Value-Based Health Care Delivery

Professor Michael E. Porter
Harvard Business School
Institute for Strategy and Competitiveness
www.isc.hbs.edu

May 6, 2013
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>
</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>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>
</tr>
<tr>
<td>Less invasive treatment methods</td>
<td>Reduced need for ER visits</td>
</tr>
<tr>
<td></td>
<td>Slower disease progression</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 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* or *Affiliated 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 Service

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

**Existing Model:**
Organize by Specialty and Discrete Service

**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
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
Organize primary care around patient segments with similar health circumstances and primary care needs:

Illustrative Segments

- Healthy adults
- Mothers and young children
- Adults at risk of developing chronic or acute disease
  - E.g. family history, environmental exposures, lifestyle
- Chronically ill adults with one or more complex chronic conditions
  - E.g. diabetes, COPD, heart failure
- Adults with rare conditions
- Frail elderly or disabled

Primary Care Integrated Practice Units:

- Care Delivery Team: The set of physicians, nurses, educators, and other staff best equipped to meet the medical and non-medical needs of the segment
- Facilities: Care delivered in facilities and locations reflecting patient circumstances

Attributes of an Integrated Practice Unit (IPU)

1. Organized around the patient medical condition or set of closely related condition (patient segments in primary care)
2. Involves a dedicated, multidisciplinary team who devotes a significant portion of their time to the condition
3. Providers affiliated with a common organizational unit
4. Taking 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. Incorporating patient education, engagement, and follow-up as integral to care
6. Utilizing a single administrative and scheduling structure
7. Co-located in dedicated facilities
8. A physician team captain and a care manager oversee each patient’s care process
9. Measure outcomes, costs, and processes for each patient using a common information platform
10. Function as a team, meeting formally and informally on a regular basis to discuss patients, processes and results
11. Accept 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 → Indicators → (Health) Outcomes

- Patient Adherence
  - Protocols/Guidelines
  - E.g., Hemoglobin A1c levels for diabetics
- Structure
  - E.g., Staff certification, facilities standards

Patient Experience
The Outcome Measures Hierarchy

Tier 1
Health Status Achieved or Retained
Survival

Tier 2
Process of Recovery
Degree of health/recovery

Tier 3
Sustainability of Health
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)

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

### Tier 1
- **Health Status**
  - Achieved or Retained
  - **Outcome Measures**
  - Survival

### 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)

---

<table>
<thead>
<tr>
<th>Dimension</th>
<th>Mortality</th>
</tr>
</thead>
<tbody>
<tr>
<td>Mortality</td>
<td></td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Dimension</th>
<th>Achieved clinical status</th>
</tr>
</thead>
<tbody>
<tr>
<td>Achieved clinical status</td>
<td></td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Dimension</th>
<th>Achieved functional status</th>
</tr>
</thead>
<tbody>
<tr>
<td>Achieved functional status</td>
<td></td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Dimension</th>
<th>Time to care completion and recovery</th>
</tr>
</thead>
<tbody>
<tr>
<td>Time to care completion and recovery</td>
<td></td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Dimension</th>
<th>Care-related pain and discomfort</th>
</tr>
</thead>
<tbody>
<tr>
<td>Care-related pain and discomfort</td>
<td></td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Dimension</th>
<th>Complications</th>
</tr>
</thead>
<tbody>
<tr>
<td>Complications</td>
<td></td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Dimension</th>
<th>Reintervention/Readmission</th>
</tr>
</thead>
<tbody>
<tr>
<td>Reintervention/Readmission</td>
<td></td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Dimension</th>
<th>Long-term clinical status</th>
</tr>
</thead>
<tbody>
<tr>
<td>Long-term clinical status</td>
<td></td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Dimension</th>
<th>Long-term functional status</th>
</tr>
</thead>
<tbody>
<tr>
<td>Long-term functional status</td>
<td></td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Dimension</th>
<th>Long-term consequences of therapy</th>
</tr>
</thead>
<tbody>
<tr>
<td>Long-term consequences of therapy</td>
<td></td>
</tr>
</tbody>
</table>
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 programs with greater than predicted survival (7%)
- 20 programs with 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%)
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. Reimbursing through Bundled Prices for Care Cycles

