Tracking Medicine: the numbers
FROM RANDOLPH TO COMMUNITY GOVERNANCE: CAN WE OVERCOME THE TRAGEDY OF THE COMMONS?

Elliott S. Fisher, MD, MPH

James W. Squires Professor of Medicine
Geisel School of Medicine at Dartmouth

Director
The Dartmouth Institute for Health Policy and Clinical Practice

FROM RANDOLPH TO COMMUNITY GOVERNANCE: CAN WE OVERCOME THE TRAGEDY OF THE COMMONS?

Elliott S. Fisher, MD, MPH

James W. Squires Professor of Medicine
Geisel School of Medicine at Dartmouth

Director
The Dartmouth Institute for Health Policy and Clinical Practice
Accountable Care: Origins

Purpose
- Population-based accountability
- Attention to effective, preference-sensitive and supply-sensitive care
- Incentives aligned to make it possible.

Higher vs. Lower Spending Regions

Source: The Dartmouth Atlas
Accountable Care: Organized Care in a Fragmented System?

Core Ideas
- Population-based virtual budgets
- Real or virtual organizations
- Performance measurement
- Patient choice
- Accommodate diversity
Accountable Care Organizations: A Commons?
And – Health Determinants Are Largely Ignored

The Reversal of Fortunes: Trends in County Mortality and Cross-County Mortality Disparities in the United States

Majid Ezzati¹,²*, Ari B. Friedman², Sandeep C. Kulkarni²,³, Christopher J. L. Murray¹,²,⁴

1983-1999
But Both Health and Health Care are Locally Produced

Health and Health Care Measures Across Communities in the Lebanon, NH, Hospital Referral Region (HRR)

<table>
<thead>
<tr>
<th>Measure</th>
<th>Low Rate</th>
<th>High Rate</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Health Determinant (range across counties)</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Prevalence of obesity (2009)</td>
<td>23%</td>
<td>31%</td>
</tr>
<tr>
<td>Prevalence of smoking (2011)</td>
<td>17%</td>
<td>30%</td>
</tr>
<tr>
<td>Teen births (per 1,000 females 15-19, 2010)</td>
<td>15</td>
<td>34</td>
</tr>
<tr>
<td><strong>Health Care Quality (range across HSAs, Medicare)</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td>HbA1c testing in diabetics (2010)</td>
<td>84%</td>
<td>95%</td>
</tr>
<tr>
<td>Ambulatory care sensitive discharges (per 1,000, 2010)</td>
<td>29</td>
<td>82</td>
</tr>
<tr>
<td>Mammography in women 67-69 (at least one every two years, 2010)</td>
<td>66%</td>
<td>78%</td>
</tr>
<tr>
<td><strong>Health Care Resource Use (range across HSAs)</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Inpatient hospital days (per 1,000, 2010, Medicare)</td>
<td>0.89</td>
<td>1.42</td>
</tr>
<tr>
<td>Age-, sex-, and price-adjusted spending (per enrollee, 2009, Medicare)</td>
<td>$6,011</td>
<td>$9,690</td>
</tr>
<tr>
<td>Age- and sex-adjusted spending (per enrollee, 2010, commercial)</td>
<td>$3,509</td>
<td>$5,010</td>
</tr>
</tbody>
</table>

Sources: countyhealthrankings.org, dartmouthatlas.org, Total Cost of Care Project (commercial data preliminary and not for distribution)
What Might Be Done?

Initial Participants
Laura Landy, Rippel Foundation
Elliott Fisher, The Dartmouth Institute
Don Berwick, CMS, IHI
Amory Lovins, Rocky Mountain Institute
John Sterman, MIT System Dynamics
Marshall Ganz, Leading Change, Harvard
Peter Senge, MIT, Society for Organizational Learning
Elinor Ostrom, Nobel Laureate in Economics, Indiana University

Leadership Team: Subject Matter Experts
Bobby Milstein,
Ruth Wagemen
Sherry Immediato
Kate Hilton

Modeling Team
Jack Homer
Gary Hirsch
Major Elements

1. Local Governance
2. Systems Thinking
3. Sustainable Financing
Contemporary research on the outcomes of diverse institutional arrangements for governing common-pool resources (CPRs) and public goods at multiple scales builds on classical economic theory while developing new theories that explain phenomena that do not fit in a dichotomous world of "the market" and "the state." Scholars are slowly shifting from postulating simple systems to using more complex frameworks, theories, and models to understand the diversity of puzzles and problems facing humans interacting in contemporary societies. The humans we study have complex motivational structures and establish diverse private-for-profit, governmental, and community institutional arrangements that operate at multiple scales to generate productive and innovative as well as destructive and perverse outcomes (North 1990, 2005).

