Value-Based Health Care Delivery: Core Concepts

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Harvard Business School

VBHC Intensive Seminar
Boston, MA
January 14, 2019

This presentation draws heavily on Professor Porter’s research in health care delivery including Redefining Health Care (with Elizabeth Teisberg), What is Value in Health Care, NEJM, and The Strategy That Will Fix Health Care, HBR (with Thomas Lee). A fuller bibliography is attached. 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. For further background and references on value-based health care, see the website of the Institute for Strategy and Competitiveness.
The Health Care Problem Remains a Global Issue

Health Care Spending vs GDP and Income

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1. Sweden changed reporting methodology and included long-term care spending in 2011, but not prior to 2011; thus HC spend for Sweden is indexed 1995-2010 and 2011-2016 with GDP growth 2010-11. Notes: All indexes based on local currencies; Income = Personal Disposable Income

Source: WHO, EIU (May 2017), BCG analysis
Creating a Value-Based Health Care System

- Today's care delivery approaches reflect **legacy organizational structures**, **management practices**, and **payment models** based on historical medical science and delivery practices.

- There have been **significant advances medical science** yet service delivery practices have not evolved.

- Health care has gotten lost in the **complexity of the system** and the pursuit of **multiple goals** including patient experience, safety, efficacy, access, research and training, etc.

- In order to transform the system, we need a **single, unifying goal** that aligns all interests.
Incremental “Solutions” Have Had Limited Impact

- Evidence-based medicine
- Safety/eliminating errors
- Prior authorization
- Patients as paying customers
- Electronic medical records
- “Lean” process improvements
- Care coordinators

- Retail clinics / urgent care
- Programs to address high cost areas (e.g. readmissions, post acute)
- Mergers and consolidation
- Analytics and big data
- Personalized medicine
- Population health

• **Restructuring health care delivery** is needed, not incremental improvements
Solving the Health Care Problem

• The fundamental \textit{goal and purpose} of health care is to deliver high and improving \textit{value for patients}

\[
\text{Value} = \frac{\text{Health outcomes that matter to patients}}{\text{Costs of delivering these outcomes}}
\]

• Delivering high value health care is the \textit{definition of success}

• Value is the only goal that can \textit{unite the interests} of all system participants

• Improving value is the \textit{only real solution} to reducing the burden of health care on citizens

• The questions are how to design a health care delivery system that \textit{substantially improves patient value}, and shift competition to \textit{competing on value}
Principles of Value-Based Health Care Delivery

• Value **cannot be understood** at the level of a hospital, a care site, a specialty, an intervention, a primary care practice or a broad patient population

• Value is created in caring for a patient’s **medical condition(s)** (acute, chronic) over the **full cycle of care**

\[
\text{Value} = \frac{\text{The set of outcomes that matter for the condition}}{\text{The total costs of delivering these outcomes over the full care cycle}}
\]

• In **primary and preventive care**, value is created in serving **segments of patients** with similar primary and preventive needs

• The medical condition is the fundamental unit of **value creation** and **value measurement** in health care delivery
Creating Value-Based Health Care Delivery

The Strategic Agenda

1. Re-organize care around patient conditions, into integrated practice units (IPUs)
   - For primary and preventive care, IPUs serve distinct patient segments

2. Measure outcomes and costs for every patient

3. Move to value-based reimbursement models, and ultimately bundled payments for conditions and primary care segments

4. Integrate multi-site care delivery systems

5. Integrate care across geography to improve value

6. Build an enabling information technology platform
Re-organize Care Around Patient Medical Conditions

Headache Care in Germany

Organize by Department, Specialty, and Discrete Service

Organize around the Patient’s Condition into an Integrated Practice Unit (IPU)

Care by Individuals

Care by a Team

Defining the 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 caring for common co-occurring conditions and complications
  – E.g., diabetes, breast cancer, knee osteoarthritis

