Value-Based Health Care Delivery

Professor Michael E. Porter
Harvard Business School

AVT Business School
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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

• Achieving 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 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, 21\textsuperscript{st} century medical technology is often delivered with 19\textsuperscript{th} century organization structures, management practices, and payment models

- Process improvements, safety initiatives, disease management and other **overlays** to the current structure are beneficial, but not sufficient

- **Consumers alone** cannot fix the dysfunctional structure of the current system
Creating Competition on Value

• **Competition** and **choice** for patients/subscribers are powerful forces to encourage restructuring of care and continuous improvement in value.

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

  ![Diagram]
  
  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, volume, convenience, or cost containment

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

– 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** over the care cycle

• 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 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 and repeats in treatment
  - Faster recovery
  - More complete recovery
  - Less disability
  - Fewer recurrences, relapses, flare ups, or acute episodes
  - Slower disease progression
  - Greater functionality and 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
Cost versus Quality, Sweden
Health Care Spending by County, 2008

Note: Cost including; primary care, specialized somatic care, specialized psychiatry care, other medical care, political health- and medical care activities, other subsidies (e.g. drugs)
Source: Öppna jämförelser, Socialstyrelsen 2008; Sjukvårdsdata i fokus 2008; BCG analysis
Creating a Value-Based Health Care Delivery System

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. Organize Around Patient Medical Conditions
Migraine Care in Germany

Existing Model:
Organize by Specialty and Discrete Services

New Model:
Organize into Integrated Practice Units (IPUs)

# Integrating Across the Cycle of Care

## Breast Cancer

### INFORMING AND ENGAGING
- Advice on self-screening
- Consultations on risk factors
- Counseling patient and family on the diagnostic process and the diagnosis
- Explaining patient treatment options/shared decision making
- Patient and family psychological counseling
- Counseling on the treatment process
- Education on managing side effects and avoiding complications of treatment
- Achieving compliance
- Psychological counseling
- Counseling on long term risk management
- Achieving Compliance

### MEASURING
- Self exams
- Mammograms
- Ultrasound
- MRI
- Labs (CBC, blood chems, etc.)
- Biopsy
- BRACA 1, 2...
- CT
- Bone scans
- Labs
- Procedure-specific measurements
- Range of movement
- Side effects measurement
- MRI, CT
- Recurring mammograms (every six months for the first 3 years)

### ACCESSING
- Office visits
- Mammography lab visits
- Lab visits
- High risk clinic visits
- Office visits
- Hospital stays
- Visits to outpatient radiation or chemotherapy units
- Pharmacy
- Rehabilitation facility visits
- Pharmacy
- Lab visits
- Mammographic labs and imaging center visits

### MONITORING/ PREVENTING
- Medical history
- Control of risk factors (obesity, high fat diet)
- Genetic screening
- Clinical exams
- Monitoring for lumps

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

### PREPARING
- Choosing a treatment plan
- Surgery prep (anesthetic risk assessment, EKG)
- Plastic or onco-plastic surgery evaluation
- Neo-adjuvant chemotherapy

### INTERVENING
- Surgery (breast preservation or mastectomy, oncoplastic alternative)
- Adjunct 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)
- Physical therapy

### MONITORING/ MANAGING
- Periodic mammography
- Other imaging
- Follow-up clinical exams
- Treatment for any continued or later onset side effects or complications
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 measures outcomes and processes as a team, not individually
10. Accepting joint accountability for outcomes and costs
What is Not Integrated Care?

Integrated care is **not** the same as:

- Co-location per se
- Care delivered by the same organization
- A multispecialty group practice
- Freestanding focused factories
- A clinical pathway
- An institute or center
- A Center of Excellence
- A health plan/provider system (e.g. Kaiser Permanente)
- Medical homes
- Accountable care organizations
Integrated Models of Primary Care

• Today’s primary care is **fragmented** and attempts to address **overly broad needs** with limited resources

• Organize primary care around teams serving **specific patient populations** (e.g. healthy adults, frail elderly, type II diabetics) rather than attempting to be all things to all patients

• Deliver **defined service bundles** covering appropriate prevention, screening, diagnosis, wellness and health maintenance

• Provide services with **multidisciplinary teams** including ancillary health professionals and support staff, in **dedicated facilities**

• Form **alliances with specialty IPUs** covering the prevalent medical conditions represented in the patient population

