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**Rethinking – Design Thinking – Health Care**

# The Provider Role

## Appendix

Ash Bhoopathy, Lin Lin, Lise Lynam, Gauri Verma, Yekyung Yoo

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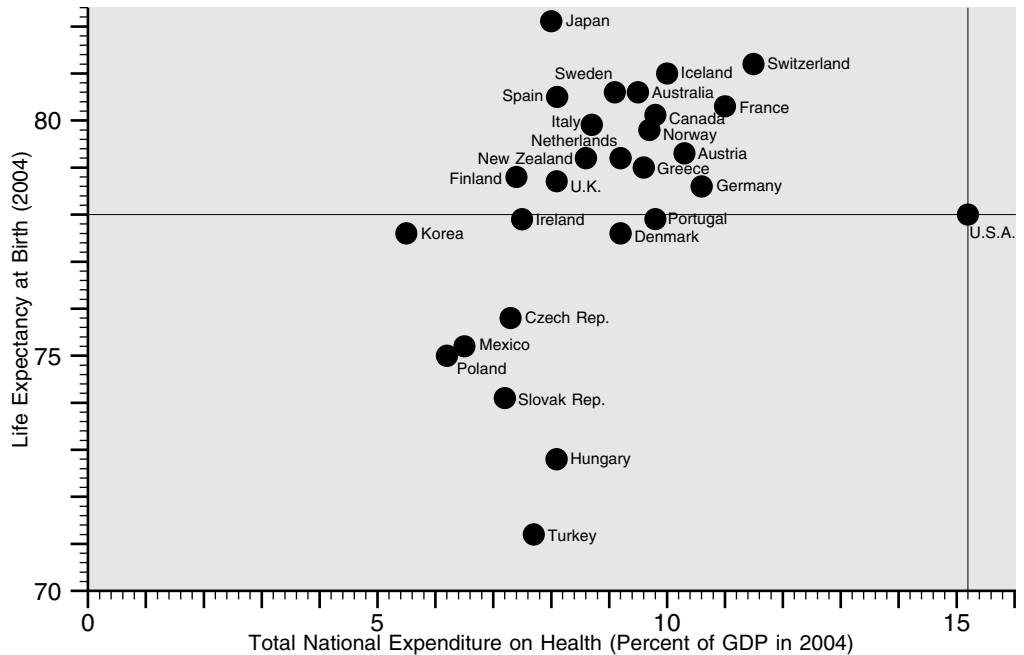
# Rethinking – DesignThinking – Health Care

## A Health Care Framework for Employers, Providers, Health Plans, Suppliers and Governments

### Charter

#### Background

"The U.S. health care system is notorious for its high costs, which Americans traditionally assumed was the price of excellence. Some American health care is truly superb, but we now know that serious quality problems also plague the system. There is compelling evidence that much care falls well short of excellence, that both too little and too much care is provided, and that alarming rates of medical error persist".<sup>1</sup>



"In the past two decades, health care has gone from being a source of national pride to one of America's preeminent concerns. The nation spends almost \$2 trillion annually on health care, and costs continue to escalate to levels approaching a national crisis. As costs rise, more and more Americans have lost access to health insurance. As these individuals face insufficient or nonexistent primary and preventive care, quality suffers and costs rise even further. Unless there is dramatic change, the aging of the baby boomers will drive more cost escalation, followed by intense pressures for cost shifting, price controls, rationing, and reduced services for ever more Americans.

The combination of high costs, unsatisfactory quality, and limited access to health care has created anxiety and frustration for all participants. No one is happy with the current system—not *patients*, who worry about the cost of insurance and the quality of care; not *employers*, who face escalating premiums and unhappy employees; not *physicians and other providers*, whose incomes have been squeezed, professional judgments overridden, and workdays overwhelmed with

bureaucracy and paperwork; not *health plans*, which are routinely vilified; not *suppliers of drugs and medical devices*, which have introduced many life-saving or life-enhancing therapies but get blamed for driving up costs; and not *governments*, whose budgets are spinning out of control." <sup>2</sup>

"The fundamental problem in the U.S. health care system is that the structure of health care delivery is broken. ... And the structure of health care delivery is broken because competition is broken. All of the well-intended reform movements have failed because they did not address the underlying nature of competition. ... The failure of competition is evident in the large and inexplicable differences in cost and quality for the same type of care across providers and across geographical area. Competition does not reward the best providers, nor do weaker providers go out of business. ... Why is competition failing in health care? Why is value for patients not higher and improving faster? The reason is not a lack of competition, but the *wrong kind of competition*. Competition has taken place at the wrong levels and on the wrong things. It has gravitated to a zero-sum competition, in which the gains of one system participant come at the expense of others. Participants compete to shift costs to one another, accumulate bargaining power, and limit services." <sup>3</sup>

"Competition on *value* must revolve around results. The results that matter are ***patient outcomes per unit of cost at the medical condition level***. Competition on results means that those providers, health plans, and suppliers that achieve excellence are rewarded with more business, while those that fail to demonstrate good results decline or cease to provide that service. ... Competing on results requires that results be measured and made widely available. Only by measuring and holding every system participant accountable for results will the performance of the health care system ever be significantly improved. ... ***Mandatory measurement and reporting of results is perhaps the single most important step in reforming the health care system.***" <sup>4</sup>

<sup>1</sup> Porter, Michael E. and Elizabeth Olmsted Teisberg. (2006) *Redefining Health Care. Creating Value-Based Competition on Results*. Cambridge, MA: Harvard Business School Press, p 1.

<sup>2</sup>Ibid, pp 1,2.

<sup>3</sup>Ibid, pp 3,4.

<sup>4</sup>Ibid, pp 6,7.

## Relevant Trends

Health care in the United States is subject to many of the trends that other industries and institutions will experience. Among these, and trends within the industry generated by its own actions are:

### **Population Growth**

Population growth continues in the U.S. Most developed countries have slowed population growth to near-replacement levels, and the U.S. birth rate is .9%, in line with the industrialized nations. Immigration in the U.S., however, is high and rising population figures reflect that. The August 2007 estimate of national population size is 302,500,000. For reference, the population in 1950 was 155,000,000.

### **Population Age Distribution**

Age distribution in the U.S. faces radical change over the period from now until 2025. As baby boomers reach retirement, the population pyramid will shift from one with a central bulge, but relatively classic shape, to one with a slight slope from 85+ to 65 and then an almost vertical slope the rest of the way down. The pyramid will develop a significant "aged" segment during this time. In the oldest portions of this segment (70+), women will continue to outnumber men.

### **Population Movement**

A combination of forces is creating a movement of people from rural to urban environments. In developed countries like the U.S., it is the renaissance of the city as a cultural center coupled with the progression from manufacturing to service to

information economies. In 2005, for the first time, the world's population was more urban than rural.

### **Health Care Costs**

Health care in America is outstripping all other costs. In the 1950's it was 6% of the gross national product, compared with 6% for education and 6% for defense. By 2003, the figures were approximately 4% for defense, 6% for education and 14.2% for health care, more than 1.5 *trillion* dollars for health care alone. The growing elderly segment of the population pyramid guarantees further accelerated growth in health care costs unless there is radical change to the system.

### **Increasing expectations**

The growing availability and capabilities of communications such as cellular telephones, satellite and cable TV, and the Internet are providing people with daily knowledge of living conditions, problems, products, threats and services everywhere. As the media create new and faster avenues of communication, they also raise levels of awareness and create expectations that both fuel demand and encourage willingness to change.

### **Internet Penetration**

Computer use and Internet access grow exponentially every year. Information of encyclopedic detail can be obtained more and more easily, and complex, sophisticated processes can be used remotely. Access to high-quality communications and sophisticated computer tools are increasingly available to individuals and groups anywhere. In the United States, Internet penetration reached 70% in 2007.

### **Emerging Technologies**

The pace of technological change continues to accelerate, bringing new science to industrial, institutional and governmental uses at an ever quickening pace. Most notable among many promising fields, major technological innovations can be expected in the new disciplines of molecular nanotechnology, robotics and the biosciences.

### **New Relationships**

Greater public mobility and access to information is changing the nature of association for many individuals and organizations. Organizations that once operated in isolation are now players in a common environment. Sometimes the emerging relationships are competitive, sometimes cooperative, and new forms of relationship can be expected to be created as conditions evolve.

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## **Project Statement**

Using Structured Planning methodology, conduct an advanced planning project to develop information service systems and ways to measure their success for *employers, providers, health plans, suppliers, and government*.

Component proposals should:

1. consider Porter and Teisberg's ***Redefining Health Care*** as the primary guideline defining policy strategy.
2. plan services with the understanding that they will be incorporated in a universal health care system.
3. anticipate and plan for networked operational cooperation among all elements of the system—locally, regionally and internationally.
4. collect and incorporate best practices and concepts as they have been advanced by organizations, agencies and planning experts throughout the health care community.
5. accommodate concepts developed for the rest of the mix of players in the system—employers/providers/health plans/suppliers/government.
6. present the information of each component report and presentation in a common format with other components as a set of recommendations that can be used by candidates in the 2008 presidential election.

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**Goals**

*As general guidelines the project should:*

- Explore a full range of possibilities, paying especial attention to the products of emerging technologies successfully advancing through research and development.
- Include ideas for any processes, tools, systems and products needed for services—including procedures, activities, organizational concepts and any relevant relationships among them.
- Explore revolutionary as well as evolutionary ideas.
- Plan for communication processes by means of which all elements of the system can be made aware of successes and failures.
- Consider potential costs and funding thoughtfully; proposals should not incorporate unnecessary frills, but should not ignore services possibly expensive but having great potential—simply to avoid costs.
- Conceive the properties and features of the concepts as means to build competition on the basis of quality as measured by change in medical condition.
- Consciously reflect the effect of the design approach as a demonstration of the power of design thinking applied to problems in the public domain.

*Overall, the solution should:*

- Assume that the proposal can be acted upon as it is conceived. Do not under-propose on the assumption that a concept might be politically opposed.
- Demonstrate what might be achieved. The value of the proposal is in its ideas, not its certain attainability. Ideas that might not be fully attainable or feasible today may be achieved tomorrow—if they are known.

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**Resources**

Resources for the project will be:

**Physical:**

- The facilities of the Institute of Design, including Room 514 as meeting space for the beginning of each class session, and 3rd and 5th floors for team activities.
- Computing support from the fifth floor computer facilities.
- Equipment as necessary from ID resources.

**Financial:**

- Funding for approved research needs and report generation.

**Human:**

- Planning Teams

**Services for Employers**

Fei Gao                      Rima Kuprys  
Margaret Jung              Amber Lindholm

**Services for Government**

Hanna Korel                Amy Palit  
Soo Yeon Paik              Alexander Troitzsch

**Services for Suppliers**

Amy Batchu                Suat Hoon Pee  
Min Joong Kim              Amy Seng

**Services for Providers**

Ash Bhoopathy              Gauri Verma  
Lin Lin                        Ye Kyung Yoo  
Lise Lynam

**Services for Health Plans**

Matthew Gardner            Preethi Lakshminarayanan  
Kichu Hong                  Peter Rivera-Pierola  
Sriram Thodla

- Project Advisors:  
**Charles L. Owen** Distinguished Professor Emeritus  
**John Pipino** Adjunct Professor

## Schedule

The project will be conducted from August 28 to December 7, 2007.

Week	Phase	Activity	Product
1 <b>Aug 28</b>	Introduction	Introduce project	
<b>Aug 31</b>	Project Definition	Develop Issues & Defining Statements	
2 <b>Sep 4</b> <b>Sep 7</b>			Issues DefStats 1
3 <b>Sep 10</b> <b>Sep 11</b>		<b>Health Workshop</b> Develop Modes and Activities of Function Structure	
<b>Sep 14</b>		<b>In-Progress Review</b>	DefStats 2 Fn Struc 1
4 <b>Sep 18</b> <b>Sep 21</b>	Information Development <i>Action Analysis</i>	Generate Functions, Design Factors and Solution Elements	
5 <b>Sep 25</b> <b>Sep 28</b>			
6 <b>Oct 2</b>		<b>In-Progress Review</b>	DefStats complete Fn Struc 2 DesFacs 1 SolnEls 1
<b>Oct 5</b>	Information Development <i>Action Analysis 2</i>	Complete Functions, Design Factors and Solution Elements	
7 <b>Oct 9</b> <b>Oct 12</b>		<b>Health Workshop</b>	Fn Struc complete DesFacs complete SolnEls complete
8 <b>Oct 16</b> <b>Oct 19</b>	Information Structuring <i>Interaction</i> <i>Structuring</i>	Score Soln Elements vs Functions	RELATN input

Week	Phase	Activity	Product
9 Oct 23 Oct 26	Concept Development	Means/Ends Analysis	Inf Structure
10 Oct 30 Nov 2		Ends/Means Synthesis	Inf Struc named
11 Nov 6 Nov 9		<b>In-progress Review</b>	Initial System Elements
12 Nov 13		<b>Presentation</b>	Final SysEls
Nov 16	Communication	Refine final SysEls; write report; complete illustrations	
13 Nov 20 Nov 23	<b>Thanksgiving</b> Holiday		
14 Nov 27 Nov 30			
15 Dec 4 Dec 7		<b>Final Presentation</b>	Illustrated Report

## Methodology

The project will be conducted using Structured Planning (See articles on the subject by Charles Owen at <http://www.id.iit.edu> under the *Publications* section of *Our Research*:

1. *Context for Creativity*, 1991.
2. *A Critical Role for Design Technology*, 1993.
3. *Design, Advanced Planning and Product Development*, 1998.
4. *Structured Planning*, 2001.

Also, see the book by Charles L. Owen available at the Institute of Design: **Structured Planning. Advanced Planning for Business, Institutions and Government. Notes on the Process with Summary Pages and Examples**, (2007).

## Issues

Consider the following topics as initial issues to be investigated. Supplement them with additional issues as information is developed during the first phase of the project.

**Technology.** What approach should be taken toward the use of advanced medical and information technologies and emerging technologies in general?

**Adaptivity.** How should elements of the system be prepared to respond to evolving demographic changes and emerging technological capabilities?

**Networking.** What policy should be taken toward partnering with health care institutions in other regions, suppliers of funding, suppliers of technology, goods, etc.?

**Means of Introduction.** How should services be introduced to facilitate acceptance and implementation?



**Public/Private Sector Relationships** . How should services be positioned with respect to authority/responsibility for implementation and operation?

**Concept Communication**. How should concepts of quality in medical condition terms and measurement strategies, processes and system concepts be communicated to the public and institutional users?

**Cost Assignment**. How should the distribution of the expected costs of services be approached?

**Disaster Contexts**. What provisions should be made for extreme conditions that can be expected with more frequent environmental emergencies (e.g., Katrina)?

**Eligibility**. What part should eligibility for care play in planning for the provision of services and measurement of their quality?

**Health Responsibility**. How should services approach the issue of personal vs societal responsibility for fundamental individual health care?

# Defining Statement

## Issue

Transition to Electronic Records Systems

## Project

Rethinking Health Care

## Originator

Lise Lynam

## Contributors

Gauri Verma  
Ash Bhoopathy  
Lin Lin  
Yekyung Yoo

## Sources

Porter, Michael E., and Tiesberg, E.O. 2006. *Redefining Health Care*. Boston, MA: Harvard Business School Press

LeCuyer, Nick. Singhal, Shubham. 2007. "Overhauling the US health care payment system." *The McKinsey Quarterly*.

GAO Report 07-1155SP. 2007. "Health Care 20 Years From Now."

Herzlinger, Regina E. 2007. *Who Killed Health Care?* New York: McGraw Hill.

## Question at Issue

Who should lead an effort to implement and control electronic information systems?

## Position

- Constraint
- Objective
- Directive

The government must set basic standards and criteria for electronic information systems to support providers in this transition and facilitate interoperability across providers and other stakeholders.

## Alternative Position

- Constraint
- Objective
- Directive
- Constraint
- Objective
- Directive

Providers should take the lead to implement electronic information systems with the freedom to make this transition within their respective means.

Providers ought to work with health plans to create a common understanding of what information should be collected and shared.

## Background and Arguments

Providers have the best access in the health care system to patient care information across the care cycle, with the benefit of a more direct relationship with patient care than government bodies and health plan organizations. Providers should therefore contribute to the creation of shared guidelines for information systems that are interoperable to facilitate information sharing, both among providers and ultimately to consumers.

That said, the variety of provider types and provider resources, and given the culture reluctance of some to invest in electronic IT systems that have in the past failed to meet their promises, it is necessary that providers be able to rely on a shared set of criteria. The government is best positioned to set and monitor these guidelines.

The benefits of a transition to interoperable information systems at the provider level are many-fold. Providers will be better equipped to treat patients by virtue of more complete, easier to access patient records that are not confined to their particular domain.

Likewise, as information can be shared about conditions and treatment outcomes, providers can better learn from each other outside of the confines of their own experiences.

Providers stand to benefit from measuring patient results across the care cycle because the competition that follows can reveal important opportunities for providers to improve care by better understanding areas of excellence and weaknesses.

And, naturally, consumers will be better empowered to make health care choices with access to improved information as performance measures for specific conditions, regions, and costs are enabled through electronic information sharing.

Regina Herzlinger points out that improved information particularly empowers a "small group of marginal, tough-minded buyers" whose effect on the market is good for "the rest of us" (Herzlinger, 229). This small group can make a big contribution toward lowering prices and increasing quality across an industry.

# Defining Statement

## Issue

Transaction Cost & Waste Reduction

## Project

Rethinking Health Care

## Question at Issue

To what extent should providers prioritize reducing transaction costs?

## Originator

Lise Lynam

## Position

- Constraint
- Objective
- Directive

Providers should make it a priority to reduce transaction costs through adoption of electronic payment and claims processing.

## Contributors

Gauri Verma  
Ash Bhoopathy  
Lin Lin  
Yekyung Yoo

## Alternative Position

- Constraint
  - Objective
  - Directive
- 
- Constraint
  - Objective
  - Directive

Only those providers with significant volume of claims should prioritize adoption of electronic means of payment and claims processing.