In this article, I will describe the intellectual journey that I have taken over the last half century from when I began graduate studies in the late 1950s. The early efforts to understand the polycentric water industry in California were formative for me. In addition to working with Vincent Ostrom and Charles Tiebout as they formulated the concept of polycentric systems for governing metropolitan areas, I studied the efforts of a large group of private and public water producers facing the problem of an overdrafted groundwater basin on the coast and watching saltwater intrusion threaten the possibility of long-term use. Then, in the 1970s, I participated with colleagues in the study of polycentric police industries serving U.S. metropolitan areas to find that the dominant theory underlying massive reform proposals was incorrect. Metropolitan areas served by a combination of large and small producers could achieve economies of scale in the production of some police services and avoid diseconomies of scale in the production of others. These early empirical studies led over time to the development of the Institutional Analysis and Development (IAD) framework. A common framework consistent with game theory enabled us to undertake a variety of empirical studies including a meta-analysis of a large number of existing
Overcoming the Tragedy of the Commons

Traditional view
- Common pool resources create social dilemmas
- Only two possible solutions:
  - Treat as *private goods*: private property rights
  - Treat as *public goods*: government regulation

Might there be a third way?
- Are there theoretical reasons why neither might be optimal?
- Are there examples of how local communities have managed to sustain a common pool resource?

*Indeed*
Overcoming the Tragedy of the Commons

Design Principles
- Defined boundaries
- Known “appropriators”
- Those affected help establish rules
- Nested structures
- Monitoring, graduated sanctions
- Conflict resolution mechanisms
- Higher authorities grant power

Processes that contribute
- Open communication (cheap talk)
- Relationships, trust
- Recognition of shared interests
- Focus on problem solving

Stewardship as a core value

Polycentric Governance of Complex Economic Systems

Possible Roles for Local Governance Structures

Establish vision and goals: a sustainable health system

Understand local needs, resources, capacities
Prioritize targets for reform initiatives and investment
Identify duplication and coordinate repurposing

Financing initiatives & how to capture and reinvest savings
Developing strategies to manage capacity downsizing
Involve authorities to regulate consolidation

Health and Health Care?
### Regional Multi-stakeholder Coalitions in Health / Health Care

