2008 Healthcare Leaders Forum

THE ROLE OF TECHNOLOGY IN HEALTHCARE DELIVERY

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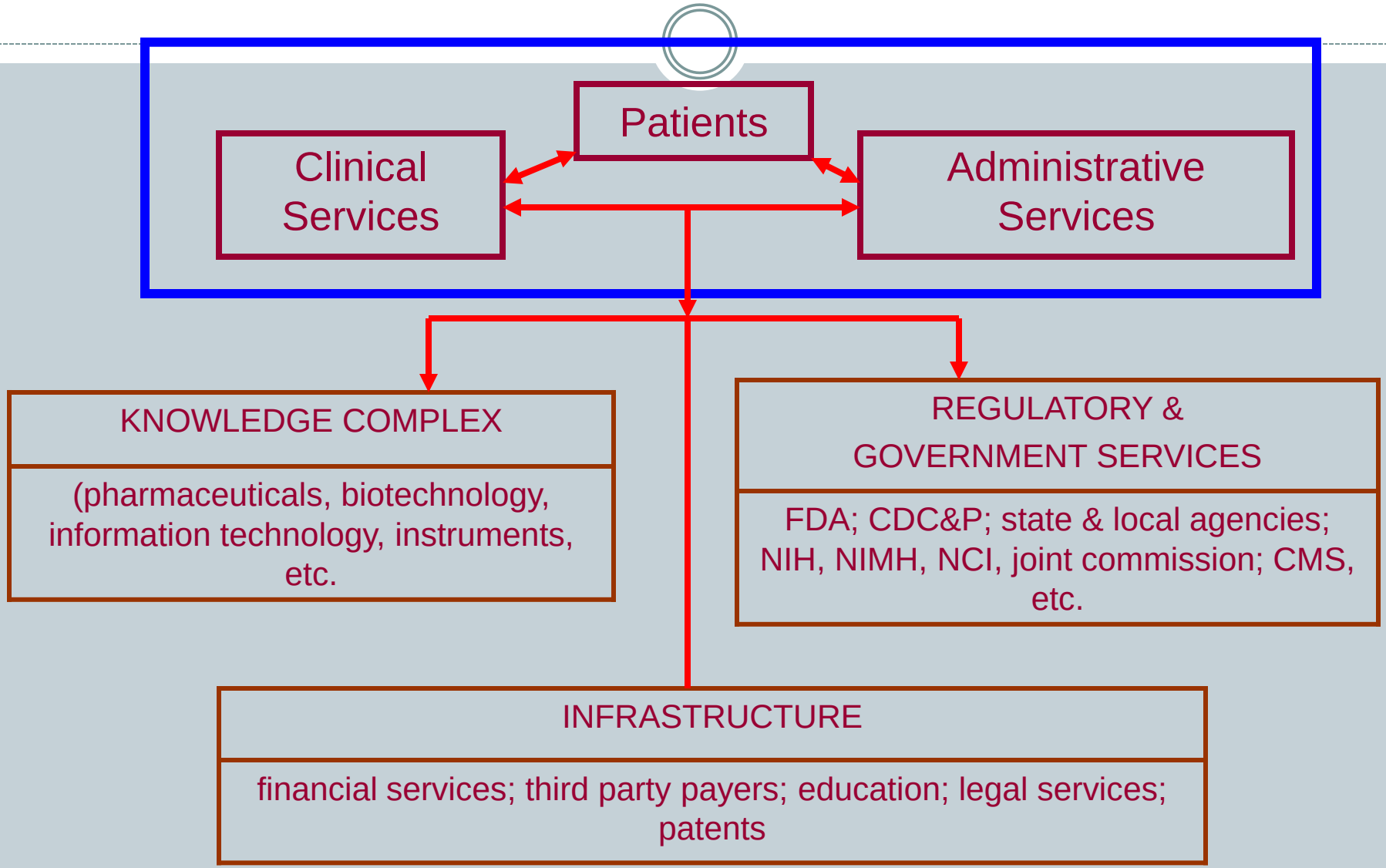
CONTENTS

- Defining Healthcare/Medical Technology
- Some Trends and Issues
- Why Health Care Is So Expensive
- What Technology Can Do
- What Technology Cannot Do
- Health Care and the Auto Industry: Similarities in Technology and Innovation
- Health Care and the Auto Industry: Differences in Technology and Innovation
- What We Can Learn From Each Other

