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 Health Care 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, measurement methods, and payment models

• 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

• Today’s competition in health care **is not aligned with value**

\[
\begin{array}{c}
\text{Financial success of} \\
\text{system participants} \\
\neq \\
\text{Patient} \\
\text{success}
\end{array}
\]

• Creating positive-sum **competition on value** 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 **health results that matter 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 System Facilities

5. Expand Areas of Excellence Across Geography

6. Build an Enabling Information Technology Platform
1. Organize Care Around Patient Medical Conditions

Migraine Care in Germany

Existing Model:
Organize by Specialty and Discrete Services

1. Organize 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

- 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>
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<tbody>
<tr>
<td>Advice on self screening</td>
<td>Counseling patient and family on the diagnostic process and the diagnosis</td>
<td>Counseling on the treatment process</td>
<td>Explaining patient treatment options/shared decision making</td>
<td>Counseling on rehabilitation options, process</td>
<td>Explaining patient treatment options/shared decision making</td>
<td>Counseling on rehabilitation options, process</td>
<td>Counseling on long term risk management</td>
<td>Counseling on long term risk management</td>
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<tr>
<td>Consultations on risk factors</td>
<td>Patient and family psychological counseling</td>
<td>Education on managing side effects and avoiding complications</td>
<td>Achieving compliance</td>
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<tr>
<td>Self exams</td>
<td>Mammograms</td>
<td>Mammograms</td>
<td>Labs</td>
<td>Procedure-specific measurements</td>
<td>Range of movement</td>
<td>Side effects measurement</td>
<td>MRI, CT</td>
<td>Recurring mammograms (every six months for the first 3 years)</td>
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<td>Mammograms</td>
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<td>Mammography unit</td>
<td>Lab visits</td>
<td>Mammmographic labs and imaging center visits</td>
<td>Lab visits</td>
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<td>Lab visits</td>
<td>Office visits</td>
<td>Office visits</td>
<td>Hospital stays</td>
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<td>High risk clinic visits</td>
<td>Lab visits</td>
<td>High risk clinic visits</td>
<td>Hospital stays</td>
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<tr>
<td>MONITORING/PREVENTING</td>
<td>DIAGNOSING</td>
<td>PREPARING</td>
<td>INTERVENING</td>
<td>RECOVERING/REHABING</td>
<td>MONITORING/REHABING</td>
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<tr>
<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>Control of risk factors (obesity, high fat diet)</td>
<td>Determining the specific nature of the disease</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>
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<tr>
<td>Genetic screening</td>
<td>(mammograms, pathology, biopsy results)</td>
<td>Plastic or oncoplastic surgery evaluation</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>Follow-up clinical exams</td>
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<tr>
<td>Clinical exams</td>
<td>Genetic evaluation</td>
<td>Neo-adjuvant chemotherapy</td>
<td>Physical therapy</td>
<td>Formal rehabilitation</td>
<td>Treatment for any continued or later onset side effects or complications</td>
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<td>Monitoring for lumps</td>
<td>Labs</td>
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*Note: The table continues with more details and specific processes.*
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. Provides 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
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. Meets formally and informally on a regular basis to discuss patients, processes and results
11. Accepts joint accountability for outcomes and costs
## Integrating Mental Health into Physical Health IPUs

### MD Anderson Head and Neck Center

<table>
<thead>
<tr>
<th>Dedicated</th>
<th>Shared</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Center Management Team</strong></td>
<td><strong>Shared MDs</strong></td>
</tr>
<tr>
<td>- 1 Center Medical Director (MD)</td>
<td>- Endocrinologists</td>
</tr>
<tr>
<td>- 2 Associate Medical Directors (MD)</td>
<td>- Other specialists as needed</td>
</tr>
<tr>
<td>- 1 Center Administrative Director (RN)</td>
<td>(cardiologists, plastic surgeons, etc.)</td>
</tr>
<tr>
<td><strong>Dedicated MDs</strong></td>
<td>- Psychiatrists</td>
</tr>
<tr>
<td>- 8 Medical Oncologists</td>
<td><strong>Skilled Staff</strong></td>
</tr>
<tr>
<td>- 12 Surgical Oncologists</td>
<td>- Dietician</td>
</tr>
<tr>
<td>- 8 Radiation Oncologists</td>
<td>- Inpatient Nutritionists</td>
</tr>
<tr>
<td>- 5 Dentists</td>
<td>- Radiation Nutritionists</td>
</tr>
<tr>
<td>- 1 Diagnostic Radiologist</td>
<td>- Smoking Cessation Counselors</td>
</tr>
<tr>
<td>- 1 Pathologist</td>
<td>- 4 Ophthalmologists</td>
</tr>
<tr>
<td>- 4 Ophthalmologists</td>
<td><strong>Skilled Staff</strong></td>
</tr>
<tr>
<td><strong>Skilled Staff</strong></td>
<td>- Dietician</td>
</tr>
<tr>
<td>- 22 Nurses</td>
<td>- Inpatient Nutritionists</td>
</tr>
<tr>
<td>- 3 Social Workers</td>
<td>- Radiation Nutritionists</td>
</tr>
<tr>
<td>- 4 Speech Pathologists</td>
<td>- Smoking Cessation Counselors</td>
</tr>
<tr>
<td>- 1 Nutritionist</td>
<td>- 1 Patient Advocate</td>
</tr>
</tbody>
</table>

