STARTING 9 AM MONDAY _____ MONTH _____ DAY _____ 1988 TOTAL PRACTICE ENCOUNTERS THIS WEEK _____															OUR/MY PRACTICE'S SERVICES WERE AVAILABL M Tu W Th F Sa Su MORNING AFTERNOON NIGHT																						
ALL PATIENTS ≥ 15 YEARS YOU DIAGNOSE WHO MEET INCLUSION CRITERIA FOR CARPAL TUNNEL SYNDROME.																																					
PATIENT IDENTIFIER	BIRTHDATE			SEX		ETHNICITY					FIRST VISIT FOR CTS TO YOUR PRACTICE			MEETS WHICH DIAGNOSTIC CRITERIA ^o (check all that apply)			OCCUPATION	TYPE OF BUSINESS	NON-OCCUPATIONAL ACTIVITIES (check all that apply)							DX RELATED TO ANY OF THESE ACTIVITIES			PREGNANCY INFORMATION								
	MO	DA	YR	M	F	W	B	A	H	O	Y	N	ND	1	2	3			DX RELATED TO OCCUPATION	NEEDLEWORK/ SEWING	YARDWORK	SPORTS	PAINTING/ DRAWING	OTHER	NONE	NOT DETERMINED	Y	N	ND	Y	N	ND	Y	N	N		
^o DIAGNOSTIC CRITERIA (check all that apply) (Mark appropriate box above if <u>any</u> symptoms, findings, or hand movements are present)															eg. carpenter, secretary, press operator			eg. canning, residential construction			EXCLUDE ALL PATIENTS WHOSE SYMPTOMS ARE DUE TO RADICULOPATHY, THORACIC OUTLET SYNDROME, OR PRONATOR TERES SYNDROME.																
1 Symptom(s) Present (in median nerve distribution) • hypesthesia • paresthesia • numbness															2 Positive Finding(s) • positive Phalen's and/or Tinel's • decreased pinprick in median nerve distribution					3 Occupational Hand Movement(s) • frequent/repetitive • high force • awkward • vibratory • palm or wrist pressure																	

Carpal Tunnel Syndrome (CTS)

(Continued)

At 4 month followup: over 50% reported improvement in symptoms

Yet....

- 17% had worsened symptoms
- 4% not able to carry out routine activities
- 39% modified job requirements
- 10% unable to continue in job

Potential for Selection Bias in Carpal Tunnel Study

	All Patients N=380	Seen by Neurologist N=46
Management:		
Referral for surgical eval	7.9%	46.1%
Surgery	2.9%	24.9%
Outcomes at 4 months:		
Continued usual activities	57.2%	26.9%
Unable to continue job	5.8%	30.0%

ASPEN Depression RCT

(1996-2000)

- 24 physicians in 12 practices
- Randomization by practice
- Usual care vs care management and tracking
- Care management embedded in practice operations-- not 'carved out'
- 12,000 patients screened, 480 with major depression enrolled in trial
- Patients followed for 2 years
- 21 articles published from study; five more under preparation

ASPEN Depression Trial Intervention

- Use of the PHQ-9 for monitoring severity and adjusting treatment
- Care management conducted by an office nurse with training from the research staff
- Used a manual (pencil and paper) tracking system
- Contacted patients frequently during acute and chronic phases
- Helped patients identify and work through barriers to care

ASPEN Depression Trial

Major Findings

- Significant improvement in depression severity at 6 months and increased benefit at 2 years.
- Significant improvements in general health status
- Significantly more satisfied with their overall care.
- Patients in rural areas and those with no insurance derived even greater benefit.

ASPEN Depression Trial (Major Findings: Continued)

- Costs: \$12 to detect patient with depression and \$61 to provide care management services
- Intervention was shown to be cost-effective, compared to other standard chronic disease interventions
- There was a substantial cost-offset in patients presenting with psychological symptoms

Direct Observation of Primary Care (RAPP)

(May, 1998 theme issue. J Fam Pract)

- 138 physicians in 84 practices
- 4,454 patient visits
- Multi-method approach: direct observation, patient interviews, chart review, physician and staff interviews, patient trajectories, staff and patient surveys
- Assessment of association of practice values, structures, and processes on delivery of preventive services

Direct Observation of Primary Care Major Findings

- Primary care practice is more complex than research and efforts to improve care generally acknowledge.
- Practices can be understood as complex adaptive systems.
- Physicians in high volume practices are more efficient, but at a cost of fewer preventive services, less positive doctor-patient relationship, and lower patient satisfaction

Direct Observation of Primary Care Major Findings (Continued)

- Family physicians show a high degree of emphasis on the family
- 10% of visit time is devoted to addressing family issues
- Other family members present on 32% of visits
- Care provided to family member in 18% of visits--rarely billed
- Simple feedback and intervention with the practice can improve preventive services
- Improvements may last up to 18 months after intervention

