Value-Based Health Care Delivery

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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.
Redefining Health Care Delivery

• The core issue in health care is the **value of health care delivered**

  ![Value: Patient health outcomes per dollar spent](image)

• Value is the only goal that can **unite the interests** of all system participants

• How to design a health care delivery system that **dramatically improves patient value**

• How to construct a **dynamic system** that keeps rapidly improving
Creating The Right Kind of Competition

• Patient **choice** and **competition** for patients are powerful forces to encourage continuous improvement in value and restructuring of care.

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

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| Financial success of system participants | Patient success |
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• Creating positive-sum **competition on value** is fundamental to health care reform in every country.
Principles of Value-Based Health Care Delivery

• The overarching goal in health care must be **value for patients**, not access, cost containment, convenience, or customer service.

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

– Outcomes are the **health results that matter for a patient’s condition** over the care cycle.
– Costs are the **total costs of care for a patient’s condition** over the care cycle.
Principles of Value-Based Health Care Delivery

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

<table>
<thead>
<tr>
<th>Better outcomes</th>
<th>Prevention of illness</th>
<th>Early detection</th>
<th>Right diagnosis</th>
<th>Right treatment to the right patient</th>
<th>Rapid cycle time of diagnosis and treatment</th>
<th>Treatment earlier in the causal chain of disease</th>
<th>Less invasive treatment methods</th>
<th>Fewer complications</th>
<th>Fewer mistakes and repeats in treatment</th>
<th>Faster recovery</th>
<th>More complete recovery</th>
<th>Greater functionality and less need for long term care</th>
<th>Fewer recurrences, relapses, flare ups, or acute episodes</th>
<th>Reduced need for ER visits</th>
<th>Slower disease progression</th>
<th>Less care induced illness</th>
</tr>
</thead>
</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 Care into Integrated Practice Units (IPUs) around Patient Medical Conditions
   - Organize primary and preventive care to serve distinct patient segments

2. Measure Outcomes and Cost for Every Patient

3. Reimburse through Bundled Prices for Care Cycles

4. Integrate Care Delivery Across Separate Facilities

5. Expand Geographic Coverage by Excellent Providers

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

Existing Model:
Organize by Specialty and
Discrete Services

1. Organizing Care Around Patient Medical Conditions
Migraine Care in Germany

Existing Model: Organize by Specialty and Discrete Services

New Model: Organize into Integrated Practice Units (IPUs)

What is a Medical Condition?

• A medical condition is an interrelated set of patient medical circumstances best addressed in an integrated way
  – Defined from the patient’s perspective
  – Involving multiple specialties and services
  – Including common co-occurring conditions and complications
  – E.g., diabetes, breast cancer, knee osteoarthritis

• In primary / preventive care, the unit of value creation is defined patient segments with similar preventive, diagnostic, and primary treatment needs (e.g. healthy adults, frail elderly)

• The medical condition / patient segment is the proper unit of value creation and the unit of value measurement in health care delivery
## Integrating Across the Cycle of Care

### Breast Cancer

#### INFORMING AND ENGAGING
- Advice on self screening
- Consultations on risk factors
- Counseling patient and family on the diagnostic process and the diagnosis
- Explaining patient treatment options/shared decision making
- Patient and family psychological counseling
- Counseling on rehabilitation options, process
- Achieving compliance
- Psychological counseling
- Counseling on long term risk management
- Achieving compliance

#### MEASURING
- Self exams
- Mammograms
- Mammograms
- Ultrasound
- MRI
- Labs (CBC, etc.)
- Biopsy
- BRACA 1, 2...
- CT
- Bone Scans
- Labs
- Procedure-specific measurements
- Range of movement
- Side effects measurement
- MRI, CT
- Recurring mammograms (every six months for the first 3 years)

#### ACCESSING THE PATIENT
- Office visits
- Mammography unit
- Lab visits
- Office visits
- Lab visits
- High risk clinic visits
- Office visits
- Hospital visits
- Lab visits
- Hospital stays
- Visits to outpatient radiation or chemotherapy units
- Pharmacy visits
- Office visits
- Rehabilitation facility visits
- Pharmacy visits
- Office visits
- Lab visits
- Mammographic labs and imaging center visits