• IPUs should be organized around conditions or groups of related conditions involving a similar team and care process
  – E.g., head and neck cancers, joint replacement
<table>
<thead>
<tr>
<th><strong>Informing and Engaging</strong></th>
<th><strong>Measuring</strong></th>
<th><strong>Accessing</strong></th>
<th><strong>CARE DELIVERY</strong></th>
<th><strong>Monitoring/Preventing</strong></th>
<th><strong>Diagnosing</strong></th>
<th><strong>Preparing</strong></th>
<th><strong>Intervening</strong></th>
<th><strong>Recovering/Rehabbing</strong></th>
<th><strong>Monitoring/Managing</strong></th>
</tr>
</thead>
<tbody>
<tr>
<td>Importance of exercise, weight reduction, proper nutrition</td>
<td>• Joint-specific symptoms and function (e.g., WOMAC scale)</td>
<td>• PCP office</td>
<td>• Monitor</td>
<td>• Imaging and</td>
<td>• Overall prep</td>
<td>• Anesthesia</td>
<td>• Surgical procedure</td>
<td>• Monitor</td>
<td>Consult regularly with patient</td>
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<tr>
<td>• Prognosis (short- and long-term outcomes)</td>
<td>• Overall health (e.g., SF-12 scale)</td>
<td>• Health club</td>
<td>• Prevent</td>
<td>• Imaging &amp;</td>
<td>• Surgical prep</td>
<td>• Administer anesthesia (general, epidural, or regional)</td>
<td>• Determine approach (e.g., minimally invasive)</td>
<td>• Monitor coagulation</td>
<td>Prescribe prophylactic antibiotics when needed</td>
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<tr>
<td>• Drawbacks and benefits of surgery</td>
<td>• Joint-specific symptoms and function (e.g., WOMAC score)</td>
<td>• Physical therapy clinic</td>
<td>• Prevent</td>
<td>• Evaluation</td>
<td>• Overall prep</td>
<td>• Monitor</td>
<td>• Insert device</td>
<td>• Monitor</td>
<td>Set long-term exercise plan</td>
</tr>
<tr>
<td>• Setting expectations</td>
<td>• Baseline health status</td>
<td>• Pre-op evaluation center</td>
<td>• Prevent</td>
<td>• Imaging</td>
<td>• Overall prep</td>
<td>• Monitor</td>
<td>• Run blood tests</td>
<td>• Monitor</td>
<td>Revise joint, if necessary</td>
</tr>
<tr>
<td>• Importance of nutrition, weight loss, vaccinations</td>
<td>• Fitness for surgery (e.g., ASA score)</td>
<td>• Operating room</td>
<td>• Prevent</td>
<td>• Physical therapy</td>
<td>• Overall prep</td>
<td>• Monitor</td>
<td>• Conduct pre-op physical exam</td>
<td>• Monitor</td>
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<tr>
<td>• Home preparation</td>
<td>• Blood loss</td>
<td>• Recovery room</td>
<td>• Prevent</td>
<td>• Physical therapy/clinic</td>
<td>• Overall prep</td>
<td>• Monitor</td>
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<td>• Monitor</td>
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<tr>
<td>• Importance of rehab</td>
<td>• Operative time</td>
<td>• Orthopedic floor at hospital or specialty surgery center</td>
<td>• Prevent</td>
<td>• Home</td>
<td>• Overall prep</td>
<td>• Monitor</td>
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<td>• Post-surgery risk factors</td>
<td>• Complications</td>
<td>• Nursing facility</td>
<td>• Prevent</td>
<td>• Home</td>
<td>• Overall prep</td>
<td>• Monitor</td>
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<td>• Importance of rehab adherence</td>
<td>• Infections</td>
<td>• Rehab facility</td>
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<td>• Home</td>
<td>• Overall prep</td>
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<tr>
<td>• Longitudinal care plan</td>
<td>• Joint-specific symptoms and function</td>
<td>• Physical therapy clinic</td>
<td>• Prevent</td>
<td>• Home</td>
<td>• Overall prep</td>
<td>• Monitor</td>
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<td>• Monitor</td>
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<tr>
<td>• Importance of exercise, maintaining healthy weight</td>
<td>• Inpatient length of stay</td>
<td>• Home</td>
<td>• Prevent</td>
<td></td>
<td></td>
<td>• Monitor</td>
<td>• Ability to return to normal activities</td>
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<td>• Overall health</td>
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The Playbook for Integrated Practice Units (IPUs)

1. Organized around a medical condition, or group of closely related conditions over the full cycle of care.
   - Defined patient segments for primary care
2. Care includes common co-occurring conditions and complications
3. Care is delivered by a dedicated, multidisciplinary team devoting a significant portion of their time to the condition
   - IPUs can involve affiliated staff and integration with partner services
4. Co-located in dedicated facilities. A hub and spoke structure connecting multiple or affiliated sites, incorporating telemedicine where appropriate
5. Optimize the location of care across services
6. Patient education, engagement, adherence, follow-up, and prevention are integrated into the care process
7. A physician team captain, clinical care manager or both oversees each patient’s care
8. IPUs have a clear clinical leader, a common scheduling and intake process, and unified financial structure (single P + L)
9. IPUs routinely measure outcomes, costs, care processes, and patient experience using a common platform, and accept joint accountability for results
10. The team regularly meets formally and informally to discuss individual patient care plans, process improvements, and how to improve results
# Mechanisms for Care Integration

