Konference om Værdi for Patienten
- Med Professor Michael E. Porter, Harvard Business School
Value Based Health Care Delivery: Implications for Denmark

Professor Michael E. Porter
Harvard Business School
www.isc.hbs.edu

November 24, 2014
The core issue in health care is the **value of health care delivered**

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

Delivering high and improving value for patients is the **fundamental goal** of health care

Improving value is the **only real solution**

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

The question is how to design a health care delivery system that **dramatically improves patient value**
Principles of Value-Based Health Care Delivery

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

- Value must be measured for the overall care of a patient’s medical condition over the cycle of care
  - not for hospitals, specialties, episodes, or interventions.
- Outcomes are the full set of health results that matter for the patient’s condition
- Costs are the total costs of care for the patient’s condition over the care cycle
- The most powerful single lever for reducing cost is improving outcomes
Creating a Value-Based Health Care Delivery System

The Strategic Agenda

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

2. Measure Outcomes and Costs for Every Patient

3. Move to Bundled Payments for Care Cycles

4. Integrate Multi-site Care Delivery Systems

5. Expand Geographic Reach in Areas of Excellence

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) for Conditions

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

• 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, patients with complex chronic conditions, and frail elderly)

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

## Integrating Care Over The Full Care Cycle
### 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>
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</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>• Monitoring and evaluating</td>
<td>• Meanings of diagnosis</td>
<td>• Loss of cartilage</td>
<td>• Specialty office</td>
<td>• Operating room</td>
<td>• Importance of exercise, maintaining healthy weight</td>
</tr>
<tr>
<td>• Prognosis (short- and long-term outcomes)</td>
<td>• Overall health (e.g., SF-12 scale)</td>
<td>• Health club</td>
<td>• Imaging and evaluating</td>
<td>• Setting expectations</td>
<td>• Change in subchondral bone</td>
<td>• Spraying office</td>
<td>• Recovery room</td>
<td>• Joint-specific symptoms and function</td>
</tr>
<tr>
<td>• Drawbacks and benefits of surgery</td>
<td>• Specialty office</td>
<td>• Physical therapy clinic</td>
<td>• Clinical evaluation</td>
<td>• Importance of nutrition, weight loss, vaccinations</td>
<td>• Joint-specific symptoms and function</td>
<td>• Operating room</td>
<td>• Orthopaedic room at hospital or specialty surgery center</td>
<td>• Weight gain or loss</td>
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<tr>
<td>• Expectations for recovery</td>
<td>• Baseline health status</td>
<td>• Imaging facility</td>
<td>• Pre-op evaluation center</td>
<td>• Importance of rehab</td>
<td>• Fitness for surgery (e.g., ASA score)</td>
<td>• Nursing facility</td>
<td>• Rehab facility</td>
<td>• Missing work</td>
</tr>
<tr>
<td>• Post-surgery risk factors</td>
<td>• Blood loss</td>
<td>• Specialty office</td>
<td>• Operating room</td>
<td>• Importance of rehab adherence</td>
<td>• Operative time</td>
<td>• Physical therapy clinic</td>
<td>• Home</td>
<td>• Overall health</td>
</tr>
<tr>
<td>• Importance of rehab</td>
<td>• Complications</td>
<td></td>
<td></td>
<td>• Longitudinal care plan</td>
<td></td>
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</tr>
</tbody>
</table>

## CARE DELIVERY

<table>
<thead>
<tr>
<th>MONITOR</th>
<th>PREVENT</th>
<th>CARE DELIVERY</th>
</tr>
</thead>
<tbody>
<tr>
<td>• Conduct PCP exam</td>
<td>• Prescribe anti-inflammatory medicines</td>
<td>• Conduct home assessment</td>
</tr>
<tr>
<td>• Refer to specialists, if necessary</td>
<td>• Recommend exercise regimen</td>
<td>• Monitor weight loss</td>
</tr>
<tr>
<td>• Set weight loss targets</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

## IMAGING

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

## OVERALL PREP

- Conduct home assessment
- Monitor weight loss

## CLINICAL EVALUATION

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

## ANESTHESIA

- Administer anesthesia (general, epidural, or regional)

## SURGICAL PREP

- Determine approach (e.g., minimally invasive)
- Insert device
- Cement joint

## SURGICAL PROCEDURE

- Monitor coagulation

## MEDICAL

- Provide daily living support (showering, dressing)
- Track risk indicators (fever, swelling, other)

## LIVING

- Daily or twice daily PT sessions

## PHYSICAL THERAPY

- Prescribe preemptive multimodal pain meds

## PAIN MANAGEMENT

- Daily return to normal activities
- Post-surgery risk factors

## ORTHOPEDIC SPECIALIST

- Orthopedic floor at hospital or specialty surgery center

## OTHER PROVIDER ENTITIES

- Operating room
- Recovery room
- Orthopedic floor at hospital or specialty surgery center
- Specialty office
- Primary care office
- Health club

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Orthopedic Specialist
Other Provider Entities

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8
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 the extent feasible, 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. Joint accountability is accepted for outcomes and costs
11. The providers on the team meet formally and informally on a regular basis to discuss patients, processes, and how to improve results
Volume in a Medical Condition Enables Value