• Deliver services not only in traditional settings but at the workplace, schools, community organizations, and in **other locations** offering regular patient contact and the ability to develop a group culture of wellness
Volume in a Medical Condition Enables Value

The Virtuous Circle of Value

- Improved Reputation → Greater Patient Volume in a Medical Condition
- Rapidly Accumulating Experience
- Better Information/Clinical Data
- More Fully Dedicated Teams
- More Tailored Facilities
- Rising Process Efficiency
- Wider Capabilities in the Care Cycle, Including Patient Engagement
- Greater Leverage in Purchasing
- Costs of IT, Measurement, and Process Improvement Spread over More Patients
- Faster Innovation
- Better Results, Adjusted for Risk
- Greater Volume in a Medical Condition

• Volume and experience will 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>
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</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>


- **Minimum volume standards** in lieu of compelling outcome information is an interim step to drive service consolidation
2. Measure Outcomes and Cost for Every Patient

- Patient Initial Conditions
- Processes
  - Protocols/Guidelines
- Patient Compliance
- Indicators
  - E.g., Hemoglobin A1c levels for diabetics
- (Health) Outcomes
  - E.g., Staff certification, facilities standards
Unit of Outcomes and Cost Measurement

- For medical conditions/primary care patient populations
- Real time and “on-line” in care delivery, not just retrospectively or in clinical studies
- Not for interventions or short episodes
- Not separately for types of service (e.g. inpatient, outpatient, tests, rehabilitation)
- Not for practices, departments, clinics, or entire hospitals

Measuring and reporting volume by medical condition
The Outcome Measures Hierarchy

**Tier 1**
- **Health Status**
  - Achieved or Retained
- **Survival**

**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)
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
In-vitro Fertilization
Success Rates Over Time

Percent Live Births per Fresh, Non-Donor Embryo Transferred by Clinic Size
Women Age <38, 1997-2005

Clinic Size:
Number of Cycles per Year
Success per Embryo Transferred

Adult Kidney Transplant Outcomes, U.S. Center Results, 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, 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%)
Swedish National Quality Registers, 2007*

Respiratory Diseases
- Respiratory Failure Register (Swedevox)
- Swedish Quality Register of Otorhinolaryngology

Childhood and Adolescence
- The Swedish Childhood Diabetes Registry (SWEDIABKIDS)
- Childhood Obesity Registry in Sweden (BORIS)
- Perinatal Quality Registry/Neonatology (PNQn)
- National Registry of Suspected/Confirmed Sexual Abuse in Children and Adolescents (SÖK)

Circulatory Diseases
- Swedish Coronary Angiography and Angioplasty Registry (SCAAR)
- Registry on Cardiac Intensive Care (RIKS-HIA)
- Registry on Secondary Prevention in Cardiac Intensive Care (SEPHIA)
- Swedish Heart Surgery Registry
- Grown-Up Congenital Heart Disease Registry (GUCH)
- National Registry on Out-of-Hospital Cardiac Arrest
- Heart Failure Registry (RiksSvikt)
- National Catheter Ablation Registry
- Vascular Registry in Sweden (Swedvasc)

- National Quality Registry for Stroke (Riks-Stroke)
- National Registry of Atrial Fibrillation and Anticoagulation (AuriculA)

Endocrine Diseases
- National Diabetes Registry (NDR)
- Swedish Obesity Surgery Registry (SOReg)
- Scandinavian Quality Register for Thyroid and Parathyroid Surgery

Gastrointestinal Disorders
- Swedish Hernia Registry
- Swedish Quality Registry on Gallstone Surgery (GallRiks)
- Swedish Quality Registry for Vertical Hernia

Musculoskeletal Diseases
- Swedish Shoulder Arthroplasty Registry
- National Hip Fracture Registry (RIKSHÖFT)
- Swedish National Hip Arthroplasty Register
- Swedish Knee Arthroplasty Register
- Swedish Rheumatoid Arthritis Registry
- National Pain Rehabilitation Registry
- Follow-Up in Back Surgery
- Swedish Cruciate Ligament Registry – X-Base
- Swedish National Elbow Arthroplasty Register (SAAR)

* Registers Receiving Funding from the Executive Committee for National Quality Registries in 2007
Cost Reduction in Health Care

