

2019 Robert L. Kane Memorial Lecture

Joseph E. Gaugler, PhD, Robert L. Kane Endowed Chair in Long-Term Care and Aging,
Division of Health Policy and Management, School of Public Health, University of
Minnesota

The event will begin at 3:00 PM CST, Thursday, April 11th, 2019



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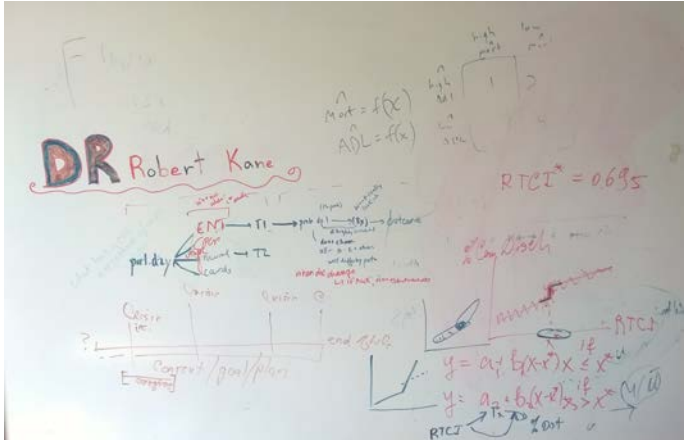
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- Molly Jeffery, Ph.D., Scientific Director of Emergency Medicine Research, Research Associate, Department of Health Sciences Research, Mayo Clinic
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- Gayle Kvenvold, MSW, President and Chief Executive Officer, LeadingAge Minnesota

Thank You to the Families and LTC Projects Team

- Ann Emery, MS, CRC, Robert L. Kane Endowed Chair in Long-Term Care and Aging Coordinator
- Robyn Birkeland, PhD
- Gabriela Bustamante, MPH
- Katie Louwagie, DNP, APRN, AGNP-C
- Colleen Peterson, MS
- Kobe Perez
- Christina Rosebush, MPH
- Aneri Shah
- Moses Waiswa, MDP

Reflections on Bob



The LTC Chair

- The original goal of the endowed Minnesota Long-Term Care Chair in Aging was to establish long-term care as an academic discipline.
- It was held by Dr. Kane since approximately 1990 until his passing in 2017
- My mission as the current Chair is to advance scientific excellence in long-term care to shape the practice, policy, and pedagogy of this critical area of focus.
- Perhaps my core objective as the LTC Chair is to invest in people.

The Robert L. Kane Postdoctoral Fellowship



Manka Nkimbeng, PhD(c), MPH, RN
RWJF Health Policy Research Scholar
School of Nursing
Johns Hopkins University



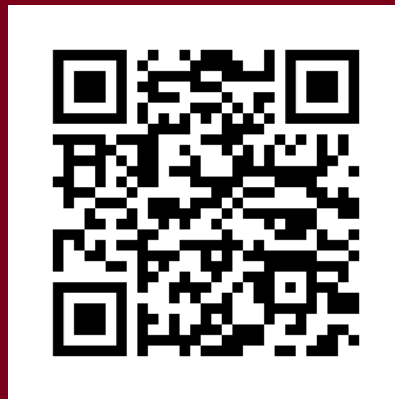
Zachary Baker, M.A.
NIH NRSA Predoctoral Fellow
Self, Motivation, and Relationship Theories Lab
Social Processes Lab
University of Houston

Other Highlighted Activities

- The Robert L. Kane Scholarship of Excellence in Long-Term Care
- The Caring for a Person with Memory Loss Conference (<http://z.umn.edu/memoryloss>)
- Community engagement and outreach
 - Statewide tour on dementia and education in every Minnesota county
- The Robert L. Kane Memorial Lecture

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in Long-Term Care and Aging, please go to:

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The Science of Changing Health System Behavior: The Kane Legacy

Vincent Mor, Ph.D.
Florence Grant Pirce Professor
Department of Health Services, Policy & Practice
and
Senior Health Scientist
Providence Veterans Administration Medical Center



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Acknowledgements

- Veterans Administration HSR&D Grant **Merit Review Award CRE 12-025**.
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- Brown, VA and other colleagues; Rosa Baier, Amy Mosher, James Roosevelt, Brian Mittman, Debra Saliba, Joseph Ouslander

