Value-Based Health Care Delivery

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Harvard Business School
Institute for Strategy and Competitiveness

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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 on 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.
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 full set of health results 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>- Prevention of illness</th>
<th>- Fewer complications</th>
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</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>- Rapid cycle time of diagnosis and treatment</td>
<td>- Greater functionality and less need for long term care</td>
</tr>
<tr>
<td>- Treatment earlier in the causal chain of disease</td>
<td>- Fewer recurrences, relapses, flare ups, or acute episodes</td>
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<td>- Less invasive treatment methods</td>
<td>- Reduced need for ER visits</td>
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<tr>
<td></td>
<td>- Slower disease progression</td>
</tr>
<tr>
<td></td>
<td>- Less care induced illness</td>
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</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

<table>
<thead>
<tr>
<th>INFORMING AND ENGAGING</th>
<th>MEASURING</th>
<th>ACCESSING THE PATIENT</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>Self exams</td>
<td>Mammograms</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>In-hospital and outpatient wound healing</td>
<td>Periodic mammography</td>
</tr>
<tr>
<td>Consultations on risk factors</td>
<td>Mammograms</td>
<td>Labs</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>Adjuvant therapies (hormonal medication, radiation, and/or chemotherapy)</td>
<td>Treatment of side effects (e.g. skin damage, cardiac complications, nausea, lymphedema and chronic fatigue)</td>
<td>Other imaging</td>
</tr>
<tr>
<td>Counseling patient and family on the diagnostic process and the diagnosis</td>
<td>Procedure-specific measurements</td>
<td>Office visits</td>
<td>Genetic evaluation</td>
<td>Labs</td>
<td>Plastic or oncoplastic surgery evaluation</td>
<td>Neo-adjuvant chemotherapy</td>
<td>Physical therapy</td>
<td>Follow-up clinical exams</td>
</tr>
<tr>
<td>Explaining patient treatment options/shared decision making</td>
<td>Proteinuria</td>
<td>Office visits</td>
<td>Genetic evaluation</td>
<td>Labs</td>
<td>Plastic or oncoplastic surgery evaluation</td>
<td>Neo-adjuvant chemotherapy</td>
<td>Physical therapy</td>
<td>Treatment for any continued or later onset side effects or complications</td>
</tr>
<tr>
<td>Patient and family psychological counseling</td>
<td>Proteinuria</td>
<td>Office visits</td>
<td>Genetic evaluation</td>
<td>Labs</td>
<td>Plastic or oncoplastic surgery evaluation</td>
<td>Neo-adjuvant chemotherapy</td>
<td>Physical therapy</td>
<td>Treatment for any continued or later onset side effects or complications</td>
</tr>
<tr>
<td>Counseling on the rehabilitation options, process</td>
<td>Range of movement</td>
<td>Hospital stays</td>
<td>Office visits</td>
<td>Hospital stays</td>
<td>Hospital stays</td>
<td>Hospital stays</td>
<td>Hospital stays</td>
<td>Physical therapy</td>
</tr>
<tr>
<td>Achieving compliance</td>
<td>Side effects measurement</td>
<td>Visits to outpatient radiation or chemotherapy units</td>
<td>Rehabilitation facility visits</td>
<td>Pharmacy visits</td>
<td>Pharmacy visits</td>
<td>Pharmacy visits</td>
<td>Pharmacy visits</td>
<td>Physical therapy</td>
</tr>
<tr>
<td>Psychological counseling</td>
<td></td>
<td>Pharmacy visits</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>Physical therapy</td>
</tr>
<tr>
<td>Counseling on long term risk management</td>
<td>MRI, CT</td>
<td>Office visits</td>
<td>Office visits</td>
<td>Office visits</td>
<td>Office visits</td>
<td>Office visits</td>
<td>Office visits</td>
<td>Physical therapy</td>
</tr>
<tr>
<td>Achieving compliance</td>
<td>Recurring mammograms (every six months for the first 3 years)</td>
<td>Lab visits</td>
<td>Lab visits</td>
<td>Lab visits</td>
<td>Lab visits</td>
<td>Lab visits</td>
<td>Lab visits</td>
<td>Physical therapy</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Mammographic labs and imaging center visits</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>Physical therapy</td>
</tr>
</tbody>
</table>

**Breast Cancer**
Attributes of an Integrated Practice Unit (IPU)

1. Organized around the **patient medical condition** or set of closely related conditions (or patient segment in primary care)
2. Involves a **dedicated, multidisciplinary team** who devotes a significant portion of their time to the condition
3. Providers involved are members of or affiliated with a **common organizational unit**
4. Takes responsibility for the **full cycle of care** for the condition
   - Encompassing **outpatient, inpatient, and rehabilitative** care as well as **supporting services** (e.g. nutrition, social work, behavioral health)
5. Incorporates **patient education, engagement, and follow-up** as integral to care
6. Utilizes a **single administrative and scheduling structure**
7. **Co-located** in dedicated facilities
8. Care is led by a **physician team captain** and a **care manager** who oversee each patient’s care process
9. **Measures** outcomes, costs, and processes for each patient using a **common information platform**
10. Providers function as a team, **meeting formally and informally** on a regular basis to discuss patients, processes and results
11. Accepts **joint accountability** for outcomes and costs
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>

Low Volume Undermines Value
Mortality of Low-birth Weight Infants in Baden-Württemberg, Germany

- **Minimum volume standards** are an interim step to drive value and service consolidation in the absence of rigorous outcome information.