**Integrating Mental Health into Physical Health IPUs**

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

2. Measure Outcomes and Cost for Every Patient

- **Patient Initial Conditions**
- **Processes**
- **Indicators**
- **(Health) Outcomes**

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

- **Structure**
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
The Outcome Measures Hierarchy

Breast Cancer

Survival
- Survival rate (One year, three year, five year, longer)

Degree of recovery / health
- Degree of remission
- Functional status
- Breast conservation
- Depression

Time to recovery or return to normal activities
- Time to remission
- Time to functional status

Disutility of care or treatment process (e.g., treatment-related discomfort, complications, adverse effects, diagnostic errors, treatment errors)
- Nosocomial infection
- Nausea/vomiting
- Febrile neutropenia
- Suspension of therapy
- Failed therapies
- Limitation of motion
- Depression

Sustainability of recovery or health over time
- Cancer recurrence
- Sustainability of functional status

Long-term consequences of therapy (e.g., care-induced illnesses)
- Incidence of secondary cancers
- Brachial plexopathy
- Fertility/pregnancy complications
- Premature osteoporosis

Initial Conditions/Risk Factors
- Stage upon diagnosis
- Type of cancer (infiltrating ductal carcinoma, tubular, medullary, lobular, etc.)
- Estrogen and progesterone receptor status (positive or negative)
- Sites of metastases
- Previous treatments
- Age
- Menopausal status
- General health, including co-morbidities
- Psychological and social factors
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 Head and Neck 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

Legend:
- RCPT: Receptionist
- INT: Interpreter
- PAS: Patient Access Specialist
- RN: Registered Nurse
- MD: Medical Doctor
- MA: Medical Assistant
- PSC: Patient Service Coordinator
- Pt: Patient, outside of process
- PHDB: Patient History Database

Decision point
Time (min)
3. Reimburse 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

<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
- 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**
Hip and Knee Replacement Bundle in Stockholm, Sweden

Provider Response

- Under bundled payment, volumes shifted from full-service hospitals to specialized orthopedic hospitals
- Interviews with specialized providers revealed the following delivery innovations:
  - Defined care pathways
  - Standardized treatment processes
  - Checklists
  - New post-discharge visit to check wound healing
  - More patient education
  - More training and specialization of staff
  - Increased procedures per day
  - Decreased length of stay
4. Integrate Care Delivery Across System 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®

DELAWARE

NEW JERSEY

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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**
   - E.g. acuity level, resource intensity, cost level, need for convenience

4. Clinically integrate care **across units and facilities** using an IPU structure
   - Widen and 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. Expand Areas of Excellence Across Geography

The Cleveland Clinic Affiliate Practices

- Central DuPage Hospital, IL
  Cardiac Surgery

- St. Vincent Indianapolis, IN
  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

- Rochester General Hospital, NY
  Cardiac Surgery

- Chester County Hospital, PA
  Cardiac Surgery

- Charleston, WV
  Kidney Transplant

2011.12.08 Comprehensive Deck
6. Build 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
- Grow Excellent Services Across Geography
- Integrate Care Delivery Across Separate Facilities
- Move to Bundled Prices for Care Cycles
- Build an Enabling IT Platform
Creating a Value-Based Health Care Delivery Organization
Implications for Physician Leaders

1. Organize Care into Integrated Practice Units (IPUs) Around Patient Medical Conditions
   • Lead multidisciplinary teams, not specialty silos

2. Measure Outcomes and Cost for Every Patient
   • Become an expert in measurement and process improvement

3. Reimburse through Bundled Prices for Care Cycles
   • Lead the development of new bundled reimbursement options and care guarantees

4. Integrate Care Delivery Across Separate Facilities
   • Champion value enhancing rationalization, relocation and integration with sister hospitals and outpatient units, instead of turf protection

5. Expand Excellent IPUs Across Geography
   • Aspire to influence patient care outside the local area

6. Create an Enabling Information Technology Platform
   • Become a champion for the right EMR systems, not an obstacle to their adoption and use