<table>
<thead>
<tr>
<th>Accountable Care Community of Akron</th>
<th>Louisiana Health Care Quality Forum</th>
</tr>
</thead>
<tbody>
<tr>
<td>Albuquerque Coalition for Healthcare Quality</td>
<td>Maine Chartered Value Exchange Alliance</td>
</tr>
<tr>
<td>Aligning Forces for Quality-South Central PA</td>
<td>Maine Health Management Coalition</td>
</tr>
<tr>
<td>Alliance for Health</td>
<td>Maine Quality Counts</td>
</tr>
<tr>
<td>Asheville, NC</td>
<td>Massachusetts Chartered Value Exchange</td>
</tr>
<tr>
<td><strong>Atlanta Regional Collaborative for Health Improvement</strong></td>
<td>Massachusetts Health Quality Partners</td>
</tr>
<tr>
<td>Better Health Greater Cleveland</td>
<td>Memphis, TN</td>
</tr>
<tr>
<td>California Chartered Value Exchange</td>
<td>Michigan Health Information Alliance</td>
</tr>
<tr>
<td>California Cooperative Healthcare Reporting Initiative</td>
<td>Michigan Lower Peninsula “medical trading area”</td>
</tr>
<tr>
<td>Cedar Rapids, IA</td>
<td>Midwest Health Initiative</td>
</tr>
<tr>
<td>Center for Improving Value in Health Care</td>
<td>Minnesota Community Measurement</td>
</tr>
<tr>
<td>The Health Collaborative</td>
<td>Minnesota Healthcare Value Exchange</td>
</tr>
<tr>
<td>Colorado Value Exchange</td>
<td>Nevada Partnership for Value-driven Health Care</td>
</tr>
<tr>
<td>Columbia, SC</td>
<td>New York Quality Alliance</td>
</tr>
<tr>
<td>Contra Costa County, CA</td>
<td>Oregon Health Care Quality Corporation</td>
</tr>
<tr>
<td>Grand Junction, CO</td>
<td>P^2 Collaborative</td>
</tr>
<tr>
<td>Greater Detroit Area Health Council</td>
<td>Pittsburgh Regional Health Initiative</td>
</tr>
<tr>
<td>Greater Louisville Value Exchange Partnership</td>
<td>Pueblo County, CO</td>
</tr>
<tr>
<td>Health Improvement Collaborative of Greater Cincinnati</td>
<td>Puget Sound Health Alliance</td>
</tr>
<tr>
<td>Healthy Memphis Common Table</td>
<td>Quality Health First Program</td>
</tr>
<tr>
<td>Healthy York County Coalition</td>
<td>Quality Quest for Health of Illinois</td>
</tr>
<tr>
<td>Humboldt County (California Center for Rural Policy)</td>
<td><strong>Upper Valley - Vital Communities, NH and VT</strong></td>
</tr>
<tr>
<td>Institute for Clinical Systems Improvement</td>
<td>Utah Partnership for Value-Driven Health Care</td>
</tr>
<tr>
<td>Integrated Healthcare Association</td>
<td>Virginia Health Care Alliance</td>
</tr>
<tr>
<td>Iowa Healthcare Collaborative</td>
<td>Wisconsin Collaborative for Healthcare Quality</td>
</tr>
<tr>
<td>Kansas City Quality Improvement Consortium</td>
<td>Wisconsin Healthcare Value Exchange</td>
</tr>
</tbody>
</table>
Major Elements

1. Local Governance
2. Systems Thinking
3. Sustainable Financing
"...systems thinking and simulation modeling can help expand the boundaries of our mental models, enhance our ability to generate and learn from evidence, and catalyze effective change in public health and beyond.”

“Side effects are not a feature of reality, but a sign that the boundaries of our mental models are too narrow, our time horizons too short.

- John Sterman, PhD

Establish formal theory
Incorporate feedback, delays, stocks, & flows
Ground predictions in evidence
Estimate implementation costs
Strengthen decision-making

Source: AJPH, March 2006; 96:505
Systems Thinking: ReThink Dynamics

Geographic Focus

Productivity & Equity

- Risk
- Health
- Care
- Cost
- Capacity

- Initiatives
- Captured Savings
- Innovation Funds
- Payment Scheme

Aging

Adjustable Trends
- Insurance eligibility
- Economic conditions
- Health care inflation
- Primary care slots

Source: Bobby Millstein, Systems Dynamic Model, ReThink Health
Disadvantage → Health Risks → Uncontrolled chronic illness → Quality of preventive & chronic care → Non-urgent ER visits → Hospital & extended care → Health care costs → Uninsurance

Economic recession → Shortage of FQHC capacity → Economic productivity → Declining urgent case fatality → Population aging → Medical price inflation → Provider Net Income

CHIP program for youth → Restrictive Medicaid eligibility

Source: ReThink Health
Systems Thinking: Initial Pilot

Pueblo: Modeling System Dynamics

Causal Pathways

System

Core Members (N=15)

- Health Department and Board of Health
- Community Health Center
- Medical Centers and Hospitals
- Mental Health Center
- Kaiser Permanente

Source: Bobby Millstein, ReThinking Health in Pueblo, Colorado: A Stewardship Strategy to Advance the Triple Aim, ReThink Health
Common Pitfalls for Health System Ventures

- Failing to invest enough or spreading resources over too many initiatives
- Lopsided investments downstream or upstream
- Triggering “supply push” responses to declining utilization
- Exacerbating capacity bottlenecks
- Neglecting or focusing exclusively on the disadvantaged
- Failing to sustain program financing
- Pursuing narrow goals and short-term impacts
Systems Thinking: Initial Pilot

Pueblo: Modeling System Dynamics

Core Members (N=15)
- Health Department and Board of Health
- Community Health Center
- Medical Centers and Hospitals
- Mental Health Center
- Kaiser Permanente

Wider Area Stakeholders (N=30+)
- Commerce, Schools, University, Local Government, Philanthropy, IHI