Using Learning Teams for Reflective Adaptation (ULTRA)

(NHLBI: New Jersey Acad Fam Physicians Network)

- Randomized 60 primary care practices in NJ and PA
- Improvement Facilitator-12 visits
- Improvement Team in Practice
- Outcomes include measures of practice change and process change for 5 conditions

Management of Laboratory Test Results

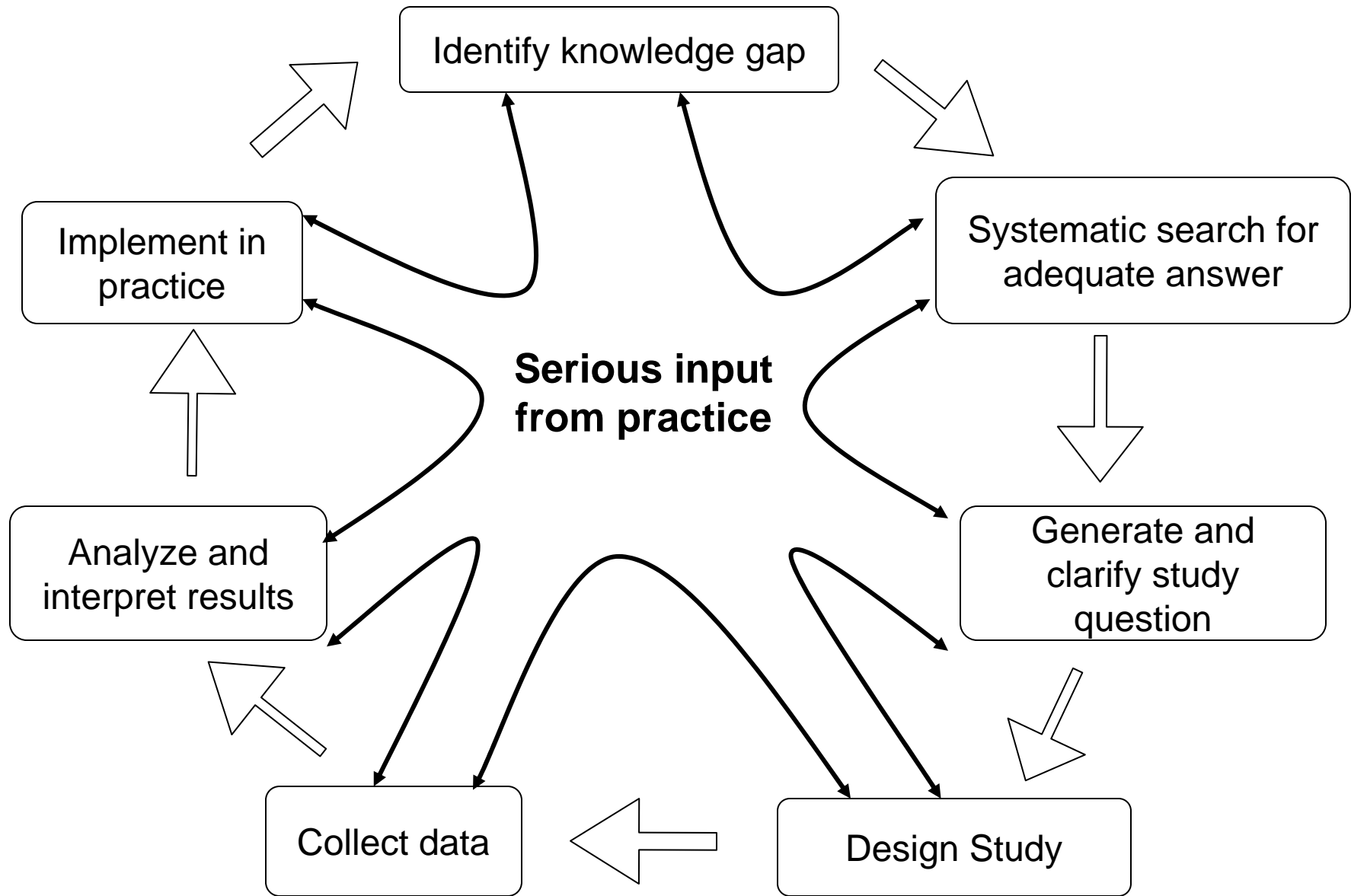
Oklahoma Practice Research Network (OKPRN)

Mold JW, Cacy DS, Dalbir DK. Management of laboratory test results in family practice: an OKPRN study. J Fam Pract 2000;49:709-715

- 24 practices in Oklahoma
- Conceptual model (literature review) including 4 steps
- Survey practices for methods for tracking lab results
- Two practices for each of 4 steps-- practice/chart audit + interviews + patient surveys
- Multimethod analysis of 'best practices' for tracking lab test results

Assertion #6

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



Doing it for a Study versus Making a Permanent Change in Practice

“It’s a lot easier to convince everyone to change what they do for a research study than to get them to make the same change forever. We’re committed to doing research in our practice and we’ll go to great lengths to complete a study.”