Kane Legacy

- Applying most rigorous methods to address most important questions
- Questions emerged from clinical and personal experience
- Reinforced by a strong sense of what's right

Kane Legacy

- RCT of Hospice in VA
- Evaluation of Evercare nursing home program
- Comparison of outcomes post-acute care in SNF, HHA and Independent Rehab
- Intervention to Reduce Acute Care Transfers (INTERACT)
- Geriatric Assessment
- Quality of Life Measurement
- Expansion of Home & Community Based Services
- Nursing Home Quality
- Systematic Reviews

Purpose

- Draw on Kane's last work to exemplify the complexity of health system change
- His work tested the impact of health system changes on patients' outcomes
- INTERACT RCT is a quality improvement intervention in nursing home setting
- Represents Kane's last big project

Changing Health System Behavior: Is it Really Science?

- Formative Evaluation
- Documenting the Implementation of the Intervention
- Organizational Psychology
- Industrial Organization
- Now known as “Implementation Science”
- *How to change work processes to efficiently achieve better outcomes for patients?*

Statement of the Problem

- Need to combine knowledge of what works with knowledge of how to institutionalize changes in care processes designed to achieve the intended goals.

Trial Problems Today

- Many interventions implemented by researchers show positive effects on outcomes
- They are done as proof of concept
- BUT, rarely consider whether and how they would be adopted in functioning health systems
- Why are some interventions adopted and others are not?
- Implementing interventions in the real world requires we understand how current care processes can be changed

Translating Efficacy Trials into Effectiveness Research

- Clinician researcher test interventions super-imposed on existing systems in hospitals, ED, SNFs or home
- Rarely consider translating these efficacy studies into programs that can be scaled
- Like traditional biomedical studies, need to connect the dots to be “translated” into advances in clinical medicine
- Doesn't happen by accident

Case Study:

Transcatheter Aortic Valve Replacement

- 2 trials, 2 products, show benefit even for low risk cases; can replace open heart surgery
- FDA approves
- Economics still favors open heart
- But, can monitor rates of use over time
- Translation already done; each procedure has been engineered and refined;
- Now only the distribution of use may change

The Simpler the Intervention the Easier to Conduct a Pragmatic Trial

- **Easy**: Substitute one vaccine for another (e.g. high dose influenza vs Standard dose)
- **Surprisingly Complicated**: PROVEN -- Video Assisted Advance Care Planning for ALL in NH
- **Multi-pronged**: Music & Memory
- **Multi-pronged Complexity**: INTERACT, DCM-Dementia Care Mapping, Staff Training
- Logarithmic increase in complexity as more Departments and types of workers involved

Comparative effectiveness of high-dose versus standard-dose influenza vaccination on numbers of US nursing home residents admitted to hospital: a cluster-randomised trial

Stefan Gravenstein, H Edward Davidson, Monica Taljaard, Jessica Ogarek, Pedro Gozalo, Lisa Han, Vincent Mor

Summary

Background Immune responses to influenza vaccines decline with age, reducing clinical effectiveness. We compared the effect of the more immunogenic high-dose trivalent influenza vaccine with a standard-dose vaccine to identify the effect on reducing hospital admissions of nursing home residents in the USA.

Methods We did a single-blind, pragmatic, comparative effectiveness, cluster-randomised trial with a 2×2 factorial design. Medicare-certified nursing homes in the USA located within 50 miles of a Centers for Disease Control influenza reporting city were recruited, so long as the facilities were not located in a hospital, had more than 50 long-stay residents, had less than 20% of the population aged under 65 years, and were not already planning to administer the high-dose influenza vaccine to residents. Enrolled nursing homes were randomised to a facility-wide standard of care for the residents of either high dose or standard dose as the vaccine for the 2013–14 influenza season and half of each group were randomly allocated to free vaccines for staff. Individual residents were included in the analysis group if they were aged 65 years or older and were long-stay residents (ie, had been in the facility 90 days or more before commencing the influenza vaccination programme). The analysts and investigators with access to the raw data were masked to study group by coding the groups until after the analyses were complete. The primary outcome was hospital admissions related to pulmonary and influenza-like illness between Nov 1, 2013, and May 31, 2014, identified from Medicare hospital claims available for residents who were without private health insurance (is, those who were considered Medicare fee-for-service). We obtained data from the Centers for Medicare & Medicaid (CMS) and enrolled facilities. The analyses used marginal Poisson and Cox proportional hazards regression, accounting for clustering of residents within homes, on an intention-to-treat basis, adjusting for facility clustering and pre-specified covariates. Safety data were voluntarily reported according to the standard of care. This trial is registered with ClinicalTrials.gov, number NCT01815268.

