Value-Based Health Care Delivery

Professor Michael E. Porter
Harvard Business School

Tuck School of Business
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This presentation draws on Michael E. Porter and Elizabeth Olmsted Teisberg: Redefining Health Care: Creating Value-Based Competition on Results, Harvard Business School Press, May 2006, and “How Physicians Can Change the Future of Health Care,” Journal of the American Medical Association, 2007; 297:1103:1111. 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 Olmsted Teisberg. Further information about these ideas, as well as case studies, can be found on the website of the Institute for Strategy & Competitiveness at http://www.isc.hbs.edu.
Principles of Value-Based Health Care Delivery

The central goal in health care must be value for patients, not access, volume, convenience, or cost containment.

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

- Outcomes are the full set of patient health outcomes over the care cycle.
- Costs are the total costs of care for the patient’s condition, not just the cost of a single provider or a single service.

How to design a health care system that dramatically improves patient value.
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
- 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 and repeats in treatment
- Faster recovery
- More complete recovery
- Less disability
- Fewer relapses or acute episodes
- Slower disease progression
- Less need for long term care
- Less care induced illness

- Better health is the goal, not more treatment
- Better health is inherently less expensive than poor health
Value-Based Health Care Delivery
The Strategic Agenda

1. Organize into Integrated Practice Units around the Patient’s Medical Condition (IPUs)
   - Including primary and preventive care for distinct patient populations

2. Measure Outcomes and Cost for Every Patient

3. Move to Bundled Prices for Care Cycles

4. Integrate Care Delivery Across Separate Facilities

5. Grow by Expanding Excellent IPUs Across Geography

6. Create an Enabling Information Technology Platform
1. Organize into Integrated Practice Units
Migraine Care in Germany

Existing Model:
Organize by Specialty and Discrete Services

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

New Model:
Organize into Integrated Practice Units (IPUs)

- Imaging Unit
- West German Headache Center
  - Neurologists
  - Psychologists
  - Physical Therapists
  - Day Hospital
- Network Neurologists
- Essen Univ. Hospital Inpatient Unit

# Integrating Across the Cycle of Care
## Breast Cancer

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<td>Hospital visits</td>
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<td>Lab visits</td>
<td>Visits to outpatient radiation or chemotherapy units Pharmacy</td>
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<td>High risk clinic visits</td>
<td>Rehabilitation facility visits</td>
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### DIAGNOSING

- Medical history
- Determining the specific nature of the disease (mammograms, pathology, biopsy results)
- Genetic evaluation (Labs)

### PREPARING

- Choosing a treatment plan
- Surgery (breast preservation or mastectomy, oncoplastic alternative)

### INTERVENCING

- Plastic or onco-plastic surgery evaluation
- Neo-adjuvant chemotherapy
- Adjuvant therapies (hormonal medication, radiation, and/or chemotherapy)

### RECOVERING/REHABING

- In-hospital and outpatient wound healing
- Treatment of side effects (e.g., skin damage, cardiac complications, nausea, lymphedema and chronic fatigue)

### MONITORING/MANAGING

- Periodic mammography
- Other imaging
- Follow-up clinical exams
- Treatment for any continued or later onset side effects or complications

- Physical therapy

### Other Provider Entities

- Breast Cancer Specialist
IPUs and Value

Outcomes

- **Better decisions** in terms of diagnosis and treatment
  - Specialized experience and expertise
  - Better coordination/peer review
  - Better integration of co-occurrences

- **Better execution** of treatment
  - Specialized experience and expertise
  - Tailored facilities
  - Seamless management of common co-occurrences

- **Faster** cycle time

- Improved *patient compliance and engagement* with care

- Full range of *support services* needed to achieve success for the patient (e.g., nutrition, rehabilitation, counseling, psychological support)

- Vastly greater patient *convenience*

Cost

- Greater provider efficiency
- Better utilization of facilities
- Streamlined administrative costs
Volume and experience have an **even greater** impact on value in an IPU structure than in the current system.
## Fragmentation of Hospital Services
### 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>

2. Measuring Outcomes and Cost for Every Patient

- **Patient Initial Conditions**
- **Processes**
  - Protocols/Guidelines
- **Indicators**
  - E.g., Hemoglobin A1c levels for diabetics
- **Outcomes**
  - (Health)
The Outcome Measures Hierarchy

Tier 1
Health Status Achieved

Tier 2
Process of Recovery

Tier 3
Sustainability of Health

 Survival

Degree of health/recovery

Time to recovery or return to normal activities

Disutility of care or treatment process (e.g., discomfort, complications, adverse effects, errors, and their consequences)