Fee for service → Bundled reimbursement for medical conditions → Global capitation

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

- 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

Copyright © Michael Porter 2013
Choosing an **overall scope of services** where the provider can achieve excellence in value

Rationalizing service lines / IPUs across facilities to improve volume, deepen dedicated teams and better utilize resources

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

Clinically integrating 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** secondary, tertiary and quaternary facilities
5. Expanding Geographic Coverage by Excellent or Affiliated 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

- Central DuPage Hospital, IL
  Cardiac Surgery

- Chester County Hospital, PA
  Cardiac Surgery

- 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

- St. Vincent Indianapolis, IN
  Kidney Transplant

- Charleston, WV
  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

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

Build an Enabling IT Platform
Creating a Value-Based Health Care Delivery System
Implications for Physician Leaders

1. Integrated Practice Units (IPUs)
   - Lead multidisciplinary teams, not specialty silos

2. Measure Cost and Outcomes
   - Become an expert in measurement and process improvement

3. Move to Bundled Prices
   - Proactively develop new bundled reimbursement options and care guarantees

4. Integrate Across Separate Facilities
   - Champion value enhancing rationalization, relocation, and integration with sister hospitals, as well as between inpatient and outpatient units, instead of protecting turf

5. Expand Excellence Across Geography
   - Create networks and affiliations to expand high-value care across geography

6. Enabling IT Platform
   - Become a champion for the right EMR systems, not an obstacle to their adoption and use
Creating a Value-Based Health Care Delivery System

Implications for Payors

1. Integrated Practice Units (IPUs)
   - Encourage and reward integrated practice unit models by providers

2. Measure Cost and Outcomes
   - Encourage or mandate provider outcome reporting through registries by medical condition
   - Create standards for meaningful provider cost measurement and reporting

3. Move to Bundled Prices
   - Design new bundled reimbursement structures for care cycles instead of fees for discrete services
   - Share information with providers to enable improved outcomes and cost measurement

4. Integrate Across Separate Facilities
   - Assist in coordinating patient care across the care cycle and across medical conditions
   - Direct care to appropriate facilities within provider systems

5. Expand Excellence Across Geography
   - Provide advice to patients (and referring physicians) in selecting excellent providers
   - Create relationships to increase the volume of care delivered by or affiliated with centers of excellence

6. Enabling IT Platform
   - Assemble, analyze, manage members’ total medical records
   - Require introduction of compatible medical records systems
### Creating a Value-Based Health Care Delivery System

#### Implications for Government

<table>
<thead>
<tr>
<th>1. Integrated Practice Units (IPUs)</th>
<th>• Reduce regulatory obstacles to care integration across the care cycle</th>
</tr>
</thead>
<tbody>
<tr>
<td>2. Measure Cost and Outcomes</td>
<td>• Create a national framework of medical condition outcome registries and a path to universal measurement</td>
</tr>
<tr>
<td></td>
<td>• Tie reimbursement to outcome reporting</td>
</tr>
<tr>
<td></td>
<td>• Set accounting standards for meaningful cost reporting</td>
</tr>
<tr>
<td>3. Move to Bundled Prices</td>
<td>• Create a bundled pricing framework and rollout schedule</td>
</tr>
<tr>
<td>4. Integrate Across Separate Facilities</td>
<td>• Introduce minimum volume standards by medical condition</td>
</tr>
<tr>
<td>5. Expand Excellence Across Geography</td>
<td>• Encourage rural providers and providers who fall below minimum volume standards to affiliate with qualifying centers of excellence for more complex care</td>
</tr>
<tr>
<td>6. Enabling IT Platform</td>
<td>• Set standards for common data definitions, interoperability, and the ability to easily extract outcome, process, and costing measures for qualifying HIT systems</td>
</tr>
</tbody>
</table>