Value-Based Health Care Delivery:
The Agenda for Surgery

Professor Michael E. Porter
American College of Surgeons’ Clinical Congress

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Boston, MA
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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.
Disclosure

Michael Porter

I have a relevant financial relationship with the following companies:

<table>
<thead>
<tr>
<th>Company</th>
<th>Role</th>
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<tbody>
<tr>
<td>Vanderbilt University Medical Center</td>
<td>Advisor</td>
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<td>Allscripts</td>
<td>Advisor</td>
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<tr>
<td>AZTherapies</td>
<td>Advisor, Investor</td>
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<tr>
<td>Ascent Biomedical Ventures</td>
<td>Investor</td>
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<td>Biopharma Credit Investments</td>
<td>Investor</td>
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<td>Advanced Aesthetic Tech.</td>
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<td>Merck &amp; Co.</td>
<td>Investor</td>
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<td>Merrimack Pharmaceuticals</td>
<td>Investor, Former Board Member</td>
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<tr>
<td>Molina Healthcare</td>
<td>Investor</td>
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<tr>
<td>Royalty Pharma</td>
<td>Investor</td>
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<tr>
<td>Thermo Fisher Scientific</td>
<td>Investor</td>
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</table>
The Health Care Problem Remains a Global Issue

Health Care Spending vs GDP and Income


Notes: All indexes based on local currencies; Income = Personal Disposable Income

Source: WHO, EIU (May 2017), BCG analysis
Issues Facing Surgeons Today

• The **role of surgeons** in future health care delivery
• The **implication** for surgeons of a cost-sensitive world
• How to **measure quality** and **performance** in surgery
• Where surgery fits in **new reimbursement models**
• How to address administrative burdens and **burnout**
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
- Programs to address high cost areas (e.g. readmissions, post acute)
- Mergers and consolidation
- IBM Watson
- Personalized medicine

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

• The fundamental **goal and purpose** of health care is to improve **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 **definition of success**

• Value is the only goal that can **unite the interests** of all system participants

• Improving value is the **only real solution**

• The question is how to design a health care delivery system that **substantially improves patient 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 population

- Value is created in caring for a patient’s **medical condition** (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 proper 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. Expand or affiliate across geography to reinforce excellence

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

Head & Neck Cancer Care at MD Anderson

Existing Model:
Organize by Specialty and Discrete Service

New Model:
Organize into Integrated Practice Units (IPUs) Around Conditions

Source: Porter, Michael E., Jain, Sachin, The University of Texas MD Anderson Cancer Center: Interdisciplinary Cancer Care. February 26, 2013.
### Integrating Over The Cycle of Care
#### Acute Hip and Knee-Osteoarthritis

<table>
<thead>
<tr>
<th>INFORMING AND ENGAGING</th>
<th>MEASURING</th>
<th>ACCESSING</th>
<th>MONITORING/PREVENTING</th>
<th>DIAGNOSING</th>
<th>PREPARING</th>
<th>INTERVENING</th>
<th>RECOVERING/REHABBING</th>
<th>MONITORING/ MANAGING</th>
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<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>• Imaging facility</td>
<td>• IMAGING</td>
<td>• OVERALL PREP</td>
<td>• ANESTHESIA</td>
<td>• SURGICAL</td>
<td>• MONITOR</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>• Pre-op evaluation center</td>
<td>• Perform and evaluate MRI and x-ray</td>
<td>• Conduct home assessment</td>
<td>• Administer anesthesia (general, epidural, or regional)</td>
<td>• Immediate return to OR for manipulation, if necessary</td>
<td>• Consult regularly with patient</td>
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<tr>
<td>• Drawbacks and benefits of surgery</td>
<td></td>
<td>• Physical therapy clinic</td>
<td>• Assess cartilage loss</td>
<td>• Assess bone alterations</td>
<td>• Monitor weight loss</td>
<td></td>
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<td>• Manage prophylactic antibiotics when needed</td>
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<tr>
<td>• Setting expectations</td>
<td></td>
<td></td>
<td>• Review history and imaging</td>
<td>• Perform cardiology, pulmonary evaluations</td>
<td></td>
<td></td>
<td></td>
<td>• Set long-term exercise plan</td>
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<tr>
<td>• Importance of nutrition, weight loss, vaccinations</td>
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<td>• Perform physical exam</td>
<td>• Run blood labs</td>
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<td>• Home preparation</td>
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<td>• Recommend treatment plan (surgery or other options)</td>
<td>• Conduct pre-op physical exam</td>
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<tr>
<td>• Expectations for recovery</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>• PAIN MANAGEMENT</td>
<td>• Prescribe preemptive multimodal pain meds</td>
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<td>• Importance of rehab</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>• SURGICAL PROCEDURE</td>
<td>• Determine approach (e.g., minimally invasive)</td>
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<td>• Post-surgery risk factors</td>
<td></td>
<td></td>
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<td></td>
<td>• Insert device</td>
<td>• Cement joint</td>
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<tr>
<td>• Importance of rehab adherence</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>• MEDICAL</td>
<td>• Monitor coagulation</td>
<td></td>
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<td>• Longitudinal care plan</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>• LIVING</td>
<td>• Provide daily living support (showering, dressing)</td>
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<td></td>
<td></td>
<td>• PHYSICAL THERAPY</td>
<td>• Track risk indicators (fever, swelling, other)</td>
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<td>• Daily or twice daily PT sessions</td>
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The Playbook for Integrated Practice Units (IPUs)