Health plans should take the lead role in supporting the providers' transition to electronic claims processing.

## Sources

Porter, Michael E., and Tiesberg, E.O. 2006. *Redefining Health Care*. Boston, MA: Harvard Business School Press

LeCuyer, Nick. Singhal, Shubham. 2007. "Overhauling the US health care payment system." *The McKinsey Quarterly*.

GAO Report 07-1155SP. 2007. "Health Care 20 Years From Now."

## Background and Arguments

Experts agree that the escalating cost of health care in the United States creates a crisis for this country. Most Americans agree that the American health care experience begs improvement and yet even the status quo is expected to deteriorate because of rising costs that make it unsustainable in the near future. According to the Comptroller General of the United States, "time is relatively short before budgetary pressures end the chance for health experts to decide deliberately and thoughtfully on the future of the nation's health care system" (GAO, 2).

While there are many components to the cost crisis in our health care system, the waste attributed to transaction processing alone is perhaps better understood and actionable. It is appropriate to pursue those contributors to costs that have been identified.

Health Care costs associated with antiquated payment and claims processing are unnecessarily high as compared to other service industries.

The U.S. health care payment system is "inefficient, consuming 15 percent or more of each dollar spent on health care, compared with about 2 percent for the payment system in retailing.... The inefficiency is concentrated in the \$250 billion

that consumers pay to medical providers, such as doctors and hospitals, as well as the \$1.3 trillion that insurance companies send to them. The crux of the problem is a mix of high transaction costs and the lack of an efficient way to make consumer-to-provider payments. The processing of transactions remains fragmented, paper based, and manual, despite progress by leading insurers in automating the adjudication of claims" (LeCuyer and Singhal, 1).

The potential benefits of reforming payment processing are twofold: providers can increase their reimbursement rates thus lessening their losses; the administrative costs associated with processing payments will be reduced. "In about 60 percent of all claims payments, the payers print and mail checks to the providers, which manually reconcile the claims and deposit the checks. The average system-wide cost per item is about \$8. With an annual volume of 2.5 billion claims payments...the system costs \$15 billion to \$20 billion a year in postage, item processing, and accounting" (7).

One of the essential challenges and requirements of reform toward electronic based processing is to ensure that the savings or quality improvements from the reinvestment of these savings are realized at the patient level.

# Defining Statement

**Issue**  
Providers-Employers Relationship

**Project**

Rethinking Health Care

**Question at Issue**

To what extent should providers and employers share medical record information?

**Originator**

Lise Lynam

**Contributors**

Gauri Verma  
Ash Bhoopathy  
Lin Lin  
Yekyung Yoo

**Position**

- Constraint
  - Objective
  - Directive
- Without patient approval, providers should share information with employers only to the extent that relevant information is appropriate for public distribution. This relationship may be indirect.

**Sources**

Porter, Michael E., and Tiesberg, E.O. 2006. *Redefining Health Care*. Boston, MA: Harvard Business School Press

LeCuyer, Nick. Singhal, Shubham. 2007. "Overhauling the US health care payment system." *The McKinsey Quarterly*.

Herzlinger, Regina E. 2007. *Who Killed Health Care?* New York: McGraw Hill.

**Alternative Position**

- Constraint
  - Objective
  - Directive
- Providers and employers must agree to shared patient information terms in the cases of employer-provided coverage.
- Constraint
  - Objective
  - Directive
- Providers should be forbidden from sharing patient information with employers.

**Background and Arguments**

Employers have an understood interest in the health care system, both as payers and as managers with productivity goals to sustain.

As health care costs increase, so do employers' feel the squeeze on their bottom line, thus reinforcing their interest in influencing the system.

Regina Herzlinger suggests that HR staffers managing health care offers for employers have limited coverage choices instead of expanding them to limit costs (Herzlinger, 100). This undercuts the very competition that would help to ensure quality and lower costs.

As employers have the potential access to large pools of patients and would-be patients -- ie, health care consumers all -- there is some thought that employers be more involved in the sharing of patient medical records. There is even the potential to improve care through insights gained about the consumers under an employer's watch. But the inherently subordinate relationship of an employee to his employer makes inappropriate and even illegal any requirement or coercion of much personal medical records sharing.

To the extent that large employers can contribute consumer

information -- demographic, measured outcomes, preventive care adherence -- it is reasonable to allow for some voluntary sharing from employees for their benefit as they evaluate their health plan coverage offerings, and for the distribution to providers and health plans.

No such information reporting should be required of employees for risk of employment discrimination.

More useful would be to ensure that providers' information on condition treatment outcomes and prices be distributed, publicly, to employers. Employers are perhaps best positioned to encourage competition among health plans to compete not just on reducing costs but on quality and value to consumers - value as a measurement of treatment outcome per dollar spent. This is a cost-quality one-two-punch.

<b>Defining Statement</b>		<b>Issue</b> Consumer Accountability	
<b>Project</b> Rethinking Health Care	<b>Question at Issue</b> To what extent should reform include personal (patient) accountability?		
<b>Originator</b> Ash Bhoopathy			
<b>Contributors</b> Lin Lin Lise Lynam Gauri Verma Ye Kyung Yoo	<b>Position</b>	<input type="checkbox"/> Constraint	Providers should take the lead in creating aligned objectives for practitioners AND consumers of health Care to promote healthy lifestyle choices, preventive medicine and chronic condition management
		<input checked="" type="checkbox"/> Objective	
		<input type="checkbox"/> Directive	
<b>Sources</b> Porter, Michael E., and Tiesberg, E.O. 2006. <i>Redefining Health Care</i> . Boston, MA: Harvard Business School Press  Domaszewicz A. Mercer Human Resource Consulting, Health & Benefits Services Office, California, USA.  Personal responsibility in health benefits: Looking backward, looking forward. PMID: 17621959 [PubMed - indexed for MEDLINE]	<b>Alternative Position</b>	<input checked="" type="checkbox"/> Constraint	The federal and state government will work together and provide provisions for preventive health and co-opt consumers and providers.
		<input type="checkbox"/> Objective	
		<input type="checkbox"/> Directive	
		<input type="checkbox"/> Constraint	Suppliers (private industry) should create patient advocacy programs and develop businesses around preventive medicine.
		<input checked="" type="checkbox"/> Objective	
		<input type="checkbox"/> Directive	

## Background and Arguments

Almost 60-80% of health care costs can be attributed to lack of consumer accountability. Lifestyle decisions (exercising, eating right, smoking cessation, regularly scheduled doctor visits) are of the utmost importance in maintaining wellness. It is even more important for chronic condition sufferers to visit their doctors and manage their health actively.

In the past, preventive medicine initiatives have been top down, and came from the CDC, National Institute of Health, and other governmental and non-profit organizations.

Creating consumer trust and loyalty within the community is an imperative for many providers. In non profit hospitals, donations to the endowment and volunteerism depend upon the ability to keep the community engaged and content.

In the current system, providers provide very little alignment of incentives between practitioners and consumers, so that consumers can get well sooner and consumers can practice healthy lifestyles.

Apart from Fixed-fee reimbursement structures (which are few and far between), there is no incentive to “fix people faster”.

Depending on a solution from governmental organizations such as the NIH is unsustainable. The status quo is unsustainable

and consumers of health Care are not practicing wellness.

Depending on suppliers (private industry) to create programs is feasible, but is likely an unworkable situation without the direct support of the caregivers to intervene when necessary.

# Defining Statement

	<b>Issue</b> Health information exchange	
<b>Project</b> Rethinking Health Care	<b>Question at Issue</b> To what extent should health information be shared among providers?	
<b>Originator</b> Ash Bhoopathy		
<b>Contributors</b> Lin Lin Lise Lynam Gauri Verma Ye Kyung Yoo	<b>Position</b> <input type="checkbox"/> Constraint      Providers should participate in an interoperable health information exchange that is nationally sanctioned by the government. <input checked="" type="checkbox"/> Objective <input type="checkbox"/> Directive	
<b>Sources</b> Goldsmith, Jeff Charles. 2003. Digital medicine implications for health Care leaders. Chicago: Health Administration Press.  Commission on Systemic Interoperability. 2005. Ending the document game connecting and transforming your health Care through information technology. Bethesda, Md.?: Commission on Systemic Interoperability. <a href="http://purl.access.gpo.gov/GPO/LPS67502">http://purl.access.gpo.gov/GPO/LPS67502</a> .	<b>Alternative Position</b> <input checked="" type="checkbox"/> Constraint      It is the consumer's responsibility to take control of his/her own health information and private industry should offer solutions to store and share medical information for patients. <input type="checkbox"/> Objective <input type="checkbox"/> Directive  <input type="checkbox"/> Constraint      Government should subsidize and institute a National Health Information Network and pay for its operation in order to decrease national health expenditure. <input checked="" type="checkbox"/> Objective <input type="checkbox"/> Directive	

## Background and Arguments

It is strongly suggested that providers take the lead in cooperating with other providers to share health information about patients and consumers of the health care system for better care delivery .

In the absence of health Care information exchange, and robust data about patients, there can exist no value based competition. Transparency that enables and empowers the consumer to make better personal health decisions requires rich data that comes from the providers in all their various modalities.

Perhaps in the past, it was easy for health Care players to remain siloed and their care would not be held to close scrutiny. All other industries have seen orders of magnitude increase in competition that has been amplified with the introduction of more data to make decisions.

### Alternative positions:

Relying on the consumer, who is increasingly a large partner of progress in the health Care system is still very hard to do. Individuals may keep records in a variety of formats, including paper, that may get lost or somehow destroyed in the health Care process. The transfer of information electronically by health Care providers (hospitals, clinics, etc), while being owned by the consumer, is the best option.

Relying on the government to subsidize the National Health Information Network and pay for its operation will not mobilize providers to work hard enough in the near term to achieve the level of data collection that is necessary for effective transfer.

Though the government may eventually participate by subsidizing or enabling a common standard for information transfer, providers need to work hard now to start collecting data that will be shared very soon.

Information exchange is vital to achieving positive sum competition that Michael Porter advocates as the driver for better value for the health Care dollar spent.

### Additional sources:

Halvorson, George C. 2007. Health care reform now! A prescription for change. San Francisco, CA: Jossey-Bass, a Wiley Imprint.

Institute of Medicine (U.S.). 2005. Quality through collaboration the future of rural health. Washington, D.C.: National Academies Press.

# Defining Statement

## Issue

Practitioner deterrents (malpractice)

## Project

Rethinking Health Care

## Originator

Ash Bhoopathy

## Contributors

Lin Lin  
Lise Lynam  
Gauri Verma  
Yekyung Yoo

## Question at Issue

To what extent should providers play a role in minimizing adverse impact of malpractice for health care practitioners?

## Position

- Constraint  
 Objective  
 Directive

Providers should take the lead in creating and communicating protocols for the government to enhance tort reform.

## Sources

Porter, Michael E., and Tiesberg, E.O. 2006. *Redefining Health Care*. Boston, MA: Harvard Business School Press

Mello MM, Studdert DM, Brennan TA. "The new medical malpractice crisis"  
N Engl J Med. 2003 Jun 5;348(23):2281-4

## Alternative Position

- Constraint  
 Objective  
 Directive  
  
 Constraint  
 Objective  
 Directive

Health plans will share responsibility with providers to deter fraudulent malpractice suits.

Consumers should be responsible for being "fair players" in the system and reducing their number of unfair malpractice suits.

## Background and Arguments

A great source of administrative friction and endogenous waste within the health Care system is the toll of litigation in malpractice lawsuits conducted every year in the United States. Malpractice suits do not restore or benefit a consumer's health in any way, nor do they improve quality of care delivered by the provider.

The massive costs of malpractice suits and subsequent insurance premiums have caused innumerable speciality physicians to leave geographic areas. This emigration reduces the supply of care providers, thus reducing consumer choice and increasing overall cost.

Providers need to work in order to standardize care and decrease variance of treatment. Moving towards practices of Evidence Based Medicine and universal acceptance of clinical pathways will decrease the potential for health Care consumers to bring spurious lawsuits against providers.

Consumers, through free market choice, have the potential to seek better care and thus influence the overall health system. Providers, who are the suppliers of care, have an obligation to provide their human resources (practitioners) with a sufficient safety net; Providers need ways to ensure that the supply of willing and able physicians, nursing staff and ancillary workers remains the same or increases over time.

Alternate positions:

Merely supplying providers with similar remuneration or increasing it marginally is unlikely to help the situation any. Physicians will continue to practice in lower risk environments, and the cost of health care in high risk environments will escalate precipitously.

Relying on any group of citizens to limit their malpractice suits to genuine cases is far from optimal. Developing an incentive system where patient and practitioner incentives are perfectly aligned is an assured solution.

# Defining Statement

**Issue**  
End of Life Care

**Project**  
Redefining Health Care

**Question at Issue**  
To what extent should providers be able to deny care to patients who are not going to recover?

**Originator**  
Lin Lin

**Contributors**  
Ash Bhoopathy  
Lise Lynam,  
Gauri Verma,  
Yekyung Yoo

**Position**

- Constraint      Providers must have the right to discontinue care for patients who fall below the survival chance rate if cost of care reasonably warrants
- Objective
- Directive

**Sources**  
*National Cancer Institute*, "End-of-Life Care: Questions and Answers," <http://www.cancer.gov/cancer-topics/factsheet/Support/end-of-life-care>

**Alternative Position**

- Constraint      Government should have the final say in which group of patients should not be administered care after they reach a certain level of sickness/age
- Objective
- Directive

- Constraint      Care should be provided to anyone regardless of level of sickness and age
- Objective
- Directive

## Background and Arguments

End of life care is a significant drain on Medicare system. According to research, 60 percent of the cost is spent on end of life procedures. Tests like blood work cost seven times their original cost because providers are trying to cover up the financial drain that is placed on them via end of life care.

Its necessary to give providers the power to decide whether or not to continue care for a group of people who have a low chance of survival. This method will help alleviate the financial drain that is placed on providers. Though this may seems cruel, but one has to also consider the people who could be treated but can't afford to go to hospitals because the fees are too high. It is better to lower the prices of health care by eliminating unnecessary spendings on end of life care.

Alternatively one can give government the power to decide in the situation. Government has the advantage of being able to make laws that will force the termination of care in some cases. However, providers are at the forefront of administering care and are therefore better suited for this job.



<h1>Defining Statement</h1>		<b>Issue</b> Improving patient comprehension	
<b>Project</b> Redefining Health Care	<b>Question at Issue</b>  To what extent should providers be responsible for ensuring patient comprehension of medical conditions?		
<b>Originator</b> Yekyung Yoo			
<b>Contributors</b> Ash Bhoopathy, Lin Lin, Lise Lynam, Gauri Verma	<b>Position</b>  <input type="checkbox"/> Constraint      Providers must be chiefly responsible for ensuring that patients understand their conditions across the care cycle. <input checked="" type="checkbox"/> Objective <input type="checkbox"/> Directive		
<b>Sources</b>  Porter, Michael E., and Tiesberg, E.O. 2006. <i>Redefining Health Care</i> . Boston, MA: Harvard Business School Press  Personal observations  wikipedia.org	<b>Alternative Position</b>  <input checked="" type="checkbox"/> Constraint      Consumers of health care must have the utmost responsibility to seek out information and understand their care conditions. <input type="checkbox"/> Objective <input type="checkbox"/> Directive  <input type="checkbox"/> Constraint      Health Plans should be responsible for ensuring that patients understand their health status. <input checked="" type="checkbox"/> Objective <input type="checkbox"/> Directive		

## Background and Arguments

In the full cycle of care, comprehensive information for consumers is rarely collected and managed on their behalf. Consumers may try to educate themselves. This requires a lot of effort in seeking information through online communities, medical search engines. However, one must realize that the idea that consumers can become medical experts and prescribe for their own conditions is dangerous and unrealistic. Providers are and should play the biggest role in the care process.

**Position One** calls for the providers to take on full responsibility for patient understanding of the care process. This solution will enable providers to serve as the destination for information collection and education for consumers. Providers should take on the responsibilities of information distribution, counseling and patient support. These services are to encompass the full cycle of care. Providers serve to help and treat patients, and medical comprehension is a part of that set of responsibilities. A new provider service may be necessary to achieve this ambition.

**Position Two** calls for the consumers to assume full responsibilities in medical comprehension. Though there is an abundance of online resources offering diagnosis and treatment information on various conditions, one can see that miscommunications can be greatly reduced if medical professionals provide first-hand explanations to patients.

**Position Three** calls for health plans to take on the responsibility. However, medical care occurs between consumers and providers, thus providers have the best access to patient care across the care cycle. Health plans do not have the most direct relationship to patients when it comes to the care cycle.

<b>Defining Statement</b>		<b>Issue</b> Performance measurement	
<b>Project</b> Redefining Health Care	<b>Question at Issue</b>  To what extent must providers measure performance?		
<b>Originator</b> Yekyung Yoo			
<b>Contributors</b> Ash Bhoopathy, Lin Lin, Lise Lynam, Gauri Verma	<b>Position</b>	<input type="checkbox"/> Constraint	The measurement system should measure the amount of condition improvement and it should include the patient satisfaction across the care cycle.
		<input checked="" type="checkbox"/> Objective	
		<input type="checkbox"/> Directive	
<b>Sources</b> Porter, Michael E., and Tiesberg, E.O. 2006. <i>Redefining Health Care</i> . Boston, MA: Harvard Business School Press  wikipedia.org	<b>Alternative Position</b>	<input checked="" type="checkbox"/> Constraint	The performance of providers must be evaluated internally and at their own discretion.
		<input type="checkbox"/> Objective	
		<input type="checkbox"/> Directive	
		<input type="checkbox"/> Constraint	
		<input checked="" type="checkbox"/> Objective	The measurement system should be established so it can measure the “quality of care” by using only objective metrics.
		<input type="checkbox"/> Directive	

**Background and Arguments**

Provider performance is measured in many ways and by many organizations today.

