

Technology And Health Care Economics: An Opportunity For The Practicing Physician

Arnie Calica, MD, PhD
Gary Marchant, JD, PhD

Introduction

For physicians entering clinical practice in 2014, planning for the future is a daunting prospect. This article will focus on a narrow issue – the effects of technological change on health care. A new result in health care economics will be presented. Speculations will be given on how this result will affect health care and how the physician could use this new material to plan ahead. The idea for this article is partly based on a conference entitled, *Technology and the Rising Cost of Health Care: A Paradigm Shift*, sponsored by University of Chicago and ASU Sandra Day O'Connor School of Law, and held at Arizona State University in March 2013.¹

Statement of the Problem

Classically there has been a debate as to whether technological advances in health care are economically useful or economically counterproductive.

This debate has usually involved invoking examples that favor one view over the other.

For example, the introduction of more effective medications in the treatment of peptic ulcer is an advance that is clearly helpful. We have gone from an era in which peptic ulcer was frequently treated with surgery to an era in which peptic ulcer is mostly treated with medicine. Current treatment for peptic ulcer is less expensive and the results are better.

On the other hand, treating metastatic breast cancer with bone marrow transplant isn't helpful. Bone marrow transplant for metastatic breast cancer has evolved from experimental to popular to infrequent. These changes were partly influenced by research (some of which was fraudulent).² Currently, treatment of breast cancer with bone marrow transplant is seen to be very expensive, somewhat hazardous and no better than conventional chemotherapy. The use of bone marrow transplant as a routine treatment for metastatic breast

cancer has become deservedly unpopular. Additional examples of unhelpful technology are given in George Poste's lecture.¹

The Result of Daniel Lawver

The issue of whether technological progress helps or hinders health care has been clarified by Daniel Lawver. This material is embodied in his Arizona State University Ph.D. thesis written under the supervision of Edward Prescott, Nobel Prize, Economics.³

Lawver looks at health care during an 11-year period (1996 - 2007). Using ingenious techniques, he calculates whether all changes in health care, when added up during this period, produce a net benefit. His conclusion is that during this period we get more value for each health care dollar spent. Moreover, the growth in health care productivity is faster than the growth of the economy generally. See [3], [1] (Edward Prescott's Lecture).

Medical research and development is a major driver of increased health care productivity. Yet despite its importance, the cost of



research and development is known to constitute only a small fraction (about 5% in 2009) of the health care dollar in the United States. (cf [4], [5], [1] (Robert Topel's Lecture)).

How do Lawyer's results relate to the Health Care Crisis?

The Health Care Crisis is the alarming growth in the proportion of the Gross Domestic Product (GDP) represented by health care expenditure. For example, 12.1% of GDP was spent on health care in 1990. By 2010 that proportion had increased to 17.4%.⁶ For a brief summary of the issues in the health care crisis see the sidebar.

Taken together, the Health Care Crisis and Lawyer's results point to significant conclusions. The net societal cost of the individual components of health care is decreasing. The cost per person for health care is rising markedly. This means that the demand for health care services is increasing even faster than the advances in health care productivity.

Lawyer's work implies that at any level of funding, there will be improvement in health care productivity with time. This means that the quantity and quality of services per dollar spent will improve with time.

A related issue is the value of health care research. The cost of research in health care is relatively modest with respect to its value. Estimating the value

of health care is dealt with in [4] & [1] (Robert Topel's Lecture). Throttling research would have significant adverse effects on the quality of future health care.

What can the Clinician do about Technology?

It is important for the clinician to recognize that medicine is changing for the better in the sense that productivity is increasing. It is difficult to accurately predict which technological changes will become useful. If one could predict and adapt quickly, everyone would benefit. In particular the individual clinician may be able to do more and better work in a given time period. This could result in increased revenue for those physicians who adapt to technological advances most efficiently. The patient who receives better care will benefit as well.

The following suggestions may be helpful to physicians in practice:

- Try to incorporate new and useful technology into your practice.
- Involve yourself with the development of technology in your specialty.
- Avoid or discard technology that is not helpful. (Do not adopt any scheme that provides inferior care, but allows you to do more work.)
- Strive to negotiate contracts that are based upon work accomplished rather than on hourly compensation.

REFERENCES & LINKS

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The Health Care Crisis Simplified

The conventional view of the health care crisis includes:

- The proportion of the GDP devoted to health care is rising sharply.
- Other advanced countries spend less on health care.⁷
- Waste, fraud, poor medical records, insurance reform and reorganization of health care delivery, are viewed as important issues.
- Advances in medical technology are viewed with ambivalence.
- The notion that the market for health care services is distorted and that many patients have a menu with no prices does not play a major role in the health care debate.

Techniques that might be used to deal with the Health Care Crisis include some combination of the following:

- Do nothing.
- Reduce waste.
- Ration Health Care Services.
- Throttle health care technology.
- Use more selectivity in the use of technological advances.
- Economically enfranchise the patient by requiring her to pay part of the bill.
- Add more regulations to the system as problems arise.