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

• 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 System

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

Today, 21st century medical technology is often delivered with 19th century organization structures, management practices, and payment models

- Care pathways, safety program, disease management and other **overlays** to the current structure are beneficial, but not sufficient
Principles of Value-Based Health Care Delivery

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

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

– Outcomes are the **full set of patient health results** 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 key 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
  - Early and timely treatment
  - Treatment earlier in the causal chain of disease
  - Rapid cycle time of diagnosis and treatment
  - Less invasive treatment methods
  - Fewer complications
  - Fewer mistakes
  - Fewer failed therapies
  - Faster recovery
  - More complete recovery
  - Greater functionality and less need for long term care
  - Less disability
  - Fewer recurrences, relapses, flare ups, or acute episodes
  - 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 Organization

The Strategic Agenda

1. Organize into Integrated Practice Units (IPUs) Around Patient Medical Conditions
   - Organize primary and preventive care to serve distinct patient populations

2. Establish Universal Measurement of Outcomes and Cost for Every Patient

3. Move to Bundled Prices for Care Cycles

4. Integrate Care Delivery Across Separate Facilities

5. Expand Excellent IPUs Across Geography

6. Create an Enabling Information Technology Platform
1. Organizing Around Patient Medical Conditions

**Migraine Care in Germany**

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

- Imaging Centers
- Outpatient Physical Therapists
- Outpatient Neurologists
- Outpatient Psychologists
- Inpatient Treatment and Detox Units
- Primary Care Physicians

**New Model:**
Organize into Integrated Practice Units (IPUs)

- Affiliated Imaging Unit
- Primary Care Physicians
- West German Headache Center Neurologists Psychologists Physical Therapists “Day Hospital”
- Affiliated “Network” Neurologists
- Essen Univ. Hospital Inpatient Unit

## 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>
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</thead>
<tbody>
<tr>
<td>Advice on self screening</td>
<td>Self exams</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>
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<tr>
<td>Consultations on risk factors</td>
<td>Mammograms</td>
<td>Mammography</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>
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<tr>
<td>Counseling patient and family on the diagnostic process and the diagnosis</td>
<td>Labs</td>
<td>Lab visits</td>
<td>Genetic screening</td>
<td>Genetic evaluation</td>
<td>Plastic or oncoplastic surgery evaluation</td>
<td>Physical therapy</td>
<td>Follow-up clinical exams</td>
<td>Treatment for any continued or later onset side effects or complications</td>
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<tr>
<td>Explaining patient treatment options/shared decision making</td>
<td>Procedure-specific measurements</td>
<td>Hospital visits</td>
<td>Medical history</td>
<td>Office visits</td>
<td>Neo-adjuvant chemotherapy</td>
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<td>Patient and family psychological counseling</td>
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<td>Lab visits</td>
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<td>Counseling on the treatment process</td>
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<td>Hospital stays</td>
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<tr>
<td>Education on managing side effects and avoiding complications</td>
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<td>Visits to outpatient radiation or chemotherapy units</td>
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<td>Achieving compliance</td>
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<td>Pharmacy visits</td>
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<td>Psychological counseling</td>
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<td>Counseling on rehabilitation options, process</td>
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<td>Counseling on long term risk management</td>
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<td>MRI, CT</td>
<td>Recurring mammograms (every six months for the first 3 years)</td>
<td>Office visits</td>
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<td>Lab visits</td>
<td>Office visits</td>
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<tr>
<td>Mammographic labs and imaging center visits</td>
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<td>High risk clinic visits</td>
<td>High risk clinic visits</td>
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<td>Monitoring for lumps</td>
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<td>Clinical exams</td>
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<td>Office visits</td>
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What is Integrated Care?

Attributes of an Integrated Practice Unit (IPU):

1. Organized around the patient’s medical condition
2. Involves a dedicated, multidisciplinary team who devote a significant portion of their time to the condition
3. Where providers are part of a common organizational unit
4. Utilizing a single administrative and scheduling structure
5. Providing 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)
   - Including patient education, engagement and follow-up
6. Co-located in dedicated facilities
7. With a physician team captain and a care manager who oversee each patient’s care process
8. Where the team meets formally and informally on a regular basis
9. And measure outcomes, processes, and costs as a team using a common information platform
10. Accepting joint accountability for outcomes and costs
Volume in a Medical Condition Enables Value

The Virtuous Circle of Value

- Volume and experience will have an even greater impact on value in an IPU structure than in the current system
### Fragmentation of Services

#### 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></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>


- **Minimum volume standards** are an interim step to drive service consolidation until comprehensive outcome information is available.
2. Measuring Outcomes and Cost for Every Patient

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

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

- **Indicators**
  - Protocols/Guidelines

- **(Health) Outcomes**
The Outcome Measures Hierarchy

Tier 1

Health Status Achieved or Retained

Survival

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)

Source: NEJM Dec 2010
In-vitro Fertilization
Success Rates Over Time

Percent Live Births per Fresh, Non-Donor Embryo Transferred by Clinic Size
Women Under 38 Years of Age, 1997-2007

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. Centers, 2005-2007

Number of programs: 240
Number of transplants: 38,515
One year graft survival: 93.2%

- 16 greater than expected graft survival (6.6%)
- 19 worse than expected graft survival (7.8%)
Measuring the Cost of Care Delivery: Principles

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

• Cost depends on the **actual use of resources** involved in a patient’s care

• The only way to properly measure cost per patient is to track the **time devoted to each patient** by these resources (personnel, facilities, and support services) and their **capacity cost**.
Mapping Resource Utilization
MD Anderson Cancer Center

Registration and Verification
- Receptionist, Patient Access Specialist (PAS), Language Assistance

Intake
- Nurse (RN), Receptionist

Clinician Visit
- MD, MLP, MA, PSC, RN

Plan of Care Discussion
- RN/LVN, MD, MLP, PSC

Plan of Care Scheduling
- Patient Service Coordinator (PSC)
Measuring the Cost of Care Delivery: Principles

• Cost should be measured around the patient

• Cost depends on the actual use of resources involved in a patient’s care

• The only way to properly measure cost per patient is to track the time devoted to each patient by these resources (personnel, facilities, and support services) and their capacity cost.