Insurance companies evaluate provider performance by certain indicators, such as DRG (Diagnosis Related Group), LOS (Length Of Stay). They classify patients based on diagnoses, procedures, age, sex, and the presence of complications or comorbidities.

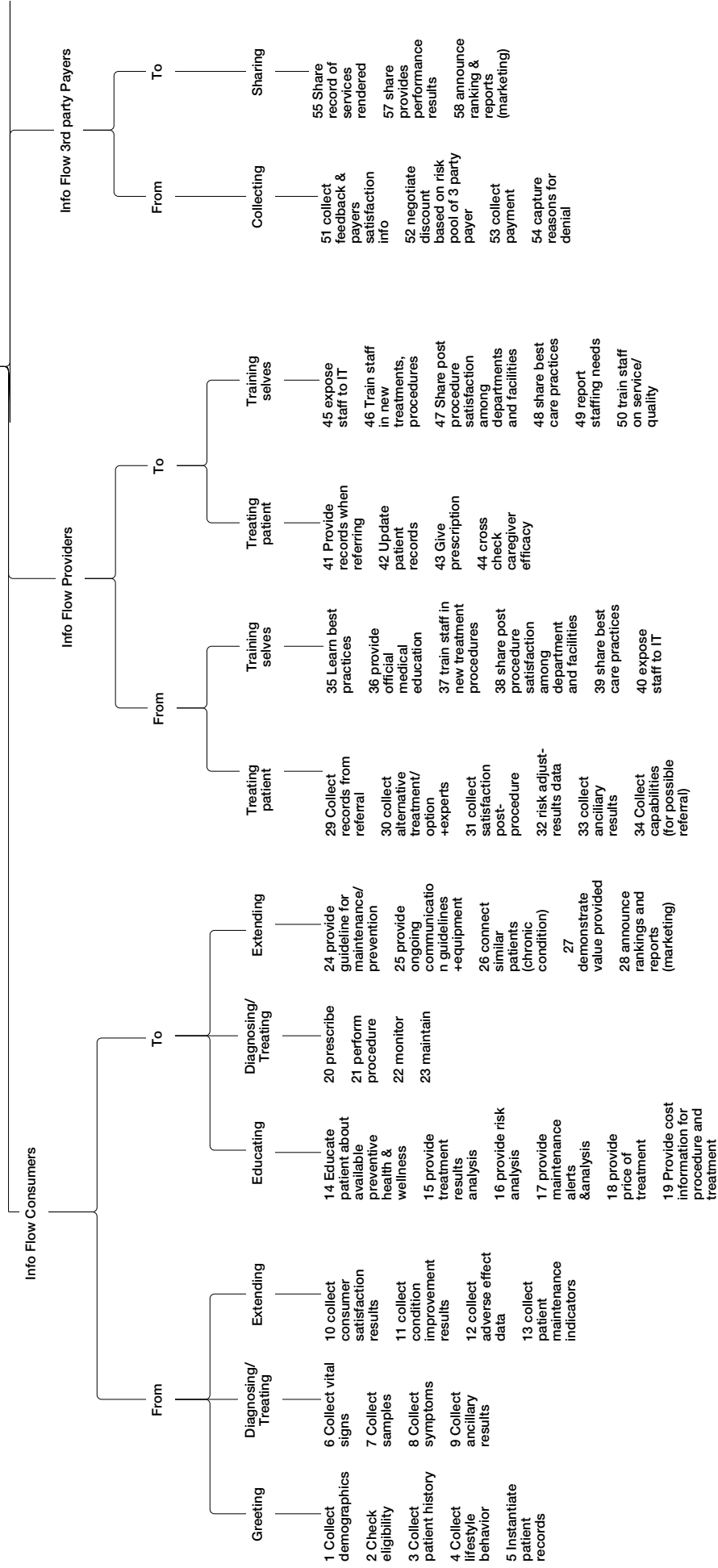
Providers, also have their own evaluating system regarding their performance, such as Morbidity & Mortality. The objectives of M&M are: to learn from complications and errors, to modify behavior and judgment based on previous experiences, and to prevent repetition of errors leading to complications.

However, people usually expect higher quality of health care service in return for their payment and are often dissatisfied with the provided service. Existing measurement and evaluation systems contribute to this, since they only focus on statistical results. This is a provider-centric perspective that does not adequately consider patient input or communicate effectively to patients that wish to exercise choice in health care.

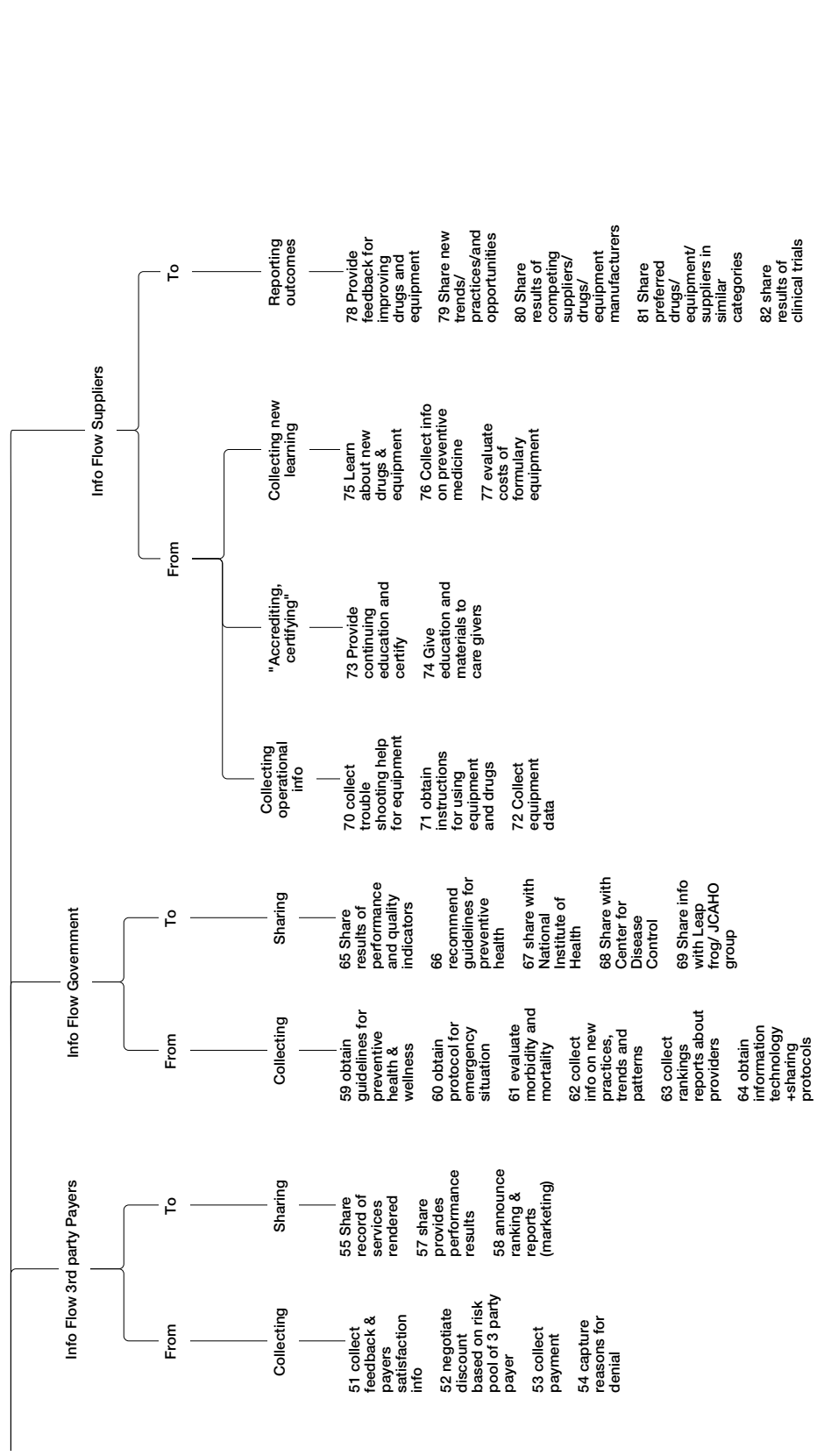
A new measurement system should take into consideration the entire health care service cycle, so that certain standards are established. It gives patients a way of communicating their feedback to the providers.

New measuring and evaluating system about the performance of health care is expected to deal with not only objective results information but should respond to subjective input as well.

# Function Structure: Providers



Continued on the next page...



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# Design Factor

Billing and negotiation process takes a long time

## Project

Rethinking Health Care

## Mode

Information for payers

## Activity

Sharing

## Originator

Gauri Verma

## Contributors

Lin Lin  
Ashwat Bhoopathy  
Lise Lynam  
Yekyung Yoo

## Sources

Porter, Michael E., and Tiesberg, E.O. 2006. *Redefining Health Care*. Boston, MA: Harvard Business School Press

Personal observation  
Health care workshop  
October 2007.  
Institute of design

## Associated Functions

- [53]Share record of services rendered
- [54]Share prices of procedures

## Observation

The current billing and negotiation process is very time consuming and often this causes delay in the treatment process and is a nuisance for customers and providers .

## Extension

The delay in the billing process is often due to the negotiations that take place between providers and third party payers. Providers being unsure until the very last moment of the approved extent of coverage by the health plans quote much higher prices for procedures and prescribe unnecessary tests and measures. This not only raises the cost but because the health plans have to ensure the validity of the prescribed treatment , they take a long time to process the information. Additionally many providers still follow a paper record system for patient information. Even with the recent switch to electronic record system the transaction process takes a long time. Some providers are now trying to standardize costs for certain procedures and treatments which not only makes costs more transparent to health plans and consumers, it also fastens the billing process. Therefore this should be encouraged.

## Design Strategies

Collaborate with health plans to standardize prices for certain procedures/ treatments

Adopt methods of self check in/ automated system for regular doctor visits such as dentists, health check ups etc

## Solution Elements

**E** Fast transactions using IT systems  
Standardizing cost price for certain procedures  
Accept online payments

**S** Automated check in system for periodic visits  
Health plan issued coupons for regular medical visits

# Design Factor

## Use of paper based record keeping system

### Project

Rethinking Health Care

### Mode

Information from providers

### Activity

Treating patients

### Originator

Gauri Verma

### Contributors

Lin Lin  
Ashwat Bhoopathy  
Lise Lynam  
Yekyung Yoo

### Sources

Porter, Michael E., and Tiesberg, E.O. 2006. *Redefining Health Care*. Boston, MA: Harvard Business School Press

Personal observation  
Health care workshop  
October 2007.  
Institute of design

### Associated Functions

- [ ] 1 Collect vital signs
- [ ] 2 Collect samples
- [ ] 4 Collect ancillary results

### Observation

Reliance on paper based record keeping systems results in medical errors besides being difficult to manage and maintain .

### Extension

Every industry has adopted technology to run things faster and more efficiently, but the health care system still runs on paper . Around 98000 Americans are killed each year due to medical errors . A big contributor towards medical errors is the use of paper based records. Not only are paper records unreliable and inefficient , they are also expensive. It is estimated that technology adoption could reduce the costs in health care by at least 25%. Health and Human Services Secretary Tommy Thompson estimates that we could save around \$140 billion a year by using more tech. So not only would IT adoption cut costs in the long run, it would also improve the quality of care . Electronic systems that are affordable and easy to use should be adopted by the health Care industry.

### Design Strategies

Adopting electronic medical records  
Making electronic record systems more affordable and easy to use  
Giving incentives to providers for IT adoption

### Solution Elements

- E** Making IT adoption a component of provider ratings
- S** Subsidized technology for providers  
Equipment use fee ( initial charge for consumers )

# Design Factor

Lack of collaboration expertise and treating patients effectively

## Project

Rethinking Health Care

## Mode

Information from providers

## Activity

Treating patients

## Originator

Gauri Verma

## Contributors

Lin Lin  
Ashwat Bhoopathy  
Lise Lynam  
Yekyung Yoo

## Sources

Porter, Michael E., and Tiesberg, E.O. 2006. *Redefining Health Care*. Boston, MA: Harvard Business School Press

Personal observation  
Health care workshop  
October 2007.  
Institute of design

## Associated Functions

- [30]Collect alternative treatment options+expert opinions
- [34]Collect capabilities for possible referrals

## Observation

Providers do not collaborate by sharing expertise to treat patients in the most effective manner.

## Extension

There is a need for real collaboration between providers that cannot be fulfilled by simply participating in conventions and seminars even though their aim may be to create information exchange . Currently the health care system is divided into different segments that focus too narrowly in a specific domain or procedure. This specialization in a specific area creates divisions and hampers the learning process for physicians and makes the health care process difficult to navigate for consumers. Providers need to add collaboration with specialization. This requires a shift towards condition based treatment where different providers work together in teams with each bringing their expertise to the team . This should also result in providers channelizing their resources and capabilities to reduce excess capacity .

## Design Strategies

Focus on condition based treatment  
Channelizing of resources and capabilities  
Reducing excess capacity  
Focusing on key offerings  
Collaborating with other providers for related services

## Solution Elements

**E** Integrated practice units

**S**

# Design Factor

Patient cannot be relied upon to give accurate information

## Project

Rethinking Health Care

## Mode

Information from consumers

## Activity

Treating patients

## Originator

Gauri Verma

## Contributors

Lin Lin  
Ashwat Bhoopathy  
Lise Lynam  
Yekyung Yoo

## Sources

Porter, Michael E., and Tiesberg, E.O. 2006. *Redefining Health Care*. Boston, MA: Harvard Business School Press

Personal observation  
Health care workshop,  
October 2007.  
Institute of design

## Associated Functions

- [ ] 3 Collect symptoms

## Observation

Patient's cannot explain their situation accurately at all times. This is most apparent in emergency situations when a patient is not able to communicate and when a patient cannot speak or understand the language.

## Extension

The current medical system relies heavily on patients to keep track of their medical history, illness and treatments and the information provided to providers is not always accurate or up to date. Providers say that rarely there is a patient who does not come with some sort of research from the internet on what could possibly be ailing him based on his symptoms. Even though consumers should have more responsibility in maintaining their health information, they may not always be the best source of information for a provider. In emergency situations there are times when a provider has no clue about the specific history of illness or unique allergies/reactions to certain medications that a patient might have. This information even if known to a patient may not be communicated to a new provider if the patient is unconscious or unable to speak. Further many time providers are unable to communicate with patients due to language, cultural or social barriers.

## Design Strategies

Patients aware of their specific condition carry device explaining their medical condition

Training providers on how to get information from patients, and to overcome social, cultural, linguistic, gender and age specific communication problems.

Health plans collaborate with providers to record patient information at nearby hospitals

Health smart homes that monitor patient activ-

## Solution Elements

**E** Remote monitoring devices

**S** Medical cards

Train providers on how to get specific information from patients

Patient record and condition information at all nearby local hospitals



# Design Factor

Inability to manage equipment and drugs efficiently

## Project

Redefining Health Care

## Mode

Information flow from Suppliers

## Activity

Collecting

## Originator

Yekyung Yoo

## Contributors

Ash Bhoopathy, Gauri Verma,  
Lin Lin, Lise Lynam

## Sources

### Hospitals of the Future :

Ubiquitous Computing support for Medical Work in Hospitals, Jakob E. Bardram, Centre for Pervasive Health Care

## Associated Functions

69. Obtain Instruction for using

70. Collect equipment data

## Observation

Managing equipment and drugs is a resource burden on providers whose time is better spent with patients.

## Extension

More advanced and effective management of inventory for surgical and non-surgical supplies is necessary to maintain the safety level of stock. At this point, the improvement of internal process management can monitor the process in real-time, enabling providers to make more strategic and tactical decisions regarding the management of hospital equipment and drugs.

## Design Strategies

Provide instant tracking of expensive or critical equipment

Automatically check the level of stock

Give restricted access to high-threat drugs

Provide instant instruction and information of equipment and drugs instantly

## Solution Elements

**S** RFID tag on drugs and equipment

# Design Factor

Lack of patient records database among providers

## Project

Rethinking – Design Thinking – Health Care

## Mode

Information flow to Providers

## Activity

Treating patient

## Originator

Lin Lin

## Contributors

Ash Bhoopathy  
Lise Lynam  
Gauri Verma  
Yekyung Yoo

## Sources

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"A Conceptual Model  
of Costs and Benefits of  
Electronic Medical Records  
in Large Physician Practices:  
Implications for Policies to  
Improve Quality." [http://  
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Health Care IT News.  
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EMR efforts." [http://www.  
healthcareitnews.com/story.  
cms?id=3852](http://www.healthcareitnews.com/story.cms?id=3852) (accessed 11.20)

## Associated Functions

[40] Expose Staff to IT  
  
[41] Provide Records When Referring  
  
[43] Give Prescription

## Observation

Currently each individual provider has their own system of keeping patients' records on file. Some use an electronic system while others use paper forms. This makes it difficult for providers to share information with government associations and even with each other.

In order to provide better care and help research centers more information, an electronic medical records (EMR) system need to be established.

## Extension

There are numerous benefits of using standardized EMRs.

1. The initial use can generate mostly financial benefits by allowing replacement of medical records and transcription staff. Subsequent use can generate mostly quality benefits that accrue when the EMR is used as an enabling technology that facilitates a new round of more substantive complementary innovations (e.g. new disease management programs) that require more intensive and advanced EMR use. Organizational factors such as governance, leadership, and intellectual capital affected the ability of practices to develop the complementary innovations that appear to be crucial for increasing physician use and generating many EMR-related quality and financial benefits. In some cases, successful EMR implementation helped strengthen such organizational factors, resulting in a virtuous cycle of improvement.

2. If researchers could access clinical data in personal and electronic medical records, it would advance the discovery of new treatments for diseases and help identify a broader base of potential study participants for clinical research.