## The Software of IPUs

### Design
- IPU **leadership** team
- Co-location and **shared** work areas
- Patient **team captain**
- Integrated clinician **scheduling**
- Care **coordinators/managers liaisons**
- Recruit **trainees** who embrace the model

### Care Processes
- Process **mapping/protocols**
  - Including **location** for specific services
- **Handoffs/rituals**
- Clear **timelines**
- Multidisciplinary **rounds**
- Repeated relationships with **outside specialists** with condition specific expertise
- Cultural **norms** around collaboration and learning

### Role of Meetings
- **Case management** meetings (agree on treatment plan)
- **Multidisciplinary** rounds
- **Difficult case** reviews
- **Outcomes** reviews and improvement processes
- **Literature** workshops

### Finance and Incentives
- **Single P+L**
- Compensation reflecting team goals on **value**, not volume
IPU Volume Enhances Value

- **More patients** with the same condition
Measure Outcomes for Every Patient
The Quality Measurement Landscape

1. **Patient Initial Conditions, Risk Factors**
   - Protocols/Guidelines

2. **Processes**
   - Protocols/Guidelines
   - E.g., Staff certification, facilities standards

3. **Structure**
   - E.g., PSA, Gleason score, surgical margin

4. **Indicators**
   - E.g., PSA, Gleason score, surgical margin

5. **Outcomes**
Principles of Outcome Measurement

• Outcomes should be measured by **condition** (including related conditions) or **primary care segment**
  – **Not** for specialties, procedures, or interventions

• Outcomes are **always multi-dimensional** and include what matters most to **patients**, not just to clinicians
  – **Patient reported outcomes** are important in every condition

• Outcomes cover the **full cycle of care**

• Outcome measurement includes **initial conditions/risk factors** to control for patient differences

• Outcomes must be **standardized** for each condition to maximize comparison, learning, and improvement

• Outcomes should be measured in the **line of care**

• Value-based principles differ from the **historical focus** on measuring **provider behavior** versus **overall patient success**
The Outcome Measures Hierarchy

Tier 1
Health Status Achieved or Retained
Survival
- Achieved clinical status
- Achieved functional status

Degree of health/recovery

Tier 2
Time to recovery and return to normal activities
- Time to diagnosis and treatment
- Time to return home
- Time to return to normal activities

Process of Recovery
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)
- Care-related pain/discomfort
- Complications
- Re-intervention/readmission

Tier 3
Sustainability of health/recovery and nature of recurrences
- Long-term clinical status
- Long-term functional status

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

Source: NEJM Dec 2010
Adult Kidney Transplant Outcomes

1987 - 1989


Number of centers: 219
Number of transplants: 19,588
1 Year Graft Survival: 79.6%

- 16 Greater than expected graft survival (7%)
- 20 Worse than expected graft survival (10%)
Adult Kidney Transplant Outcomes
2011 - 2013

Number of programs included: 209
Number of transplants: 38,370
1 Year Graft Survival: 94.7%

4 Greater than expected graft survival (1.9%)
5 Worse than expected graft survival (2.4%)
**Standardizing Outcome Sets**

**ICHOM Standard Sets**

**Standard Sets Complete (2013)**
1. Localized Prostate Cancer *
2. Lower Back Pain *
3. Coronary Artery Disease *
4. Cataracts *

**Standard Sets Complete (2014)**
5. Parkinson's Disease *
6. Cleft Lip and Palate *
7. Stroke *
8. Hip and Knee Osteoarthritis *
9. Macular Degeneration *
10. Lung Cancer *
11. Depression and Anxiety *
12. Advanced Prostate Cancer *

**Standard Sets Complete (2015-16)**
13. Breast Cancer *
14. Dementia
15. Frail Elderly
16. Heart Failure
17. Pregnancy and Childbirth
18. Colorectal Cancer *
19. Overactive Bladder
20. Craniofacial Microsomia
21. Inflammatory Bowel Disease

**Standard Sets Complete (2017-18)**
22. Chronic Kidney Disease *
23. Congenital Upper Limb Malformations
24. Pediatric Facial Palsy
25. Inflammatory Arthritis *
26. Hypertension
27. Oral Health

