What does it take to do good research in healthcare settings? The Ecology of Research
Why is the Ecology of Research so important for health care systems now?

- Research is not JUST ACADEMIC—it is not just about publishing papers and obtaining grants
- Health systems need to learn how to deliver high value care
- Not just about researchers gaining from health systems but health systems learning from researchers
Chronic Heart Failure
Parkland and Amaransingham
What I am going to talk about

- Health care system as full partner
- What are we: center, department, division
- Who do we report to: the problem of multiple bosses
- Envisioning goals
- Assembling the team—diversity, expertise, relationships, honoring the principles of complexity science
- Removing barriers—regulatory, local leadership, unions, workers as co-investigators
- Pipeline: training, mentoring, recruiting
- Money
- Grit
Health Care System as Full Partner
Leveraging academic medicine to:

- Reduce costs
- Increase value
- Enable innovation
Deciding What the Research Endeavor Will Be

Dr. Rindova: Open Coordination Ecosystem

Center, Department, Division, (Academic or Health Care System Based), Loose Confederacy of Collaborators
A linear or deterministic system is one where initial conditions lead to unique final states, and trajectories that start at similar points, end in similar regions.

Initial state

Trajectory

Final state

Non-linear or chaotic systems are ones where the initial states lead to unique final states, yet the trajectories are not similar even when the initial states are closely spaced.

Initial state

Final states
Who Will Your Research Group Be Beholding To: the problem of multiple bosses

Managing Multiple Bosses

Multiple Bosses always fun.
QUERI Anecdote: you did what we asked but it is not what we want
First Who, Then What: Assembling the Team
Research Teams as Complex Adaptive Systems

- Diverse learning agents (individuals)
- Interacting non-linearly (with selves, to organizations in which they carry out their research, with funding organizations)
- Self-organizing
- Coevolution
- Emergent properties
"We all come to the table with different ways of problem solving. It's a diverse way of finding a solution to the same problems," says Campbell. "It's not just about the facts that we know but the way that we do things really does differ between men and women, at least according to the evidence out there. There are very different ways that groups with gender diversity complete things."
Figure 2. Differences in A) the frequency of female working group participants at the National Center for Ecological Analysis and Synthesis (black background, white dots) and in US universities (black, unpatterned, data from NSF 1998, 2009) over time and B) the average number of citations (SE) received by publications with or without female coauthors.

http://www.plosone.org/article/info:doi/10.1371/journal.pone.0079147
What Diversity Means in Recruiting

• Physicians and PhDs
• Nurses, Other Health Professionals, Anthropologist, Economists, Statisticians, Psychologists, Engineers, Business Experts and more
• Ethnic diversity
• Gender Diversity
Self-organization
Flat Organizational Structure

• An organizational structure in which most of the middle-management levels and their functions have been eliminated, thus bringing the top management in direct contact with the frontline salespeople, shop floor employees and customers.

• Despite their breadth, flat organizations can benefit from most of the advantages enjoyed by small companies, such as faster response time to changing conditions and customer preferences.

• Read more: http://www.businessdictionary.com/definition/flat-organization.html#ixzz2y7rVToLQ
In a leaked memo from Yahoo's human resources department, Mayer announced a ban on all telecommuting because, "Some of the best decisions and insights come from hallway and cafeteria discussions, meeting new people, and impromptu team meetings. Speed and quality are often sacrificed when we work from home."
The Death of the Cubicle — and the Killers Are Collaboration and Innovation

Google: Discovery + Collaboration + Fun = Innovation
Envisioning Shared Goals
OR
What You Can Be the Best in the World At
Have you killed anyone today?