## Design Strategies

A national format need to be set for patient and treatment records

Providers need to invest in purchasing an electronic record system

Government need to offer subsidies to smaller providers that cannot afford to buy an electronic system

Make the electronic record systems interoperable

## Solution Elements

**M** Standardized and Interoperable EMRs

**M** Standardized Patient Information Formats

# Design Factor

Lack of an comprehensive system to educate patients

## Project

Rethinking – Design Thinking – Health Care

## Mode

Information Flow to Consumers

## Activity

Educating

## Originator

Lin Lin

## Contributors

Ash Bhoopathy  
Lise Lynam  
Gauri Verma  
Yekyung Yoo

## Sources

US Government, "Health and Nutrition," US Government, <http://www.usa.gov/Citizen/Topics/Health.shtml>

Arizona Health Sciences Library, "Medical Layman's Terms," Arizona Health Sciences Library,

PubMed, "Effective physician-patient communication and health outcomes: a review,"

## Associated Functions

[14] Educate patient about available preventive health & wellness

[15] Provide treatment results analysis

[16] Provide risk analysis

[17] Provide maintenance alerts & analysis

## Observation

Consumers need to be educated on lifestyle choices, preventive care, and chronic condition management

## Extension

Currently consumers use a combination of both the caregiver and the internet as sources in acquiring information on conditions and treatments. Though there is an abundance of sources online, it is dangerous to leave the responsibility of educating the patients to the patients themselves since these sources are not always reliable. Patients need navigational assistance from caregivers to hone in on relevant information. Consumers are often intimidated to ask their physician further questions when they don't understand. The most common mentality in this situation is to "google it later." However, providers should seek to change this mentality. Providers should urge consumers to ask questions and even check to see if they have comprehended fully what their treatment plan is. Additionally, caregivers need to direct translated materials for consumers who are not fluent in English.

## Design Strategies

1. Mandatory "talk" between caregiver and consumer to ensure understanding
2. Centralized source for health care information that shows unified information and can be easily navigated.
3. Translations provided to help consumers understand difficult medical terms/descriptions, with multi-lingual provisions
4. Periodic updates on new trends and treatments

## Solution Elements

- S** Care Giver Verbal Competence Measures:
  - Consumer Health Central
- M** Medical terms dictionary
- M** "What's New" mailings/emails system
- S**

# Design Factor

Lack of "follow up" service

## Project

Rethinking – Design Thinking – Health Care

## Mode

Information Flow to Consumers

## Activity

Educating

## Originator

Lin Lin

## Contributors

Ash Bhoopathy  
Lise Lynam  
Gauri Verma  
Ye Kyung Yoo

## Sources

R. Breton, MA; Deborah A. Taira, ScD; Eric Burns, MBA; James O'Leary, PhD; and Richard S. Chung, MD. "Follow-up Services After an Emergency Department Visit for Substance Abuse" *The American Journal of Managed Care*,

## Associated Functions

[15] Provide treatment results analysis  
[17] Provide maintenance alerts & analysis

## Observation

Consumers/patients need to be surveyed on their improvement

## Extension

Caregivers need to monitor progress in patients. Penalty and reward systems should be set up to ensure that patients are following the caregivers' advice. According to a research done by The American Journal of Managed Care, in emergency substance-abuse situations, patients are rarely given follow-up services after their initial emergency visit (Breton, Deborah, Burns, O'Leary, and Chung). Without follow-up services, providers cannot check to see if the patient has followed their instructions correctly, or even has been cured. Providers need to be more proactive in seeking patient's comprehension and compliance.

## Design Strategies

1. Mandate follow-up checkup
2. Reward consumers who quit bad habits

## Solution Elements

- E** Auto Appointments
- S** Health plans reward system

# Design Factor

Lack of a price list

## Project

Rethinking – Design Thinking – Health Care

## Mode

Information Flow to Consumers

## Activity

Educating

## Originator

Lin Lin

## Contributors

Ash Bhoopathy  
Lise Lynam  
Gauri Verma  
Ye Kyung Yoo

## Sources

Cutland, Laura, "State's mandatory hospital price list useless, critics say," *Business Journal*, <http://www.bizjournals.com/sanjose/stories/2005/07/18/story4.html>

## Associated Functions

[18] Provide price of treatment

[19] Provide cost information for procedure and treatment

## Observation

Consumers need clear information about prices of treatments and services. Currently there are price lists that are published by different providers but they don't all use the same standards.

## Extension

Currently the State of California requires hospitals to submit their prices on 50 common procedures. However, no guidelines are set up to specify standard definitions for services and products.

For example, one provider calls a blood test that measures electrolytes and kidney function "lab-chem basic" while another provider dubbed it "basic metabolic pane." Some providers include physician and technician fees while some only include procedural fees.

The price lists are also long, with some that runs up to hundreds of pages with no method set up to browse or search. Even if consumers get access to these lists, it is not easy for them to browse through and find their condition.

## Design Strategies

1. List must be searchable
2. Standardized vocabulary

## Solution Elements

**E** Searchable database for procedures.

**S** Dictionary of Procedures.

# Design Factor

Insufficient means of feedback exchange after treatment process

## Project

Redefining Health Care

## Mode

Information flow to Consumers

## Activity

Diagnosing / Treating

## Originator

Yekyung Yoo

## Contributors

Ash Bhoopathy, Gauri Verma,  
Lin Lin, Lise Lynam

## Sources

Porter, Michael E., and Tiesberg, E.O. 2006. *Redefining Health Care*. Boston, MA: Harvard Business School Press

Breslin, Maggie. (Mayo Clinic) Interview, October 2007. Institute of Design

## Associated Functions

20 Prescribe

21 Perform procedure

22 Monitor

## Observation

Through care delivery, provider performance and patient condition can be improved when the patient has a clear understanding of his condition and treatment across the care cycle.

## Extension

As emphasized by the Mayo Clinic, conversation is one of the most critical values exchanged between a patient and his doctor. It directly supports the doctor's ability to make correct diagnoses and determine the best treatment plan for each patient.

It also empowers the consumer to manage his condition and prevent recurrences and complications.

In today's era of the 15-minute power visit, conversation quality is compromised. Feeling the rush, patients are discouraged and intimidated from asking questions to clarify their condition and wellness guidelines.

Providers need to recommit to the patient-provider conversation. And they should develop a means for gauging their communication skills from the patient's perspective since they naturally speak different languages.

This would help to prevent avoidable misdiagnoses, reduce costs spent on improper treatments, and expedite patient recovery.

## Design Strategies

Provide appropriate education for each consumer

Follow-up with patient by telephone, E-mail and offline material after procedure

Facilitate continuous feedback

## Solution Elements

**M** Web CheckUp

**S** Patient Comprehension Test

**M** Monitoring Device

# Design Factor

Difficulty gaining traction

## Project

Rethinking Health Care

## Mode

Information Flow from Suppliers

## Activity

Certifying

## Originator

Lise Lynam

## Contributors

Ash Bhoopathy  
Lin Lin  
Gauri Verma  
Ye Kyung Yoo

## Sources

Porter, Michael E., Tiesberg, E.O. 2006. *Redefining Health Care*. Boston, MA.: Harvard Business School Press.

Goldsmith, Jeff C. 2003. *Digital Medicine. Implications for health care leaders*. Chicago: Health Administration Press.

Herzlinger, Regina E. 2007. *Who Killed Health Care? America's \$2 Trillion Medical Problem -- And the Consumer-Driven Cure*. New York: McGraw Hill

## Associated Functions

73 Provide continuing education and certification

74 Give education and materials to care givers

## Observation

A certification program is only as useful as its certification is desired for competitive advantage.

## Extension

As with any certification or continuing education degree, subjects have to believe that they will be rewarded or competitively positioned by virtue of the distinction.

The Health Care Quality Certification Board is an example of such an effort ripe for improved attention from aspiring providers.

No such certification body has yet been identified by this research for rewarding the adoption of and expertise in electronic records.

It is by way of this electronic opportunity that quality measures (and HQCB) stand to have more credibility and competitive value to providers and consumers.

Such additional value would help to offset cultural reluctance and a current lack of incentive to pursue and showcase either certification.

## Design Strategies

Entice existing example of performance measured providers to attain HQC.

Expand existing quality certification or create new certification to include training and utilization of electronic medical records.

## Solution Elements

**M** HQCB Discount

**M** Health Care and ITS Quality Certification Board

# Design Factor

Reluctance to accept electronic systems to gather and store information

## Project

Rethinking Health Care

## Mode

Information Flow from Providers

## Activity

Training Selves

## Originator

Lise Lynam

## Contributors

Ash Bhoopathy  
Lin Lin  
Gauri Verma  
Ye Kyung Yoo

## Sources

Porter, Michael E., Tiesberg, E.O. 2006. *Redefining Health Care*. Boston, MA.: Harvard Business School Press.

Goldsmith, Jeff C. 2003. *Digital Medicine. Implications for health care leaders*. Chicago: Health Administration Press.

Herzlinger, Regina E. 2007. *Who Killed Health Care? America's \$2 Trillion Medical Problem -- And the Consumer-Driven Cure*. New York: McGraw Hill

## Associated Functions

- 35 Learn best practices
- 36 Provide official medical education
- 37 Train staff in new treatment procedures
- 38 Share post-procedure satisfaction among department and facilities
- 39 Share best care practices
- 40 Expose staff to IT

## Observation

Electronic information systems are hard to use and costly to install, especially as they have been subject to change and outdate. Thus providers are culturally reluctant to embrace a transition to the digital age.

## Extension

Providers are extremely cautious toward the promise of digital record keeping. For some, past investments to this end have been disappointing. IT vendors overstated their ability to address providers' usability needs, costly technology has been quickly outdated, and systems have failed to integrate.

At the same time, providers have a cultural tradition that puts the doctor's notepad and voice recorder on par with his white coat and stethoscope. Paper and ownership is a routine they know and protect. They are understandably reluctant to let a learning curve slow their services to alter their everyday way of doing things. There is no good time to stop and change.

There is also no incentive. Providers do not currently compete on demonstrating electronic upgrades and the performance measuring such upgrades would enable.

## Design Strategies

Establish financial support stream for the adoption of electronic record keeping

Secure third party payer support, financially and otherwise for adoption of electronic record keeping

Train new and old providers in using electronic methods.

Measure publicly providers' adoption of electronic record keeping

## Solution Elements

**M** Dedicated ITS Trust Fund

**M** IT System Training Program

**S** Patient Condition and Provider Performance Standards Board



# Design Factor

No consensus on performance indicators

## Project

Rethinking Health Care

## Mode

Information Flow from Consumers

## Activity

Extending

## Originator

Lise Lynam

## Contributors

Ash Bhoopathy  
Lin Lin  
Gauri Verma  
Ye Kyung Yoo

## Sources

Porter, Michael E., Tiesberg, E.O. 2006. *Redefining Health Care*. Boston, MA.: Harvard Business School Press.

Goldsmith, Jeff C. 2003. *Digital Medicine. Implications for health care leaders*. Chicago: Health Administration Press.

Herzlinger, Regina E. 2007. *Who Killed Health Care? America's \$2 Trillion Medical Problem -- And the Consumer-Driven Cure*. New York: McGraw Hill

## Associated Functions

- 10 Collect consumer satisfaction results
- 11 Collect condition improvement results
- 12 Collect adverse effect data
- 13 Collect patient maintenance indicators

## Observation

As providers move toward electronic patient data systems, it becomes easier to measure provider performance as reflected by patient outcomes and cost of care over time.

Performance measuring, however, is only as useful as it is commonly understood across providers, payers, and consumers.

## Extension

As many technical challenges there are for measuring provider performance, the initiative faces significant non-technical barriers as well.

Providers are unlikely to reach consensus on what indicators are most useful to measuring performance and patient conditions. Different types of providers bow to different standards and do not measure performance across a patient's care cycle where performance measure has the most value to consumers.

Some basic set of standards must be adopted to bring any real value to measuring provider performance for the sake of comparison.

## Design Strategies

Set minimum performance standards & criteria

Accommodate evolving understanding of conditions

## Solution Elements

**M** Performance Standards

**M** Consumer review forum

# Design Factor

Insufficient electronic capability to collect and store data for response

## Project

Rethinking Health Care

## Mode

Information Flow from Consumers

## Activity

Extending

## Originator

Lise Lynam

## Contributors

Ash Bhoopathy  
Lin Lin  
Gauri Verma  
Ye Kyung Yoo

## Sources

Porter, Michael E., Tiesberg, E.O. 2006. *Redefining Health Care*. Boston, MA.: Harvard Business School Press.

Goldsmith, Jeff C. 2003. *Digital Medicine. Implications for health care leaders*. Chicago: Health Administration Press.

Herzlinger, Regina E. 2007. *Who Killed Health Care? America's \$2 Trillion Medical Problem -- And the Consumer-Driven Cure*. New York: McGraw Hill

## Associated Functions

- 10 Collect consumer satisfaction results
- 11 Collect condition improvement results
- 12 Collect adverse effect data
- 13 Collect patient maintenance indicators

## Observation

As the system strives to accommodate improved communications with and monitoring of patients without additional hospital or other site visits, it is necessary to embrace electronic systems for collecting and storing patient and treatment data.

## Extension

As providers strive to better understand their consumers' conditions and their own performance, it is necessary to adopt electronic data systems that take the place of paper data storing more common today.

And as providers pursue the mutual benefit of sharing information, both to better treat shared patients and to support their ongoing quest for new knowledge and expertise, the gains of this shift are greatest if these data systems can "speak to each other." In other words, IT systems must be interoperable. And they must be interoperable without compromising security.

Management of chronic conditions is particularly suited to this kind of remote treatment and monitoring.

Providers will be better prepared to treat patients with a more holistic record of the patient's medical and other relevant histories.

## Design Strategies

Install electronic data systems

Adopt electronic means of note-taking that is integrated with data system

## Solution Elements

**M** Affordable, secure, and user-friendly IT System

**M** IT System PDAs

**M** IT System Notes Scanner

# Design Factor

Over-reliance on paper-based data methods

## Project

Rethinking Health Care

## Mode

Information Flow from Third Party Player

## Activity

Collecting

## Originator

Lise Lynam

## Contributors

Ash Bhoopathy  
Lin Lin  
Gauri Verma  
Ye Kyung Yoo

## Sources

Porter, Michael E., Tiesberg, E.O. 2006. *Redefining Health Care*. Boston, MA.: Harvard Business School Press.

Goldsmith, Jeff C. 2003. *Digital Medicine. Implications for health care leaders*. Chicago: Health Administration Press.

Herzlinger, Regina E. 2007. *Who Killed Health Care? America's \$2 Trillion Medical Problem -- And the Consumer-Driven Cure*. New York: McGraw Hill

## Associated Functions

- 51 Collect feedback and payers satisfaction information
- 52 Negotiate discount based on risk pool of third party payer
- 53 Collect payment
- 54 Capture reasons for denial

## Observation

Too many providers still rely on paper-based records collection and storage.

## Extension

Most providers still rely on hard-to-share paper forms of data collection and storage. Even within a hospital this is not integrated across departments, resulting in multiple and incomplete profiles/records for a single patient.

The paper approach also adds time and cost as an administrative task not well suited to a physician's or nurse's expertise.

It is therefore tedious and costly to negotiate prices which only further degrades cost transparency.

Similarly, efforts to evaluate provider performance and patient outcomes are hampered by fragmented data that is slow to pool and hard to share for assessment. This has a negative effect on measuring provider performance and on care delivery itself.

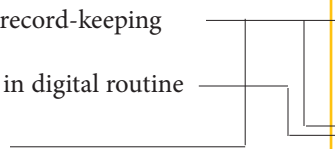
There is a cultural component to the paper tradition. Providers, especially of older generations, are less comfortable with computer-based modernization, and are accustomed to a paper-based routine. They are too busy and too esteemed to have to stop to learn about computer systems now.

## Design Strategies

Transition to digital record-keeping

Train new providers in digital routine

Reduce paperwork



## Solution Elements

**M** Interoperable IT System

**M** IT System Training Program

# Design Factor

Difficulty setting goals

## Project

Rethinking Health Care

## Mode

Information Flow from Supplier

## Activity

Certifying

## Originator

Lise Lynam

## Contributors

Ash Bhoopathy  
Lin Lin  
Gauri Verma  
Ye Kyung Yoo

## Sources

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Herzlinger, Regina E. 2007. *Who Killed Health Care? America's \$2 Trillion Medical Problem -- And the Consumer-Driven Cure*. New York: McGraw Hill

www.noca.org

## Associated Functions

73 Provide continuing education and certification

74 Give education and materials to care givers

## Observation

Suppliers may struggle to identify key credible indicators of value to reflect patient care by providers, both as a general measure and with respect to the role of a modern electronic culture.

## Extension

Provider input is a likely navigational source for homing in on critical and credible quality indicators whose certification add value to patients and, by extension, providers looking for competitive advantage.

The standards would lose credibility if they sought or achieved consensus among providers. This would be akin to self-certification. How, then, a certification board determines what is appropriate is a matter of some difficulty.

## Design Strategies

Set benchmarks for IT training proficiency.

Set benchmarks for demonstrating meaningful adoption of electronic patient records and performance evaluation by patient condition.

## Solution Elements

**M** Performance Standards

**M** IT Training Program

# Design Factor

Patients do not report or misreport treatment side effects

## Project

Rethinking Health Care

## Mode

Information Flow from Consumers

## Activity

Extending

## Originator

Lise Lynam

## Contributors

Ash Bhoopathy  
Lin Lin  
Gauri Verma  
Ye Kyung Yoo

## Sources

Porter, Michael E., Tiesberg, E.O. 2006. *Redefining Health Care. Creating Value-Based Competition on Results.* Boston, MA.: Harvard Business School Press.

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Herzlinger, Regina E. 2007. *Who Killed Health Care? America's \$2 Trillion Medical Problem*

## Associated Functions

- 10 Collect consumer satisfaction results
- 11 Collect condition improvement results
- 12 Collect adverse effect data
- 13 Collect patient maintenance indicators

## Observation

Providers will attempt to monitor remotely patient response to treatments so that adverse effects to drugs and other treatment can be understood without inconveniencing the patient.

