

Health Information Technology-Electronic Health Records: Promises and Realities

Savings in Electronic Medical Record Systems? Do It for the Quality

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Clifford Goodman, PhD
Senior Vice President
clifford.goodman@lewin.com

Potential Savings as a Selling Proposition

- Policymakers are considering whether to make major long-term investments in electronic medical record (EMR) systems
- The prospect for EMR systems to decrease costs is a potential selling point
 - Policymakers may seek cost-neutral or cost-reducing solutions
- To what extent are projected cost savings realistic and meaningful?

RAND Study - Two Main Approaches for Estimating Savings

- Top-down
 - Apply productivity gain rates experienced by other industries that adopted IT during 1990s to health sector
- Bottom-up
 - Starting with EMR effects reported in the literature, use modeling to scale-up savings to health care savings

Top-down Approach

- Apply productivity gain rates experienced by other industries that adopted IT during 1990s
- Telecom, securities trading, retail & general merchandising invested heavily in IT
 - Experienced 6-8% annual productivity growth
 - One-third to one-fourth of this attributed to IT

Top-down Approach

- For the period 2002-2017, apply productivity improvements of:
 - 1.5% per year (as in retail-wholesale):
 - \$346 B average annual health care savings
 - In 2012, that would be 11% of projected national health expenditures (NHE)
 - 4.0% per year (as in one-half of telecom):
 - \$813 B average annual health care savings
 - In 2012, that would be 26% of projected NHE
 - Yes, that would be real money

Top-down Approach – Caveats, for example ...

- Econometric evidence finds no correlation between IT investment and productivity growth during 1973-1989 (i.e., before 1990s cited by RAND) in such industries as insurance banking, air transport, wholesale trade, retail trade, and manufacturing.
 - An exception: “The telephone industry had huge numbers of employees doing a number of well-subdivided, highly routinized tasks.” (Landauer 1995)
- “The complexity of health care makes it unlikely that we will achieve large productivity gains more quickly than other industries have.” (Walker 2005)

Bottom-up Approach

- Start with EMR effects reported in the literature
- Scale-up the effects with a simulation of health IT adoption
- Savings based on:
 - Greater efficiency in inpatient care, outpatient care, and safety benefits
 - Short-term preventive care
 - Near-term chronic disease management
 - Long-term prevention of chronic disease

Projected Savings by Year 15

- \$82 B per year in health care efficiency and safety
 - \$77.4 B: inpatient and outpatient efficiency
 - eventual 90% adoption in inpatient and outpatient settings
 - avg. \$42 B per year
 - \$1.0 B: inpatient adverse drug events
 - \$3.5 B: ambulatory adverse drug events
- \$628 B cumulative savings
 - \$468.5 B inpatient
 - \$159 B outpatient

Implementation Costs Over 15 Years

- \$115 B cumulative implementation costs
 - \$98 B: hospitals
 - \$17.2 B: physicians
- Assumes front-end loaded implementation costs:
 - Outpatient settings: 2 years
 - Followed by 20% annual maintenance costs
 - Inpatient settings: 4 years
 - Followed by 30% annual maintenance costs

Cumulative Net Savings Over 15 Years

- $\$628 \text{ B} - \$115 \text{ B} = \$513 \text{ B}^*$
 - $\$468.5 \text{ B} - \$98 \text{ B} = \$371 \text{ B}$: hospitals
 - $\$159 \text{ B} - \$17.2 \text{ B} = \$142 \text{ B}$: physicians

*Cumulative net savings are provided only for efficiency and safety, not for the disease management and lifestyle changes. Although RAND paper offers that improvements in prevention and management of chronic disease could double the \$82 B in annual savings to be achieved in 15 years, the figure presented appear to indicate a 50% increase, to approx. \$120 B by then.

Real Money?

- National policymakers are weighing the potential costs and benefits of making substantial financial commitments to broad implementation of HIT.
- The prospect of realizing dramatic reductions in national health spending could be persuasive and perhaps decisive.
- Is it viable?

Real Money?

- Assume 15 year implementation starting in 2004
- Annual savings will reach \$82 B savings by 2019
 - When mid-point baby-boomers turn 65
 - Annual NHE will be approx. \$5 T
 - Would reach **1.7%** of NHE in 2019
- Projected \$513 B cumulative savings by 2019
 - Cumulative NHE will be approx. \$48-50 T
 - Would reach **1.06%** of cumulative NHE by 2019

Projecting Savings onto National Health Spending

- Provides rough idea for relative magnitude of potential impact and how gradual this effect would be, even in optimistic scenarios
- However, usefulness of this approach is limited
- Projected savings are scaled-up from effects reported in literature
 - Does literature reflect failures?
 - Have instances of favorable effects been sustained?
 - Are these effects generalizable?
 - Could these effects be scaled up?