Defining Medical/Healthcare Technology

- Medical Devices Systems
- Information Technology
- Medical/Surgical Procedures & Services
- Disposables
- Pharmaceuticals
- Technology Used in Administration of Health Care (e.g., telephone systems)

MEDICAL TECHNOLOGIES AND HEALTHCARE DELIVERY



Some Trends

Demographic Trends in the United States (in millions)

Year	All Ages	65 and Older	Per Cent
1950	150.69	12.19	8.1
1970	203.21	20.06	9.9
1990	248.70	31.07	12.5
2000	281.42	34.99	12.4
2005	296.49	36.61	12.4
2010	308.93	40.23	13.0
2020	335.80	54.63	16.3
2030	363.58	71.45	19.7
2040	391.94	80.09	20.4
2050	419.85	86.70	20.7

Source: US Census Bureau

HEALTH CARE MOVING FROM 20TH TO 21ST CENTURY

20th Century	21st Century
Provider-centered	Patient-centered
Price-driven	Value-driven
Knowledge-fragmented	Knowledge-organized
Care decisions widely varying	
Slow diffusion of innovation	Rapid diffusion
Paper-based	Electronically-based
Episodic care	Continuous care
Fragmented care	Coordinated care
Limited choice	More choice
Little quality measurement	Ubiquitous measurement
Management by process	Management for outcomes
Adversarial government regulation	Collaborative regulation
Persistent escalating cost	Overall cost decline

Source: National Institute for Healthcare Management and the National Committee for Quality Health Care, 2003.

Health Expenditures as % of Gross Domestic Product

Year	Per Cent
1960	5.2
1970	7.2
1980	9.1
1990	12.4
1995	13.8
2000	13.8
2002	15.4
2003	15.9
2004	16.0

Source: US Government, Centers for Medicare and Medicaid

Type of Healthcare Expenditures (for the year 2004)

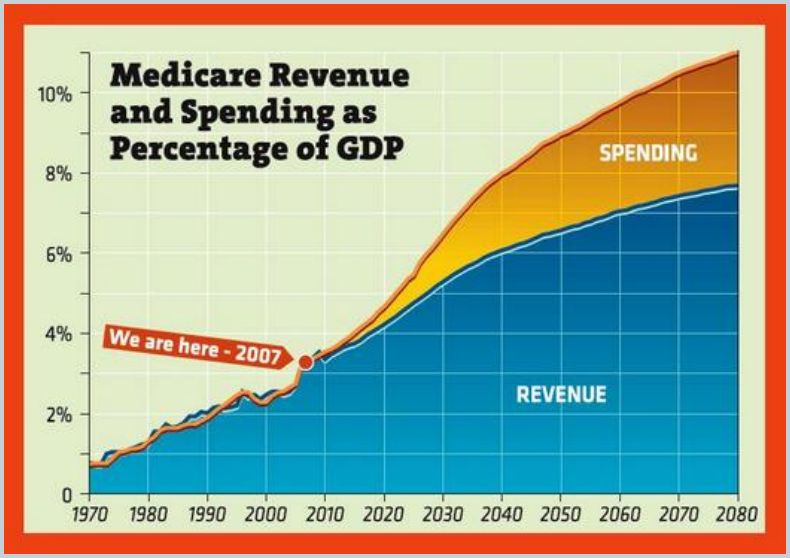
Expenditures and Source of funds	Total	Hospital	Physician	Home	Drugs	Nursing
Total:	$1,560.2	36.6%	25.6%	7.4%	12.1%	

Source

Out of pocket	15.1%
Private insurance	36.1%
Government	44.4%
Medicaid	17.5%
Medicare	19.2%
Other government	7.7%

(of the 44.4% of the government)

Federal	33.9%
State and Local	10.5%



Some Persisting Issues

- Quality of care
- Patient safety
- Availability of care
- Affordability of care
- Access to care
- Responsibility and payment for care

Why Is Health Care So Expensive?

