Future of Healthcare Delivery

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Creating a High Value Delivery Organization

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

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Value: Patient health outcomes per dollar spent
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• 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** versus cost shifting or restricting services
• What does a value-based delivery system **look like**?
• What is the **role of suppliers** in high value care?
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 legacy, medical science, organizational structures, management practices, and payment models that are obsolete.

Care pathways, process improvements, safety initiatives, care coordinators, disease management and other overlays to the current structure are beneficial, but not sufficient.
Principles of Value-Based Health Care Delivery

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

- 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 The Right Kind of Competition

• Patient choice and competition for patients are powerful forces to encourage continuous improvement in value and restructuring of care

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

| Financial success of system participants | ≠ | Patient success |

• Creating positive-sum competition on value for patients is fundamental to health care reform in every country
Creating a Value-Based Health Care Delivery System

The Strategic Agenda

1. Organize Care into Integrated Practice Units (IPUs) around Patient Medical Conditions
   - Organize primary and preventive care 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)

What is a 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 common co-occurring conditions and complications
  **Examples:** diabetes, breast cancer, knee osteoarthritis

- In primary / preventive care, the unit of value creation is defined patient segments with similar preventive, diagnostic, and primary treatment needs (e.g. healthy adults, frail elderly)

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

# 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 (e.g., WOMAC scale)</td>
<td>PCP office</td>
<td>IMAGING</td>
<td>OVERALL PREP</td>
<td>ANESTHESIA</td>
<td>SURGICAL</td>
<td>SURGICAL PROCEDURE</td>
<td>MONITOR</td>
</tr>
<tr>
<td>Prognosis (short- and long-term outcomes)</td>
<td>Change in subchondral bone</td>
<td>Health club</td>
<td>Perform and evaluate MRI and x-ray</td>
<td>Conduct home assessment</td>
<td>Administer anesthesia (general, epidural, or regional)</td>
<td>Determine approach (e.g., minimally invasive)</td>
<td>Monitor coagulation</td>
<td>Consult regularly with patient</td>
</tr>
<tr>
<td>Drawbacks and benefits of surgery</td>
<td>Joint-specific symptoms and function</td>
<td>Physical therapy clinic</td>
<td>Assess cartilage loss</td>
<td>Monitor weight loss</td>
<td>SURGICAL PREP</td>
<td>Insert device</td>
<td>Monitor coagulation</td>
<td>Describe prophylactic antibiotics when needed</td>
</tr>
<tr>
<td>Overall health</td>
<td>Overall health</td>
<td>• Specialty office</td>
<td>Perform imaging</td>
<td>Run blood labs</td>
<td>PAIN MANAGEMENT</td>
<td>Cement joint</td>
<td>Track risk indicators (fever, swelling, other)</td>
<td>• Revise joint, if necessary</td>
</tr>
<tr>
<td>• Specialty office</td>
<td>• Pre-op evaluation center</td>
<td>• Operating room</td>
<td>• Perform cardiology, pulmonary evaluations</td>
<td>• Run blood labs</td>
<td>PHYSICAL THERAPY</td>
<td>Daily or twice daily PT sessions</td>
<td>MEDICAL</td>
<td>• Set long-term exercise plan</td>
</tr>
<tr>
<td>• Imaging facility</td>
<td>• Recovery room</td>
<td>• Orthopedic floor at hospital or specialty surgery center</td>
<td>Conduct pre-op physical exam</td>
<td></td>
<td></td>
<td></td>
<td>LIVING</td>
<td>• Home preparation</td>
</tr>
<tr>
<td>• Specialty office</td>
<td>• Nursing facility</td>
<td>• Rehab facility</td>
<td>• PT clinic</td>
<td></td>
<td></td>
<td></td>
<td>• Ability to return to normal activities</td>
<td></td>
</tr>
<tr>
<td>• Pre-op evaluation center</td>
<td>• Primary care office</td>
<td>• Health club</td>
<td></td>
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<td></td>
<td></td>
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</tr>
<tr>
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<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>• Weight gain or loss</td>
<td></td>
</tr>
</tbody>
</table>

## MONITOR
- Conduct PCP exam
- Refer to specialists, if necessary

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

## INTERVENING
- Administer anesthesia (general, epidural, or regional)
- Insert device
- Cement joint
- Prescribe preemptive multimodal pain meds

## RECOVERING/ REHABBING
- Immediate return to OR for manipulation, if necessary
- Monitor coagulation
- Provide daily living support (showering, dressing)
- Track risk indicators (fever, swelling, other)

## CARE DELIVERY
- Monitor regularly with patient
- Describe prophylactic antibiotics when needed
- Set long-term exercise plan
- Revise joint, if necessary

