Value-Based Health Care Delivery

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

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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.
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**

- Prevention of illness
- Early detection
- Right diagnosis
- Right treatment to the right patient
- Rapid cycle time of diagnosis and treatment
- Treatment earlier in the causal chain of disease
- Less invasive treatment methods
- Fewer complications
- Fewer mistakes and repeats in treatment
- Faster recovery
- More complete recovery
- Greater functionality and less need for long term care
- Fewer recurrences, relapses, flare ups, or acute episodes
- Reduced need for ER visits
- Slower disease progression
- Less care induced illness

- **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

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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.
## Introducing 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 the treatment process**
- **Education on managing side effects and avoiding complications**
- **Achieving compliance**
- **Counseling on rehabilitation options, process**
- **Achieving compliance**
- **Psychological counseling**
- **Counseling on long term risk management**
- **Achieving compliance**

## Measuring
- **Self exams**
- **Mammograms**
- **Mammograms**
- **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**
- **Hospital stays**
- **Visits to outpatient radiation or chemotherapy units**
- **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**
Value-Based Primary Care

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

**Tailor the Care Delivery Team and Facilities to Each Segment**
- The set of physicians, nurses, educators, and other staff best equipped to meet the medical and non-medical needs of the segment
- Care delivered in locations reflecting patient circumstances
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
- **Indicators**
  - E.g., Hemoglobin A1c levels for diabetics
- **Outcomes**
  - (Health) Outcomes

**Patient Adherence**
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*

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

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*Source: NEJM Dec 2010*
The Outcome Measures Hierarchy

<table>
<thead>
<tr>
<th>Tier</th>
<th>Dimension</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>Survival</td>
</tr>
<tr>
<td>2</td>
<td>Degree of health/recovery</td>
</tr>
<tr>
<td>3</td>
<td>Sustainability of health/recovery and nature of recurrences</td>
</tr>
<tr>
<td></td>
<td>Long-term consequences of therapy (e.g., care-induced illnesses)</td>
</tr>
</tbody>
</table>

- **Tier 1**
  - **Dimension**: Mortality
    - Mortality

- **Tier 2**
  - **Dimension**: Time to recovery
    - Time to recovery
    - Care-related pain and discomfort
    - Complications
    - Reintervention/Readmission

- **Tier 3**
  - **Dimension**: Long-term clinical status
    - Long-term clinical status
  - **Dimension**: Long-term functional status
    - Long-term functional status
  - **Dimension**: Long-term consequences of therapy
    - 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%)
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
Mapping Resource Utilization
MD Anderson Cancer Center – New Patient Visit

Registration and Verification

- Receptionist, Patient Access Specialist, Interpreter
- Patient arrives
- Check in patient; communicate arrival
- Interpreter needed? (5%)
- Add language translation time for each process

Intake

- Nurse, Receptionist
- Verify patient information; complete consent forms
- Assess patient; assemble paperwork; place patient in room

Clinician Visit

- MD, mid-level provider, medical assistant, patient service coordinator, RN
- Initiate patient workup; review patient history; conduct physical exam
- Laryngoscopy needed? (10%)
- Perform laryngoscopy MD, MA, PSC

Plan of Care Discussion

- RN/LVN, MD, mid-level provider, patient service coordinator
- Discuss plan of care

Plan of Care Scheduling

- Patient Service Coordinator
- Schedule test and consults; communicate schedule to patient
- Scheduled for same day? (10%)
- Pt discharged

Plan of Care Schedule

- Patient service coordinator
- Review plan of care, introduce team, review schedule for return visit RN

Phases:
- RCPT: Receptionist
- INT: Interpreter
- PAS: Patient Access Specialist
- RN: Registered Nurse
- MD: Medical Doctor
- MA: Medical Assistant
- PSC: Patient Service Coordinator
- PHDB: Patient History Database

Total Time (min):
- 2
- 20
- 45
- 30
- 15
- 5
- 10

Decision point

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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 | - 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
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

CLEVELAND CLINIC

Central DuPage Hospital, IL
Cardiac Surgery

Chester County Hospital, PA
Cardiac Surgery

Rochester General Hospital, NY
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
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

Grow Excellent Services Across Geography

Integrate Care Delivery Across Separate Facilities

Measure Outcomes and Cost For Every Patient

Move to Bundled Prices for Care Cycles

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</strong> and <strong>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>• <strong>Create networks and affiliations to expand high-value care outside the local area</strong></td>
</tr>
<tr>
<td>6. Enabling IT Platform</td>
<td>• <strong>Become a champion for the right EMR systems</strong>, not an obstacle to their adoption and use</td>
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</table>