Source: Bobby Millstein, ReThinking Health in Pueblo, Colorado: A Stewardship Strategy to Advance the Triple Aim, ReThink Health
Systems Thinking: Atlanta

ReThink Health - Atlanta

Progress Toward Core Values
Percent Change Relative to the Baseline at Year 2040

Health
-22.0% Death rate
-20.7% Severe physical illness
-24.3% Untreated mental illness

Cost
-18.4% Health care costs, per cap

Spending & Savings
$244M Program spending, at 2040
$5.50B Program spending, cumul
$158M Unspent funds, cumul
-$1.68K Net costs, at 2040
1.00 Spending vs indicated, at 2040

Click variable name to see graph over time

Inequity
-8.9% Disadvantaged group
-7.9% Disadvantaged deaths

Care
51.3% Adequacy prev/chron care
0.0% PCP sufficiency Medicaid
25.5% PCP sufficiency, Disadv-Unins
-40.9% Nonurgent episodes to ER
-27.1% Inpatient stays
-35.0% Readmission rate

Productivity
6.1% Value of productivity
-18.1% Workforce care costs, per cap

Scenario: Healthy Beh, Self Care, PCP Eff, Cord Care, CGP SS

Model Version 2e: 08.01.13
Systems Thinking: Atlanta

Death rate, age standardized

Adequacy of preventive and chronic care

Disadvantaged fraction of deaths

Value of productivity
Assumes: capture and reinvest 25% of savings
ReThink Health

Major Elements

1. Local Governance
2. Systems Thinking
3. Sustainable Financing
Hospital Community Benefit

- What the ACA now requires:
  - Conduct a community health needs assessment;
  - Integrate input from broad community interests; and
  - Develop and adopt a formal implementation strategy to address identified unmet needs

- What is possible:
  - Regionally coordinated needs assessment
  - Coordinated portfolio of improvement projects
  - Pooling of community benefit funds
  - Aligning and enhancing workforce capacity
Social Impact Bonds

1. Identify
2. Invest
3. Improve
4. Return

Financial stakeholders

share-of-savings contract

Investors

capital to pay for intervention

Validated savings

Better health, lower costs

Independent evaluators

Service providers

Source: Collective Health LLC, 2013
Community Health Trusts

- Set priorities for prevention, invest in innovative interventions, integrate prevention with health system
- Funding
  - Pooling of hospital Community Benefit contributions to community health improvement projects
  - Funds from special sources such as legal judgments (e.g., tobacco settlements) or non-profit conversion funds
  - Project-specific funding sources such as foundation grants
  - Health insurance premiums
  - Employer contributions
  - General tax revenues
Upper Connecticut River Valley
## Upper Connecticut River Valley - Workgroups

### Initial Planning Team

<table>
<thead>
<tr>
<th>NAME</th>
<th>TITLE</th>
<th>ORGANIZATION</th>
</tr>
</thead>
<tbody>
<tr>
<td>Barbara Couch</td>
<td>VP Corporate Social Responsibility</td>
<td>Hypertherm</td>
</tr>
<tr>
<td>Elliott Fisher</td>
<td>Director</td>
<td>The Dartmouth Institute</td>
</tr>
<tr>
<td>Sara Kobylenski</td>
<td>Executive Director</td>
<td>The Upper Valley Haven</td>
</tr>
<tr>
<td>Laura Landy</td>
<td>President &amp; CEO</td>
<td>The Fannie E. Rippel Foundation</td>
</tr>
<tr>
<td>Gregg Meyer</td>
<td>CCO and Executive VP for Population Health</td>
<td>Dartmouth-Hitchcock Medical Center</td>
</tr>
<tr>
<td>Al Mulley</td>
<td>Director</td>
<td>The Dartmouth Center for HCDS</td>
</tr>
<tr>
<td>Gene Nelson</td>
<td>Director of Population Health and Measurement</td>
<td>The Dartmouth Institute</td>
</tr>
<tr>
<td>Steve Voigt</td>
<td>President &amp; CEO</td>
<td>King Arthur Flour</td>
</tr>
<tr>
<td>Jenet Corrigan</td>
<td>Distinguished Fellow</td>
<td>Dartmouth Institute</td>
</tr>
</tbody>
</table>

