Introduction to 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’s delivery approaches reflect 19th century organizational 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**.

  - Financial success of system participants ≠ Patient success

- 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.

<table>
<thead>
<tr>
<th>Value =</th>
<th>Health outcomes</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Costs of delivering the outcomes</td>
</tr>
</tbody>
</table>

- 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.
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>
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</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

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 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>
</tr>
</thead>
<tbody>
<tr>
<td>Advice on self screening</td>
<td>Counseling patient and family on the diagnostic process and the diagnosis</td>
<td>Explaining patient treatment options/shared decision making</td>
<td>Counseling on the treatment process</td>
<td>Education on managing side effects and avoiding complications</td>
<td>Achieving compliance</td>
<td>Counseling on rehabilitation options, process</td>
<td>Achieving compliance</td>
<td>Psychological counseling</td>
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<tr>
<td>Consultations on risk factors</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>Counseling on long term risk management</td>
</tr>
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<td></td>
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<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>Achieving compliance</td>
</tr>
<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>
</tr>
<tr>
<td>Mammograms</td>
<td>Mammograms</td>
<td>Ultrasound</td>
<td>MRI</td>
<td>Labs (CBC, etc.)</td>
<td>Biopsy</td>
<td>BRACA 1, 2...</td>
<td>CT</td>
<td>Bone Scans</td>
</tr>
<tr>
<td>Office visits</td>
<td>Office visits</td>
<td>Office visits</td>
<td>Office visits</td>
<td>Hospital visits</td>
<td>Hospital stays</td>
<td>Visits to outpatient radiation or chemotheraphy units</td>
<td>Pharmacy visits</td>
<td>Office visits</td>
</tr>
<tr>
<td>Mammography unit</td>
<td>Lab visits</td>
<td>Lab visits</td>
<td>High risk clinic visits</td>
<td>Hospital visits</td>
<td>Hospital stays</td>
<td>Visits to outpatient radiation or chemotheraphy units</td>
<td>Pharmacy visits</td>
<td>Office visits</td>
</tr>
<tr>
<td>Lab visits</td>
<td>High risk clinic visits</td>
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<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>Lab visits</td>
</tr>
<tr>
<td>Office visits</td>
<td>Lab visits</td>
<td>High risk clinic visits</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>Mammographic labs and imaging center visits</td>
</tr>
<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>Surgery (breast preservation or mastectomy, oncoplastic alternative)</td>
<td>Surgery (breast preservation or mastectomy, oncoplastic alternative)</td>
<td>Periodic mammography</td>
<td>Other imaging</td>
<td></td>
</tr>
<tr>
<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>Plastic or oncoplastic surgery evaluation</td>
<td>Neo-adjuvant chemotherapy</td>
<td>In-hospital and outpatient wound healing</td>
<td>Follow-up clinical exams</td>
<td>Treatment for any continued or later onset side effects or complications</td>
<td></td>
</tr>
<tr>
<td>Genetic screening</td>
<td>Genetic evaluation</td>
<td>Plastic or oncoplastic surgery evaluation</td>
<td>Adjuvant therapies (hormonal medication, radiation, and/or chemotherapy)</td>
<td>Physical therapy</td>
<td>Physical therapy</td>
<td>Physical therapy</td>
<td>Physical therapy</td>
<td></td>
</tr>
<tr>
<td>Clinical exams</td>
<td>Labs</td>
<td>Neo-adjuvant chemotherapy</td>
<td></td>
<td></td>
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</table>
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
Volume in a Medical Condition Enables Value

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

- **Processes**
  - Structure
    - E.g., Staff certification, facilities standards

- **Indicators**
  - (Health) Outcomes
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

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 Patient Visit

Registration and Verification
- Receptionist, Patient Access Specialist, Interpreter
  - Patient arrives
  - Check in patient; communicate arrival
  - RCPT
  - Verify patient information; complete consent forms
  - PAS
  - Interpreter needed? RCPT
  - Y
  - 5%
  - Add language translation time for each process
  - INT, RCPT
  - N
  - 95%

Intake
- Nurse, Receptionist
  - Assess patient; assemble paperwork; place patient in room
  - RN

Clinician Visit
- MD, mid-level provider, medical assistant, patient service coordinator, RN
  - Initiate patient workup; review patient history; conduct physical exam
  - MLP
  - Laryngoscopy needed?
  - Y
  - 90%
  - Perform laryngoscopy
  - MD, MA, PSC
  - N
  - 10%

Plan of Care Discussion
- RN/LVN, MD, mid-level provider, patient service coordinator
  - Review plan of care; introduce team; review schedule for return visit
  - RN
  - Scheduling
  - Patient Service Coordinator
  - Schedule tests and consults; communicate schedule to patient
  - PSC
  - N
  - 10%
  - Pt discharged
  - Enter next process

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

Time (min)
3. Move to 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**

Fee for service  →  Bundled reimbursement for medical conditions  →  Global capitation
**Bundled Payment in Practice**  
**Hip and Knee Replacement in Stockholm, Sweden**

- **Components** of the bundle

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

- 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
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 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
The Cleveland Clinic Affiliate Practices

- Central DuPage Hospital, IL
  - Cardiac Surgery

- CLEVELAND CLINIC

- 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

- Charleston, WV
  - Kidney Transplant

- Rochester General Hospital, NY
  - 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

Measure Outcomes and Cost For Every Patient

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 into Integrated Practice Units (IPUs) Around Patient Medical Conditions
   • Lead multidisciplinary teams, not specialty divisions or departments

2. Establish Universal Measurement of Outcomes and Cost for Every Patient
   • Become an expert in measurement and process improvement

3. Move to Bundled Prices for Care Cycles
   • Lead the development of new packaged reimbursement options and care guarantees

4. Integrate Care Delivery Across Separate Facilities
   • View relationships across inpatient and outpatient units, or with sister hospitals, as value drivers not loss of autonomy

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