Source: Hummer et al, Zeitschrift für Geburtshilfe und Neonatologie, 2006; Results duplicated in AOK study: Heller G, Gibt et al.
2. Measuring Outcomes and Cost for Every Patient
   The Measurement Landscape

- Patient Initial Conditions
- Processes
  - Protocols/Guidelines
  - E.g., Staff certification, facilities standards
- Patient Adherence
  - E.g., Hemoglobin A1c levels for diabetics
- Indicators
- (Health) Outcomes
The Outcome Measures Hierarchy

**Tier 1**
- Survival

**Health Status Achieved or Retained**
- Degree of health/recovery

**Tier 2**
- Time to recovery and return to normal activities

**Process of Recovery**
- 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/recovery and nature of recurrences

**Sustainability of Health**
- Long-term consequences of therapy (e.g., care-induced illnesses)

Source: NEJM Dec 2010
The Outcome Measures Hierarchy

Tier 1
Health Status Achieved or Retained
- 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)

Dimension
- Mortality
- Achieved clinical status
- Achieved functional status
- Time to recovery
- Care-related pain and discomfort
- Complications
- Reintervention/Readmission
- Long-term clinical status
- Long-term functional status
- Long-term consequences of therapy

Source: NEJM Dec 2010
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%)
3. Reimbursing through 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
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 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

The Children’s Hospital of Philadelphia®

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

[Map showing Children’s Hospital of Philadelphia's network hospitals and outpatient units across Pennsylvania, New Jersey, and Delaware]
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 medical condition, 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

Leading Providers

• Grow **areas of excellence across geography:**
  − **Hub and spoke** expansion of satellite pre- and post-acute services
  − **Affiliations** with community providers to extend the reach of IPUs

• Increase the **volume of patients** in medical conditions or primary care segments vs. **widening** service lines locally, or adding new **broad line** units

Community Providers

• **Affiliate with excellent providers** in more complex medical conditions and patient segments in order to access expertise, facilities and services to enable high value care
  − New roles for **rural** and **community** hospitals
Expanding Geographic Coverage by Excellent Providers
The Cleveland Clinic Affiliate Programs

- Rochester General Hospital, NY
  Cardiac Surgery
- Chester County Hospital, PA
  Cardiac Surgery
- Central DuPage Hospital, IL
  Cardiac Surgery
- St. Vincent Indianapolis, IN
  Kidney Transplant
- Charleston, WV
  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

CLEVELAND CLINIC
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 System
### Implications for Physician Leaders

<table>
<thead>
<tr>
<th>1. Integrated Practice Units (IPUs)</th>
<th>• Lead <strong>multidisciplinary teams</strong>, not specialty silos</th>
</tr>
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<tbody>
<tr>
<td>2. Measure Cost and Outcomes</td>
<td>• Become an expert in <strong>measurement and process improvement</strong></td>
</tr>
<tr>
<td>3. Move to Bundled Prices</td>
<td>• Proactively develop new <strong>bundled reimbursement options and care guarantees</strong></td>
</tr>
<tr>
<td>4. Integrate Across Separate Facilities</td>
<td>• <strong>Champion value enhancing rationalization, relocation, and integration</strong> with sister hospitals, as well as between inpatient and outpatient units, instead of protecting turf</td>
</tr>
<tr>
<td>5. Expand Excellence Across Geography</td>
<td>• Create networks and affiliations to expand high-value care <strong>outside the local area</strong></td>
</tr>
<tr>
<td>6. Enabling IT Platform</td>
<td>• Become a <strong>champion for the right EMR systems</strong>, not an obstacle to their adoption and use</td>
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</table>
# Creating a Value-Based Health Care Delivery System

## Implications for Payors

<table>
<thead>
<tr>
<th>1. Integrated Practice Units (IPUs)</th>
<th>- Encourage and reward integrated practice unit models by providers</th>
</tr>
</thead>
<tbody>
<tr>
<td>2. Measure Cost and Outcomes</td>
<td>- Encourage or mandate provider outcome reporting through registries by medical condition</td>
</tr>
<tr>
<td>3. Move to Bundled Prices</td>
<td>- Create standards for meaningful provider cost reporting</td>
</tr>
<tr>
<td>4. Integrate Across Separate Facilities</td>
<td>- Design new bundled reimbursement structures for care cycles instead of fees for discrete services</td>
</tr>
<tr>
<td>5. Expand Excellence Across Geography</td>
<td>- Share information with providers to enable improved outcomes and cost measurement</td>
</tr>
<tr>
<td>6. Enabling IT Platform</td>
<td>- Assist in coordinating patient care across the care cycle and across medical conditions</td>
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<td>- Direct care to appropriate facilities within provider systems</td>
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<td>- Provide advice to patients (and referring physicians) in selecting excellent providers</td>
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<td>- Create relationships to increase the volume of care delivered by or affiliated with centers of excellence</td>
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<td></td>
<td>- Assemble, analyze, manage members’ total medical records</td>
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<td>- Require introduction of compatible medical records systems</td>
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