Findings 823 facilities were recruited to the study between March and August, 2013 to participate in the trial, of which 409 facilities were randomised for residents to receive high-dose vaccine, and 414 facilities for residents to receive standard-dose vaccine. The facilities housed 92269, of whom 75917 were aged 65 years or older and 53008 were also long-stay residents, and 38256 were matched to Medicare hospital claims as of Nov 1, 2013. Staff vaccination rates did not differ between groups, so analyses focused on the high-dose versus standard-dose vaccine comparison. On the basis of Medicare fee-for-service claims, the incidence of respiratory-related hospital admissions was significantly lower in facilities where residents received high-dose influenza vaccines than in those that received standard-dose influenza vaccines (0·185 per 1000 resident-days or 3·4% over 6 months vs 0·211 per 1000 resident-days or 3·9% over 6 months; adjusted relative risk 0·873, 95% CI 0·776–0·982, p=0·023).

Interpretation When compared with standard-dose vaccine, high-dose influenza vaccine can reduce risk of respiratory-related hospital admissions from nursing home residents aged 65 years and older.

Funding Sanofi Pasteur, Swiftwater, PA, USA.

The ABATE Trial

Chlorhexidine versus routine bathing to prevent multidrug-resistant organisms and all-cause bloodstream infections in general medical and surgical units (ABATE Infection trial): a cluster-randomised trial



Susan S Huang, Edward Septimus, Ken Kleinman, Julia Moody, Jason Hickok, Lauren Heim, Adrijana Gombosov, Taliser R Avery, Katherine Haffnerreffer, Lauren Shimelman, Mary K Hayden, Robert A Weinstein, Caren Spencer-Smith, Rebecca E Kaganov, Michael V Murphy, Tyler Forehand, Julie Lankiewicz, Micaela H Coady, Lena Portillo, Jalpa Sarup-Patel, John A Jernigan, Jonathan B Perlin, Richard Platt, for the ABATE Infection trial team

Summary

Background Universal skin and nasal decolonisation reduces multidrug-resistant pathogens and bloodstream infections in intensive care units. The effect of universal decolonisation on pathogens and infections in non-critical-care units is unknown. The aim of the ABATE Infection trial was to evaluate the use of chlorhexidine bathing in non-critical-care units, with an intervention similar to one that was found to reduce multidrug-resistant organisms and bacteraemia in intensive care units.

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[http://dx.doi.org/10.1016/S0140-6736\(18\)32593-5](http://dx.doi.org/10.1016/S0140-6736(18)32593-5)
See Online/Comment
[http://dx.doi.org/10.1016/S0140-6736\(18\)33130-1](http://dx.doi.org/10.1016/S0140-6736(18)33130-1)

Intervention Complexity and Health System Context

- ABATE done in acute hospital system committed to reducing infections (costs)
- Staff stability, education and turnover all undermine implementation capacity in NH
- Lean Management; no redundancy
- Few administrative layers
- Many staff have multiple jobs

INTERACT RCT

JAMA Internal Medicine | [Original Investigation](#)

