Value-Based Health Care Delivery

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Reykjavík, Iceland
November 1, 2010

This presentation draws on Redefining Health Care: Creating Value-Based Competition on Results (with Elizabeth O. Teisberg), Harvard Business School Press, May 2006; “A Strategy for Health Care Reform—Toward a Value-Based System,” New England Journal of Medicine, June 3, 2009; “Value-Based Health Care Delivery,” Annals of Surgery 248: 4, October 2008; “Defining and Introducing Value in Healthcare,” Institute of Medicine Annual Meeting, 2007. Additional information about these ideas, as well as case studies, can be found the Institute for Strategy & Competitiveness Redefining Health Care website at http://www.hbs.edu/rhc/index.html. No part of this publication may be reproduced, stored in a retrieval system, or transmitted in any form or by any means — electronic, mechanical, photocopying, recording, or otherwise — without the permission of Michael E. Porter and Elizabeth O. Teisberg.
Challenge in Health Care Reform

Past Goals

- Creating a universal and equitable health care system
- Controlling the cost of health care

Future Imperative

- Creating a high-value health care delivery system
Redefining Health Care Delivery

• Achieving universal coverage and access to care are essential, but not enough
• The core issue in health care is the value of health care delivered

Value: Patient health outcomes per dollar spent

• How to design a health care system that dramatically improves patient value
  – Ownership of entities is secondary (e.g. non-profit vs. for profit vs. government)
• How to construct a dynamic system that keeps rapidly improving
Creating a Value-Based Health Care System

• Significant improvement in value will require fundamental restructuring of health care delivery, not incremental improvements

Today, 21st century medical technology is often delivered with 19th century organization structures, management practices, and payment models

- Process improvements, safety initiatives, disease management and other overlays to the current structure are beneficial, but not sufficient

- Consumers alone cannot fix the dysfunctional structure of the current system
Creating Competition on Value

• **Competition** and **choice** for patients/subscribers are powerful forces to encourage restructuring of care and continuous improvement in value

• Today’s competition in health care is often not aligned with value

  \[
  \text{Financial success of system participants} \neq \text{Patient success}
  \]

• Creating positive-sum **competition on value** is a central challenge in health care reform in every country
Principles of Value-Based Health Care Delivery

• The central goal in health care must be value for patients, not access, volume, convenience, or cost containment

\[
\text{Value} = \frac{\text{Health outcomes}}{\text{Costs of delivering the outcomes}}
\]

– Outcomes are the full set of patient health outcomes over the care cycle
– Costs are the total costs of care for the patient’s condition over the care cycle

• How to design a health care system that dramatically improves patient value
Cost versus Quality, Sweden
Health Care Spending by County, 2008

Higher
cost

22,000 -

Health Care
Cost Per
Capita (SEK)

20,000 -

Gotland
Norrbotten

18,000 -

Västernorrland

16,000 -

Örebro
Skåne

14,000 -

Västergötland

12,000 -

Halland
Uppsala

10,000 -

Östergötland

8,000 -

Västerbotten

6,000 -

Kalmar

4,000 -

Jönköping

2,000 -

Västmanland

0 -

Västerbotten

Note: Cost including; primary care, specialized somatic care, specialized psychiatry care, other medical care, political health- and medical care activities, other subsidies (e.g. drugs)
Source: Öppna jämförelser, Socialstyrelsen 2008; Sjukvårdsdata i fokus 2008; BCG analysis
Principles of Value-Based Health Care Delivery

- **Quality improvement** is the key driver of cost containment and value improvement, where quality is **health outcomes**

<table>
<thead>
<tr>
<th>Prevention of illness</th>
<th>Fewer complications</th>
</tr>
</thead>
<tbody>
<tr>
<td>Early detection</td>
<td>Fewer mistakes and repeats in treatment</td>
</tr>
<tr>
<td>Right diagnosis</td>
<td>Faster recovery</td>
</tr>
<tr>
<td>Right treatment to the right patient</td>
<td>More complete recovery</td>
</tr>
<tr>
<td>Early and timely treatment</td>
<td>Less disability</td>
</tr>
<tr>
<td>Treatment earlier in the causal chain of disease</td>
<td>Fewer recurrences, relapses, flare ups, or acute episodes</td>
</tr>
<tr>
<td>Rapid cycle time of diagnosis and treatment</td>
<td>Slower disease progression</td>
</tr>
<tr>
<td>Less invasive treatment methods</td>
<td>Greater functionality and less need for long term care</td>
</tr>
<tr>
<td></td>
<td>Less care induced illness</td>
</tr>
</tbody>
</table>