Sustainability of health or recovery and nature of recurrences

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

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

Initial Conditions/Risk Factors
- Stage of disease
- 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
- Fertility/pregnancy complications
- Premature osteoporosis
Adult Kidney Transplant Outcomes, U.S. Center Results, 1987-1989

Number of programs: 219
Number of transplants: 19,588
1 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, 1998-2000

1 year graft survival 90.9%
- 10 greater than predicted survival (4.5%)
- 14 worse than predicted survival (6.4%)
Adult Kidney Transplant Outcomes
U.S. Center Results, 2005-2007

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

- 16 greater than expected graft survival (6.6%)
- 19 worse than expected graft survival (7.8%)
Cost Measurement

Aspiration

• Cost should be measured for each patient, aggregated across the full cycle of care
• Cost should be measured for each medical condition (which includes common co-occurring conditions), not for all services
• The cost of each activity or input attributed to a patient should reflect that patient’s use of resources (e.g. time, facilities, service), not average allocations
• The only way to properly measure cost per patient is to track the time devoted to each patient by providers, facilities, support services, and other shared costs

Reality

• Most providers track charges not costs
• Most providers track cost by billing category, not for medical conditions
• Most providers cannot accumulate total costs for particular patients
• Most providers use arbitrary or average allocations, not patient specific allocations
3. Move to Bundled Prices for Care Cycles

- Fee for service
- Global capitation
- Bundled reimbursement for medical conditions
- Global budgeting
What is Bundled Payment?

• **Total package price** for the care cycle for a medical condition
  – Includes responsibility for **avoidable complications**
  – Medical condition capitation
• The bundled price should be **severity adjusted**

**What is Not Bundled Payment**

• Prices for **short** episodes (e.g. inpatient only, procedure only)
• **Separate** payments for physicians and facilities
• **Pay-for-performance** bonuses
• “**Medical Home**” payment for care coordination

• DRGs can be a **starting point** for bundled models
Bundled Payment in Practice
Hip and Knee Replacement in Sweden

• In 2009, Stockholm County Council began to offer a **bundled price for joint replacement** (hip and knee), that includes:
  - Pre-op evaluation
  - Lab tests
  - Radiology
  - Surgery & related admission
  - Prosthesis
  - Drugs
  - Inpatient rehab, up to 6 days
  - 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

• Eligibility is restricted to **relatively healthy patients** (i.e. ASA scores of 1 or 2)

• **Same referral** process as the traditional system

• **Mandatory** reporting to joint registry plus supplementary

• Provider participation is **voluntary** but all providers are involved
  – 6 public hospitals, 4 private hospitals
  – 3400 patients treated in 2009

• The bundled price for a knee or hip replacement is about **US $8,000**
4. Integrate Care Delivery Across Separate Facilities

Children’s Hospital of Philadelphia (CHOP)  
Hospital Affiliates
Imperative of System Integration

Confederation of Standalone Units/Facilities

- Increase volume
- Benefits limited to contracting and spreading fixed cost

Integrated Care Delivery Network

- Increase value
- The network is more than the sum of its parts
Levels of System Integration

• **Rationalize service lines/IPUs** across facilities to improve volume, avoid duplication, and concentrate excellence

• **Offer specific services** at the **appropriate facility**
  – E.g. acuity level, cost level, need for convenience
  – Patient referrals across units

• Clinically integrate care **across facilities**, within an IPU structure
  – **Expand** and **integrate** care across facilities
  – **Consistent protocols** and access to experts throughout the network (IT enabled)
  – Connect **ancillary service units** to IPUs
    o E.g. home care, rehabilitation, behavioral health, social work, addiction treatment (organize within service units to align with IPUs)
  – Better connect **preventive/primary care** units and specialty IPUs
5. Grow by Expanding Excellent IPUs Across Geography
The Cleveland Clinic Managed Practices

- Grow in ways that improve **value**, not just volume
Models of Geographic Expansion

- Affiliation Agreements with Independent Provider Organizations
- Second Opinions and Telemedicine
- Dispersed Diagnostic Centers
- Convenience Sensitive Service Locations in the Community
- Complex IPU Components (e.g. surgery) in Additional Locations
- Specialty Hospitals as Hubs in Additional Locations
- New Broader-Line Hospital Hubs
A Mutually Reinforcing Strategic Agenda

Organize into Integrated Practice Units

Integrate Care Delivery Across Separate Facilities

Measure Outcomes and Cost For Every Patient

Grow Excellent Services Across Geography

Move to Bundled Prices for Care Cycles

Create an Enabling IT Platform
Value-Based Healthcare Delivery: Implications for Contracting Parties/Health Plans

“Payor” → Value-Added Health Organization
Value-Based Health Care: The Role of Employers