• Cost should be aggregated at the medical condition level for each patient over the full cycle of care, not for departments, services, or line items

• Cost measurement should be combined with outcome measurement to inform process improvement and cost reduction
  – e.g. Reduce high cost activities that do not contribute to superior outcomes
  – Optimize the value of the entire cycle of care, versus seek to minimize the cost of individual activities
  – Speed up cycle time

• Combining costs and outcomes transforms the discussion about care improvement
3. Setting Bundled Prices for Care Cycles

**Bundled Price**
- A single price covering the full care cycle for an acute medical condition
- Time-based reimbursement for full care of a chronic condition
- Time-based reimbursement for primary/preventive care for a defined patient population
Bundled Payment in Practice
Hip and Knee Replacement in Stockholm, Sweden

• **Components** of the bundle

<table>
<thead>
<tr>
<th>Pre-op evaluation</th>
<th>All physician and staff fees and costs</th>
</tr>
</thead>
<tbody>
<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</td>
</tr>
<tr>
<td>Surgery &amp; related admissions</td>
<td>within 2 years</td>
</tr>
<tr>
<td>Prosthesis</td>
<td>If post-op infection requiring</td>
</tr>
<tr>
<td>Drugs</td>
<td>antibiotics occurs, guarantee extends</td>
</tr>
<tr>
<td>Inpatient rehab, up to 6 days</td>
<td>to 5 years</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
• Provider participation is **voluntary**. All providers are participating
• The Stockholm bundled price for a knee or hip replacement is about **US $8,000**
Creating a Bundled Pricing System

• Defining the Bundle
  – **Scope** of the medical condition and care cycle duration
  – **Services** included, but retaining flexibility on methods
  – **Complications** and **comorbidities** included/excluded

• Pricing the Bundle: Key Choices
  – **Level** of bundled price vs. sum of current charges
  – Price **stability** commitment
  – Extent of **severity/risk** adjustment
  – Extent of “guarantees” by providers
  – Mechanism for handling **outliers** and **unanticipated** complications
  – Bonuses for **excellent outcomes**?

• Implementing the Bundle
  – Internal **distribution of the payment** among providers (dividing the pie)
  – **Billing and claims** processes
  – **Outcome measurement** to minimize incentives to limit value-enhancing services

• **Accurate costing** at the medical condition level is a prerequisite for negotiating bundled prices
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

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Integrating a Provider System

- Choosing the **overall scope of service lines** in which a provider can achieve excellence

- **Rationalizing service lines/ IPUs** across facilities to improve volume, avoid duplication, and deepen teams

- Offering specific services at the **appropriate facility**
  - E.g. acuity level, cost level, need for convenience

- Clinically integrating care **across facilities**, within an IPU structure
  - Better **connecting** preventive/primary care units to specialty IPUs
  - **Widening** and **integrating** the care cycle

- There are major value improvements from **moving care out** of heavily resourced hospital, tertiary and quaternary facilities
5. Expanding Excellent IPUs Across Geography

**Leading Provider**

- **Grow areas of excellence across locations:**
  - Satellite pre- and post-acute services
  - Affiliations with community providers
  - New IPU hubs

**NOT:**

- Widening the service line locally
- Growing through new broad line, stand-alone units

**Community Provider**

- **Affiliate with excellent providers** in medical conditions and patient populations where there is insufficient volume or expertise to achieve superior value
  - New roles for rural and community hospitals
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 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**
Creating a Value-Based Health Care Delivery Organization

The Strategic Agenda

1. Organize into Integrated Practice Units (IPUs) Around Patient Medical Conditions
   - Organize primary and preventive care to serve distinct patient populations

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Moving to a Value-Based System
Implications for Government

1. Organize into Integrated Practice Units (IPUs) Around Patient Medical Conditions and Patient Populations
   - Provider certification based on care integration measures (e.g. multidisciplinary teams, dedicated facilities)
   - Reduce regulatory obstacles to care integration (e.g. Stark Laws, corporate practice of medicine)

2. Establish Universal Measurement of Outcomes and Cost for Every Patient
   - Roll out national framework for mandatory outcome measurement by medical condition
   - Require provider reporting of patient volume by medical condition as an interim step
   - Reset reimbursement levels based on modern cost accounting principles

3. Move to Bundled Prices for Care Cycles
   - Expand DRG care episodes and set guidelines for bundled payment reimbursement requirements

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

5. Expand Excellent IPUs Across Geography
   - Encourage affiliations between small or rural providers and qualifying centers of excellence

6. Create an Enabling Information Technology Platform
   - Require common data definitions, interoperability, and the ability to easily extract outcome, process, and costing measures by all HIT systems
For additional information on

Value-Based Health Care Delivery:

www.isc.hbs.edu