Remote communications, however, may over-rely on the patient to understand his or her response to treatment.

## Extension

As providers improve remote communications with consumers, providers will attempt to monitor condition and response to treatments so that adverse effects to drugs and other treatment can be understood without inconveniencing the patient -- and thereby facilitating the patient's participation in their own condition maintenance.

Remote communications, however, may over-rely on the patient to understand his or her response to treatment. Thus adverse effects may go unreported, or misreported.

Some combination of monitoring methods becomes necessary to compensate for this likelihood. To support provider-patient communications then, minute clinics and technological devices should be employed that can assist in reliably measuring a patient's response to treatment should that response require urgent attention that the patient may not convey on his or her own.

## Design Strategies

Distribute patient DIY monitor

Ensure patient understanding of condition, treatment and potential risks, side effects of treatment.

Ensure easily accessible patient-provider communication

## Solution Elements

**M** Vitals Plus Quick Check

**M** Shared Internet Patient Report and Checkup System

# Design Factor

No shared IT for sharing best practices

## Project

Rethinking Health Care

## Mode

Information Flow from Providers

## Activity

Training Selves

## Originator

Lise Lynam

## Contributors

Ash Bhoopathy  
Lin Lin  
Gauri Verma  
Ye Kyung Yoo

## Sources

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Herzlinger, Regina E. 2007. *Who Killed Health Care? America's \$2 Trillion Medical Problem*

## Associated Functions

- 35 Learn best practices
- 36 Provide official medical education
- 37 Train staff in new treatment procedures
- 38 Share post procedure satisfaction among department and facilities
- 39 Share best care practices
- 40 Expose staff to IT

## Observation

Providers are isolated by their own fragmented patient records data from learning new treatment findings (risk and opportunities) relevant to their practice from other providers.

## Extension

There is an untapped pool of information across providers because it is difficult to connect fragmented and privately filed data that exists mostly in paper form. This is an overwhelming opportunity that providers cannot hope to weed through manually and on their own impulse.

Providers rely on personal peer networks, provider conferences and medical journals that may go unread due to time constraints.

At the same time, most physicians and nurses have naturally curious minds for learning new information relevant to their practice and their patients.

## Design Strategies

Transition to digital form for pooling outcomes records and new treatment knowledge

Consolidate patient record-keeping into digital form

## Solution Elements

**M** IT System Training Program

**M** IT System Shared Information Flagging

# Design Factor

Insufficient patient access to maintenance evaluation technology

## Project

Rethinking Health Care

## Mode

Information Flow from Consumers

## Activity

Extending

## Originator

Lise Lynam

## Contributors

Ash Bhoopathy  
Lin Lin  
Gauri Verma  
Ye Kyung Yoo

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## Associated Functions

- 10 Collect consumer satisfaction results
- 11 Collect condition improvement results
- 12 Collect adverse effect data
- 13 Collect patient maintenance indicators

## Observation

As providers extend care to an off-site provider-patient relationship that monitors a patient's health -- in general or in response to a particular treatment -- it is useful to consider technology that empowers the patient to provide his/her measurable health indicators.

## Extension

It is common for patients to leave a provider site with few or little understood recommendations for self-maintenance of care and monitoring of condition improvement. Even in the case of major surgeries, patients reveal a lack of understanding of the outcome and its implications.

Adding to this, many patients or would-be patients do not engage in their own responsibility to make sure they understand their condition or general health status.

With technological improvements, it is reasonable to expect improved ability for consumers and patients to communicate outside the confines of an episodic or routine provider-site patient visit. It is also reasonable to expect some means for consumers to measure their own health status indicators from home, without the provider's hands-on assistance. This would be useful in monitoring a chronic condition, response to treatment, and general health.

Providers, and potentially health plans, should help to educate patients about these possibilities, and help to facilitate their distribution to consumers.

## Design Strategies

Improve patient-provider remote communications

Distribute DIY health check technology

## Solution Elements

**M** Secure electronic database with internet capability

**M** DIY Vitals Check

# Design Factor

Insufficient remote connection to consumer

## Project

Rethinking Health Care

## Mode

Information Flow from Consumers

## Activity

Extending

## Originator

Lise Lynam

## Contributors

Ash Bhoopathy  
Lin Lin  
Gauri Verma  
Ye Kyung Yoo

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## Associated Functions

- 10 Collect consumer satisfaction results
- 11 Collect condition improvement results
- 12 Collect adverse effect data
- 13 Collect patient maintenance indicators

## Observation

As the system strives to accommodate improved communications with and monitoring of patients without additional hospital or other site visits, it is necessary to determine what technology can both facilitate this and be embraced by providers and consumers.

## Extension

Remote connections to patients is a critical component of a system that will reduce cost and resource drain in provider sites (hospitals in particular). Management of chronic conditions is particularly suited to this kind of remote treatment and monitoring.

Additionally, providers will be able to respond to declines in patient condition without relying on the patient to know more than he or she does. At the same time, such a capability engages the patient's responsibility to participate in continued monitoring as needed, thus improving patient health.

As alerts may trigger additional treatments, providers will be better prepared for subsequent patient visits and can plan to coordinate with other provider services as needed.

The spread of minute clinics can also serve this need, to the extent that a visit to a local CVS or other pharmacy clinic may be more convenient to the patient than a visit to the hospital or other provider site

## Design Strategies

Connect providers and consumers by remote means

Monitor patient conditions by remote means

## Solution Elements

**M** Secure electronic database with internet capability

**M** DIY vitals-plus reader



# Design Factor

Insufficient shared means of electronic exchange

## Project

Rethinking Health Care

## Mode

Information Flow to Third Party Players

## Activity

Collecting From

## Originator

Lise Lynam

## Contributors

Ash Bhoopathy  
Lin Lin  
Gauri Verma  
Ye Kyung Yoo

## Sources

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## Associated Functions

- 51 Collect feedback and payer satisfaction information
- 52 Negotiate discount based on risk pool of third party payer
- 53 Collect payment
- 54 Capture reasons for denial

## Observation

Providers do not have the technological capability or confidence to make worthwhile an investment in IT systems for patient records.

## Extension

Most providers still rely on hard-to-share paper forms of data collection and storage. Even within a hospital this is not integrated across departments, resulting in multiple and incomplete profiles/records for a single patient.

The paper approach also adds time and cost as an administrative task not well suited to a physician's or nurse's expertise.

In some cases, providers have contracted out the organizing and handling of these records to electronic form, In other cases providers have even invested in IT systems to make the move toward electronic record keeping but with little integration benefit and without the expected return due to overreaching promises of IT vendors and not yet sufficient technological advances. As these advances leap, it is now difficult to get providers back on board.

But the change is necessary and unavoidable. And as it stands to effect the most gain for providers and consumers in the long term if IT systems are interoperable to facilitate sharing of data, it is necessary to go through the painful process of setting some system standard to which all adhere.

## Design Strategies

Set interoperability IT system standards for industry

Adopt interoperable IT systems

## Solution Elements

**M** Interoperable IT system

# Design Factor

Unpredictable denials in cases of emergency treatment

## Project

Rethinking Health Care

## Mode

Information Flow to Third Party Players

## Activity

Collecting From

## Originator

Lise Lynam

## Contributors

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Lin Lin  
Gauri Verma  
Ye Kyung Yoo

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## Associated Functions

- 51 Collect feedback and payer satisfaction information
- 52 Negotiate discount based on risk pool of third party payer
- 53 Collect payment
- 54 Capture reasons for denial

## Observation

In the case of emergency care, providers cannot wait to verify patient's coverage with payers before responding to the patient. This puts providers at financial risk.

## Extension

Emergency care providers are trained and committed to treating critical patients without prior approval from health plans or other payers. This is appropriate but puts providers in a financially risky position and gives payers the opportunity to deny coverage post-treatment. It may also give some providers too much freedom to "over-treat" under the protective disclaimer of emergency care.

This is a source of friction between providers and payers.

## Design Strategies

Maintain slush fund for emergency care without reliance on reimbursement

Establish time-of-treatment connection to payer

## Solution Elements

**E** Protected Emergency Treatment Fund

**M** Emergency Treatment Alerts

# Design Factor

Unable to assess vital vs extraneous information

## Project

Rethinking Health Care

## Mode

Information Flow from Consumer

## Activity

Collecting

## Originator

Ash Bhoopathy

## Contributors

Lin Lin, Lise Lynam, Gauri Verma,  
Ye Kyung Yoo

## Sources

Gawande, Atul. Complications  
A Surgeon's Notes on an  
Imperfect Science. New York:  
Metropolitan Books, 2002.

## Associated Functions

Associated functions:

- 1 Collect demographics
- 2 Check eligibility
- 3 Collect patient history
- 4 Collect lifestyle behavior

## Observation

Practitioners of health Care often suffer from data analysis paralysis-- The inability to make medical decisions is exacerbated by the extraneous information that caregivers get from patients.

## Extension

Finding out that a patient is predisposed to a certain condition because of a particular ethnic classification is useful sometimes, but there needs to be a cost-benefit analysis performed to see how much this actually helps.

It is imperative to separate demographic information from the patient data during submission to the 3rd party payer, to prevent any discrimination or biases in offering payment for services rendered

## Design Strategies

Provide common standard for collection of demographic data

Establish a commission of the best hospitals and physician offices to seek what is the proper demographic information to capture from consumers for the purpose of government tracking of records (NIH/CDC,etc) is necessary.

Provide reason to patients for collecting information

## Solution Elements

**E** Patient Education for Information collection

**S** Commission on Patient Record Tracking

# Design Factor

Users reluctant to provide personal information

## Project

Rethinking Health Care

## Mode

Information Flow from Consumer

## Activity

Collecting

## Originator

Ash Bhoopathy

## Contributors

Lin Lin, Lise Lynam, Gauri Verma,  
Ye Kyung Yoo

## Sources

Gawande, Atul. Complications  
A Surgeon's Notes on an  
Imperfect Science. New York:  
Metropolitan Books, 2002.

## Associated Functions

Associated functions:

- 1 Collect demographics
- 2 Check eligibility
- 3 Collect patient history
- 4 Collect lifestyle behavior

## Observation

Users are reluctant to dole out their personal information in the fear that this information might be used against them

## Extension

It is imperative to separate demographic information from the patient data during submission to the 3rd party payer, to prevent any discrimination or biases in offering payment for services rendered.

## Design Strategies

Provide reason to patients for collecting information -

Provide common standard for collection of demographic data

Provide a means to deidentify crucial data to prevent 3rd party payers from having access to something that might prevent proper fair and expedient reimbursement

## Solution Elements

**E** S - Patient Education on Information Collection

**S** S - Patient Data Deidentification mechanism

# Design Factor

Procedure should dictate eligibility

## Project

Rethinking Health Care

## Mode

Information Flow from Consumer

## Activity

Collecting

## Originator

Ash Bhoopathy

## Contributors

Lin Lin, Lise Lynam, Gauri Verma,  
Ye Kyung Yoo

## Sources

Griffin, Don, and I. Donald  
Snook. Hospitals What They  
Are and How They Work.  
Sudbury, Mass: Jones and  
Bartlett, 2006.

## Associated Functions

Associated functions:  
- 2 Check eligibility

## Observation

Prior to performing the procedure, there is an eligibility check performed by the hospital administration that tells the users if their insurance will cover their procedure or not.

## Extension

The eligibility check can not communicate to the patient most times whether their insurance will cover every granular item that is involved in the care of the patient.

Currently, the purpose of the eligibility check is to understand what portion of hospital coverages or ambulatory codes the health plan or 3rd party payer will cover (now how much or to what extent).

## Design Strategies

Use clinical pathway, or planned procedure code to determine eligibility and total cost (minimum and maximum charges). Hospitals are allowed to charge only underneath this maximum range

## Solution Elements

**M** Clinical Pathway dictates  
Reimbursement Eligibility

# Design Factor

## Nonstandard maintenance guidelines

### Project

Rethinking Health Care

### Mode

Information Flow from Consumers

### Activity

Collecting

### Originator

Ash Bhoopathy

### Contributors

Lin Lin, Lise Lynam, Gauri Verma,  
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Snook. Hospitals What They  
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Sudbury, Mass: Jones and  
Bartlett, 2006.

Cerner Corporation -- Supplier of  
HCIT systems

### Associated Functions

- 14 Instantiate patient records
- 3 Collect patient history
- 40 Provide records when referring
- 41 Update patient records

### Observation

Patient education leaflets are nonstandard and are created by the provider.

At the same time, these educational materials are not easily customized.

### Extension

Patient education is not customized to their specific needs. Generally, these leaflets are form databases that are printed in a back office near the patient's room. The nurse or discharge caregiver will discuss these materials briefly with the patient and then the patient will sign a release mentioning that they have looked at the instructions.

The intent behind this procedure is to absolve the provider of potential lawsuits in the event that the patient does not cooperate or comply with the procedures.

### Design Strategies

Create customizable templates for patient education.

### Solution Elements

- S** Customizable patient education templates

# Design Factor

Varying customer understanding/capability

## Project

Rethinking Health Care

## Mode

Information Flow from Consumers

## Activity

Collecting

## Originator

Ash Bhoopathy

## Contributors

Lin Lin, Lise Lynam, Gauri Verma,  
Ye Kyung Yoo

## Sources

Griffin, Don, and I. Donald Snook. Hospitals What They Are and How They Work. Sudbury, Mass: Jones and Bartlett, 2006.

Cerner Corporation

Crespo R. Virtual community health promotion. Prev Chronic Dis [serial online]. 2007 Jul [date cited]. Available from: [http://www.cdc.gov/pcd/issues/2007/jul/07\\_0043.htm](http://www.cdc.gov/pcd/issues/2007/jul/07_0043.htm).

## Associated Functions

- 24 provide guideline for maintenance/prevention
- 25 provide ongoing communication guidelines+equipment

## Observation

Patient's understanding varies greatly.

Patient's ability to access communication technology varies greatly.

## Extension

Patients vary widely in their understanding of the procedures they have undergone, the prescriptions they have taken and will begin taking.

Moreover, patient's level of access to technology that will help them see a patient record or continuously monitor is variable.

## Design Strategies

Caregivers should ensure that patients fully understand the post procedure education

## Solution Elements

**S** [S] Evaluate patient post-treatment maintenance readiness

YouTube - Patient Education

Podcast

RSS / Newsletter

Email

# Design Factor

Privacy regulations hinder common care communities

## Project

Rethinking Health Care

## Mode

Information Flow from Consumers

## Activity

Collecting

## Originator

Ash Bhoopathy

## Contributors

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Snook. Hospitals What They  
Are and How They Work.  
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Bartlett, 2006.

Cerner Corporation

## Associated Functions

- 26 connect similar patients (chronic condi-  
tion)

## Observation

Due to privacy and regulations, providers cannot facilitate care communities

## Extension

Chronic condition patient can benefit greatly when they communicate with patients that share the same medical condition. These informal technologically advanced support groups are valuable to improving and maintaining health

## Design Strategies

Providers should push government to change regulations and create better connected care communities

## Solution Elements

**M** Provider supported condition cohorts



# Design Factor

Payment collection is resource intensive

## Project

Rethinking Health Care

## Mode

Information Flow from Consumers

## Activity

Extending

## Originator

Ash Bhoopathy

## Contributors

Lin Lin, Lise Lynam, Gauri Verma,  
Ye Kyung Yoo

## Sources

Griffin, Don, and I. Donald  
Snook. Hospitals What They  
Are and How They Work.  
Sudbury, Mass: Jones and  
Bartlett, 2006.

Cerner Corporation

## Associated Functions

- 50 negotiate discount based on risk pool of  
3rd party payer

## Observation

Often times, reimbursement from a multi-  
tude of 3rd party payers is a horrendous task.  
Negotiated discounts, and a variety of reim-  
bursement schemes obfuscate payment and pre-  
vent hospitals

## Extension

Nonstandard payment practices increase costs in the long run due to uncol-  
lected debts.

## Design Strategies

Standardize way to receive payment from 3PP -  
regardless of payor.

## Solution Elements

**M** Standardized 3PP payment struc-  
ture

# Design Factor

Old systems are not scalable, backwards compatible

## Project

Rethinking Health Care

## Mode

Information Flow from Consumers

## Activity

Collecting

## Originator

Ash Bhoopathy

## Contributors

Lin Lin, Lise Lynam, Gauri Verma,  
Ye Kyung Yoo

## Sources

Griffin, Don, and I. Donald  
Snook. Hospitals What They  
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Bartlett, 2006.

Bauer, Jeffrey C., Ph.D.,  
Technology and the Future of  
Health Care. San Diego, CA,  
2003

Cerner Corporation

## Associated Functions

- 71 Learn about new drugs & equipment
- 73 evaluate costs of formulary & equipment

## Observation

Providers are beholden to supplier's mini-monopolies on enterprise systems due to the costs of interfacing with an external party information source.

## Extension

Using a complete health Care IT system from a single source (vendor) is potentially dangerous, as it sets a precedence and reliance on maintenance. (Bauer)

## Design Strategies

Develop new systems with open architecture to enable individual suppliers and developers to add custom applications

## Solution Elements

- M** Open-Source health Care application architecture
- S** API for health IT systems

# Design Factor

Little economic value placed on IT systems

## Project

Rethinking Health Care

## Mode

Information Flow from Consumers

## Activity

Collecting

## Originator

Ash Bhoopathy

## Contributors

Lin Lin, Lise Lynam, Gauri Verma,  
Ye Kyung Yoo

## Sources

Griffin, Don, and I. Donald Snook. Hospitals What They Are and How They Work. Sudbury, Mass: Jones and Bartlett, 2006.

Harris, Kathy; Caplan Grey, Maurene; Rozwell, Carol. Changing the View of ROI to VOI -- Value on Investment. Gartner report 2001.

