The Learning Health System: Visions of the Present and Future

Charles P. Friedman, PhD
University of Michigan
NSF Workshop
April 11-12, 2013
One Metaphor and One Lesson from History
My Main Points

• The present vision of the LHS
• The gathering momentum to achieve it
• The future vision that is the focus of this workshop
A Learning Health System (LHS)

“… one in which progress in science, informatics, and care culture align to generate new knowledge as an ongoing, natural by-product of the care experience, and seamlessly refine and deliver best practices for continuous improvement in health and health care.”

(Institute of Medicine)
In Simpler Language

• The health system is going digital
  ~40% now
  ~80% by 2019

• If each care provider, patient, researcher, used his/her own data only for immediate needs, we are undershooting the potential

• If comparable data are shared, we can establish a virtuous cycle of learning and improvement

• The key is to figure out how to do this routinely.
A National-Scale Learning Health System

- Beacon Community
- Integrated Delivery System
- Patient-centered Groups
- Federal Agencies
- State Public Health
- Health Information Organization
- Health Center Network
- Governance
  - Patient Engagement
  - Trust
  - Analysis
  - Dissemination
The LHS Must Work Bi-Directionally: Afferent and Efferent Arms
The National LHS: *One Infrastructure* that Supports

- **Research**
  - Clinical
  - Comparative effectiveness
  - Translational

- **Public Health**
  - Surveillance
  - Situational Awareness

- **Quality Improvement**
  - Health process and outcomes research
  - Best practice dissemination

- **Consumer Engagement**
  - Knowledge-driven decision making
The National LHS as Currently Envisioned

• A federation of some type
  – *Not* a centralized database
• Grounded in public trust and patient engagement
• Participatory governance
• An “Ultra Large Scale” socio-technical system
My Main Points

• The present vision of the LHS
• The gathering momentum to achieve it
• The future vision that the focus of this workshop
LHS: A Pillar of the 2011 Federal Health IT Strategic Plan

Goal I: Achieve Adoption and Information Exchange through Meaningful Use of Health IT

Goal II: Improve Care, Improve Population Health, and Reduce Health Care Costs through the Use of Health IT

Goal III: Inspire Confidence and Trust in Health IT

Goal IV: Empower Individuals with Health IT to Improve their Health and the Health Care System

Goal V: Achieve Rapid Learning and Technological Advancement

Transform Health Care

Better Technology

Better Information
IOM Reports

Digital Infrastructure for the Learning Health System: The Foundation for Continuous Improvement in Health and Health Care

Best Care at Lower Cost: The Path to Continuously Learning Health Care in America
• Perspective: Jan 3, 2013
• “Code Red and Blue — Safely Limiting Health Care’s GDP Footprint”
  Arnold Milstein, M.D., M.P.H.

...U.S. health care needs to adopt new work methods, outlined in the Institute of Medicine’s vision for a learning health system... Such methods would enable clinicians and health care managers to more rapidly improve value by continuously examining current clinical workflows, management tools from other service industries, burgeoning databases, and advances in applied sciences (especially health psychology and information, communication, and materials technologies). They could then use the insights gained to design and test innovations for better fulfilling patients’ health goals with less spending and rapidly scaling successful innovations.
And News from NIH…

NIH to recruit Associate Director for Data Science

National Institutes of Health Director Francis S. Collins, M.D., Ph.D., today announced plans to recruit a new senior scientific position, the Associate Director for Data Science. The associate director will lead a series of NIH-wide strategic initiatives that collectively aim to capitalize on the exponential growth of biomedical research data, such as from genomics, imaging, and electronic health records…
The LHS Summit: May 17-18, 2012

Engaging a critical mass of key stakeholders, to be, for the LHS, what the Dumbarton Oaks Conference was for the United Nations (see http://LearningHealth.org)

• ~ 70 organizations represented at the National Press Club
• Resulted in 10 consensus LHS Core Values
• Giving rise to national “Learning Health Community”
Learning Health System *Core Values*

*Full version in the resource paper library...*

1. Person-Focused
2. Privacy
3. Inclusiveness
4. Transparency
5. Accessibility
6. Adaptability
7. Governance
8. Cooperative and Participatory Leadership
9. Scientific Integrity
10. Value
50 Endorsements of the LHS Core Values*
(As of 3/12/2013)

*To be included on a Learning Health Community public website that will list all organizations that have endorsed the LHS Core Values.
In Sum: A Growing National Movement

• Achieving multi-stakeholder endorsement of LHS Core Values (52 endorsements received to date)

• Building a self-organizing, multi-stakeholder “learning health community”, to develop as a coalition of the willing

• National workshops (this one, and others)

• Catalyzing, leading, and participating in initiatives
  - Standards
  - Governance,
    Technology
My Main Points

• The present vision of the LHS
• The gathering momentum to achieve it
• The future vision that is the focus of this workshop
The “System-After-Next”

In working with institutions and companies on new uses of computing, I have encouraged the view that the future is more often invented than discovered. To help invent the future, we envision ways of integrating people, processes and technology. This vision - called the system-after-next - serves as a guidepost to draw organizational development. The result is a kind of planning from the future back to the present...

Our Target: The LHS-After-Next

• The initial implementation of the LHS will be what we can build with knowledge we currently possess
• The LHS-After-Next will be much higher-functioning and informed by research
• Our four use cases are a start at envisioning the LHS-After-Next
• In this workshop we will identify the challenges to achieving the LHS-After-Next
The Two Talks that Follow…

• Will provide perspective on the “LHS after next”
• Kevin Sullivan from a computing science and engineering perspective
• Lynn Etheredge from a economics and behavioral science perspective