Effects of an Intervention to Reduce Hospitalizations From Nursing Homes

A Randomized Implementation Trial of the INTERACT Program

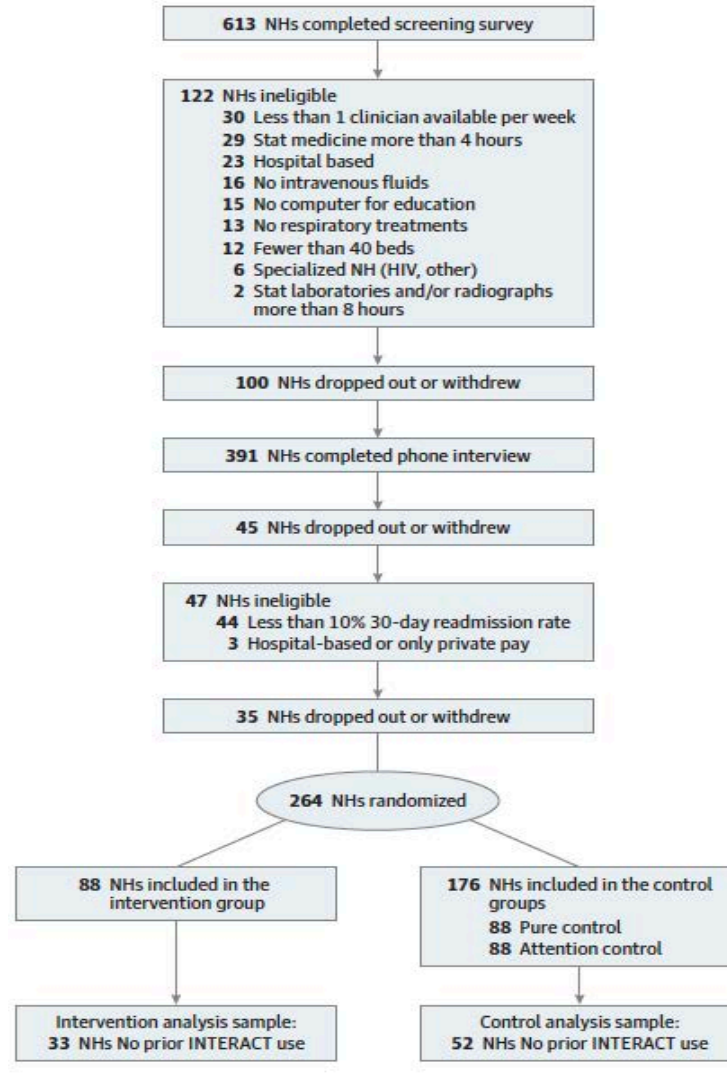
Robert L. Kane, MD; Peter Huckfeldt, PhD; Ruth Tappen, EdD, RN; Gabriella Engstrom, PhD, RN; Carolina Rojido, MD; David Newman, PhD; Zhiyou Yang, BS; Joseph G. Ouslander, MD

IMPORTANCE Medicare payment initiatives are spurring efforts to reduce potentially avoidable hospitalizations.

OBJECTIVE To determine whether training and support for implementation of a nursing home (NH) quality improvement program (Interventions to Reduce Acute Care Transfers [INTERACT]) reduced hospital admissions and emergency department (ED) visits.

[+ Supplemental content](#)