Cerner Corporation

## Associated Functions

75 - Learn about new drugs and equipment  
77 - Evaluate costs of formulary and equipment

## Observation

Value creation and strategic decision making in hospitals is limited to economic, return on investment methodology, preventing adoption of necessary systems.

## Extension

When faced with decisions such as procuring information technology that will help provide better care in the long term or open a new oncology wing, a NPV analysis will yield that the better project to pursue is one in infrastructure.

The revenue streams that will emerge from a new cancer center are by far greater than any in information technology, so it is hard to argue with a hospital administration that claims this is true.

As hospitals are currently using a decision making methodology that is based on ROI, they are rewarded by shareholders (or senior management) to increase short term revenue in exchange for long term value creation

According to a Gartner report, "Investments in workplace capabilities such as information access, knowledge management (KM), collaboration, business process management (BPM) and productivity have traditionally been labeled "soft" initiatives. The softness stems from the underlying assets (e.g., human knowledge, digitized information, enabling software and networks), which are intangibly connected to 'hard' ROI." (Harris, 2)

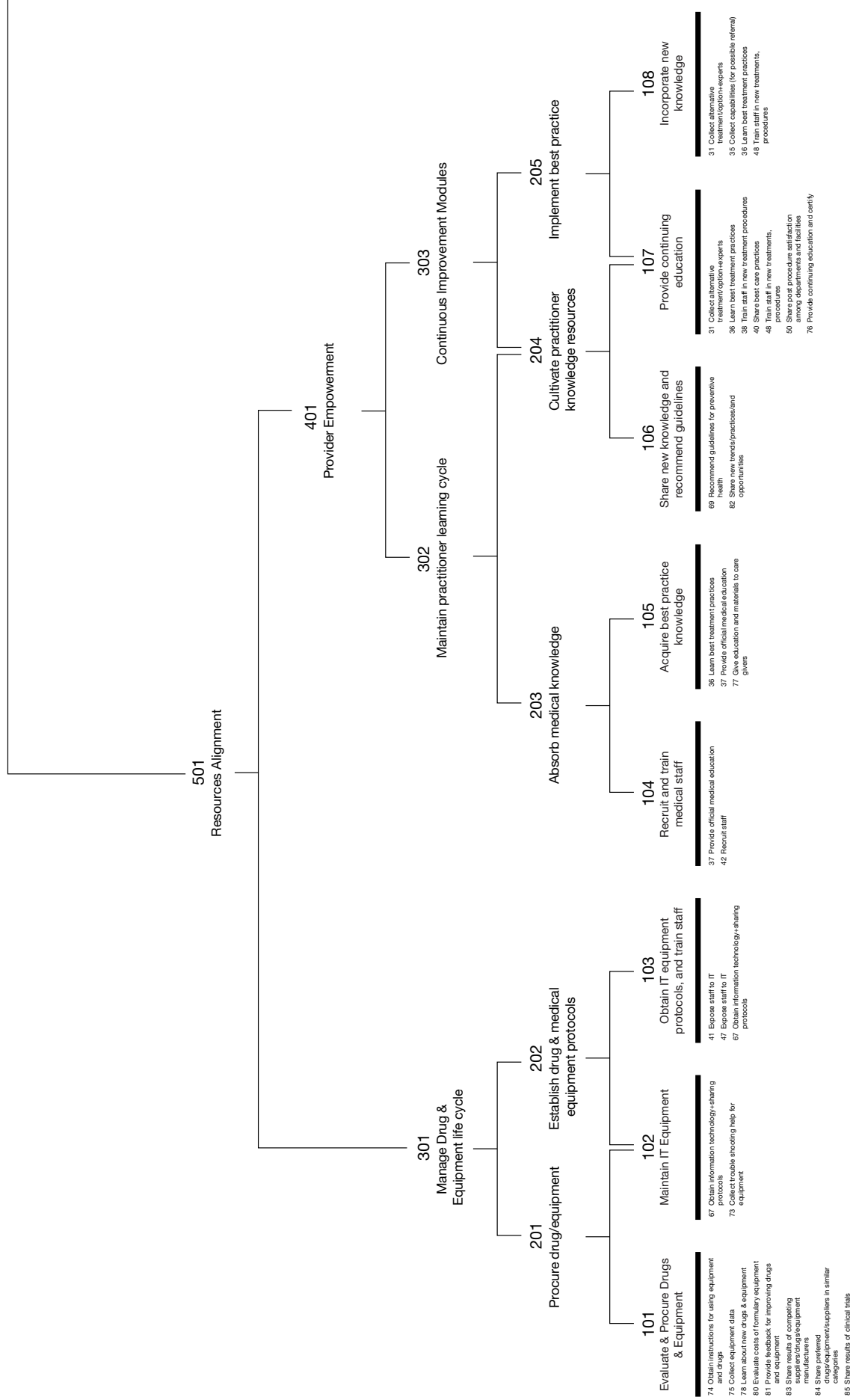
## Design Strategies

Migrate ROI to VOI decision making

## Solution Elements

**S** VOI decision making tools

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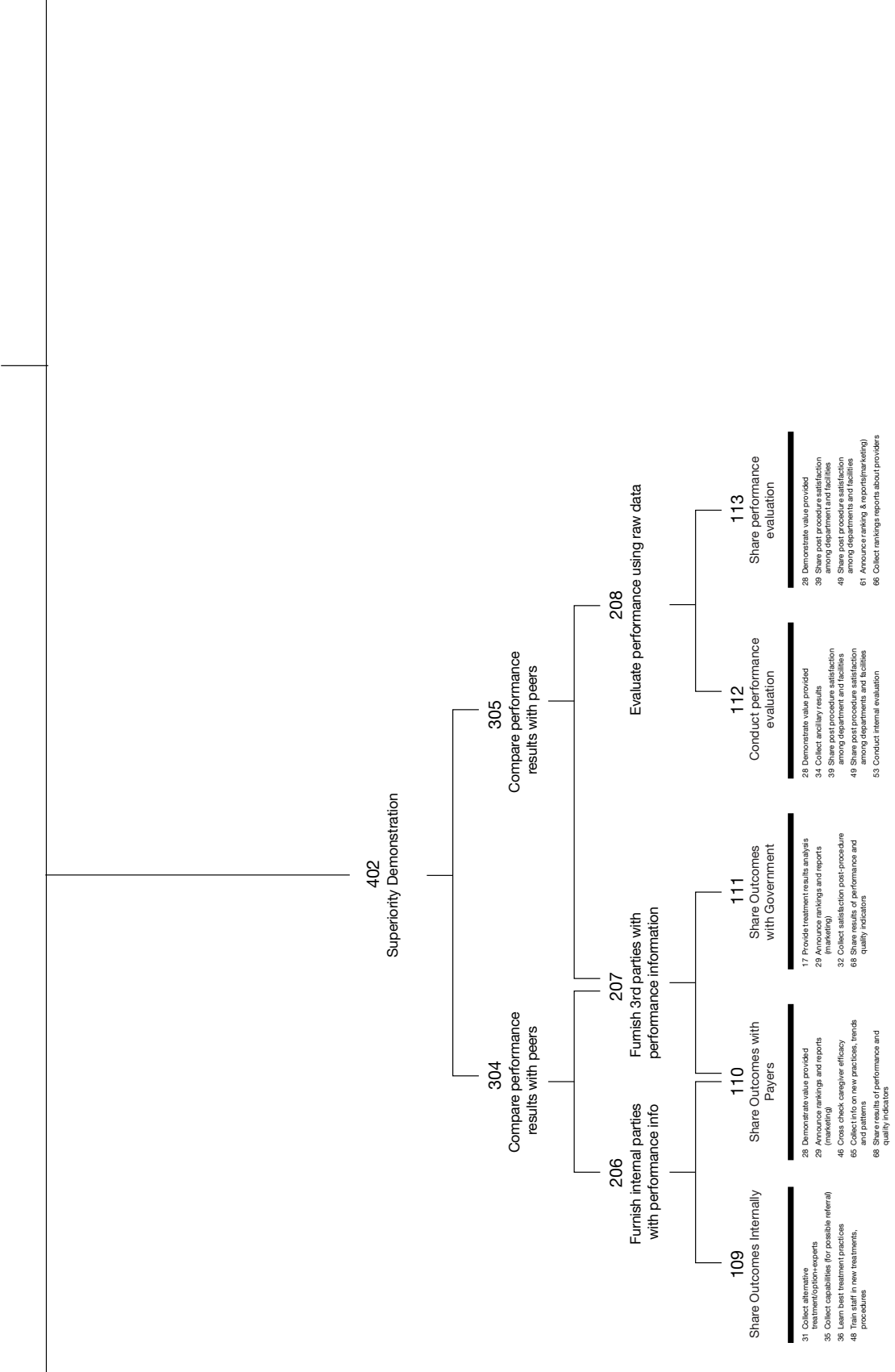


*Rethinking – Design Thinking – Health Care  
Information Services from the Providers' side*

Information Structure 23 October, 2007

701  
"Positive-Sum Competition" Healthcare System

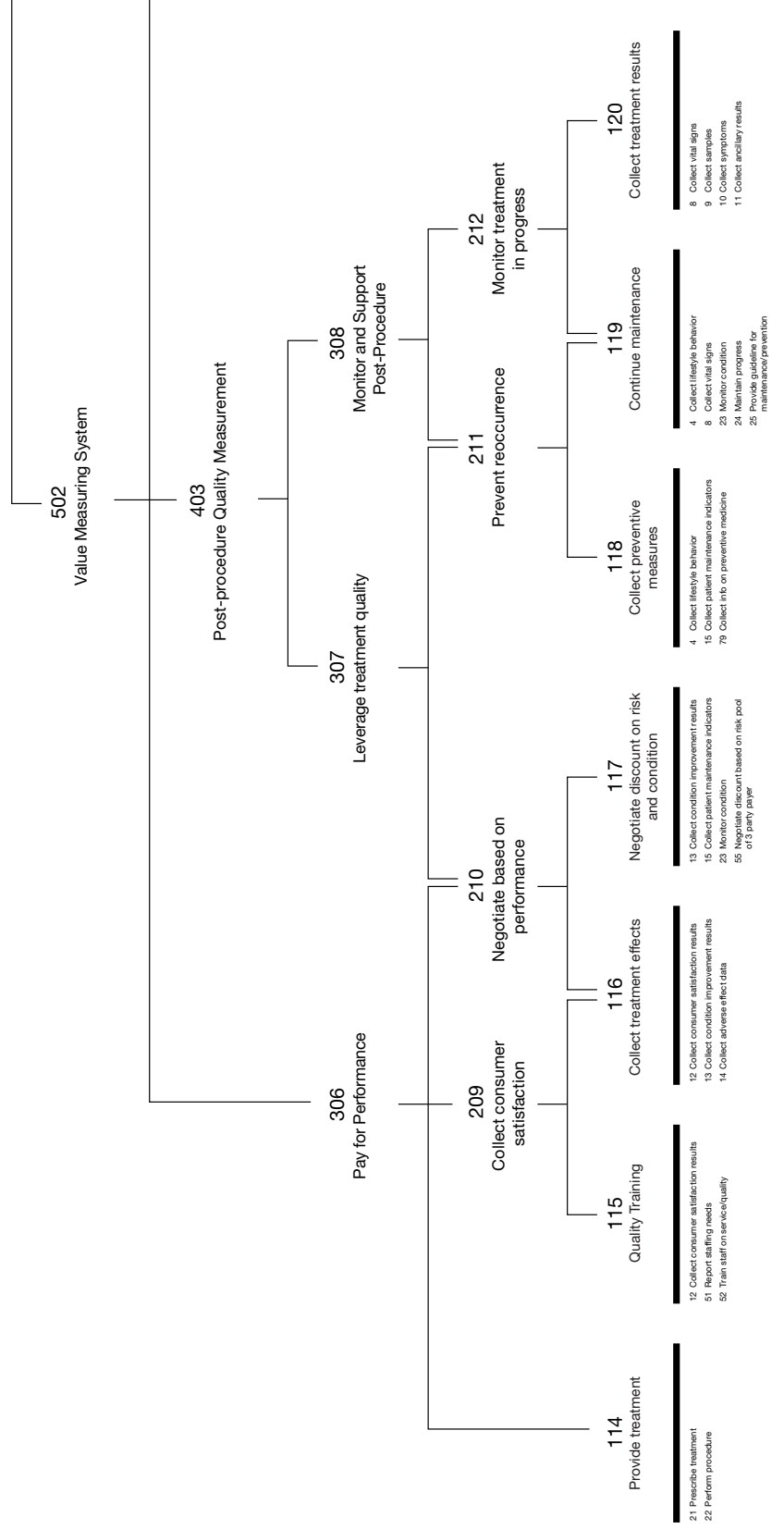
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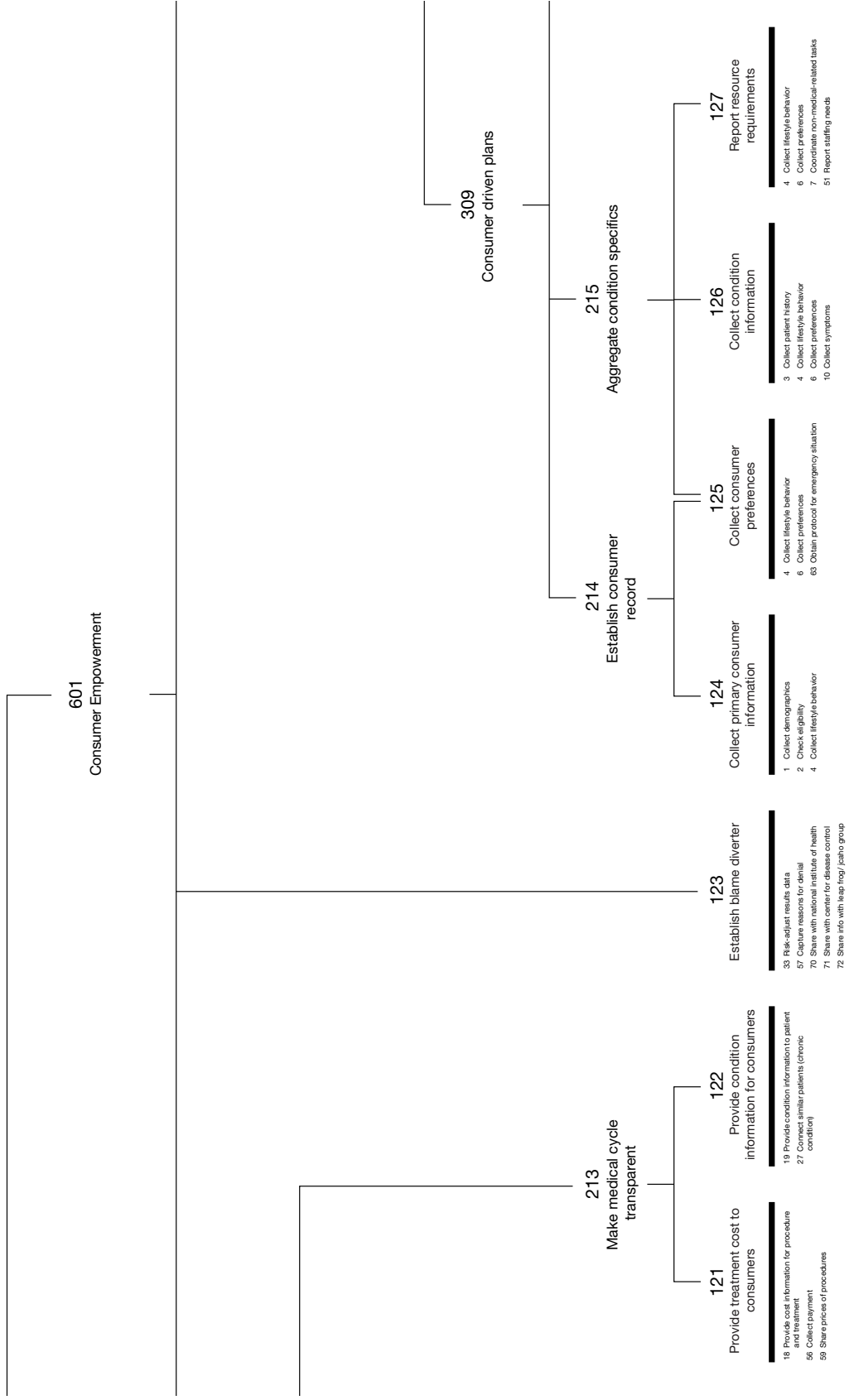
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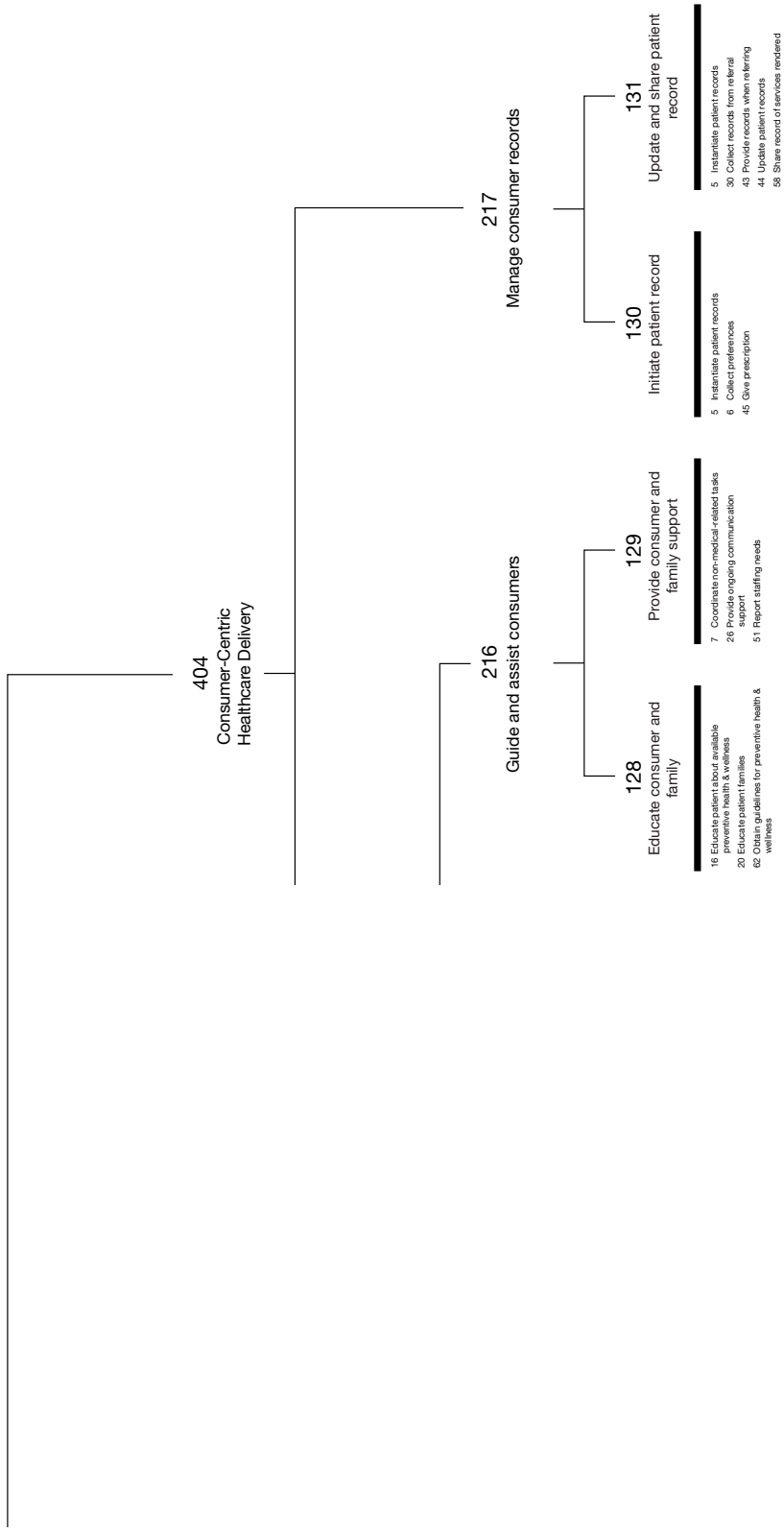
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1 Competition™ Healthcare System



Continued on the next page...