#### MONITORING/PREVENTING
- Medical history
- Control of risk factors (obesity, high fat diet)
- Genetic screening
- Clinical exams
- Monitoring for lumps
- Medical history
- Determining the specific nature of the disease (mammograms, pathology, biopsy results)
- Genetic evaluation
- Labs
- Choosing a treatment plan
- Surgery prep (anesthetic risk assessment, EKG)
- Plastic or oncoplastic surgery evaluation
- Neo-adjuvant chemotherapy
- Surgery (breast preservation or mastectomy, oncoplastic alternative)
- Adjuvant therapies (hormonal medication, radiation, and/or chemotherapy)
- In-hospital and outpatient wound healing
- Treatment of side effects (e.g. skin damage, cardiac complications, nausea, lymphedema and chronic fatigue)
- Physical therapy
- Periodic mammography
- Other imaging
- Follow-up clinical exams
- Treatment for any continued or later onset side effects or complications
Volume and experience will have an even greater impact on value in an IPU structure than in the current system.
## Role of Volume in Value Creation
### Fragmentation of Hospital Services in 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>

2. Measuring Outcomes and Cost for Every Patient
The Measurement Landscape

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

**Patient Adherence**

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

**Structure**

- E.g., Staff certification, facilities standards
The Outcome Measures Hierarchy

Tier 1
Health Status Achieved or Retained

Survival

Tier 2
Process of Recovery

Degree of health/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)

Source: NEJM Dec 2010
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. Centers, 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, 2008-2010

Number of programs included: 236
Number of transplants: 38,535
1-year graft survival: 93.55%

- 8 greater than expected graft survival (3.4%)
- 14 worse than expected graft survival (5.9%)
The International Consortium for Health Outcomes Measurement (ICHOM)  
Strategic Vision

1. Become the **single global repository** of in-use outcome measures and risk-adjustment factors by medical condition  
   – ICHOM Metrics Repository

2. Enable **international standardization** of outcome measures by medical condition

3. Identify and disseminate global outcome **measurement best practices**  
   – Registry Development Compass  
   – Provider case studies

4. Develop an **cross-stakeholder, cross-country network** dedicated to advancing outcomes measurement and Value-Based Health Care Delivery  
   – Annual conferences  
   – Working groups

A non-profit, joint effort by Professor Michael Porter, The Karolinska University and The Boston Consulting Group to advance outcomes measurement worldwide
## Initial Findings from the ICHOM Metrics Repository:
Variable Coverage of the Outcome Hierarchy Across Conditions

<table>
<thead>
<tr>
<th>Dimension</th>
<th>Musculoskeletal</th>
<th>Cancer</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Hip Osteo-arthritis</td>
<td>Knee Osteo-arthritis</td>
</tr>
<tr>
<td>Mortality</td>
<td>◆</td>
<td>◆</td>
</tr>
<tr>
<td>Short-term Clinical Status</td>
<td>◆</td>
<td>◆</td>
</tr>
<tr>
<td>Short-term Functional Status</td>
<td>◆</td>
<td>◆</td>
</tr>
<tr>
<td>Time to recovery</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Complications</td>
<td>◆</td>
<td>◆</td>
</tr>
<tr>
<td>Reintervention/Readmission</td>
<td>◆</td>
<td>◆</td>
</tr>
<tr>
<td>Care-related Pain/Discomfort</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Long-term Clinical Status</td>
<td>◆</td>
<td>◆</td>
</tr>
<tr>
<td>Long-term Functional status</td>
<td>◆</td>
<td>◆</td>
</tr>
<tr>
<td>Long-term complications of therapy</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>
Measuring the Cost of Care Delivery: Principles

• Cost is the **actual expense** of patient care, not the **charges** billed or collected

• Cost should be measured around the **patient**

• Cost should be aggregated over the **full cycle of care for the patient’s medical condition**, not for departments, services, or line items

• Cost depends on the **actual use of resources** involved in a patient’s care process (personnel, facilities, supplies)
  – The **time** devoted to each patient by these resources
  – The **capacity cost** of each resource
  – The **support costs** required for each patient-facing resource
3. Move to Bundled Prices for Care Cycles

Bundled Price

- A single price covering the **full care cycle for an acute medical condition**
- Time-based reimbursement for overall care of a **chronic condition**
- Time-based reimbursement for **primary/preventive care for a defined patient segment**

Fee for service

Bundled reimbursement for medical conditions

Global capitation
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 fees and 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

Currently 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

Applies to all qualifying patients. Provider participation is voluntary, but all providers are continuing to offer total joint replacements

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

Children’s Hospital of Philadelphia Care Network

Network Hospitals:
- CHOP Newborn Care
- CHOP Pediatric Care
- CHOP Newborn & Pediatric Care

Wholly-Owned Outpatient Units:
- Pediatric & Adolescent Primary Care
- Pediatric & Adolescent Specialty Care Center
- Pediatric & Adolescent Specialty Care Center & Surgery Center
- Pediatric & Adolescent Specialty Care Center & Home Care