- **Better health** is the goal, not more treatment
- Better health is **inherently less expensive** than poor health
Creating a Value-Based Health Care Delivery System

The Strategic Agenda

1. Organize into Integrated Practice Units (IPUs) Around Patient Medical Conditions
   - Organize primary and preventive care to serve distinct patient populations

2. Establish Universal Measurement of Outcomes and Cost for Every Patient

3. Move to Bundled Prices for Care Cycles

4. Integrate Care Delivery Across Separate Facilities

5. Expand Excellent IPUs Across Geography

6. Create an Enabling Information Technology Platform
1. Organize Around Patient Medical Conditions
Migraine Care in Germany

Existing Model:
Organize by Specialty and Discrete Services

New Model:
Organize into Integrated Practice Units (IPUs)

Integrating Across the Cycle of Care
Breast Cancer

<table>
<thead>
<tr>
<th>INFORMING AND ENGAGING</th>
<th>MEASURING</th>
<th>ACCESSING</th>
<th>MONITORING/PREVENTING</th>
<th>DIAGNOSING</th>
<th>PREPARING</th>
<th>INTERVENING</th>
<th>RECOVERING/REHABING</th>
<th>MONITORING/MANAGING</th>
</tr>
</thead>
<tbody>
<tr>
<td>• Advice on self screening</td>
<td>• Mammograms</td>
<td>• Office visits</td>
<td>• Medical history</td>
<td>• Medical history</td>
<td>• Choosing a treatment plan</td>
<td>• Surgery (breast preservation or mastectomy, oncoplastic alternative)</td>
<td>• Periodic mammography</td>
<td>□ Breast Cancer Specialist</td>
</tr>
<tr>
<td>• Consultations on risk factors</td>
<td>• Ultrasound, MRI</td>
<td>• Office visits</td>
<td>• Control of risk factors (obesity, high fat diet)</td>
<td>• Determining the specific nature of the disease (mammograms, pathology, biopsy results)</td>
<td>• Surgery prep (anesthetic risk assessment, EKG)</td>
<td>• In-hospital and outpatient wound healing</td>
<td>• Other imaging</td>
<td></td>
</tr>
<tr>
<td>• Counseling patient and family on the diagnostic process and the diagnosis</td>
<td>• Labs (CBC, Blood chems, etc.)</td>
<td>• Hospital stays</td>
<td>• Genetic screening</td>
<td>• Genetic evaluation</td>
<td>• Plastic or onco-plastic surgery evaluation</td>
<td>• Treatment of side effects (e.g. skin damage, cardiac complications, nausea, lymphedema and chronic fatigue)</td>
<td>□ Other Provider Entities</td>
<td></td>
</tr>
<tr>
<td>• Patient and family psychological counseling</td>
<td>• Biopsy, BRACA 1, 2...</td>
<td>• Visits to outpatient radiation or chemotherapy units</td>
<td>• Clinical exams</td>
<td>• Labs</td>
<td>• Neo-adjuvant chemotherapy</td>
<td>• Follow-up clinical exams</td>
<td></td>
<td></td>
</tr>
<tr>
<td>• Counseling on the treatment process</td>
<td>• CT, Bone Scan</td>
<td>• Pharmacy</td>
<td>• Monitoring for lumps</td>
<td>• High risk clinic visits</td>
<td>• Adjuvant therapies (hormonal medication, radiation, and/or chemotherapy)</td>
<td>• Treatment for any continued or later onset side effects or complications</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

- Labs
- Procedure-specific measurements
- Range of movement
- Side effects measurement
- MRI, CT
- Recurring mammograms (every six months for the first 3 years)
Integrated Models of Primary Care

• Today’s primary care is **fragmented** and attempts to address **overly broad needs** with limited resources

• Organize primary care around teams serving **specific patient populations** (e.g. healthy adults, frail elderly, type II diabetics) rather than attempting to be all things to all patients

• Deliver **defined service bundles** covering appropriate prevention, screening, diagnosis, wellness and health maintenance for the population.