404  
Consumer-Centric  
Healthcare Delivery

216  
Guide and assist consumers

128  
Educate consumer and family

- 16 Educate patient about available preventive health & wellness
- 20 Educate patient families
- 62 Obtain guidelines for preventive health & wellness

129  
Provide consumer and family support

- 7 Coordinate non-medical-related tasks
- 26 Provide ongoing communication support
- 51 Report staffing needs

217  
Manage consumer records

130  
Initiate patient record

- 5 Instantiate patient records
- 6 Collect preferences
- 45 Give prescription

131  
Update and share patient record

- 5 Instantiate patient records
- 30 Collect records from referral
- 43 Provide records when referring
- 44 Update patient records
- 58 Share record of services rendered



<h1>Activity Analysis</h1>		<b>Activity</b> Treating patients	
<b>Project</b> Rethinking Health Care		<b>Scenario</b>  Once a patient has been diagnosed he is either is prescribed a treatment or further referred to a specialist. To follow the treatment process the current provider requires information from other departments, labs, and providers that the patient has visited previously. Since patient information such as ancillary results or even diagnosis information is not shared between different providers directly, in most cases the patient himself has to provide this information each time he changes a provider	
<b>Mode</b> Information from Providers			
<b>Originator</b> Gauri Verma			
<b>Contributors</b> Lin Lin Ashwat Bhoopathy Lise Lynam Yekung Yoo			
<b>Users</b> Individual physicians and provider organizations. Provider's operators of database system, doctors, specialists, staff, nurses,		<b>System Components</b>  Patients printed copy of records Electronic record keeping system Computers Patient's files/ paper based record keeping system	<b>Environmental Components</b>  Individual set ups and provider organizations such as hospitals, nursing homes, labs . Departments within the provider organizations.
<b>System Functions</b>  [29]Collect records from referrals [30]Collect alternative treatment options+expert opinions [31]Collect satisfaction/ learning post-procedure [32]Risk adjust data [33]Collect ancillary results [34]Collect capabilities for possible referrals		<b>Associated Design Factors</b>  (29,33) Lack of access to patient records in a standardized form ( 31) No efficient means of getting feedback after treatment process. ( 30,34) Lack of collaboration between providers to share expertise and treat patients effectively	

# Design Factor

Lack of access to patient records in a standardized form

## Project

Rethinking Health Care

## Mode

Information from Providers

## Activity

Treating Patients

## Originator

Gauri Verma

## Contributors

Lin Lin  
Ashwat Bhoopathy  
Lise Lynam  
Yekyung Yoo

## Sources

Redefining Health Care  
Porter, Tiesberg.  
Personal observation  
health care workshop

## Associated Functions

- [29]Collect records from referrals  
[33]Collect ancillary results

## Observation

There is a lack of a standardized format for recording and sharing patient information across providers in the current system.

## Extension

Even though many providers have recently switched to electronic formats for recording patient information recently, no standardized format for recording such information is followed by providers. Such standardization can only be provided by the government. Also these patient records should be accessible to other providers of the patients so that the patient himself does not have to keep track of all his previous transactions, medications and treatment and illness history. At the same time it is necessary that a patient should also have access to his own information and be responsible for understanding his condition. Also this data( entire medical history) should not be accessible to anyone that the patient does not want to have access to it such as health plans and employers. A good system should be able to balance these objectives to be of any use to the patient. It is a critical tool for providers to deliver the best care

## Design Strategies

Collaboration between providers to share patient records and results directly using IT.

Patient keeps copy of all his records from different providers in one place and providers maintain their own separate records database.

State wide medical records

## Solution Elements

**S** IT system for sharing patient records directly between providers

**S** Medical identity cards-updated on each provider visit

**S** State wide medical identity numbers

# Solution Element

**E M S**

Medical identity cards

**Project**

Rethinking Health Care

**Mode**

Information from Providers

**Activity**

Treating Patients

**Originator**

Gauri Verma

**Contributors**

Lin Lin  
Ashwat Bhoopathy  
Lise Lynam  
Yekyung Yoo

**Description**

Each person is issued a medical identity card by the government. Each time the patient visits a provider his medical information is updated on the card and a record of the current treatment and transaction is kept by the provider also. The data from the card can be duplicated and transferred by the patient only. His entire medical history is only accessible to whoever the patient wants. Providers can only keep records of their own transaction and have to update that information in the patients card as well. This will ensure no third party payer or employer has access to the customer's entire medical record

**Source**

Redefining Health Care  
Porter, Tiesberg.  
Personal observation  
health care workshop

**Properties**

- Patient identifier number
- Patient emergency information
- Med history
- Privacy settings
- Access and edit control

**Features**

- Contains patients unique medical history
- Updates patient information with each visit
- Ensures privacy protection
- Gives patients control over privacy settings
- Empowers providers to deliver better informed care
- Gives consumers full access to their personal records
- Helps patients manage personal records
- Helps providers access patient information with patient permission.

**Associated Function/s**

- [ 3 ] Collect symptoms
- [29]Collect records from referrals
- [33]Collect ancillary results

**Source Design Factor/s**

Lack of access to patient records in a standardized form  
Patient cannot be relied upon to give accurate information

# Activity Analysis

Activity  
Extending

## Project

Rethinking Health Care

## Mode

Information from Consumers

## Originator

Lise Lynam

## Contributors

Ash Bhoopathy  
Lin Lin  
Gauri Verma  
Yekyung Yoo

## Scenario

Providers maintain remote communications with and evaluations of consumers after treatment to monitor progress and failures over time.

## Users

Caregivers (physicians, nurses, therapists, pharmacists), administrators, consumers

## System Components

Patient Information Exchange System  
Remote Patient Connection  
Telephone  
Computer  
Secure Internet Access

## Environmental Components

Patient residence, physician office, clinic, pharmacy, hospital, physician site.

## System Functions

- 10 Collect consumer satisfaction results
- 11 Collect condition improvement results
- 12 Collect adverse effect data
- 13 Collect patient maintenance indicators

## Associated Design Factors

- [10, 11, 13] Insufficient remote connection to consumer
- [10, 11, 13] Insufficient electronic capability to collect and store data for response
- [10, 11,] No consensus on performance measures
- [12, 13] Insufficient patient access to maintenance evaluation technology
- [12] Patients do not report or misreport treatment side effects

# Design Factor

No consensus on performance measures

## Project

Rethinking Health Care

## Mode

Information from Consumers

## Activity

Extending

## Originator

Lise Lynam

## Contributors

Ash Bhoopathy  
Lin Lin  
Gauri Verma  
Yekyung Yoo

## Sources

Porter, Michael E., Tiesberg, E.O. 2006. *Redefining Health Care. Creating Value-Based Competition on Results.* Boston, MA.: Harvard Business School Press.

Goldsmith, Jeff C. 2003. *Digital Medicine. Implications for health care leaders.* Chicago: Health Administration Press.

Herzlinger, Regina E. 2007. *Who Killed Health Care?* New York: McGraw Hill

## Associated Functions

10 Collect consumer satisfaction results  
11 Collect condition improvement results

## Observation

Providers are reluctant to measure their performance beyond the objective confines of adherence to best practices.

Consumers of healthy markets, however, rely on outcomes information and subjective review from fellow consumers.

## Extension

As many technical challenges there are for measuring provider performance (information exchange), the initiative faces significant non-technical barriers as well.

Different types of providers bow to different standards and do typically measure performance across a patient's care cycle where performance measure has the most value to consumers that wish to exercise choice.

What's more, performance measures that do exist rely on measuring hospital adherence to process followed (best practices), rather than results achieved. This is undoubtedly an important indicator of hospital quality but it is not meaningful to most patients most of the time without some consideration of results.

As Regina Herzlinger puts it, we're measuring and paying for "conformance" instead of performance (127).

Physicians are uneasy about measuring their performance in any terms that are not objective; outcomes are difficult if not impossible to objectively measure.

Consumers are more comfortable with and better able to use results information and can weigh subjective feedback to make better decisions for themselves.

## Design Strategies

Set minimum performance standards & criteria

Accommodate conditions for which there are no established best practices

Offer consumer-speak reviews

Embrace subjective reviews

Measure provider adoption of consumer reviews

## Solution Elements

**M** Patient Satisfaction Reviews

**M** Patient Voice Rating

**E** Best Practices Rating

# Solution Element

**E M S**

Patient Voice Rating

**Project**

Rethinking Health Care

**Mode**

Information from Consumers

**Activity**

Extending

**Originator**

Lise Lynam

**Contributors**

Ash Bhoopathy

Lin Lin

Gauri Verma

Yekyung Yoo

**Description**

Public measure of a provider's commitment to collecting and reporting patient satisfaction feedback.

**Source**

Herzlinger, Regina E. 2007. *Who Killed Health Care?* New York: McGraw Hill.  
Porter, Michael E., Tiesberg, E.O. 2006. *Redefining Health Care. Creating Value-Based Competition on Results.* Boston, MA.: Harvard Business School Press.

**Properties**

- Rating of provider adoption of patient feedback
- Guidelines for effective adoption
- Public report
- Online report
- Award for patient service quality

**Features**

- Measures and patient access to feedback reporting
- Measures and reports frequency of patient feedback as indicator of provider's encouragement
- Reports available mediums for patient input offered by provider
- Encourages providers to consider patient satisfaction as a performance indicator
- Supports provider efforts to improve service quality
- Supports competition on quality reviews that consumers understand

**Associated Function/s**

10 Collect consumer satisfaction results

11 Collect condition improvement results

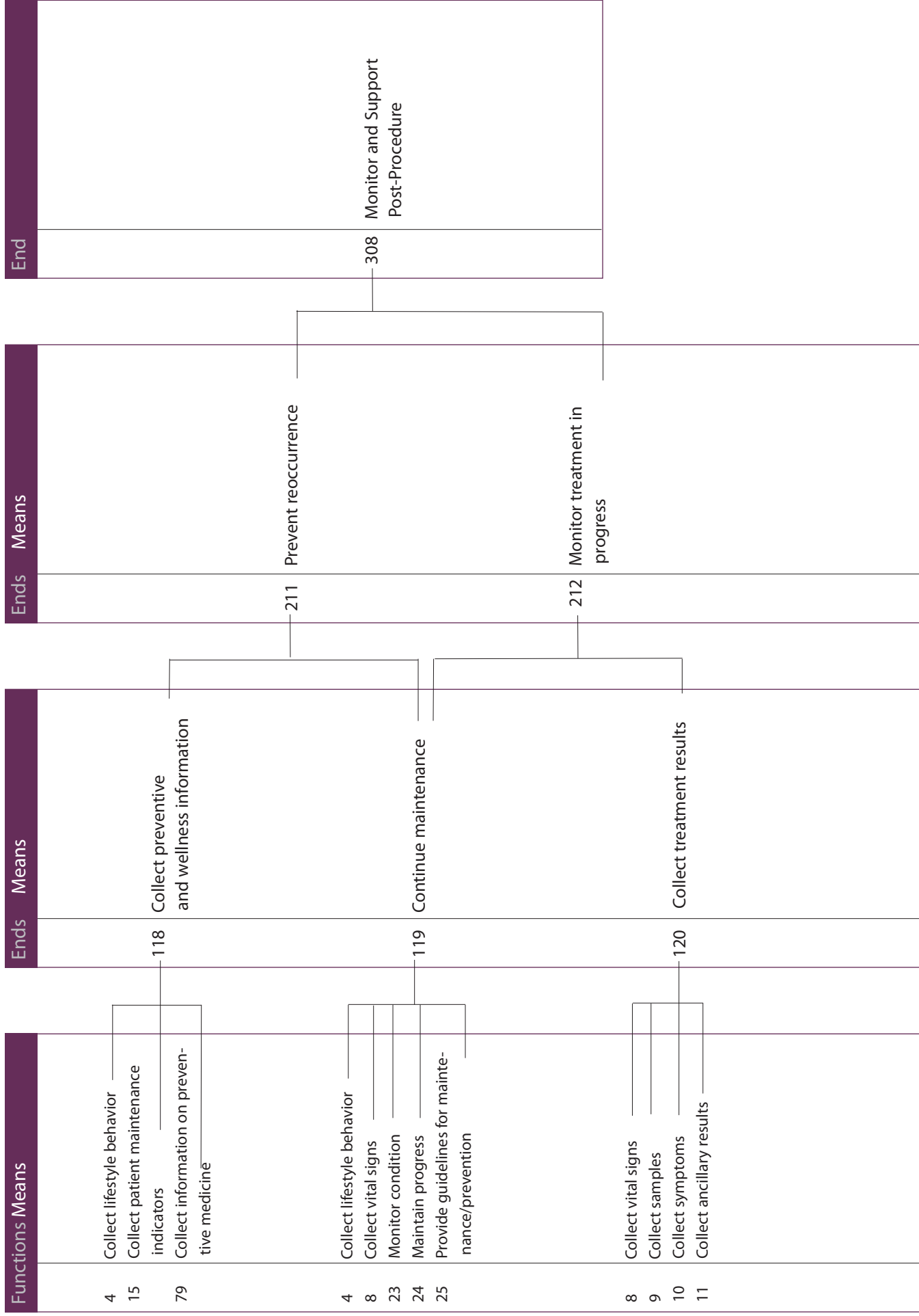
**Source Design Factor/s**

No consensus on performance measures

# Means/Ends Synthesis

Redefining Health Care: System Element Type

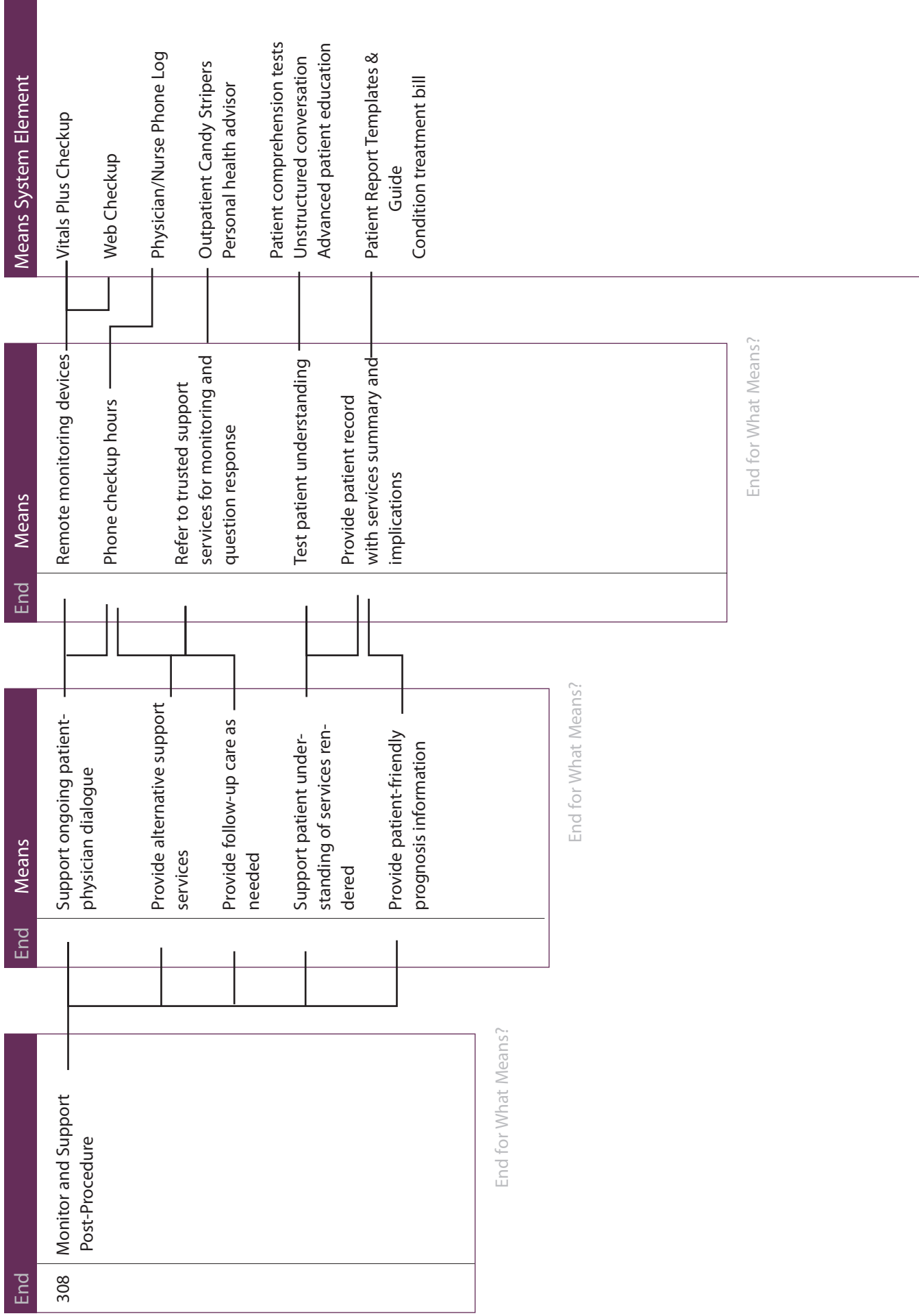
Cluster 308



# Ends/Means Synthesis

Rethinking Health Care: Monitor and Support Post-Procedure

Cluster #308





# System Element

**E M S**

Patient Comprehension Test

**Originator**

Yekyung Yoo

**Contributors**Ash Bhoopathy, Gauri Verma,  
Lin Lin, Lise Lynam**Sources**Michael E. Porter and Elizabeth  
Olmsted Teisberg. 2006. *Redefining  
Health Care*. Harvard Business  
School Press.

wikipedia.org

**SuperSet Element(s)**

N/A

**Related Elements**

- Electronic Chalkboard

**SubSet Element(s)**

N/A

**Description**

This is a tool for the physician to check that the patient understands the information conveyed during the visit. It is also used for the physician to improve his own communication skills over time. It may exist as an on-site "test," a follow-up phone conversation, or an email. The provider has the right to deliver it in whatever way they think is best.