**Committed/In Process**
28. Diabetes
29. Atrial Fibrillation
30. Overall Adult Health
31. Pediatric Health
32. Hand and Wrist
33. Neonates
34. Head and Neck Cancer
35. Congenital Heart Disease
36. Mental Health in Children and Young People

* Published Thus Far in Peer-Reviewed Journals (16)
Measure Cost for Every Patient

Principles

• Cost is the **actual expense** of patient care, not the **sum of charges** billed or collected

• Properly measuring the cost of care requires **different cost accounting** methods than prevailing approaches such as departmental, charge-based, or RVU-based costing

• Cost should be measured for **each patient** over the **full cycle of care for the condition**

• Cost is driven by the use of **the resources** involved in a patient’s care (personnel, facilities, supplies, and support services)
  – Time and actual **costs**, not arbitrary allocations

• Understanding costs requires **mapping the care process**

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

**Intake**
- Nurse, Receptionist
- Verify patient information; complete consent forms PAS
- 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
- Discuss plan of care MD
- Perform laryngoscopy MD, MA, PSC

**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
- Schedule tests and consults; communicate schedule to patient PSC

**Plan of Care Scheduling**
- Patient Service Coordinator
- Scheduled for same day? PSC
- Enter next process

Decision Point
Time (minutes)

Source: HBS, MD Anderson Cancer Center
Major Cost Reduction Opportunities in Health Care

• Utilize physicians and skilled staff at the top of their licenses
• Eliminate low- or non-value added services or tests
• Reduce process variation that increases complexity and raises cost
• **Reduce cycle times** across the care cycle, which expands capacity with the same staff and facilities
• Invest in additional services or higher costs inputs that will **lower overall care cycle cost**
• Move uncomplicated services **out of highly-resourced** facilities
• Reduce service duplication and volume fragmentation across sites
• Rationalize redundant administrative and scheduling units
• Increase cost awareness in clinical teams
• Decrease the cost of claims management and billing processes

• Our work reveals typical **cost reduction opportunities of 30+%**
• Many cost improvements also **improve outcomes**
Move to Value-Based Payment Models

Volume

- Fee for Service
- Global Budgets

Value

- Capitation/Population Based Payments
  - Pay for care for a life
- Bundled Payment
  - Pay for care for conditions (acute, chronic) and primary care segments

- Both approaches create positive incentives for reducing costs and separate payment from performing particular services
- Capitation at the hospital or system level can coexist with bundle payment at the condition level
### Emerging Value-Based Payment Models

<table>
<thead>
<tr>
<th>Capitation (Population-Based)</th>
<th>Bundled Payment</th>
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<tbody>
<tr>
<td>- A single risk-adjusted payment for the overall care for a <strong>life</strong></td>
<td>- A single risk adjusted payment for the overall care for a <strong>condition</strong></td>
</tr>
<tr>
<td>- Responsible for <strong>all needed care</strong> in the covered population</td>
<td>- Not for a specialty, procedure, or short episode</td>
</tr>
<tr>
<td>- Accountable for <strong>population level quality metrics</strong></td>
<td>- Covers the <strong>full set</strong> of services needed <strong>over an acute care cycle</strong>, or a <strong>defined time period</strong> for chronic care or primary care</td>
</tr>
<tr>
<td>- At risk for the difference between the <strong>sum of payments</strong> for the population and <strong>overall spending</strong></td>
<td>- Contingent on <strong>condition-specific outcomes</strong></td>
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<td></td>
<td>- Including responsibility for avoidable <strong>complications</strong></td>
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<td></td>
<td>- <strong>At risk for the difference between the bundled price and the actual cost</strong> of all included services</td>
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<td>- <strong>Limits of responsibility</strong> for unrelated care and outliers</td>
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<tr>
<td></td>
<td>- <strong>Accountable for costs and outcomes, patient by patient, and condition by condition</strong></td>
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</tbody>
</table>

**Notes:**
- Providers take **disease incidence risk**, not just **execution/outlier risk**
- Accountable for **overall cost** and **population level quality measures**
Integrate Multi-site Care
Children’s Hospital of Philadelphia Care Network

**Wholly-Owned Outpatient Units**
- Primary Care Practices
- Specialty Care Centers
- Specialty Care Center, Surgery Center & After-Hours Urgent Care
- Specialty Care & Surgery Centers
- Specialty Care Center, Surgery Center, After-Hours Urgent Care & Home Care