• Current organization structure and cost accounting practices in health care obscure the understanding of actual costs in care delivery
• There are major opportunities for cost efficiencies
  – Over-resourced facilities
    ▪ E.g. routine care delivered in expensive hospital settings
  – Under-utilization of expensive clinical space, equipment, and facilities
  – Poor utilization of highly skilled physicians and staff
  – Over-provision of low- or no-value testing and other services in order to justify billing/follow rigid protocols
  – Long cycle times
  – Redundant administrative and scheduling personnel
  – Missed opportunities for volume procurement
  – Excess inventory and weak inventory management
  – Lack of cost knowledge and awareness in clinical teams

• Such cost reduction opportunities do not require outcome tradeoffs, but may actually improve outcomes
3. Move to Bundled Prices for Care Cycles

- Bundled reimbursement covers the full care cycle for an acute medical condition, and time-based reimbursement for chronic conditions or primary/preventive care for a patient population.
Bundled Payment in Practice
Hip and Knee Replacement in Stockholm, Sweden

• **Components** of the bundle

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

• 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** but all providers are involved

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

Confederation of Standalone Units/Facilities

- Increase **volume**
- Capture flow of **patients**
- Benefits limited to contracting and spreading limited fixed overhead

Integrated Care Delivery Network

- Increase **value**
- The network is **more than** the sum of its parts
Building an Integrated Care System
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

Network Hospitals: Wholly-Owned Outpatient Units:
Levels of System Integration

• Choose an overall **scope of service lines** where the provider can achieve excellence

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

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

• Clinically integrate **care across facilities**, within an IPU structure
  – **Expand** and **integrate** the care cycle
  – Better connect **preventive/primary care** units to specialty IPUs

• There are major value improvement opportunities through **moving care out** of heavily resourced hospital, tertiary and quaternary facilities
5. Expand Excellent IPUs Across Geography

- Grow **areas of excellence** and **leverage across locations**, rather than adding broad line, stand-alone units.

- **Affiliate with excellent providers** in medical conditions where there is insufficient volume or expertise to achieve superior value.
Expanding Excellent IPUs Across Geography
The Cleveland Clinic Managed Practices

Rochester General Hospital, NY
Cardiac Surgery

CLEVELAND CLINIC
Cardiac Care

Chester County Hospital, PA
Cardiac Surgery

Cape Fear Valley Health System, NC
Cardiac Surgery

McLeod Heart & Vascular Institute, SC
Cardiac Surgery

Cleveland Clinic Florida Weston, FL
Cardiac Surgery
6. Create 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 over time
- Data encompasses the **full care cycle**, including referring entities
- Allows access and communication among **all involved parties**, including patients
- "Structured” data vs. free text
- **Templates** for medical conditions to enhance the user interface
- 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 systems**
A Mutually Reinforcing Strategic Agenda

- Organize into Integrated Practice Units
- Measure Outcomes and Cost for Every Patient
- Move to Bundled Prices for Care Cycles
- Grow Excellent Services Across Geography
- Integrate Care Delivery Across Separate Facilities
- Create an Enabling IT Platform
Value-Based Health Care Delivery: Implications for Contracting Parties/Health Plans

- Providers can lead in developing new relationships with health plans through their role in providing health benefits for their own employees
Value-Based Health Care Delivery: Implications for Government

• Establish universal measurement and reporting of health outcomes

• Remove obstacles to integrated care for medical conditions

• Shift reimbursement systems to bundled prices for care cycles

• Open competition among providers and across geography

• Set policies to encourage greater involvement and responsibility of individuals for their health and their health care

• Set standards and mandate EMR adoption that supports integrated care and outcome measurement
Value-Based Health Care Delivery: Implications for Employers

• Set the goal of **employee health**
• Assist employees in **healthy living** and **active participation in their own care**
• Provide for convenient and high value **prevention, wellness, screening, and disease management** services
  – On site clinics
• Set **new expectations for payors**
  – Plans should contract for **integrated care**, not discrete services
  – Plans should contract for care **cycles rather than single interventions**
  – Plans should assist subscribers in **accessing excellent providers** for their medical condition
  – Plans should **measure and improve** member health results by condition, and expect providers to do the same
• Provide for **health plan continuity** for employees, rather than plan churning
• Find ways to **expand insurance coverage** and advocate **reform of the insurance system**
• Measure and hold employee benefit staff accountable for the **health value achieved** by the company