- Employer interests are more closely aligned with patient interests than any other system player
  - Employers need healthy, high performing employees
  - Employers bear the costs of chronic health problems and poor quality care
    - The cost of poor health is 2 to 7 times more than the cost of health benefits
      - Absenteeism
      - Presenteeism

- Employers are uniquely positioned to improve employee health
  - Daily interactions with employees
  - On-site clinics for quick diagnosis and treatment, prevention, and screening
  - Group culture of wellness
  - Providers should establish direct relationships with employers to enable value based approaches
Value-Based Health Care Delivery: Implications for Government

- Remove obstacles to the **restructuring of health care delivery** around the integrated care of medical conditions

- Establish **universal measurement** and **reporting** of provider **health outcomes**

- Require universal reporting by health plans of **health outcomes for members**

- Shift reimbursement systems to **bundled prices for cycles of care** instead of payments for discrete treatments or services

- **Open up competition** among providers and across geography

- Mandate **EMR adoption** that enables integrated care and supports outcome measurement
  - National **standards** for data definitions, communication, and aggregation
  - **Software as a service** model for smaller providers

- Encourage greater **responsibility of individuals** for their health and their health care
Coordinating Care Across IPUs
Patients with Multiple Medical Conditions

- The primary organizational structure for care delivery should be around the forms of integration required for every patient, or IPUs
  - The current system is organized around the exception, not the rule
- Overlay mechanisms should manage coordination across IPUs
- The IPU model will greatly simplify coordination of care for patients with multiple medical conditions
The Outcomes Measures Hierarchy
Acute Knee-Osteoarthritis Requiring Replacement

Survival
- Mortality

Degree of recovery / health
- Range of motion achieved
- Pain level achieved
- Functional level achieved
- Degree of independence
- Ability to return to work
- Extent of return to physical activities
- Level of satisfaction with outcome

Time to recovery or return to normal activities
- Time to maximum range of motion
- Time to lowest pain level
- Time to highest functional level
- Time to post-deterioration independence
- Time to return to work
- Time to return to physical activities

Disutility of care or treatment process
(e.g., treatment-related discomfort, complications, adverse effects, diagnostic errors, treatment errors)
- Surgical pain
- Length of hospital stay independent of complications
- Deep vein thrombosis
- Delirium
- Infection rate (Urinary Tract)
- Pneumonia
- Pulmonary embolism
- Myocardial infarction

Sustainability of recovery or health over time
- Maintained range of motion
- Ongoing pain status
- Functional level
- Ability to live independently
- Ability to continue working
- Maintained activities
- Need for revision/re-operation (immediate failure, implant failure secondary to wear)

Long-term consequences of therapy (e.g., care-induced illnesses)
- Loss of mobility due to inadequate rehab
- Complications of cardiac issues
- Risk of complex fracture
- Susceptibility to infection
- Stiff knee due to unrecognized complication
- Regional pain syndrome

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Move to Bundled Prices for Care Cycles

Fee for service

Bundled reimbursement for medical conditions

Global capitation

Global budgeting
Enabling System Integration

Practice Structure

- **IPU structure**
  - First step is to increase **consistency** of protocols/processes across sites
  - “Virtual” IPUs even if providers practice at different locations
  - Case management structure spanning units where appropriate

Physician Organization

- **Employed** physicians
- Formal **affiliations** with independent physicians
  - Support service is an inducement for affiliation (E.g. IT, back office)
- **Rotation** of staff across locations

Common Systems

- **Common EMR platform** which aggregates information across units
- Common **outcome and process measurement** systems

Scheduling

- Common or federated **patient scheduling service** across units

Cost Measurement

- Ability to accurately accumulate **cost per patient** across the entire care cycle
- Ability to measure **cost by location**

Culture

- Management practices that foster affiliation with the organization, developing **personal relationships**, and regular contact among dispersed staff
Redefining Health Care Delivery

• Universal coverage and access to care are **essential, but not enough**

• The core issue in health care is the **value of health care delivered**

  Value: Patient health outcomes per dollar spent

• How to design a health care delivery system that **dramatically improves patient value**
  – Ownership of entities is secondary (e.g. non-profit vs. for profit vs. government)

• 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, and pricing

  - Process improvements, care pathways, lean production, safety initiatives, disease management and other overlays to the current structure are beneficial but **not sufficient**
  - “Consumers” **cannot fix the dysfunctional structure** of the current system
Creating Competition on Value

• **Competition for patients/subscribers** is a powerful force to encourage restructuring of care and continuous improvement in value

• 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 a central challenge in health care reform in every country
Principles of Value-Based Health Care Delivery

The central goal in health care must be value for patients, not access, equity, volume, convenience, or cost containment.

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

- Outcomes are the full set of patient health outcomes over the care cycle.
- Costs are the total costs of care for the patient’s condition, not just the cost of a single provider or a single service.