1. Organized around a **medical condition**, or **group of closely related conditions**.
   - Defined patient segments for primary care

2. Care is delivered by a **dedicated, multidisciplinary team** devoting a significant portion of their time to the condition
   - In-house staff and affiliated staff with strong working relationships

3. **Co-located in dedicated facilities.** A **hub and spoke** structure connecting multiple or affiliated sites, incorporating telemedicine where appropriate

4. Takes responsibility for the **full cycle of care**

5. **Patient education, engagement, adherence, follow-up, and prevention** are integrated into the care process

6. The unit has a clear **clinical leader**, a common **scheduling and intake process**, and unified **financial structure** (single P + L)

7. A **physician team captain, clinical care manager** or both oversees each patient’s care

8. The IPU **routinely measures** outcomes, costs, care processes, and patient experience using a **common platform**

9. The team **accepts joint accountability** for outcomes and costs

10. The team **regularly meets formally and informally** to discuss individual patient care plans, process improvements, and how to improve results
Volume Matters for IPUs and Value

- **More patients** with the same condition enables higher value

**The Virtuous Circle of Value**

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

- Focuses on low-income older adults living in under-served urban communities
  - Four severity tiers
- Multidisciplinary team covering the full care cycle: physicians, PAs, NPs, RNs, medical assistants, scribes, care managers, social workers, clinical informatics specialists, and others
- Co-located in dedicated facilities. 40 sites across the Midwest
- Explicit processes to engage patients and reduce obstacles to accessing care such as free rides/home-visits, in-house pharmacy and selected events for community residents
- Selected in-house specialty services such as behavioral health and podiatry. Close relationships with outside specialists selected based on outcomes, cost and ability to work with integrated model
- Meet daily and weekly to discuss patient care plans and process improvement
- Measure and accountable for outcomes, cost, and patient experience
- Single full-risk value-based payment covering overall care
  - Includes specialty and post-acute care
Measure Outcomes for Every Patient
The Quality Measurement Landscape

- **Patient Initial Conditions, Risk Factors**
  - Protocols/Guidelines
  - Structure
    - E.g., Staff certification, facilities standards

- **Processes**
  - Protocols/Guidelines

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

- **Outcomes**
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

• Achieved clinical status
• Achieved functional status

• Time to diagnosis and treatment
• Time to return home
• Time to return to normal activities

• Care-related pain/discomfort
• Complications
• Re-intervention/readmission

• Long-term clinical status
• Long-term functional status
Measuring Multiple Outcomes
Prostate Cancer Care in Germany

- 5 year disease specific survival
  - Average hospital: 94%
  - Best hospital: 95%

Source: ICHOM

Severe erectile dysfunction after one year
Incontinence after one year
Measuring Multiple Outcomes
Prostate Cancer Care in Germany

- 5 year disease specific survival
  - Average hospital: 75.5%
  - Best hospital: 95%
- Severe erectile dysfunction after one year
  - Average hospital: 17.4%
  - Best hospital: 94%
- Incontinence after one year
  - Average hospital: 43.3%
  - Best hospital: 9.2%

Source: ICHOM
# Standardizing Minimum Outcome Sets

**ICHOM Standard Sets**

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<tr>
<td></td>
<td></td>
<td>21. Inflammatory Bowel Disease</td>
<td></td>
<td>35. Congenital Heart Disease</td>
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* Published Thus Far in Peer-Reviewed Journals (14)
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**, or by **primary care segment**

• Cost is driven by the use of **all 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

- Check-in patient; communicate arrival RCPT
- Verify patient information; complete consent forms PAS

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
- Discuss plan of care MD

Plan of Care Discussion
RN/LVN, MD, mid-level provider, patient service coordinator

- Review plan of care; introduce taxing; review schedule for return visit RN

Plan of Care Scheduling
Patient Service Coordinator

- Schedule tests and consults; communicate schedule to patient PSC

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
- 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 cost of **claims management** and **billing** processes

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

## Capitation (Population-Based)
- A single risk-adjusted payment for the overall care for a **life**
- Responsible for **all needed care** in the covered population
- Accountable for **population level quality metrics**
- At risk for the difference between the **sum of payments** for the population and **overall spending**
  - Providers take **disease incidence risk**, not just **execution/outlier risk**
- Accountable for **overall cost** and **population level quality measures**