**Properties**

- A tool for gauging patient comprehension of condition and treatment
- A test that illustrates the physician's ability to clearly communicate information to the patient

**Features**

- Provides patient the information related to the visit
- Measures the patient's understanding of the visit.
- Assesses the physician's ability to clearly explain medical terms to the patient

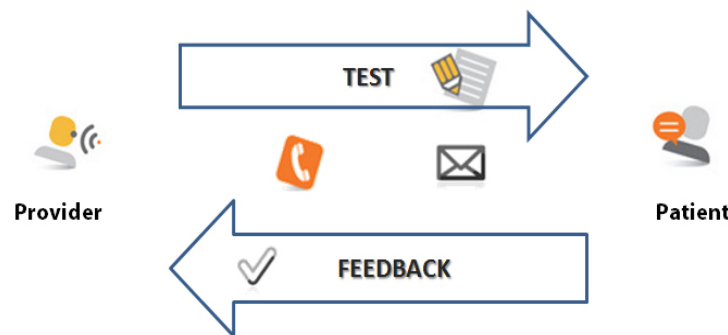
**Fulfilled Functions**

- 20 Prescribe
- 21 Perform procedure
- 22 Monitor

**Discussion**

There is a need to improve the quality of communication between medical professionals and patients. By improving the quality of the patient-provider conversation, patients are left feeling more enthusiastic and empowered about their medical condition. By providing the patient a comprehension test at the end of their visit, providers ensure that they understand their treatment plan and will follow the physician's instructions. Moreover, having a mutual understanding will lessen the occurrences of malpractice suits.

Physicians typically don't know whether they have clearly explained a patient's condition. With the popularity of online search engines like google, patients tend to self-diagnose when they feel that their physician did not do a good job at explaining to them. This could lead to many complicated situations where the patients don't follow the physician's instructions exactly and thus have encountered complications. Providers seek to change that habit with the Patient Comprehension Test.

**Scenario**

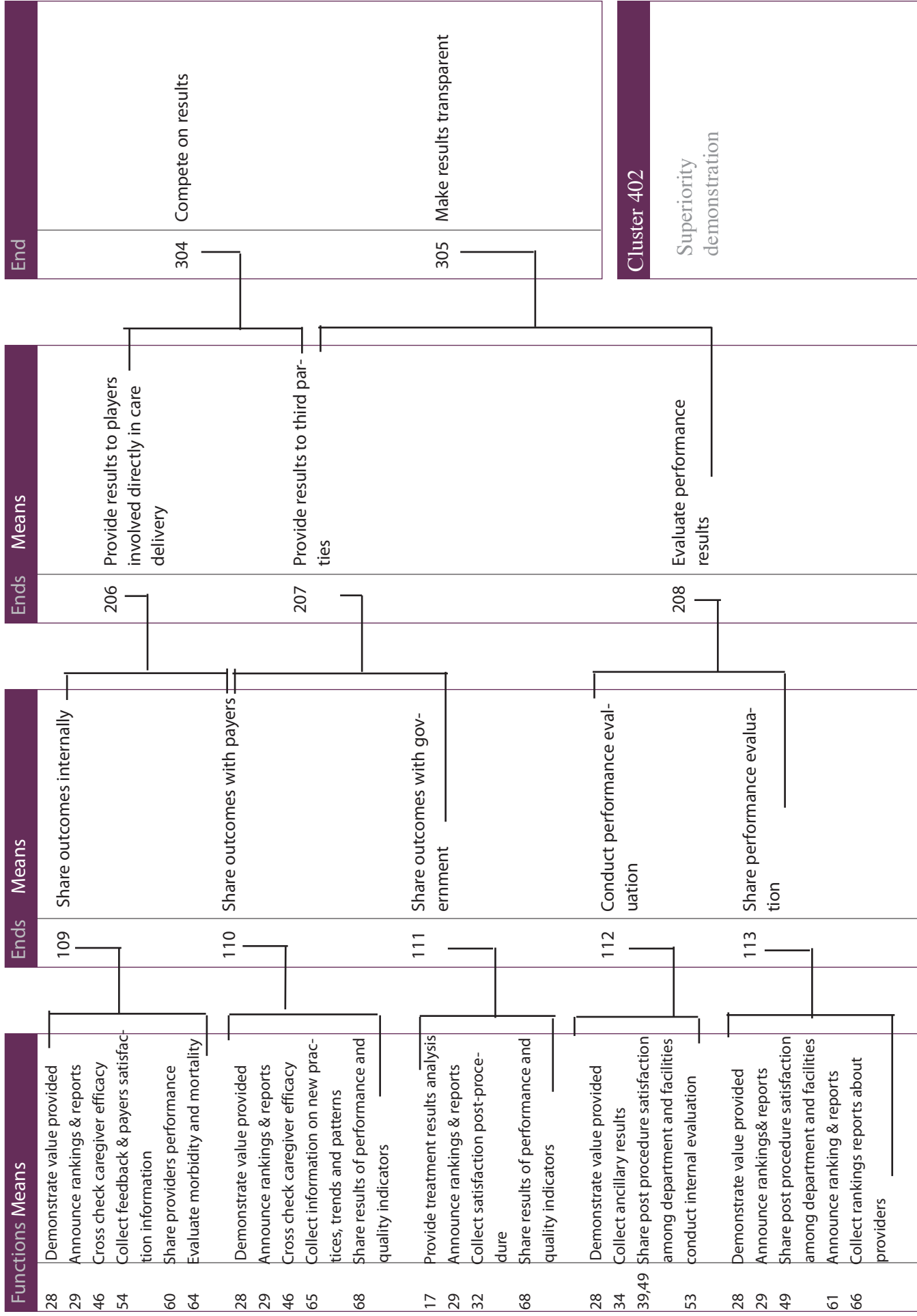
Lucy, a 27 year-old, sits in the doctor's office. She listens to her physician's explanation of her condition and the treatment plan. However, she finds that the physician uses many terms that she doesn't understand. Though she wants to ask some questions, she is too afraid to speak up. Instead, she convinces herself that she can go home, google her condition, and find more understandable explanations. At the end of the diagnosis, the doctor asks some questions about her disease and treatment. She can't answer those questions. She confesses that she pretended to understand his explanation and asks for some definitions on terms which she did not understand. The doctor happily provides explanations in everyday terms.

After she arrives at home, Lucy receives a phone call and an email from the doctor's office. From the phone call, the doctor asks questions about her diet and home exercises. She remembers their conversation at the office, and was able to answer with the right details. In the email, there was a Patient Comprehension Test, in the form of a survey. This document reflects on the discussion, reviews her documents, and carefully confirms that she understands her doctor's diagnosis. After the test, there is more information on the diet and exercises that are appropriate for her. With these materials, Lucy feels empowered and taken care of. She prints out the email and put it on her refrigerator to remind herself to follow the doctor's instructions.

# Means/Ends Synthesis

Redefining health Care: Providers

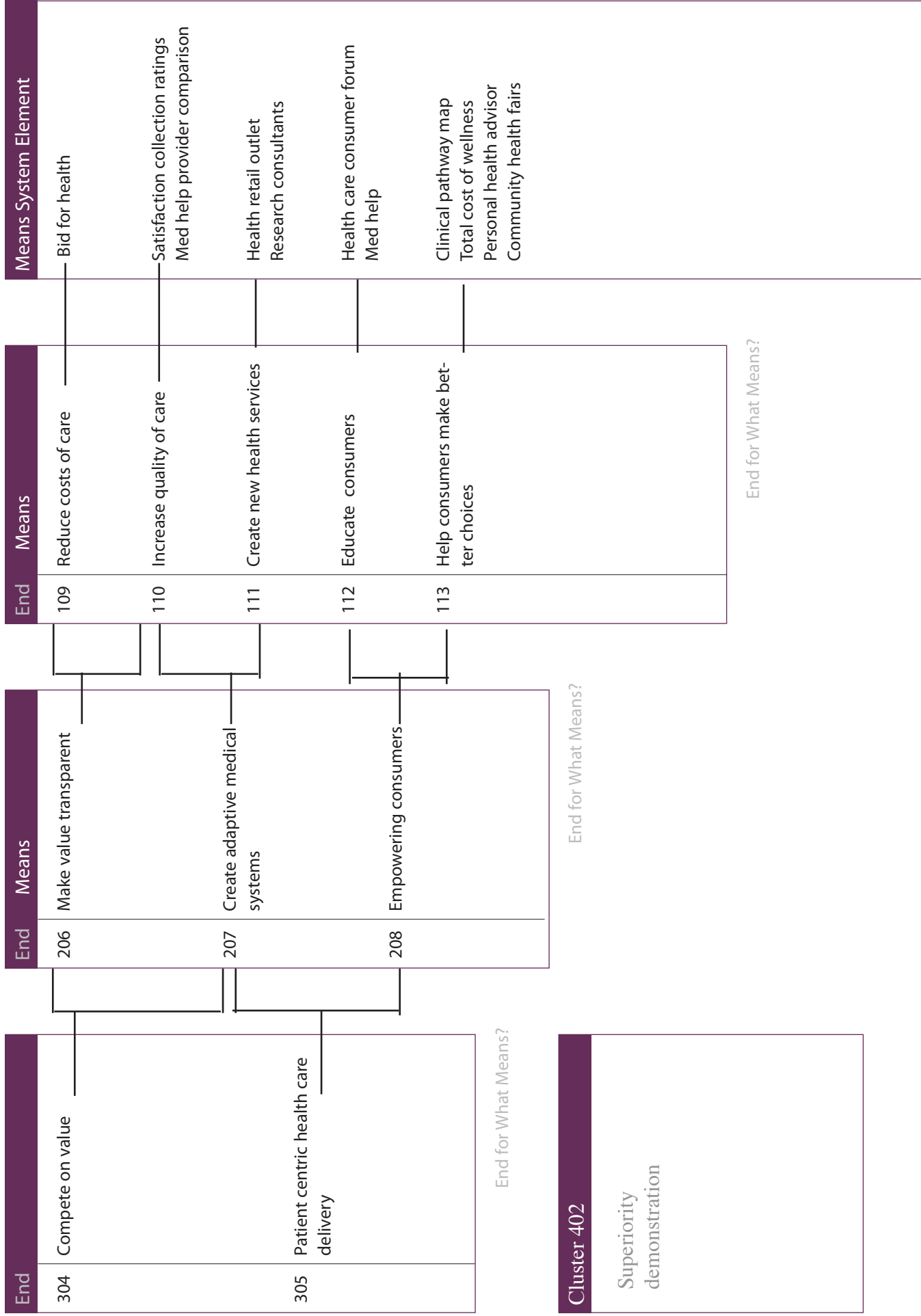
Cluster 402



# Ends/Means Synthesis

## Rethinking Health Care- Providers

## Cluster 402



# System Element

**E M S**

Bid for Health

**Originator**

Gauri Verma

**Contributors**Ash Bhoopathy,  
Yekyung Yoo,  
Lin Lin,  
Lise Lynam**Sources**Michael E. Porter and Elizabeth  
Olmsted Teisberg. 2006. *Redefining  
Health Care*. Harvard Business  
School Press.  
Ryan Masse, The Badger Herald , Nov' 07**SuperSet Element(s)**

N/A

**Related Elements**

-My choice calculator

**SubSet Element(s)**

N/A

**Description**

Bid for Health is a bidding mechanism for condition treatment and procedures based on the priceline model. Here consumers can name their own price for treatment and set their own parameters for quality comparison. They then invite providers to bid for the procedures and treatment. Providers compete with each other on reduced price and increased quality.

**Properties**

- Bidding mechanism
- Provider performance ratings
- Patient details and medical history for select providers

**Features**

- Empowers consumers to set their own prices
- Allows providers to compete on reduced prices and increased quality
- Reduces overall costs

## Fulfilled Functions

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### Discussion

The best chance to reduce prices and increase quality in the health care system lies at the provider level. We know that Price information is notoriously elusive in health care. A bill soon to be introduced in Wisconsin state by Sen. Jim Sullivan, requires health care providers to list the prices of their 50 most frequently performed procedures. The bill would give consumers the right to price estimates for a procedure from the provider. But hospitals face a far harder task in listing their prices. For one, a procedure performed on one person will not necessarily be the same, nor cost the same, as the procedure on another person. This is the cost based pricing method followed by providers currently.

We suggest a shift to price based costing with the Bid for Health model. We believe that providers know best about their business and that consumers don't need to be bothered with how a provider calculates his costs as long as they are all inclusive prices. So now, in order to compete, a provider will try to reduce his actual costs by channelizing resources and capabilities, by reducing excess capacity and by collaboration with other providers. This would lead to lowering of prices overall and enhanced quality of care.

### Scenario

Brian is an athlete who injured himself recently and now requires a knee surgery. He already has the basic knowledge about his condition, about the available providers, and the market price for the procedure he is seeking. He logs on to the Bid for Health system and supplies details of the treatment he is seeking and lists down the maximum price he is ready to pay on the bidding mechanism. He is then asked to supply details such as his medical history which he does by simply giving selected providers access to his PHR. Now once this information is conveyed to providers by the bid for health system, providers within a certain time frame will look into Brian's medical history and evaluate the risks and possible complications that could arise in the treatment, based on which they would name their price. The price itself is in the form of range that shows the best case, middle case and worst case scenario prices. The prices are all inclusive so Brian cannot be charged for more than what is initially specified by the providers. Since the provider Brian finally selected had no specific preferences for payment procedure, Brian decided to pay directly to the provider once his treatment is over.

# System Element Relationships

Rethinking -Design Thinking - Health Care System Elements Pairings 1 - 3 with 4 - 6

## 1. Web Check Up

Web Check Up can have a service that translates terms with **Babel Fish Translator**.

3

Web CheckUp can show **Clinical Pathway Map**.

2

## 2. UnStructured Conversation

0

During **UnStructured Conversation** at the doctor's office, the doctor can use **Clinical Pathway Map** to help patient understanding.

3

Patient can purchase monitors and services in **Retail Health Outlet** following the instruction from **UnStructured Conversation**.

2

## 3. Patient Comprehension Test

**Babel fish Translator** can be used in **Patient Comprehension Test**.

2

To confirm the knowledge of patient, **Clinical Pathway Map** can be included in **Patient Comprehension Test**.

1

Through **Patient Comprehension Test**, patient can make the right choice choosing the appropriate equipment in **Retail Health Outlet**.

1

## Scoring

- 3 Critical Relationship
- 2 Strong Relationship
- 1 Slight Relationship
- 0 No Relationship

## 4. Babel fish Translator

## 5. Clinical Pathway Map

## 6. Retail Health Outlet

# System Element Relationships

Rethinking - Design Thinking - Health Care  
System Elements Pairings 7 - 9 with 10 - 12

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2 Aggregated provider satisfaction score catered to <b>Community Health Fair</b> .	
---	--

3 Patient preference collected from <b>My Choice Calculator</b> can be used in publishing public report in <b>Satisfaction Collection Ratings</b> .	
--	--

3 Exposed price can help measure satisfaction from patients.	
---	--

	0
--	---

2 Priorities from <b>My Choice Calculator</b> can be included in <b>Patient Compliance Agreement</b> .	
---	--

2 Patient can refer to <b>Price List</b> before coming to agreement.	
---	--

	0
--	---

2 <b>Patient Responsibility Rewards</b> can support reliable pricing by provider.	
--	--



7. Community Health Fair

8. My Choice Calculator

9. Provider Generated Price List



10. Satisfaction Collection Ratings



11. Patient Compliance Agreement



12. Patient Responsibility Rewards

Scoring  
 3 Critical Relationship  
 2 Strong Relationship  
 1 Slight Relationship  
 0 No Relationship