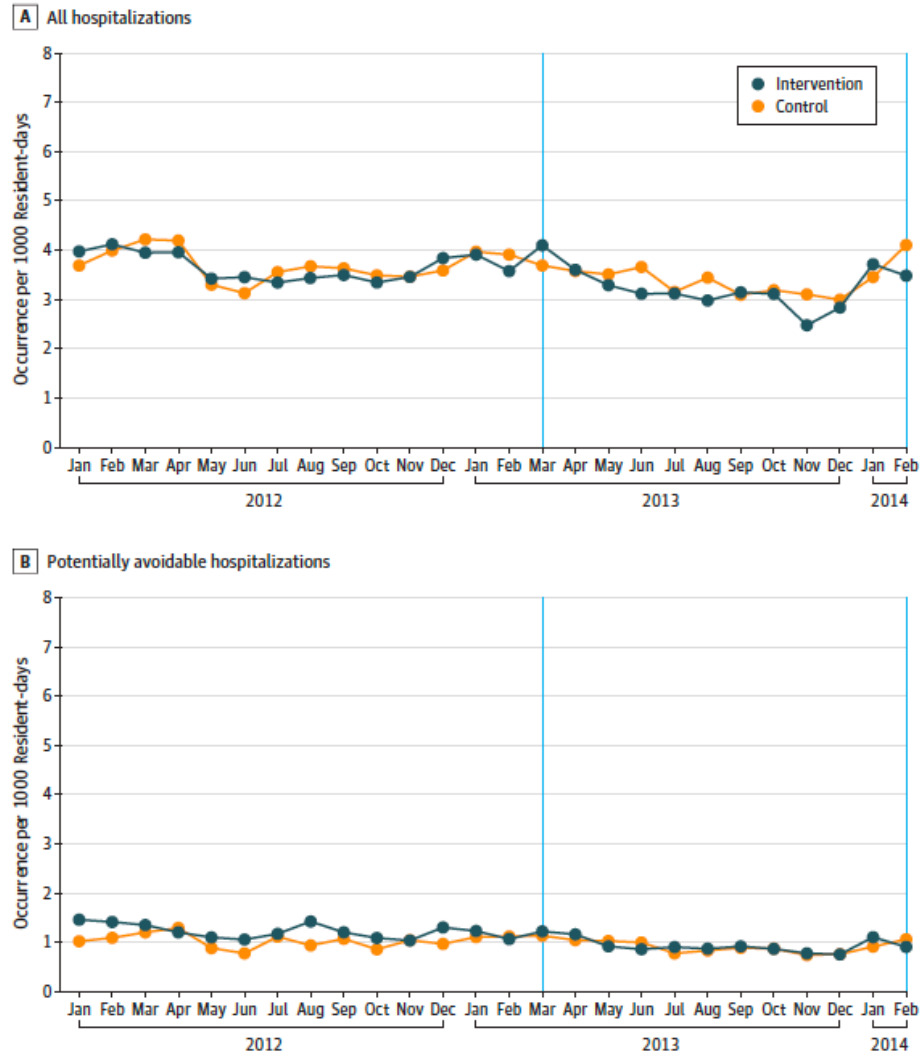
Figure 1. CONSORT Diagram



Pragmatic Cluster RCT, BUT, an Efficacy Trial?

- Post-randomization excluded NHs with PRIOR INTERACT experience
- Effect of exposure only; clean slate
- Excludes early adopters
- Exclusions improve chance of detecting a difference IF the intervention effective
- Selected for capacity to change, BUT excluded those that already had changed
- Intent to Treat

Figure 2. Trends in Hospitalizations and Emergency Department Visits for 33 Intervention NHs and 52 Control NHs



Implementation

Degree of Implementation of the Interventions to Reduce Acute Care Transfers (INTERACT) Quality Improvement Program Associated with Number of Hospitalizations

Peter J. Huckfeldt, PhD, Robert L. Kane, MD,* Zhiyou Yang, BS,* Gabriella Engstrom, PhD, RN,† Ruth Tappen, EdD, RN,† Carolina Rojido, MD,‡ David Newman, PhD,† Bernardo Reyes, MD,‡ and Joseph G. Ouslander, MD†‡*

OBJECTIVES: To determine whether degree of implementation of the Interventions to Reduce Acute Care Transfers (INTERACT) program is associated with number of hospitalizations and emergency department (ED) visits of skilled nursing facility (SNF) residents.

DESIGN: Secondary analysis from a randomized controlled trial.

SETTING: SNFs from across the United States (N=264).

PARTICIPANTS: Two hundred of the SNFs from the randomized trial that provided baseline and intervention data on INTERACT use.

INTERVENTIONS: During a 12-month period, intervention SNFs received remote training and support for INTERACT implementation; control SNFs did not, although most control facilities were using various components of the INTERACT program before and during the trial on their own.

MEASUREMENTS: INTERACT use data were based on monthly self-reports for SNFs randomized to the intervention group and pre- and postintervention surveys for control SNFs. Primary outcomes were rates of all-cause hospitalizations, potentially avoidable hospitalizations (PAHs), ED visits without admission, and 30-day hospital readmissions.

RESULTS: The 65 SNFs (32 intervention, 33 control) that reported increases in INTERACT use had reductions in all-cause hospitalizations (0.427 per 1,000 resident-days;

11.2% relative reduction from baseline, $p<.001$) and PAHs (0.221 per 1,000 resident-days; 18.9% relative reduction, $p<.001$). The 34 SNFs (12 intervention, 22 control) that reported consistently low or moderate INTERACT use had statistically insignificant changes in hospitalizations and ED visit rates.