**Community Inpatient Partnerships**
- CHOP Newborn Care
- CHOP Pediatric Care
- CHOP Newborn & Pediatric Care
- Hospital & Integrated Specialty Program
Shifting The Strategic Logic of Health Systems

Confederation of Standalone Units/Facilities

- Increase **volume**
- More clout in **contracting** and **purchasing**
- **Spread** “fixed overhead” costs
- Use **owned or affiliated** primary care practices to “**guarantee**” referrals

Clinically Integrated Care Delivery System

- Increase **value**
- Value-based **delivery models**
- **Concentrate**, **allocate**, and **integrate** care across appropriate sites
- The system is **more than** the sum of its parts
Four Levels of Provider System Integration

1. Defining the overall scope of services for each site and for the system as a whole, based on value
   - Affiliate when this creates value

2. Concentrate volume of patients by condition in fewer locations to support IPUs and improve outcomes and efficiency

3. Perform the right services in the right locations based on acuity level, resource/cost fit, and the benefits of patient convenience for repetitive services
   - E.g., move less complex surgeries out of tertiary hospitals to lower acuity facilities and outpatient surgery centers
   - Affiliate when this creates value

4. Integrate the care cycle across sites via an IPU structure
   - Common scheduling
   - Digital services and telemedicine can help tie together the care cycle
The Geography of Care and Value

• The Traditional Care Geography Model
  - Care organized around specialties and interventions for each site
  - Duplication of services across sites/facilities (community and AMCs)
  - Sites provide care for multiple acuity levels
  - Limited integration of care across services and sites (multiple hubs)
  - Reinforced by fee-for-service model and siloed IT systems

• Geography and Value: Strategic Principles
  - Organize care by condition in IPUs (hubs)
    - Multi-disciplinary teams
    - Responsibility for full care cycle
  - Allocate services across the care cycle to sites based on care complexity, patient risk, and patient convenience
  - Integrate telemedicine, affiliation with independent provider sites, and home services into the care cycle
  - The IPU builds systems for teams to direct patients to the most appropriate site
Delivering the Right Care at the Right Location
Rothman Institute, Philadelphia

Facility Capability
- Lowest Complexity
- Low Complexity
- Medium Complexity
- Highest Complexity

Price of Total Hip Replacement:
- Ambulatory Surgery Center: ~$12,000 USD
- Rothman Orthopaedic Specialty Hospital: ~$45,000 USD

Patient Risk Factors: Age, Weight, Expected Activity, General Health, and Bone Quality
Build an Enabling IT Platform
Attributes of a Value-Based IT Platform

1. Combines all types of data for each patient across the full care cycle (notes, lab tests, genomics, imaging, costs) using standard definitions and terminology

2. Tools to capture, store, and extract structured data and eliminate free text

3. Data is captured in the clinical and administrative workflow

4. Data is stored and easily extractable from a common warehouse. Capability to aggregate, extract, run analytics and display data by condition and over time

5. Full interoperability allowing data sharing within and across networks, EMR platforms, referring clinicians, and health plans

6. Platform is structured to enable the capture and aggregation of outcomes, costing parameters, and bundled payment eligibility/billing

7. Leverages mobile technology for scheduling, PROMs collection, secure patient communication and monitoring, virtual visits, access to clinical notes, and patient education
A Mutually Reinforcing Strategic Agenda

1. Organize into Integrated Practice Units (IPUs)

2. Measure Outcomes and Cost For Every Patient

3. Move to Bundled Payments for Care Cycles

4. Integrate Care Delivery Systems

5. Expand Geographic Reach

6. Build an Integrated Information Technology Platform
Value-Based Health Care is Rapidly Diffusing
Peer Reviewed Literature 1990-2018

From: Science Direct; accessed December 2018, Patrick Clapp, Baker Research Services, Harvard Business School
The Health Care Transformation is Well Underway

• We **know the path** forward

• **Value for patients** is True North

• **Value based thinking** is restructuring care organization, outcome measurement, payment models and **health system strategy** across multiple countries

• **Standardized outcome measurement** and new **costing practices** are beginning to accelerate value improvement

• **Employers, suppliers, and insurers** can be the next accelerators

• **Government policy** is beginning to reinforce value improvement

• We are anxious to **work with all** of you in accelerating this transformation
Selected References on Value-Based Health Care

Value-based Health Care

Integrated Practice Units and Primary Care

Outcome Measurement

Cost Measurement

Reimbursement

Regional and National Expansion

Information Technology

Websites