Value-Based Health Care Delivery

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Creating A High Value Delivery Organization

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

  Value: Patient health outcomes per pound spent

- Delivering high and improving value is the **fundamental purpose** of health care
- Value is the only goal that can **unite the interests** of all system participants

- Improving value is the only real **solution** to reforming health care versus cost cutting, per se **cost shifting** to patients, **restricting services**, or **reducing provider compensation**
Creating a Value-Based Health Care System

- Significant improvement in value will require **fundamental restructuring of health care delivery**, not incremental improvements.
- Today’s delivery approaches reflect a **legacy** of medical science, organizational structures, management practices, patient mobility, and payment models that are obsolete.

Care pathways, process improvements, safety initiatives, care coordinators, focus on frequent flyers, inspections, and other **overlays** to the current structure can be beneficial, but not sufficient.
Principles of Value-Based Health Care Delivery

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

- Value is measured for the **care of a patient’s medical condition** over the full cycle of care
  - Outcomes are the **full set of health results for a patient’s condition** over the care cycle
  - Costs are the **total costs of care for a patient’s condition** over the care cycle
Creating a Value-Based Health Care Delivery System

The Strategic Agenda

1. Organize Care into Integrated Practice Units (IPUs) around Patient Medical Conditions
   - For primary and preventive care, organize to serve distinct patient segments

2. Measure Outcomes and Costs for Every Patient

3. Move to Bundled Payments for Care Cycles

4. Integrate Care Delivery Systems

5. Expand Geographic Reach

6. Build an Enabling Information Technology Platform
1. Organize Care Around Patient Medical Conditions
Migraine Care in Germany

Existing Model:
Organize by Specialty and Discrete Service

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Migraine Care in Germany

Existing Model:
Organize by Specialty and Discrete Service

New Model:
Organize into Integrated Practice Units (IPUs)

### The Care Delivery Value Chain

#### Acute Knee-Osteoarthritis Requiring Replacement

<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>
</tr>
</thead>
<tbody>
<tr>
<td>• Importance of exercise, weight reduction, proper nutrition</td>
<td>• Joint-specific symptoms and function and overall health</td>
<td>• PCP office</td>
<td>• Imaging</td>
<td>• Overall health status</td>
<td>• Operating room</td>
<td>• Medical</td>
<td>• Immediate return to OR for manipulation, if necessary</td>
<td>• Consult regularly with patient</td>
</tr>
<tr>
<td>• Setting expectations and benefits of surgery</td>
<td>• Baseline health status</td>
<td>• Specialty office</td>
<td>• Pre-op evaluation center</td>
<td>• Pre-op physical exam</td>
<td>• Operating room</td>
<td>• Surgical</td>
<td>• Monitor coagulation</td>
<td>• Prescribe prophylactic antibiotics when needed</td>
</tr>
<tr>
<td>• Expectations for recovery and surgical risk factors</td>
<td>• Blood loss</td>
<td>• Specialty office</td>
<td>• Pre-op evaluation center</td>
<td>• Perform cardiology and pulmonary evaluations</td>
<td>• General anesthesia (general, epidural, or regional)</td>
<td>• Living</td>
<td>• Provide daily living support (showering, dressing)</td>
<td>• Set long-term exercise plan</td>
</tr>
<tr>
<td>• Importance of rehab adherence and longitudinal care plan</td>
<td>• Infections and Joint-specific symptoms and function</td>
<td>• Specialty office</td>
<td>• Through cardiology, pulmonary evaluations</td>
<td>• Insert device and Insert cement</td>
<td>• Monitor coagulation</td>
<td>• Physical therapy</td>
<td>• Track risk indicators (fever, swelling, other)</td>
<td>• Revise joint, if necessary</td>
</tr>
<tr>
<td>• Importance of exercise, maintaining healthy weight</td>
<td></td>
<td>• Primary care office</td>
<td></td>
<td></td>
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</tr>
</tbody>
</table>

#### Orthopedic Specialist and Other Provider Entities

- **Orthopedic Specialist**
  - • PCP office
  - • Health club
  - • Physical therapy clinic

- **Other Provider Entities**
  - • Imaging facility
  - • Pre-op evaluation center
  - • Operating room
  - • Recovery room
  - • Orthopedic floor at hospital or specialty surgery center
  - • Nursing facility
  - • Rehab facility
  - • PT clinic
  - • Home

**MONITOR**
- • Conduct PCP exam
- • Refer to specialists, if necessary

**PREVENT**
- • Prescribe anti-inflammatory medicines
- • Recommend exercise regimen
- • Set weight loss targets

**PREP**
- • Perform and evaluate MRI and x-ray
  - • Assess cartilage loss
  - • Assess bone alterations

**CLINICAL EVALUATION**
- • Review history and imaging
- • Perform physical exam
- • Recommend treatment plan (surgery or other options)