Why are there so many HCO filled with so many smart people doing so many dumb things?
What Fuels Your Economic Engine

Grants, endowments, contracts, more grants, consulting.......
University of Texas System Grants Program

With funding from the UT System Malpractice plan, the Committee provides awards to UT faculty to conduct research, educational initiatives, and clinical collaboratives to improve healthcare quality and safety. In addition, a subcommittee selects RMF Strategies to help the UT System implement its policy on disclosure of unanticipated events to patients and family members.
Our primary goal is to conduct research that generates new knowledge about how to improve the quality and safety of healthcare. We also actively disseminate our findings and participate in educational programs designed to train researchers and caregivers to improve care.
Success in Both Recruitment and Retention

• Academic recruiting/Start-up packages/crossing departmental and school lines
• Critical mass/ongoing resources
• Location/location/location
• Relationships
• Medical school vs. public health vs. university vs. type of school within university
• To be or not to be a center—or everybody who is anybody wants their own center
A tale of two schools (and 2 start-up packages)

Core center funding supplies
A part of an RA and computer,
Academic department supplies
Salary only

1 million
Funding for Investigators in Medical Schools

• Must buy your time
• Endowed chairs are highly dependent on where you are and what research you do
• External funding: AHRQ has never been well funded compared to NIH. NIH has just started funding implementation research. VA is an intramural research program
• Small boost in funding at state level when not for profit health care systems were sold to for-profit—but not always into research
• Center funding (initial underwriting) dependent on promise of future funds
Removing Barriers
Regulatory Burdens

- Human Subjects Boards
- Unions
- Hospital Management
- Training
Infrastructure Burdens

• Data availability: getting data out of electronic medical record systems
• Trained research staff
• Core services: biostatistical, data management, regulatory support, administrative for grant submission and budget/financial management
Burden of Research Traditions

• Set in stone designs
• Getting funding agencies to buy innovative work—implementation work acceptable over 20 years time
• Participatory action research vs. QI vs. RCT
PREPARING THE PEOPLE PIPELINE

A Federal Succession Planning Primer
Pipeline

• Graduate programs—predoctoral
• Postdoctoral
• Junior faculty—career development award
mentoring
• A survey with a nested case-control study found an association between having a mentor and having a research grant as a principal investigator (OR range, 2.1-3.1).

• The influence of a mentor was an important motivating factor in pursuing research training or career.

• Research fellows who had had a mentor were more likely to provide mentorship to others (multivariate OR, 8.9; 95% CI, 1.8-42.4)
REVIEW:
A Systematic Review of Qualitative Research on the Meaning and Characteristics of Mentoring in Academic Medicine
Dario Sambunjak, MD, Sharon E. Straus, MD MSc FRCPC, and Ana Marusic, MD
J Gen Intern Med 25(1):72–8
DOI: 10.1007/s11606-009-1165-8
Desired Characteristics of Mentors: **Personal**

- Altruistic
- Understanding
- Patient
- Honest
- Responsive
- Trustworthy
- Nonjudgmental
- Reliable
- Active listener
- Motivator
Desired Characteristics of Mentors: Relational

- Accessible
- Sincerely dedicated to developing an important relationship with the mentee
- Sincerely wants to offer help in mentee's best interest
- Able to identify potential strengths in their mentees
- Able to assist mentees in defining and reaching goals
- Holds a high standard for the mentee's achievements
- Compatible ("good match") in terms of practice style, vision and personality
- Professional Senior and well respected in their field
- Knowledgeable and experienced
Desired Characteristics of Mentor: Professional

- Senior and well-respected in their field
- Knowledgeable and experienced
Actions of a Good Mentor: Personal

- Emotions
- Moral support
- Private-professional issues
- Self-awareness
- Vision-building and Goal setting
- Role Modeling

- Skill development
- Expanding engagement
- Career monitoring
- Navigating the institution
- Connections and networking
Actions of Good Mentor: Institutional

- Protection and Advocacy
- Promoting mentee in the department and in the academic community
- Advocating for the mentee
Mentoring

• Needs to continue throughout the career
• Examples in our institution: Grantseekers, Career Development Lunches
• For preparation of grants, should involve internal and external review
• Matching individuals actively
PUNISHMENT COMES ONE WAY OR ANOTHER

JEFF BRIDGES MATT DAMON JOSH BROLIN

WRITTEN FOR THE SCREEN AND DIRECTED BY JOEL & ETHAN COEN

TRUE GRIT

RETRIBUTION 12-22

TrueGritMovie.com
To Achieve the Best Outcomes We Will Need:

• A transdisciplinary approach: No individual has the skillset to improve the care at the system level

• BECAUSE: Systems are becoming larger and more complex requiring more diverse expertise to make improvements

• AND GRIT
Paradigm shift

Old:
- Hierarchy
- Defined roles
- Skill sets
- Structured communication

New:
- New definition of expertise
- Everyone’s responsibility
- Relationships
- Rich, reflective conversations
What Did I talk about

- Health care system as full partner
- Envisioning goals
- Assembling the team—diversity, expertise, relationships, honoring the principles of complexity science
- Removing barriers—regulatory, local leadership, unions, workers as co-investigators
- Pipeline: training, mentoring, recruiting
- Money
- Grit
Leftovers
Ecology

- the branch of biology dealing with the relations and interactions between organisms and their **environment**, including **other organisms**

- **Human ecology**: the branch of sociology concerned with the spacing and interdependence of people and institutions.
Health Systems Research
Projects

**AdHopHTA** - Adopting Hospital Based Health Technology Assessment in EU
**Advance-HTA** - Advancing and strengthening the methodological tools and practices relating to the application and implementation of Health Technology Assessment
**ANCIEN** - Assessing Needs of Care In European Nations
**COFI** - Comparing policy framework, structure, effectiveness and cost-effectiveness of Functional and Integrated systems of mental health care
**COURAGE in Europe** - COllaborative Research on AGEing in Europe
**DIFFER** - Diagonal Interventions to Fast Forward Enhanced Reproductive Health
**DISMEVAL** - Developing and validating disease management evaluation methods for European healthcare systems
**ECHO** - European Collaboration for Healthcare Optimisation
**ECHOUTCOME** - European Consortium in Healthcare Outcomes and cost-benefit research
**EQUIPT** - European-study on Quantifying Utility of Investment in Protection from Tobacco
**EUCBCC** - EUropean Cross Border Care Collaborations
**Euprimecare** - Quality and costs of primary care in Europe
**EuroDRG** - Diagnosis-Related Groups in Europe: towards Efficiency and Quality
Live Long and Prosper
What does it take to do good research

• Building good research teams
• In what settings
  – Public health
  – Medical schools
• Multidisciplinary
• Career development luncheons
• Pipeline
• Top flight journal and top flight professional group
Research in organizations

• HSR, health affairs, health care management review
• What would it be? Who would sponsor it?
Individuals who Learn

- Definition: People can and will process information, as well as react to changes in information.
- You cannot stop this but you can possibly use it to advantage.
- Recognize that there are many different types of learning and that continuing education and required training is just one type and not likely the most effective.
- Transfer of intrinsic knowledge from one worker to another should be facilitated—the role of the water cooler or other social time.
Diversity in Science

• Ethnic diversity as a marker for ideas diversity
• Richard Freeman, Wei Wong
• 1.5 million papers included
• Citations received as the outcome – diverse backgrounds vs. similar backgrounds
• All anglo, all chinese, all anything do worse
• “avoiding groupthink”
• Geographic diversity also more highly cited— meaning teams made up from different locations
Figure 1. Temporal changes in A) the frequency of male and female principal investigators at the National Center for Ecological Analysis and Synthesis (men: white background, black dots; women: black background, white dots) and at US universities (men: white unpatterned; women: black unpatterned, data from NSF 1998, 2009) and B) their average (SE) h-index (men: grey circle; women: black square).

http://www.plosone.org/article/info:doi/10.1371/journal.pone.0079147
Interconnections / Interdependencies

• **Definition:** Change in pattern of interactions, including non-verbal communication.
• Importance of trust, relationship in accomplishing the work
• Reduction of competition and enhancement of group goals and awards—but define group carefully. Teams can become competitive with each other. Silos can form.
  – “We, the ICU team, would deliver drugs on time but the pharmacy fails to deliver them to us. It is their fault not ours.”
Interdependencies

Relationships

Processes

Affordances
Self-Management
or Self-Organization

• Definition: Order is created in a system without explicit direction from above

• Examples:
  – Greater flexibility in reporting structure or job descriptions
  – Allowing nurses’ aids in a nursing home to decide among themselves how to organize the care they give
Coevolution

• **Definition:** The system and the environment influence each others’ development
Emergence

• Characteristics that arise unpredictably from the other properties
• Implications of non-linearity in outcomes—potentially one explanation of the wide confidence intervals in effect sizes of so many QI interventions
Uncertainty is inherent in health care!