## ACCESSING
- PCP office
- Health club
- Physical therapy clinic

## MEASURING
- Loss of cartilage
- Baseline health status
- Blood loss
- Infections

## INFORMING AND ENGAGING
- Importance of exercise, weight reduction, proper nutrition
- Joint-specific symptoms and function (e.g., WOMAC scale)
- Overall health (e.g., SF-12 scale)

## DIAGNOSING
- Assess cartilage loss
- Fitness for surgery (e.g., ASA score)
- Operative time
- Joint-specific symptoms and function

## PREPARING
- Conduct home assessment
- Monitor weight loss
- Insert device
- Cement joint

## INTERVENING
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## INFORMING AND ENGAGING
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Attributes of an Integrated Practice Unit (IPU)

1. Organized around a medical condition or set of closely related conditions (or around defined patient segments for primary care)
2. Care is delivered by a dedicated, multidisciplinary team who devote a significant portion of their time to the medical condition
3. Providers see themselves as part of a common organizational unit
4. The team takes responsibility for the full cycle of care for the condition
   - Encompassing outpatient, inpatient, and rehabilitative care, as well as supporting services (such as nutrition, social work, and behavioral health)
5. Patient education, engagement, and follow-up are integrated into care
6. The unit has a single administrative and scheduling structure
7. To a large extent, care is co-located in dedicated facilities
8. A physician team captain or a clinical care manager (or both) oversees each patient’s care process
9. The team measures outcomes, costs, and processes for each patient using a common measurement platform
10. The providers on the team meet formally and informally on a regular basis to discuss patients, processes, and results
11. Joint accountability is accepted for outcomes and costs
The 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>

2. Measure Outcomes and Costs for Every Patient
The Measurement Landscape

- Patient Initial Conditions
- Processes
  - Protocols/Guidelines
- Indicators
  - E.g. PSA, Gleason score, surgical margin
- (Health) Outcomes
  - E.g. Staff certification, facilities standards

Patient Experience/Engagement
The Outcome Measures Hierarchy

Tier 1: Survival
- Degree of health/recovery

Tier 2: Time to recovery and 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)

Tier 3: Sustainability of health/recovery and nature of recurrences
- Sustainability of Health
  - Long-term consequences of therapy (e.g., care-induced illnesses)

Source: NEJM Dec 2010

- Achieved clinical status
- Achieved functional status
- Care-related pain/discomfort
- Complications
- Reintervention/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
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
Adult Kidney Transplant Outcomes
U.S. Centers, 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, 2008-2010

Number of programs included: 236
Number of transplants: 38,535
1-year graft survival: 93.55%

- 8 greater than expected graft survival (3.4%)
- 14 worse than expected graft survival (5.9%)
Measuring the Cost of Care Delivery: Principles

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

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

• 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)
  
  – The **time** devoted to each patient by these resources
  
  – The **capacity cost** of each resource
  
  – The **support costs** required for each patient-facing resource

Mapping Resource Utilization
MD Anderson Cancer Center – New Patient Visit

Registration and Verification
- Receptionist, Patient Access Specialist, Interpreter

Intake
- Nurse, Receptionist

Clinician Visit
- MD, mid-level provider, medical assistant, patient service coordinator, RN

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

Plan of Care Scheduling
- Patient Service Coordinator

Decision Point

Time (minutes)
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, inventory, and equipment 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. Reimburse through Bundled Prices for Care Cycles

Fee for service

Global budgeting

Bundled reimbursement for medical conditions

Global capitation
Bundled Payment in Practice
Hip and Knee Replacement in Stockholm, Sweden

- **Components** of the bundle

<table>
<thead>
<tr>
<th>Pre-op evaluation</th>
<th>All physician and staff fees and costs</th>
</tr>
</thead>
<tbody>
<tr>
<td>Lab tests</td>
<td>1 follow-up visit within 3 months</td>
</tr>
<tr>
<td>Radiology</td>
<td>Any additional surgery to the joint</td>
</tr>
<tr>
<td>Surgery &amp; related admissions</td>
<td>within 2 years</td>
</tr>
<tr>
<td>Prosthesis</td>
<td>If post-op infection requiring</td>
</tr>
<tr>
<td>Drugs</td>
<td>antibiotics occurs, guarantee extends</td>
</tr>
<tr>
<td>Inpatient rehab, up to 6 days</td>
<td>to 5 years</td>
</tr>
</tbody>
</table>