The Children’s Hospital of Philadelphia®
Four Levels of Provider System Integration

1. Choose an **overall scope of services** where the provider system can achieve excellence in value

2. **Rationalize service lines / IPUs across facilities** to improve volume, better utilize resources, and deepen teams

3. Offer specific services at the **appropriate facility**
   - Based on acuity level, resource intensity, cost level, need for convenience
   - E.g., shifting routine surgeries to smaller, more specialized facilities

4. Clinically integrate care **across units and facilities** using an IPU structure
   - Integrate services across the care cycle
   - Integrate preventive/primary care units with specialty IPUs

There are major value improvements available from **concentrating volume** by medical condition and moving care **out of heavily resourced** hospital, tertiary and quaternary facilities
5. Expanding Geographic Coverage by Excellent Providers

The Cleveland Clinic Affiliate Practices

- Central DuPage Hospital, IL
  Cardiac Surgery

- St. Vincent Indianapolis, IN
  Kidney Transplant

- Pikeville Medical Center, KY
  Cardiac Surgery

- Cape Fear Valley Medical Center, NC
  Cardiac Surgery

- McLeod Heart & Vascular Institute, SC
  Cardiac Surgery

- Cleveland Clinic Florida Weston, FL
  Cardiac Surgery

- Rochester General Hospital, NY
  Cardiac Surgery

- Chester County Hospital, PA
  Cardiac Surgery

- Charleston, WV
  Kidney Transplant

- St. Vincent Indianapolis, IN
  Kidney Transplant
6. Building 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
- Data encompasses the full care cycle, including care by referring entities
- Allow access and communication among all involved parties, including with patients
- Templates for medical conditions to enhance the user interface
- “Structured” data vs. free text
- 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 (and payor) organizations
A Mutually Reinforcing Strategic Agenda

- Organize into Integrated Practice Units
- Measure Outcomes and Cost For Every Patient
- Move to Bundled Prices for Care Cycles
- Integrate Care Delivery Across Separate Facilities
- Grow Excellent Services Across Geography

Build an Enabling IT Platform
Creating a Value-Based Health Care Delivery Organization
Implications for Suppliers

1. Integrated Practice Units (IPUs)
   - Work to embed drugs/devices in the right care delivery processes

2. Measure Cost and Outcomes
   - Demonstrate value based on careful study of long term outcomes and costs versus alternative approaches
   - Ensure that the products are used by the right patients

3. Move to Bundled Prices
   - Move to value-based pricing approaches (e.g. price for success, guarantees)

5. Expand Excellence Across Geography
   - Support providers with knowledge of best practices and possible innovations in organization and delivery of care
## Creating a Value-Based Health Care Delivery Organization

### Implications for Payors

<table>
<thead>
<tr>
<th>1. Integrated Practice Units (IPUs)</th>
<th>• Encourage and reward <em>integrated practice unit</em> models by providers</th>
</tr>
</thead>
<tbody>
<tr>
<td>2. Measure Cost and Outcomes</td>
<td>• Monitor and compare <em>provider results</em> by medical condition</td>
</tr>
<tr>
<td>3. Move to Bundled Prices</td>
<td>• Design <em>new bundled reimbursement structures</em> for care cycles instead of fees for discrete services</td>
</tr>
<tr>
<td>4. Integrate Across Separate Facilities</td>
<td>• Assist in coordinating patient care <em>across the care cycle</em> and across medical conditions</td>
</tr>
<tr>
<td>5. Expand Excellence Across Geography</td>
<td>• Provide advice to patients (and referring physicians) in selecting <em>excellent providers</em></td>
</tr>
<tr>
<td>6. Enabling IT Platform</td>
<td>• Assemble, analyze and manage the <em>total medical records</em> of members to their adoption and use</td>
</tr>
</tbody>
</table>
Creating a Value-Based Health Care Delivery Organization

Implications for Government

1. Integrated Practice Units (IPUs)
   - Reduce regulatory obstacles to care integration

2. Measure Cost and Outcomes
   - Create a national framework of medical condition outcome registries and a path to universal measurement
   - Tie reimbursement to outcome reporting

3. Move to Bundled Prices
   - Create a bundled pricing framework and rollout schedule

4. Integrate Across Separate Facilities
   - Introduce minimum volume standards by medical condition

5. Expand Excellence Across Geography
   - Encourage affiliations between providers who fall below minimum volume standards and qualifying centers of excellence for more complex care

6. Enabling IT Platform
   - Set standards for common data definitions, interoperability, and the ability to easily extract outcome, process, and costing measures for qualifying HIT systems