• Provide services with **multidisciplinary teams**, including ancillary health professionals and support staff, in **dedicated facilities**

• Form **alliances with specialty IPUs** covering the prevalent medical conditions represented in the patient population

• Deliver services not only in traditional settings but at the **workplace, schools, community organizations**, and in **other locations** offering regular patient contact and the ability to develop a group culture of wellness
Volume and experience will have an even greater impact on value in an IPU structure than in the current system.
## Fragmentation of Hospital Services
### Sweden

<table>
<thead>
<tr>
<th>DRG</th>
<th>Number of admitting providers</th>
<th>Average percent of total national admissions</th>
<th>Average admissions/provider/year</th>
<th>Average admissions/provider/week</th>
</tr>
</thead>
<tbody>
<tr>
<td>Knee Procedure</td>
<td>68</td>
<td>1.5%</td>
<td>55</td>
<td>1</td>
</tr>
<tr>
<td>Diabetes age &gt; 35</td>
<td>80</td>
<td>1.3%</td>
<td>96</td>
<td>2</td>
</tr>
<tr>
<td>Kidney failure</td>
<td>80</td>
<td>1.3%</td>
<td>97</td>
<td>2</td>
</tr>
<tr>
<td>Multiple sclerosis and cerebellar ataxia</td>
<td>78</td>
<td>1.3%</td>
<td>28</td>
<td>1</td>
</tr>
<tr>
<td>Inflammatory bowel disease</td>
<td>73</td>
<td>1.4%</td>
<td>66</td>
<td>1</td>
</tr>
<tr>
<td>Implantation of cardiac pacemaker</td>
<td>51</td>
<td>2.0%</td>
<td>124</td>
<td>2</td>
</tr>
<tr>
<td>Splenectomy age &gt; 17</td>
<td>37</td>
<td>2.6%</td>
<td>3</td>
<td>&lt;1</td>
</tr>
<tr>
<td>Cleft lip &amp; palate repair</td>
<td>7</td>
<td>14.2%</td>
<td>83</td>
<td>2</td>
</tr>
<tr>
<td>Heart transplant</td>
<td>6</td>
<td>16.6%</td>
<td>12</td>
<td>&lt;1</td>
</tr>
</tbody>
</table>


- **Minimum volume standards** in lieu of compelling outcome information is an interim step to drive service consolidation
2. Measure Outcomes and Cost for Every Patient

- **Patient Initial Conditions**
- **Processes**
- **Indicators**
- **(Health) Outcomes**

**Patient Compliance**

- Protocols/Guidelines
- E.g., Hemoglobin A1c levels for diabetics

**Structure**

- E.g., Staff certification, facilities standards
Unit of Outcomes and Cost Measurement

- **For** medical conditions/primary care patient populations
- **Real time** and “on-line” in care delivery, not just retrospectively or in clinical studies
- **Not** for interventions or short episodes
- **Not** separately for types of service (e.g. inpatient, outpatient, tests, rehabilitation)
- **Not** for practices, departments, clinics, or entire hospitals

Measuring and reporting **volume** by medical condition
The Outcome Measures Hierarchy

Tier 1
Health Status Achieved or Retained
- Survival
- Degree of health/recovery

Tier 2
Process of Recovery
- Time to recovery and return to normal activities
- Disutility of the care or treatment process (e.g., diagnostic errors and ineffective care, treatment-related discomfort, complications, or adverse effects, treatment errors and their consequences in terms of additional treatment)

Tier 3
Sustainability of Health
- Sustainability of health/recovery and nature of recurrences
- Long-term consequences of therapy (e.g., care-induced illnesses)

Recurrences
Care-induced Illnesses
The Outcome Measures Hierarchy

Breast Cancer

Survival
- Survival rate (One year, three year, five year, longer)

Degree of recovery / health
- Degree of remission
- Functional status
- Breast conservation
- Depression

Time to recovery or return to normal activities
- Time to remission
- Time to functional status