Han PK 2011
Med Decision Making
Interdependencies

**Relationships**
The individuals in the system and how they relate

**Processes**
The ways we work

**Affordances**
The resources at our disposal

---

Self-organization

Sensemaking, Improvising & Learning
Complexity Science
Funding—Business School

- External support/Philanthropy in business school—scholarships, faculty support, buildings -- alumni
- Teaching—4 courses a semester. For tenure track, 2 courses a semester. 40% teaching, 40% research, 10% service. 15% state, a lot from tuition. 4000 undergraduate, 400 MBA and 200 PhD. Plus executive ed programs. Plus non-business majors taking courses. Faculty can do one day a week of consulting and get the extra salary. Most only do one day a month. Can also have contracts as part of job—does not increase income. Research faculty get two months of summer support (first three years for tenure track then based on performance) BUT hiring less tenure track
- Credit hour generation done by non-tenure track—paid less (2/3) and teach more (4 rather than 2 courses)
Actions of a Good Mentor: Emotions

• Expressing emotions and sharing feelings honestly
• Helping mentee to clarify feelings
• Permitting vulnerability
• Encouraging discussion of the personal meaning of the topic or experience
Actions of a Good Mentor: Moral Support

• Giving moral support to help mentee cope with the stresses
• Helping build motivation
Actions of Good Mentor: Private-professional Issues

• Tracking personal issues of the mentee, making links over time
• Helping mentee with balancing and coping with career demands and personal responsibilities
Actions of a Good Mentor: Self-awareness

• Giving positive feedback and constructive criticism
• Uncovering mentee's underlying assumptions through careful probing
• Helping mentee to identify areas for further performance improvement
• Guiding mentee in decision-making (or facilitating decision-making)
• Fostering self-reflection
Actions of a Good Mentor: Vision-building and goal-setting

• Appreciating the mentee's abilities, goals and interests
• Enabling mentee to remain open-minded about possible career paths by supporting their interests while also promoting flexibility
• Helping mentee to articulate vision for his/her future
• Helping mentee to clarify his/her goals
• Recognizing the potential of the mentee and envisioning possibilities
• Engendering a sense of possibility and wonder while encouraging the mentees to reach to their highest potentials
• Encouraging higher-order goals beyond mentee's initial conception
• Challenging mentee to expand his/her goals
Table 2 Cont.—Actions of a Good Mentor

<table>
<thead>
<tr>
<th>Action</th>
<th>Reference</th>
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<tbody>
<tr>
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<td>24</td>
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<td>Helping mentee to articulate vision for his/her future</td>
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<td>29</td>
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<td>Challenging mentee to expand his/her goals</td>
<td>29</td>
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<tr>
<td>Role modeling Being a role-model for good mentorship</td>
<td>31</td>
</tr>
<tr>
<td>Skill development Helping mentee to analyze data and prepare manuscripts and presentations</td>
<td>28 and 31</td>
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<tr>
<td>Expanding engagement Inviting mentee to participate in new projects</td>
<td>28</td>
</tr>
<tr>
<td>Career monitoring Advising on career progress, including achievement of appropriate career milestones and time management</td>
<td>31</td>
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<tr>
<td>Grant review</td>
<td>31</td>
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<tr>
<td>Navigating the institution</td>
<td>Teaching mentee to promote themselves</td>
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<tr>
<th>Connections and networking</th>
<th>Provides resources (references to others, secretarial support)</th>
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<tr>
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<td>Helping mentee gain access to otherwise closed academic circles</td>
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<td></td>
<td>Helping mentee establish connections with potential research collaborators</td>
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<td>Providing networking opportunities</td>
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<th>Promoting mentee in the department and in the academic community at large while protecting him/her from the sometimes harsh interactions in academe</th>
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