**SURGICAL PREP**
- • Perform cardiology, pulmonary evaluations
- • Run blood labs
- • Conduct pre-op physical exam

**PAIN MANAGEMENT**
- • Prescribe preemptive multimodal pain meds

**ANESTHESIA**
- • Administer anesthesia (general, epidural, or regional)

**SURGICAL PROCEDURE**
- • Determine approach (e.g., minimally invasive)
- • Insert device
- • Insert cement joint

**MEDICAL**
- • Monitor coagulation

**LIVING**
- • Provide daily living support (showering, dressing)

**PHYSICAL THERAPY**
- • Daily or twice daily PT sessions

**INFORMING AND ENGAGING**
- • Importance of exercise, weight reduction, proper nutrition
- • Setting expectations and benefits of surgery
- • Expectations for recovery and surgical risk factors
- • Importance of rehab adherence and longitudinal care plan
- • Importance of exercise, maintaining healthy weight

**MEASURING**
- • Joint-specific symptoms and function and overall health
- • Baseline health status
- • Overall health status
- • Operating room
- • Recovery room
- • Orthopedic floor at hospital or specialty surgery center

**ACCESSING**
- • PCP office
- • Health club
- • Physical therapy clinic
- • Imaging facility
- • Pre-op evaluation center
- • Operating room
- • Recovery room
- • Orthopedic floor at hospital or specialty surgery center
- • Nursing facility
- • Rehab facility
- • PT clinic
- • Home

**MONITORING/ PREVENTING**
- • Conduct home assessment
- • Monitor weight loss
- • Conduct home assessment
- • Monitor weight loss
- • Conduct post-operative care
- • Monitor weight loss

**DIAGNOSING**
- • Review history and imaging
- • Perform physical exam
- • Recommend treatment plan (surgery or other options)

**PREPARING**
- • Perform cardiology, pulmonary evaluations
- • Run blood labs
- • Conduct pre-op physical exam

**INTERVENING**
- • Administer anesthesia (general, epidural, or regional)
- • Monitor coagulation
- • Provide daily living support (showering, dressing)
- • Daily or twice daily PT sessions

**RECOVERING/ REHABBING**
- • Immediate return to OR for manipulation, if necessary
- • Monitor coagulation
- • Provide daily living support (showering, dressing)
- • Daily or twice daily PT sessions

**MONITORING/ MANAGING**
- • Consult regularly with patient
- • Prescribe prophylactic antibiotics when needed
- • Set long-term exercise plan
- • Revise joint, if necessary
Integrating Across the Care Cycle
An Orthopedic Surgeon Teaches A Course to Physical Therapists
About Treatment Post-Surgery
What is a Medical Condition?

Specialty Care

- A medical condition is **an interrelated set of patient medical circumstances best addressed in an integrated way**
  - Defined from the patient’s perspective
  - Involving **multiple** specialties and services
  - Including common co-occurring conditions and complications

Examples: diabetes, breast cancer, knee osteoarthritis

Primary/Preventive Care

- The corresponding unit of value creation is **defined patient segments** with similar preventive, diagnostic, and primary treatment needs (e.g. healthy adults, patients with complex chronic conditions, frail elderly)

- The medical condition / patient segment is the proper **unit of value creation and value measurement** in health care delivery

Volume and experience will have an even greater impact on value in an IPU structure than in the current system.
### Role of Volume in Value Creation
#### Fragmentation of Hospital Services in Sweden

<table>
<thead>
<tr>
<th>DRG</th>
<th>Number of admitting providers</th>
<th>Average percent of total national admissions</th>
<th>Average admissions/provider/year</th>
<th>Average admissions/provider/week</th>
</tr>
</thead>
<tbody>
<tr>
<td>Knee Procedure</td>
<td>68</td>
<td>1.5%</td>
<td>55</td>
<td>1</td>
</tr>
<tr>
<td>Diabetes age &gt; 35</td>
<td>80</td>
<td>1.3%</td>
<td>96</td>
<td>2</td>
</tr>
<tr>
<td>Kidney failure</td>
<td>80</td>
<td>1.3%</td>
<td>97</td>
<td>2</td>
</tr>
<tr>
<td>Multiple sclerosis and cerebellar ataxia</td>
<td>78</td>
<td>1.3%</td>
<td>28</td>
<td>1</td>
</tr>
<tr>
<td>Inflammatory bowel disease</td>
<td>73</td>
<td>1.4%</td>
<td>66</td>
<td>1</td>
</tr>
<tr>
<td>Implantation of cardiac pacemaker</td>
<td>51</td>
<td>2.0%</td>
<td>124</td>
<td>2</td>
</tr>
<tr>
<td>Splenectomy age &gt; 17</td>
<td>37</td>
<td>2.6%</td>
<td>3</td>
<td>&lt;1</td>
</tr>
<tr>
<td>Cleft lip &amp; palate repair</td>
<td>7</td>
<td>14.2%</td>
<td>83</td>
<td>2</td>
</tr>
<tr>
<td>Heart transplant</td>
<td>6</td>
<td>16.6%</td>
<td>12</td>
<td>&lt;1</td>
</tr>
</tbody>
</table>

Low Volume Undermines Value
Mortality of Low-birth Weight Infants in Baden-Württemberg, Germany

- Minimum volume standards are an interim step to drive value and service consolidation in the absence of rigorous outcome information.