“As a study, of course we could do it for six months or so. As a permanent change in our practice? Whoa dude, now that’s a completely different matter.”

Assertion #7

PBRNs can and will continue to evolve to become more effective, real time, learning organizations

What Are The Characteristics Of Successful Networks?

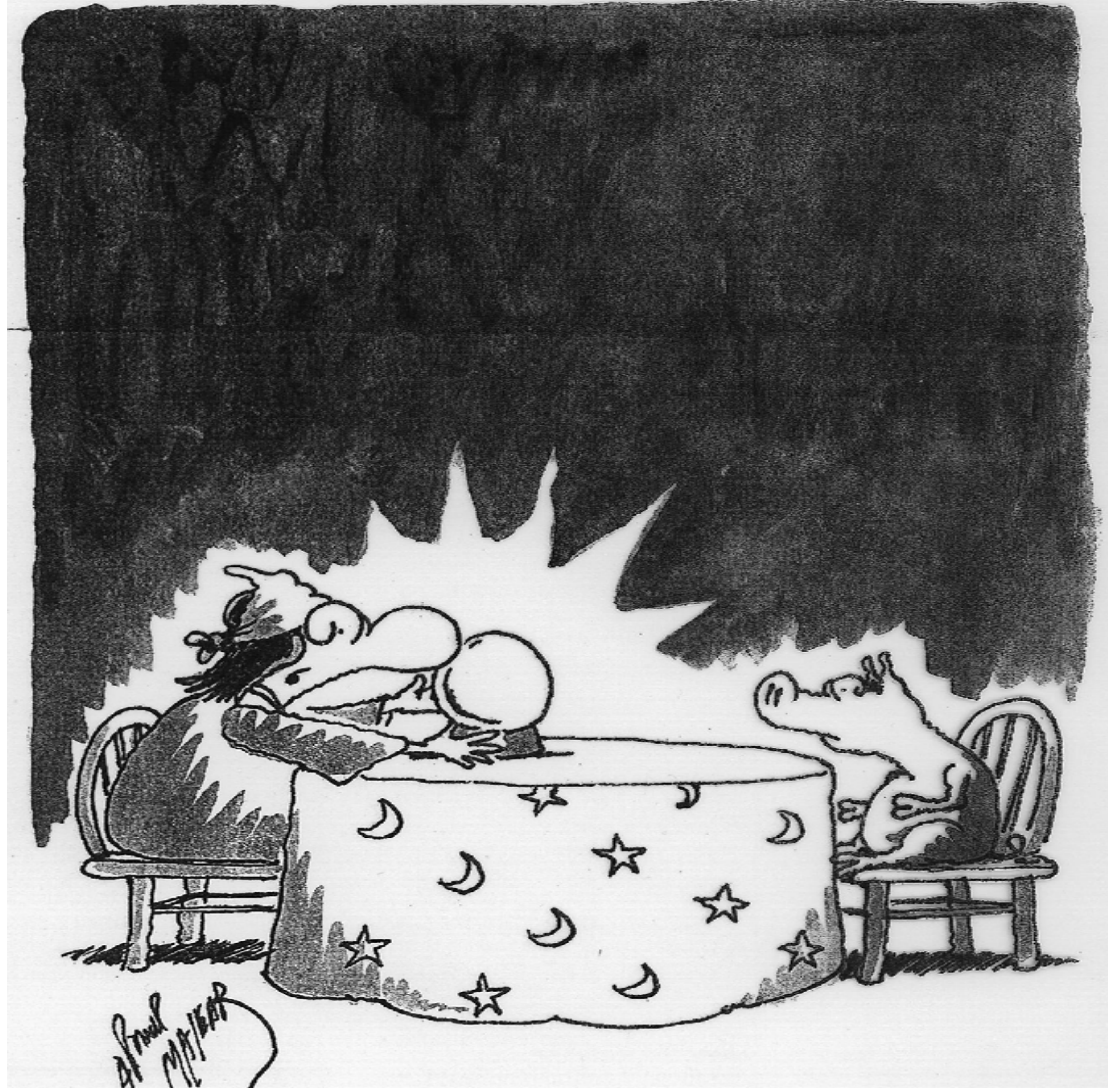
- Clear clinician involvement all aspects of network governance and operation
- Clear rewards for clinicians participating in the (often diverse) network activities
- A “network of researchers” who have learned how to work within a network

What Are The Characteristics Of Successful Networks? (Continued)

- Visionary leadership
- A huge dose of commitment and voluntarism by all players
- A diversified revenue stream: consistent infrastructure support and a varied stream of project revenue
- A benevolent academic program(s) that does not try to “own” the network

What lies ahead for practice-based research?

“Making predictions is risky, especially about the future”



There, I can see you....you're eating an apple....no, you're not exactly eating it.....