- 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**
• Under bundled payment, volumes shifted from full-service hospitals to specialized orthopedic hospitals
• Interviews with specialized providers revealed the following delivery innovations:
  – Explicit care pathways
  – Standardized treatment processes
  – Checklists
  – New post-discharge visit to check wound healing
  – More patient education
  – More training and specialization of staff
  – Increased procedures per day
  – Decreased length of stay
4. Integrating Care Delivery Across Separate Facilities
Children’s Hospital of Philadelphia Care Network

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
Four Levels of Provider System Integration

1. **Define 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 locations through an IPU structure**
5. Expand Geographic Reach
The Cleveland Clinic Affiliate Programs

- Central DuPage Hospital, IL
  Cardiac Surgery
- Chester County Hospital, PA
  Cardiac Surgery
- Pikeville Medical Center, KY
  Cardiac Surgery
- 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
- St. Vincent Indianapolis, IN
  Kidney Transplant
- Charleston, WV
  Kidney Transplant
6. Build 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
- 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 Enabling Information Technology Platform
Why We Are Stuck
Legacy System

1. Organized around specialties and departments, with private-practice physicians

2. Measures process compliance and charges

3. Fee-for-service payments based on volume of services delivered

4. Each hospital or practice offers a full line of services

5. Providers limited to serving their immediate geographic area

6. Build an Enabling IT Platform
Getting Unstuck

**Legacy System**

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Moving to a High-Value Health Care System

1. Make **patient value** the central goal of all reforms

2. Move towards reorganizing care into **Integrated Practice Units** around patient medical conditions
   - Certification standards should require **multidisciplinary teams**, integrated scheduling, and coordinated case management
   - Primary and preventive care should be tailored to serving **distinct patient segments**

3. Eliminate the **separation** between inpatient, outpatient, and rehabilitation care
   - Integrate care across the care cycle, with more care shifting to the **outpatient setting**
   - Reduce **cost-shifting** between care settings by eliminating the different models of reimbursement for inpatient and outpatient care
   - Harness the **power of IT** to enable integrated care delivery
## Moving to a High-Value Health Care System

4. Mandate a path to measurement and reporting of *outcomes* for every patient condition
   - Create a **national body** to oversee the development of outcome measures
   - Mandate **publication** of risk-adjusted outcomes
   - Until outcome data is widely available, expand **minimum volume standards**

5. Introduce new cost-accounting standards to measure *costs* at the level of patients and their medical conditions
   - Establish a **national body** to develop common costing standards that provide accurate cost data across providers and allows costs to be measured around the patient
   - Pilot patient-level costing **across care settings** to inform bundled payment design
Moving to a High-Value Health Care System

6. Shift reimbursement to **bundled payments** for the full care cycle
   - Introduce a universal **reimbursement catalog** based on accurate patient-level costing

7. Encourage consolidation of **providers** and provider **service lines**
   - Expand **minimum volume standards** to support excellent outcomes and efficient capacity utilization

8. Develop a strategic plan **by medical condition** and **primary care segment** to foster care integration, introduce outcome measures, pilot patient-level costing, and shift to bundled payments

9. Engage **clinicians** in the value agenda and accept joint responsibility for its success
Zero-Sum Competition in U.S. Health Care

**Bad Competition**

- Competition to **shift costs** or **capture greater revenue**
- Competition to **capture patients** and **restrict choice**
- Competition to **increase bargaining power** to secure discounts or price premiums
- Competition to **exclude less healthy individuals**

**Good Competition**

- Competition to **increase value for patients**

**Zero or Negative Sum Competition**

**Positive Sum Competition**
Value-Based Health Care Delivery
Implications for Suppliers

• Compete on delivering **unique value** measured over the **full care cycle**

• **Demonstrate value** based on careful study of long term outcomes and costs versus alternative approaches

• Ensure that the products are **used by the right patients**

• Work to embed drugs/devices in the **right care delivery processes**

• Market products based on **value, information, provider support** and **patient support**

• Offer services that **contribute to value** rather than reinforce cost shifting

• Move to **value-based pricing** approaches
  – e.g. price for success, guarantees; participate in bundles for devices and follow up services
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Creating a Value-Based Health Care Delivery System

Implications for Suppliers

1. Integrated Practice Units (IPUs)
   - Work to embed drugs/devices in the right care delivery processes

2. Measure Cost and Outcomes
   - Demonstrate value based on careful study of long-term outcomes and costs versus alternative approaches
   - Ensure that products are used by the right patients

3. Move to Bundled Prices
   - Move to value-based pricing approaches (e.g. price for success, guarantees) and participate in bundles

5. Expand Excellence Across Geography
   - Support providers with knowledge of best practices in the organization and delivery of care

6. Enabling IT Platform
   - Develop informatics systems that facilitate integrated, team-based care delivery, real-time outcome measurement, and activity-based costing for each patient and medical condition