### Engaged Upper Valley Leaders (selection)

<table>
<thead>
<tr>
<th>NAME</th>
<th>TITLE</th>
<th>ORGANIZATION</th>
</tr>
</thead>
<tbody>
<tr>
<td>Patrick Andrew</td>
<td>Superintendent</td>
<td>Mascom Valley Regional High School</td>
</tr>
<tr>
<td>Julia Griffin</td>
<td>Town Manager</td>
<td>Town of Hanover, NH</td>
</tr>
<tr>
<td>Laurie Harding</td>
<td>State Representative</td>
<td>NH House of Representatives</td>
</tr>
<tr>
<td>Karen Hein</td>
<td>Board Member</td>
<td>Green Mountain Care Board, VT</td>
</tr>
<tr>
<td>Robin Lunge</td>
<td>Director of Health Care Reform</td>
<td>State of Vermont</td>
</tr>
<tr>
<td>Joanne McLaughlin</td>
<td>CEO</td>
<td>VNA of VT and NH</td>
</tr>
<tr>
<td>Rob Schultz</td>
<td>Executive Director</td>
<td>COVER Home Repair</td>
</tr>
<tr>
<td>Suzanne Stofflett</td>
<td>Interim Vice President</td>
<td>Granite State United Way</td>
</tr>
</tbody>
</table>
## Upper Connecticut River Valley - Workgroups

<table>
<thead>
<tr>
<th>NAME</th>
<th>TITLE</th>
</tr>
</thead>
<tbody>
<tr>
<td>Community Engagement</td>
<td>(Sara Kobylnski) Engage community to build vision, set goals, and create the conditions needed for regional stewardship</td>
</tr>
<tr>
<td>Stewardship</td>
<td>(Steve Voigt) Design and support the emergence of a stewardship structure to enable multi-stakeholder engagement in transformation</td>
</tr>
<tr>
<td>Measurement</td>
<td>(Gene Nelson) Develop and implement a measurement strategy that enables the initiative to trace progress, test effectiveness, learn</td>
</tr>
<tr>
<td>Innovation</td>
<td>(Barbara Couch) To build the inventory of current activities and help create an environment to identify, support and spread initiatives</td>
</tr>
<tr>
<td>Finance</td>
<td>(Janet Corrigan): To identify strategies for alignment of current funding streams and develop and implement approaches to capturing savings</td>
</tr>
<tr>
<td>Management</td>
<td>(Sara Kobylnski, Elliott Fisher) provide support and coordination for activities and until transition to a backbone organization</td>
</tr>
</tbody>
</table>

http://rethinkhealth.org/ucrv/
UCRV First Meeting: Building a Shared Vision

http://rethinkhealth.org/ucrv/
UCRV Second Meeting: Setting Goals
<table>
<thead>
<tr>
<th>Variable Name</th>
<th>2040</th>
</tr>
</thead>
<tbody>
<tr>
<td>Deaths avoided per $100,000 spent (Healthy Beh, Self Care, PCP Eff, Cord Care, CGP SS)</td>
<td>0.98</td>
</tr>
<tr>
<td>Additional person-years of adequate care per $100,000 spent (Base)</td>
<td>0.00</td>
</tr>
<tr>
<td>Additional person-years of adequate care per $100,000 spent (Healthy Beh, Self Care, PCP Eff, Cord Care, CGP SS)</td>
<td>189</td>
</tr>
<tr>
<td>Healthcare costs avoided per $1 spent (Base)</td>
<td>$0.00</td>
</tr>
<tr>
<td>Healthcare costs avoided per $1 spent (Healthy Beh, Self Care, PCP Eff, Cord Care, CGP SS)</td>
<td>$10.66</td>
</tr>
<tr>
<td>Value of increased productivity per $1 spent (Base)</td>
<td>$0.00</td>
</tr>
<tr>
<td>Value of increased productivity per $1 spent (Healthy Beh, Self Care, PCP Eff, Cord Care, CGP SS)</td>
<td>$5.60</td>
</tr>
</tbody>
</table>
Elinor Ostrom

- "...humans have more capability to solve social dilemmas than posited in rational-choice theory…"
- "...designing institutions to force ... entirely self-interested individuals has been the major goal (of policy)"
- "...instead, a core goal of ... policy should be to develop institutions that bring out the best in humans.”