Source: Hummer et al, Zeitschrift für Geburtshilfe und Neonatologie, 2006; Results duplicated in AOK study: Heller G, Gibt et al.
2. Measure Outcomes and Costs for Every Patient
The Measurement Landscape

- **Patient Initial Conditions**
  - E.g. Staff certification, facilities standards

- **Processes**
  - Protocols/Guidelines

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

- **Patient Experience/Engagement**

- **(Health) Outcomes**
The Outcome Measures Hierarchy

**Tier 1**

- **Health Status**
  - Achieved or Retained
  - **Degree of health/recovery**
    - Achieved clinical status
    - Achieved functional status

**Tier 2**

- **Process of Recovery**
  - **Time to recovery and return to normal activities**
    - Care-related pain/discomfort
    - Complications
    - Reintervention/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
Measuring Multiple Outcomes
Prostate Cancer Care in Germany

5 year disease specific survival

Average hospital: 94%
Best hospital: 95%

Source: ICHOM
Measuring Multiple Outcomes -- Continued
Prostate Cancer Care in Germany

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

Severe erectile dysfunction after one year
- Average hospital: 75.5%
- Best hospital: 17.4%

Incontinence after one year
- Average hospital: 43.3%
- Best hospital: 9.2%

Source: ICHOM
Measuring the Cost of Care Delivery: Principles

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

• Cost should be measured around the **patient**, not just the department or provider organization

• Cost should be aggregated over the **full cycle of care for the patient’s medical condition**

• Cost depends on the **actual use of resources** involved in a patient’s care process (personnel, facilities, supplies)

Major Cost Reduction Opportunities in Health Care

• Reduce **process variation** that lowers efficiency and raises inventory without improving outcomes

• Eliminate **low-** or **non-value added** services or tests
  – Sometimes driven by protocols or to justify billing

• Rationalize redundant **administrative** and **scheduling** units

• **Improve utilization** of expensive physicians, staff, clinical space, and facilities by reducing duplication and service fragmentation

• Minimize use of **physician and skilled staff** time for less skilled activities

• Reduce the provision of routine or uncomplicated services in **highly-resourced** facilities

• **Reduce cycle times** across the care cycle

• **Optimize total care cycle cost** versus minimizing cost of individual service

• Increase **cost awareness** in clinical teams

• Many cost reduction opportunities will actually **improve outcomes**
3. Move to Bundled Payments for Care Cycles

**Bundled Price**
- A single price covering the **full care cycle for an acute medical condition**
- Time-based reimbursement for overall care of a **chronic condition**
- Time-based reimbursement for **primary/preventive care** for a **defined patient segment**

- Bundle reimbursement for medical conditions
- Global budget
- Global capitation
- Fee for service
Bundled Payment in Practice
Hip and Knee Replacement in Stockholm, Sweden

- Components of the bundle

| - Pre-op evaluation | - All physician and staff fees and 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 | |

- Currently applies to all **relatively healthy patients** (i.e. ASA scores of 1 or 2)
- The same **referral process** from PCPs is utilized as the traditional system
- **Mandatory reporting** by providers to the joint registry plus supplementary reporting
- Applies to **all** qualifying patients. Provider participation is **voluntary**, but all providers are continuing to offer total joint replacements

- The Stockholm bundled price for a knee or hip replacement is about **US $8,000 (4,800GBP)**
4. Integrate Care Delivery Systems
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

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Four Levels of Provider System Integration

1. **Define the overall scope of services** where the provider can achieve high value

2. **Concentrate volume in fewer locations** in the conditions that providers treat

3. Choose the **right location for each service** based on medical condition, acuity level, resource intensity, cost level and need for convenience
   - E.g., shift routine surgeries out of tertiary hospitals to smaller, more specialized facilities

4. **Integrate care across appropriate locations** through IPU structures
5. Expand Geographic Reach

The Cleveland Clinic Affiliate Programs

- Central DuPage Hospital, IL
  Cardiac Surgery

- Chester County Hospital, PA
  Cardiac Surgery

- CLEVELAND CLINIC

- Pikeville Medical Center, KY
  Cardiac Surgery

- St. Vincent Indianapolis, IN
  Kidney Transplant

- Cape Fear Valley Medical Center, NC
  Cardiac Surgery

- McLeod Heart & Vascular Institute, SC
  Cardiac Surgery

- Cleveland Clinic Florida Weston, FL
  Cardiac Surgery

- Rochester General Hospital, NY
  Cardiac Surgery

- Charleston, WV
  Kidney Transplant
6. Build an Enabling Integrated IT Platform

Utilize information technology to enable **restructuring of care delivery** and **measuring results**, rather than treating it as a solution itself.

- Combine **all types of data** (e.g. notes, images) for each patient
- Common **data definitions**
- Data encompasses the **full care cycle**, including care by referring entities
- Allow access and communication among **all involved parties**, including with patients
- **Templates** for medical conditions to enhance the user interface
- “**Structured**” data vs. free text
- Architecture that allows easy extraction of **outcome measures, process measures**, and **activity-based cost measures** for each patient and medical condition
- Interoperability standards enabling communication among **different provider** (and payor) **organizations**
A Mutually Reinforcing Strategic Agenda

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