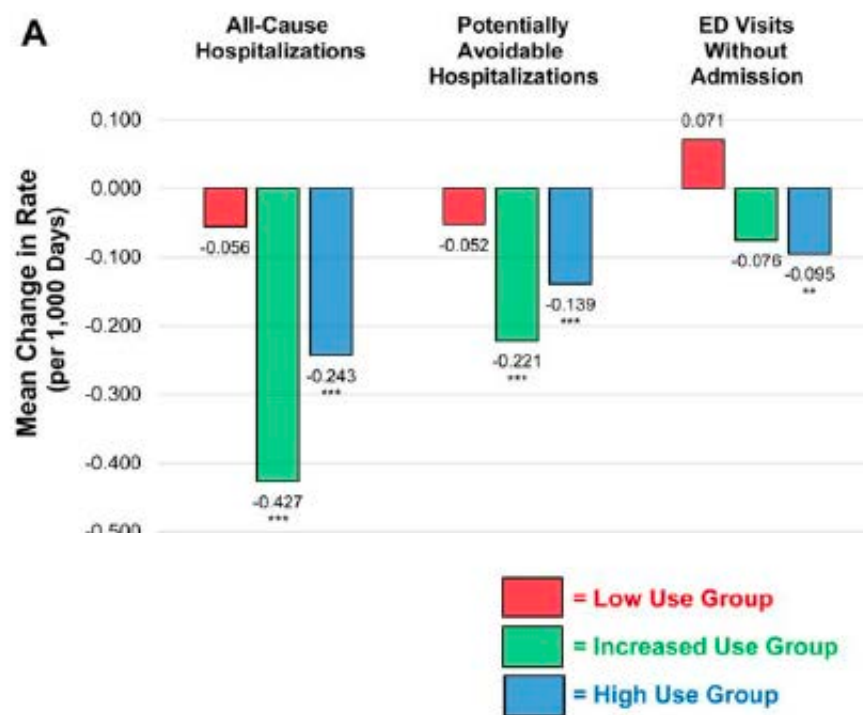
CONCLUSION: Increased reported use of core INTERACT tools was associated with significantly greater reductions in all-cause hospitalizations and PAHs in both intervention and control SNFs, suggesting that motivation and incentives to reduce hospitalizations were more important than the training and support provided in the trial in improving outcomes. Further research is needed to better understand the most effective strategies to motivate programs such as INTERACT. *J Am Geriatr Soc* 66:1830-1837, 2018.

Key words: skilled nursing facilities; potentially avoidable hospitalizations

Skilled nursing facilities (SNFs) in the United States are }
under increasing pressure to reduce hospitalizations,
hospital readmissions, and emergency department (ED)



Outcomes by Level of Implementation



What is Implementation?

- INTERACT includes tools and processes, but implementation level categories based only on STOP 'N WATCH and SBAR tools
- NHs using these tools most had greatest reduction in hospital transfers
- But most compliant NHs probably had better management; (effect may not be INTERACT)
- Least compliant were non-profit, had more RNs and highest quality score???

INTERACT in VA NHs (CLCs)

- Just completed a pair matched, cluster RCT of INTERACT in 8 VA CLC
- Much more “hands on” implementation; in person visits, weekly calls, embed tools into local EMR
- Using counts of STOP ‘N WATCH & e-SBAR tools facility months rated as high or low

IMPACT of INTERACT

- Based on Intent to Treat analysis, found no significant differential change in hospitalization rates (even avoidable)
- Dropped 2 CLCs and dropped ½ of study time of another CLC and did “as treated” analysis
- Pair matched Veterans in intervention CLCs that implemented with Vets in controls. No significant difference on hospital transfers

Why INTERACT Wasn't Effective?

- VA CLCs had higher hospital transfers per 1000 (~5 vs. ~3)
- But, only ~15% of VA CLC hospital transfers are avoidable while ~33% in community NH.
- VA CLCs have sicker residents, BUT, there is greater MD involvement, higher RN staffing ratio and lower staff turnover.
- VA staff may not have agreed there was a need to adopt INTERACT

What does INTERACT tell us about Changing Health Systems Behavior?

- Complex interventions hard to implement
- Commitment by leadership is a necessary but not sufficient condition
- Even agreement in advance doesn't guarantee implementation success
- Health Systems Management responds to market exigencies long before study end

Implications for Studies of Health Systems Change

- Need replications of efficacy studies that are increasingly more embedded
- Need to consider how to translate interventions to scale from the outset
- Must understand dose response; how much implementation is enough?
- Multiple pilots embedded in Health Systems may be needed to get implementation right

Testing Hypotheses or Gaining Compelling Evidence of Effectiveness

- How pragmatic a trial?
- Must all the units (MD offices, NHs, etc.) perform well for program to work?
- What criteria for selecting high, mid vs. low performing units?
- Investigators must appreciate the difference between “intent to treat”, “per protocol” and “as treated” analyses.
- What would health system leadership do? What do they expect? How sure before acting?

Summary

- Not enough for researchers to test interventions to change health systems
- To be useful, health systems must be willing to introduce system wide
- Requires evidence of feasibility AND effectiveness in a fully functioning HCS
- Researchers must partner with HCS to implement the most salient features of researchers' interventions