Disutility of care or treatment process (e.g., treatment-related discomfort, complications, adverse effects, diagnostic errors, treatment errors)
- Nosocomial infection
- Nausea/vomiting
- Febrile neutropenia
- Suspension of therapy
- Failed therapies
- Limitation of motion
- Depression

Sustainability of recovery or health over time
- Cancer recurrence
- Sustainability of functional status

Long-term consequences of therapy (e.g., care-induced illnesses)
- Incidence of secondary cancers
- Brachial plexopathy
- Fertility/pregnancy complications
- Premature osteoporosis

Initial Conditions/Risk Factors
- Stage upon diagnosis
- Type of cancer (infiltrating ductal carcinoma, tubular, medullary, lobular, etc.)
- Estrogen and progesterone receptor status (positive or negative)
- Sites of metastases
- Previous treatments
- Age
- Menopausal status
- General health, including co-morbidities
- Psychological and social factors
Adult Kidney Transplant Outcomes, U.S. Center Results, 1987-1989

Number of programs: 219
Number of transplants: 19,588
One year graft survival: 79.6%

- 16 greater than predicted survival (7%)
- 20 worse than predicted survival (10%)
Adult Kidney Transplant Outcomes
U.S. Center Results, 2005-2007

Number of programs: 240
Number of transplants: 38,515
One year graft survival: 93.2%

- 16 greater than expected graft survival (6.6%)
- 19 worse than expected graft survival (7.8%)
Swedish National Quality Registers, 2007*

Respiratory Diseases
- Respiratory Failure Register (Swedevox)
- Swedish Quality Register of Otorhinolaryngology

Childhood and Adolescence
- The Swedish Childhood Diabetes Registry (SWEDIABKIDS)
- Childhood Obesity Registry in Sweden (BORIS)
- Perinatal Quality Registry/Neonatology (PNQn)
- National Registry of Suspected/Confirmed Sexual Abuse in Children and Adolescents (SÖK)

Circulatory Diseases
- Swedish Coronary Angiography and Angioplasty Registry (SCAAR)
- Registry on Cardiac Intensive Care (RIKS-HIA)
- Registry on Secondary Prevention in Cardiac Intensive Care (SEPHIA)
- Swedish Heart Surgery Registry
- Grown-Up Congenital Heart Disease Registry (GUCH)
- National Registry on Out-of-Hospital Cardiac Arrest
- Heart Failure Registry (RiksSvikt)
- National Catheter Ablation Registry
- Vascular Registry in Sweden (Swedvasc)

Endocrine Diseases
- National Quality Registry for Stroke (Riks-Stroke)
- National Registry of Atrial Fibrillation and Anticoagulation (AuriculA)

Gastrointestinal Disorders
- Swedish Hernia Registry
- Swedish Quality Registry on Gallstone Surgery (GallRiks)
- Swedish Quality Registry for Vertical Hernia

Musculoskeletal Diseases
- Swedish Shoulder Arthroplasty Registry
- National Hip Fracture Registry (RIKSHÖFT)
- Swedish National Hip Arthroplasty Register
- Swedish Knee Arthroplasty Register
- Swedish Rheumatoid Arthritis Registry
- National Pain Rehabilitation Registry
- Follow-Up in Back Surgery
- Swedish Cruciate Ligament Registry – X-Base
- Swedish National Elbow Arthroplasty Register (SAAR)

* Registers Receiving Funding from the Executive Committee for National Quality Registries in 2007
Cost Reduction in Health Care

• Current organization structure and cost accounting practices in health care obscure the understanding of actual costs in care delivery
• There are major opportunities for cost efficiencies
  – Over-resourced facilities
    ▪ E.g. routine care delivered in expensive hospital settings
  – Under-utilization of expensive clinical space, equipment, and facilities
  – Poor utilization of highly skilled physicians and staff
  – Redundant administrative and scheduling personnel
  – Over-provision of low- or no-value testing and other services in order to justify billing/follow rigid protocols
  – Long cycle times
  – Missed opportunities for volume procurement
  – Excess inventory and weak inventory management
  – Lack of cost knowledge and awareness in clinical teams

• Such cost reduction opportunities do not require outcome tradeoffs, but may actually improve outcomes
3. Move to Bundled Prices for Care Cycles