COST DRIVERS

1. Necessity of the HC system
2. Cultural ideals of the population
3. Complexity of the HC system
4. Hospital inpatient costs
5. Outpatient services costs
6. Physician cost drivers
7. Role of medical/healthcare technology

Role of Medical Technology

- Approximately 19% (Geisler& Heller = 18.6%)
- Of which: disposables = 25%

medical services = 24%

(diagnostics, therapeutics, & monitoring)

information technology = 21%

(hardware, software, & telecommunications)

drugs/pharmaceuticals = 17%

medical/surgical procedures & services = 7%

others (systems & interface) = 6%

- Direct expenditures of medical technology = 12.6%
- Indirect expenditures = 6.2%

How the Population Views the Drivers of Rising Healthcare Costs

	Patients saying "very important"	Patients saying "most important"
High profits made by drug companies	58%	22%
The number of malpractice lawsuits	60%	21%
The amount of greed & waste that occurs in the healthcare system	59%	19%
The aging of the population	53%	12%
The use of expensive, high-tech medical equipment & expensive new drugs	45%	8%
The fact that most people with health insurance have no incentive to look for lower-priced doctors & services	29%	4%

Source: Kaiser Family Foundation, 2005

What Technology Can Do

Information technology can help reduce errors in medications

Use of computerized physician order entry (CPOE) can reduce medication errors by 80%

(foundation for e-health)

Picture archiving & communication system (PACS) eliminates need for films, allows interaction on a global scale: savings, improved quality & cost reductions

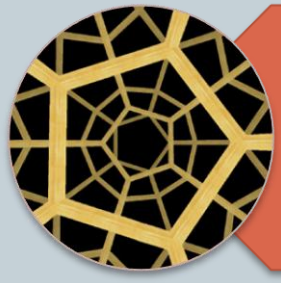
Improvements in diagnosis & treatments with technology help the quality & availability of care

Telemedicine/telehealth: monitoring chronic diseases over distances allows for access to care, quality of care, & reduces costs

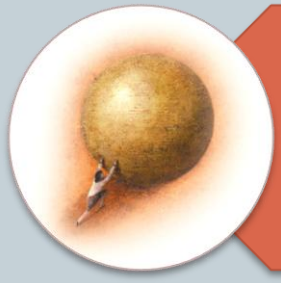
What Technology Cannot Do

Barriers to Adoption of Technologies in HC

- Lack of investment capital
- Lack of interoperable health systems
- Organizational change issues: design & workflow



Solve Basic Issues of Complexity of the System, Necessity, Cultural, and Political Issues



Make the Industry More Amenable to Change and Innovation

Where We Are Today

- Only 15% of hospitals have some form of computerized medication order entry implemented
- In those hospitals, physicians enter less than 25% of the orders
- Only 10% of hospitals utilize bar-coded medication administration at bedside
- Fewer than 5% of providers use computerized patient records
- About 80% of the estimated 35 billion health transactions each year are conducted by phone, fax, or mail—not via the Internet
- The financial services industry spends about 8-10% on information technology; HE healthcare industry = 2-3%
- Only 11% of hospitals have PACS

Health Care and the Auto Industry Similarities in Technology & Innovation

Most innovations are peripheral to the main products/service

Integration of information/telecommunication technologies

Most innovations come from outside the industry (electronics in auto; medical instruments/IT in health care)

Most innovations are incremental rather than radical or revolutionary

Technological innovations in both industries are not necessarily aimed at solving basic issues/challenges of the industry

Differences in Technology & Innovation

- Differences in the complexity of the system: The auto industry has a simpler environment
- Different competitive environments leading to different competitive strategies: The auto industry competes with other market forces; the HC industry competes within itself
- The auto industry is mainly an economic force (with some social implications); The HC industry is an amalgam of social, political, ethical, and economic forces
- Hence: Innovations in the auto industry can be aimed at cost savings/reductions—with degrees of freedom in quality; in the HC industry cost, quality, availability, access, affordability are intertwined
- The HC industry is “under the gun” for always employing the “best available technology”

What We Can Learn From Each Other

- The rate of adoption of innovations can be influenced by management (e.g., reducing “time to market” of new auto models)
- Resistance to change can be overcome by awareness of the benefits from technological innovations
- Patient empowerment in HC and customer sophistication in auto are different phenomena
- Auto customers are much more empowered in their purchasing choices; patients are much less empowered in choices of treatments
- Thus: the more technologically advanced the product/service, the less empowered the customers/patients
- The concept of value chain is much more difficult to attain in HC due to the cost drivers discussed earlier

SOME LESSONS

- Technology is neither the cause nor the cure for what ails healthcare delivery in America
- Technology *facilitates* and enhances public expectations and clinical/administrative capabilities for global interface, better diagnosis, and “miracle” cures
- Technology is *instrumental* in the new age of medicine and provision of care

- The Value Chain approach to health care delivery is an attractive theoretical perspective—but not workable in the HC environment, due to:

> Complexity of the system

> High level of Professionalism of actors

> Silos in the system

> Unlike Manufacturing: difficulties in measuring outcomes and value

QUESTIONS?