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

• Delivering high and improving value is the fundamental purpose of health care.

• 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 a Value-Based Health Care System

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

  Care pathways, process improvements, safety initiatives, case managers, disease management and other overlays to the current structure are beneficial, but not sufficient.
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.

- But today’s competition in health care is not aligned with value.

- Creating positive-sum competition on value for patients 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 **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.
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** in health care delivery
  - For care organizations
  - For measurement
## 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>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>In-hospital and outpatient wound healing</td>
<td>Periodic mammography</td>
</tr>
<tr>
<td>Consultations on risk factors</td>
<td>Self exams</td>
<td>Mammography unit</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>Other imaging</td>
<td>Other imaging</td>
</tr>
<tr>
<td></td>
<td>Mammograms</td>
<td>Lab visits</td>
<td>Genetic screening</td>
<td>Genetic evaluation</td>
<td>Plastic or oncoplastic surgery evaluation</td>
<td>Neo-adjuvant chemotherapy</td>
<td>Treatment of side effects (e.g. skin damage, cardiac complications, nausea, lymphedema and chronic fatigue)</td>
<td>Follow-up clinical exams</td>
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<tr>
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<td></td>
<td>High risk clinic visits</td>
<td>Clinical exams</td>
<td>Labs</td>
<td>Neo-adjuvant chemotherapy</td>
<td>Neoadjuvant chemotherapy</td>
<td>Physical therapy</td>
<td>Treatment for any continued or later onset side effects or complications</td>
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<tr>
<td></td>
<td></td>
<td></td>
<td>Monitoring for lumps</td>
<td></td>
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</table>

*Table continues with additional tasks and procedures for each stage.*
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>

2. Measuring Outcomes and Cost for Every Patient

The Measurement Landscape

- **Patient Initial Conditions**
  - E.g., Staff certification, facilities standards

- **Processes**
  - Protocols/Guidelines

- **Patient Adherence**

- **Indicators**
  - E.g., Hemoglobin A1c levels for diabetics, PSA levels

- **(Health) Outcomes**

"The Measurement Landscape" refers to the comprehensive framework that includes various aspects of healthcare measurement, from patient initial conditions to outcomes. This diagram illustrates the interplay between different components such as patient adherence, protocols/guidelines, structure, and outcomes. It emphasizes the importance of measuring outcomes and costs for every patient to improve healthcare delivery and efficiency.
The Outcome Measures Hierarchy

Tier 1

Health Status Achieved or Retained

Survival

Degree of health/recovery

Time to recovery and return to normal activities

Tier 2

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)

Sustainability of health/recovery and nature of recurrences

Tier 3

Sustainability of Health

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

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%)
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
   - Curriculum and conferences
   - Working groups

A non-profit organization founded by Professor Michael Porter, The Karolinska University and The Boston Consulting Group to advance outcomes measurement worldwide
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

Intake
- Nurse, Receptionist

Clinician Visit
- MD, mid-level provider, medical assistant, patient service coordinator, RN

Plan of Care Discussion
- RN/LVN, MD, mid-level provider, patient service coordinator

Plan of Care Scheduling
- Patient Service Coordinator

- 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

Add language translation time for each process INT, RCPT

Decision point

Time (min)

Schedule tests and consults; communicate schedule to patient PSC

Scheduled for same day? PSC

90-95%

Pt discharged

Pt: Patient, outside of process

Clean room; complete paperwork; check email and voicemail for updates or changes to plan of care RN

Changes to Plan of Care?

90%

5-10%

Notify patient of changes RN

Notify patient of changes RN

Enter next process

Y

N

Y

N

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

Decision point

Time (min)
Major Cost Reduction Opportunities in Health Care

- **Process variation** that reduces efficiency without improving outcomes
- Over-provision of low- or non-value adding services or tests
  - Sometimes to follow rigid protocols or justify billing
- **Low utilization** of expensive physicians, staff, clinical space and equipment, partly due to duplication and service fragmentation
- Use of physicians and skilled staff for less skilled activities
- Delivering care in over-resourced facilities
  - E.g. routine care delivered in expensive hospital settings
- **Long cycle times** and unnecessary delays
- Redundant administrative and scheduling units
- Excess inventory and weak inventory management
- Focus on the costs of discrete services rather than optimizing the total cost of the care cycle
- Lack of cost awareness in clinical teams

- There are numerous cost reduction opportunities that do not require outcome tradeoffs, but will actually improve outcomes
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

<table>
<thead>
<tr>
<th>Item</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>Pre-op evaluation</td>
<td>All physician and staff fees and costs</td>
</tr>
<tr>
<td>Lab tests</td>
<td>1 follow-up visit within 3 months</td>
</tr>
<tr>
<td>Radiology</td>
<td>Any additional surgery to the joint within 2 years</td>
</tr>
<tr>
<td>Surgery &amp; related admissions</td>
<td>If post-op infection requiring antibiotics occurs, guarantee extends to 5 years</td>
</tr>
<tr>
<td>Prosthesis</td>
<td></td>
</tr>
<tr>
<td>Drugs</td>
<td></td>
</tr>
<tr>
<td>Inpatient rehab, up to 6 days</td>
<td></td>
</tr>
</tbody>
</table>

- 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 medical condition, acuity level, resource intensity, cost level, need for convenience
   - Shift routine surgeries to less resourced and 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** by medical conditions or primary care segments vs. **widening** service lines 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
- St. Vincent Indianapolis, IN
  Kidney Transplant
- Cape Fear Valley Medical Center, NC
  Cardiac Surgery
- Charleston, WV
  Kidney Transplant
- McLeod Heart & Vascular Institute, SC
  Cardiac Surgery
- Cleveland Clinic Florida Weston, FL
  Cardiac Surgery
- Rochester General Hospital, NY
  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
- “**Structured**” data vs. free text
- Allow access and communication among **all involved parties**, including with patients
- **Templates** for medical conditions to enhance the user interface
- Interoperability standards enabling communication among **different provider** (and payor) **organizations**
- Architecture that allows easy extraction of **outcome measures, process measures**, and **activity-based cost measures** for each patient and medical condition
A Mutually Reinforcing Strategic Agenda

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

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 products are used by the right patients

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

5. Expand Excellence Across Geography
   • Support providers with knowledge of best practices in the organization and delivery of care

6. Enabling IT Platform
   • Develop informatics systems that facilitate integrated, team-based care delivery, real-time outcome measurement, and activity-based costing for each patient and medical condition