Could Savings Ever Hit the Bottom Line?

- Health care system is not one in which demand is being satisfied
- Whether in its current form or transformed, U.S. health care system will find ways to reallocate any savings
- As RAND notes:
 - “It is possible that the efficiencies will be used to improve health care quality rather than to reduce costs.”
- It is unrealistic to hold out effective, widespread adoption of HIT as a net cost saver for NHE

Could Savings Ever Hit the Bottom Line?

- Indeed, the extraordinary IT-enabled productivity improvements experienced in telecom, securities, and other sectors did not result in less spending in those industries, but ...
 - They do exemplify creation of previously unimaginable forms of benefit for burgeoning markets
- What might that suggest for the health care sector?

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CBO: Evidence on the Costs and Benefits of Health Information Technology (2008)

- CBO analyzed studies by RAND and Center for Information Technology Leadership. In the view of CBO:
 - “By itself, the adoption of more health IT is generally not sufficient to produce significant cost savings.”
 - “Both studies overestimate the savings for the healthcare system as a whole.”
 - RAND study was based on subset of literature that found positive effects for implementation of health IT; it ignored studies that did not find favorable results.
 - RAND study projected savings of adoption of health IT relative to the level of adoption as it stood in 2004. It did not account for the trend in adoption that would have occurred since then in the absence of a policy intervention, thereby describing the net effect (as CBO typically would do).
 - RAND study did not account for the potential cost savings that would accrue from comparative effectiveness research, which could be enabled by the large volumes of real-world practice data captured by an enhanced health IT capacity.

A More Realistic Question

- Will HIT/EMR improve health care at an acceptable cost?

We have ways to assess this

The Medium Will Enable New Messages

- Transformation: not just plug and play
 - Requires content and smart analytical software (as noted by RAND)
- For example:
 - Need to develop predictive modeling algorithms linked to pharmacogenomic databases and other emerging resources to identify and optimally manage patients with particular conditions

The Medium Will Enable New Messages

- Other new and emerging tools will have to be not just upgraded but uploaded. For example:
 - CPOE is used to warn about potentially harmful interactions of a new drug with other drugs.
 - Brought into a broader HIT system, CPOE can avoid upstream errors in drug order and execution
 - Across a large population, a health plan, or a country, CPOE data can contribute to post-marketing surveillance, epidemiology, and market research
- This will require extending and creating new algorithms and software whose applications will be enabled by widespread adoption of HIT

Do It for the Quality

- Potential of HIT adoption offers direct means of addressing inexcusable quality deficit in U.S.
- Potential efficiencies and improvements (though not savings) described by Hillestad et al. are within reach of current technology
- Major commitment by federal gov't, active support of private sector, is needed to resolve short-term disincentives and market barriers to HIT participation
- Capacity for transformation will arise when this system enables new forms of high-speed, broadly integrated data collection, analysis, and knowledge development and transfer in a value-based health care market

What Should Policymakers Ask?

- Are findings of demo projects/other studies ...
 - Derived from rigorous inquiry of research questions in a given setting? (Internal validity)
 - Generalizable to other settings? (External validity)
- Are these systems home-grown one-offs or commercially available?
- What were disruptive effects?
- Aside from hardware, software, other capital costs, are costs accounted for work process analysis, software configuration, testing, user training, IT staff/support, transition (involving dual systems), maintenance, upgrades?
- What are institutional commitment and capacity for transformation?
- What incentives will be required?
- Do projections of impact (e.g., productivity, costs) of new systems account for current trends?

PERSPECTIVE

Savings In Electronic Medical Record Systems? Do It For The Quality

It is unrealistic to hold out widespread adoption of health information technology as a net cost saver.

by **Clifford Goodman**

ABSTRACT: National policymakers are considering whether to make major long-term investments in electronic medical record (EMR) systems. The matter of rising health care costs is never far from any health care debate, and the prospect for EMR systems to decrease costs is a potential selling point. The paper by Richard Hillestad and colleagues presents a well-documented analysis of the potential costs, savings, and other benefits of widespread adoption of interoperable EMR systems. It focuses on the potential savings such systems could yield. Here I examine the main components of their argument and question whether such savings could ever be realized.

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