## Bundled Payment
- A single risk adjusted payment for the overall care for a **condition**
  - **Not** for a specialty, procedure, or short episode
- Covers the **full set** of services needed **over an acute care cycle**, or a **defined time period** for chronic care or primary care
- Contingent on **condition-specific outcomes**
  - Including responsibility for avoidable complications
- At risk for the difference between the **bundled price** and the **actual cost** of all included services
  - **Limits of responsibility** for unrelated care and outliers
- Accountable for costs and outcomes, **patient by patient**, and **condition by condition**
Walmart Centers of Excellence Programs

Conditions:
- Cardiac
- Cancer
- Joint replacement
- Spine
- Transplant
- Weight loss

Partnerships:
- Cleveland Clinic (OH)
- Geisinger (PA)
- Kaiser Permanente (CA)
- Johns Hopkins (MD)
- Mayo Clinic (MN)
- Memorial Hermann (TX)
- Northeast Baptist (TX)
- Virginia Mason (WA)
- Emory (GA)

Source: Compiled from news.Walmart.com and through publicly available news and press releases.
Four Levels of Provider System Integration

1. Defining the **overall scope of services** for each site, and for the facility/system as a whole, where it can deliver **high 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 fit, and the benefits of patient convenience for repetitive services
   - E.g., move **less complex surgeries** out of tertiary hospitals to smaller facilities and outpatient surgery centers

4. Integrate the care cycle **across sites** via an **IPU structure**
   - Common **scheduling**
   - **Digital services** and **telemedicine** can help tie together the care cycle
Delivering the Right Care at the Right Location
Rothman Institute, Philadelphia

Patient Risk Factors: Age, Weight, Expected Activity, General Health, and Bone Quality

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

Price of Total Hip Replacement:
- Ambulatory Surgery Center: ~$12,000 USD
- Rothman Orthopaedic Specialty Hospital
- Bryn Mawr Community Hospital: ~$45,000 USD
- Jefferson University Academic Medical Center
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
How Can Surgeons Create Value?

1. Think **beyond the operating room**
   - Move away from surgical silos and partner with caregivers in preventative care, perioperative care, rehabilitation, short-term follow up, surveillance

2. Institute universal **outcome measurement** and **public reporting** to drive improvement and demonstrate high value care

3. Utilize **time-driven activity-based costing** methodology covering the **full cycle of care** to demonstrate overall impact on efficiency and value

4. Actively engage in **bundled payments** with employers, government payers and private payers advocate for broader implementation

5. **Reorganize care within a region** to optimize resources
   - Aggregate volume by condition in fewer sites
   - E.g. lower acuity surgery in community hospital settings, higher acuity/complexity surgery in tertiary care hospitals
Shifting to a Value-Based Mindset

- Technician → Condition Expert
- Solo Actor → Hold a Key Role in the IPU Team
- Focus on Safety → Influence Multiple Patient Outcomes
- Maintain Volume Across Many Procedures → Become Expert in a Few Conditions
- Control Cost of a Specific Procedure → Reduce Cost Over the Complete Care Cycle
- Drive Volume of Services → Get Paid for High-Value Care
- Commodity Player → Deliver Distinctive Value
Expanding the Role of Surgeons in the Care Cycle
Thinking Beyond the Operating Room

**Prevention & Detection**
- Work with primary care to prevent progression of disease
- Advise primary care on accurate diagnoses and timely referral

**Medical Management**
- Partner with medical specialists to manage complex cases and the ongoing evaluation of need for surgery
- Develop non-surgical options with other providers

**Preoperative Care**
- Collaborate with primary care, anesthesiologist and applicable specialized to prepare patient for successful surgery
- Be accessible to primary care team for preoperative care questions

**Surgical Intervention**
- Optimize the surgical process

**Postoperative Care**
- Co-develop best practices with post-operative teams
- Ensure seamless transition to post op care

**Rehabilitation**
- Shift post-acute care to appropriate settings (e.g., home, rehab, etc.)
- Extended clinic hours and after-hours hotline
- Educate home health team and PT on best practices

**Surveillance**
- Ongoing monitoring of patients for recurrence
- Measure longer term outcome measurement
Value-Based Care Models are Already Taking Off in Surgery

• Multiple value-based health care models emerging, such as in trauma, bariatric, and cancer care

• Well-established IPU models exists within transplantation
  - Mandated outcome reporting by the National Organ Transplantation Act (NOTA)
  - Multidisciplinary care model became the standard of care
  - Early bundled payment for kidney transplant (UCLA & Kaiser)

  - Rapid dissemination of best practices and scientific breakthroughs
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%)
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%)
The Health Care Transformation is Well Underway

• We **know the path** forward

• **Value for patients** is the True North

• **Value based thinking** is restructuring care organization, outcome measurement, health system strategy, and payment models 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
Course: Selected References on Value-Based Health Care

- Websites Including Videos
  - http://www.isc.hbs.edu/
  - https://www.ichom.org/
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