- Bundled reimbursement covers the **full care cycle** for an acute medical condition, and **time-based reimbursement** for chronic conditions or primary/preventive care for a patient population.
Bundled Payment in Practice
Hip and Knee Replacement in Stockholm, Sweden

- **Components** of the bundle
  - Pre-op evaluation
  - Lab tests
  - Radiology
  - Surgery & related admissions
  - Prosthesis
  - Drugs
  - Inpatient rehab, up to 6 days
  - All physician and staff costs
  - 1 follow-up visit within 3 months
  - Any additional surgery to the joint within 2 years
  - If post-op infection requiring antibiotics occurs, guarantee extends to 5 years

- Applies to all **relatively healthy patients** (i.e. ASA scores of 1 or 2)
- The same **referral process** from PCPs is utilized as the traditional system
- **Mandatory reporting** by providers to the joint registry plus supplementary reporting

- Provider participation is **voluntary** but all providers are involved

- The bundled price for a knee or hip replacement is about **US $8,000**
4. Integrate Care Delivery Across Separate Facilities

- Increase **volume**
- Capture flow of **patients**
- Benefits limited to **contracting** and spreading limited fixed overhead

- Increase **value**
- The network is **more than** the sum of its parts

Confederation of Standalone Units/Facilities

Integrated Care Delivery Network
Building an Integrated Care System
Children’s Hospital of Philadelphia Care Network

- Choose an overall **scope of service lines** where the provider can achieve excellence
- **Rationalize service lines**/ IPUs across facilities to improve volume, avoid duplication, and deepen teams
- **Offer specific services** at the **appropriate facility**
  - E.g. acuity level, cost level, need for convenience
- Clinically integrate **care across facilities**, within an IPU structure
  - **Expand** and **integrate** the care cycle
  - Better connect **preventive/primary care** units to specialty IPUs
5. Expand Excellent IPUs Across Geography

- Grow **areas of excellence** and **leverage across locations**, rather than:
  - adding services with no value advantage
  - establishing new broad line, stand-alone units

- **Affiliate with excellent providers** in medical conditions where there is insufficient volume or expertise to achieve superior value
Expanding Excellent IPUs Across Geography
The Cleveland Clinic Managed Practices

Rochester General Hospital, NY
Cardiac Surgery

CLEVELAND CLINIC
Cardiac Care

Chester County Hospital, PA
Cardiac Surgery

Cape Fear Valley Health System, NC
Cardiac Surgery

McLeod Heart & Vascular Institute, SC
Cardiac Surgery

Cleveland Clinic Florida Weston, FL
Cardiac Surgery
6. Create an Enabling Information Technology Platform

Utilize information technology to enable restructuring of care delivery and measuring results, rather than treating it as a solution itself

- Common data definitions
- Combine all types of data (e.g. notes, images) for each patient over time
- Data encompasses the full care cycle, including referring entities
- Allows access and communication among all involved parties, including patients
- “Structured” data vs. free text
- Templates for medical conditions to enhance the user interface
- Architecture that allows easy extraction of outcome measures, process measures, and activity based cost measures for each patient and medical condition
- Interoperability standards enabling communication among different provider systems
A Mutually Reinforcing Strategic Agenda

Organize into Integrated Practice Units

Integrate Care Delivery Across Separate Facilities

Measure Outcomes and Cost For Every Patient

Grow Excellent Services Across Geography

Move to Bundled Prices for Care Cycles

Create an Enabling IT Platform
Value-Based Health Care Delivery: Implications for Contracting Parties/Health Plans

- Providers can lead in developing new relationships with health plans through their role in providing health benefits for their own employees
Value-Based Health Care Delivery: Implications for Government

• Establish **universal measurement** and **reporting** of **health outcomes**

• Shift reimbursement systems to **bundled prices for care cycles**

• Remove obstacles to **integrated care for medical conditions**

• **Open competition** and **choice** among providers and across geography

• Set policies to encourage greater **involvement** and **responsibility of individuals** for their health and their health care

• Set standards and mandate **EMR adoption** that supports integrated care and outcome measurement
For additional information on

Value-Based Health Care Delivery:

www.isc.hbs.edu