The Virtuous Circle of Value

- Greater Patient Volume in a Medical Condition
- Rapidly Accumulating Experience
- Better Information/Clinical Data
- More Fully Dedicated Teams
- More Tailored Facilities
- Rising Process Efficiency
- Better utilization of capacity
- 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
- Improving Reputation
- 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>Procedure</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>
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<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 Quality Measurement Landscape

- **Patient Experience/Engagement**
  - Protocols/Guidelines
  - E.g. PSA, Gleason score, surgical margin

- **Structure**
  - E.g. Staff certification, facilities standards

- **Patient Initial Conditions**
  - Processes

- **Indicators**
  - (Health) Outcomes
Principles of Outcome Measurement

- Outcomes should be measured by **medical condition** or **primary care patient segment**
  - **Not** by **procedure** or **intervention**
- Outcomes should reflect the **full cycle of care** for the condition
- Outcomes are **always multi-dimensional** and should include the health results **most relevant to patients**
- Outcome measurement must include **initial conditions/risk factors** to allow for adjustment for patient differences
- Outcome measures should be **standardized** to enable comparison and learning
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)

• Achieved clinical status
• Achieved functional status

• Care-related pain/discomfort
• Complications
• Reintervention/readmission

• Long-term clinical status
• Long-term functional status

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
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 **charges** billed or collected

• Cost should be measured around the **patient**, not only for departments or the provider organization as a whole

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

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

• “**Overhead**” costs should be allocated based on the patient-facing resources which drive usage
  - e.g. IT

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
• Restructure care so that **physicians** and **skilled staff practice** at the **top of their license**
• Move routine or uncomplicated services out of **highly-resourced** facilities
• **Reduce cycle times** across the care cycle
• Design steps to optimize total care cycle costs Process steps that **optimize total care cycle cost** versus minimizing investments in particular individuals the costs of individual services
• Increase **cost awareness** among clinical teams

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

**Bundled Reimbursement**
- 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
Elements of a Value-Based Bundled Payment

• **Condition** based and covering the full cycle of care, versus specialty, procedure or episode based
• **Risk** adjusted, or covering a **defined patient group** in terms of complexity
  - 80/20 rule
• Contingent on **outcomes**, including care guarantees
• Payment based on the **cost of efficient and effective care**, not past charges
• Specified **limits of responsibility** for unrelated care needs, and **stop loss** provisions to mitigate against outliers
• A level of **price stability**
Bundled Payment in Practice
Hip and Knee Replacement in Stockholm, Sweden

• **Components** of OrthoChoice bundle

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

• Initially applied to all **relatively healthy patients** (i.e. ASA scores of 1 or 2)

• **Mandatory reporting** by providers to the joint registry plus supplementary reporting

• The Stockholm bundled price for a knee or hip replacement is about **US $8,300**

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Early Results:
- Wait times fell dramatically
- Complications fell 16.9% in the first year and another 25.9% in the second year
- Functional outcomes constant
- Volume shifted toward specialty hospitals and away from full service acute hospitals
- Private providers restructured the care process to improve efficiency and lower complication
# Outcome-Based Bundled Reimbursement

## Swedish Spine Bundle

### Base Payment

- **Covered**: Preoperative consultation, surgery, inpatient stay, implants, medications, laboratories, radiology, physical therapy, and follow-up care.
- **Risk adjustment**: Age, gender, patient-reported pre-operative pain measured by Visual Analog Scale (VAS)

### Warranty Payment

- **Covered**: Surgery wrong side/level, Disk herniation, Re-stenosis, Mechanical complication, Pseudoarthrosis
- **Risk adjustments**: Age, gender, preoperative VAS, pain duration, smoking, comorbidities, operative treatment, employment status

### Performance Payment

- **Amount**: Average of 10 percent of base reimbursement
- **Criteria**: Based on the actual improvement in pain at 1 year after surgery (Global Assessment Scale) versus expected pain outcome based on registry data for similar patients

### Total Payment

- **Amount**: 54,537 SEK ($8,139*)

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* Based on Jan 1, 2012 exchange rate of 6.8 SEK to 1 USD

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A National Collaboration on Value Based Health Care

SVEUS

Research Collaboration and Harvard Business School Case Studies

- Used to teach leaders in health care at HBS and leading business schools around the world
  - Value Measurement in Health Care
    - Dec 15th - 17th, 2014
  - Intensive Seminar on Value Based Health Care
    - January 5th - 9th, 2015
  - Health Care Strategy for Senior Executives
    - January 12th – 14th, 2015
  - Harvard Business Publishing Course for Educators
    - January 15th, 2015
  - Partners Health Care Residents & Fellows
    - January 14th – 16th, 2015

National Rollout of Outcome Measurement and Bundled Payments
4. Integrate Multi-site 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 scope of services** for each facility, and for the organization as a whole, based on **value**

2. **Concentrate volume by condition** in fewer locations

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 IPUs
Delivering the Right Care at the Right Location
Rothman Institute, Philadelphia

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

Cost of Total Knee Replacement:
- Ambient Surgery Center: ~$12,000 USD
- Rothman Orthopaedic Specialty Hospital: ~$45,000 USD

Facility Capability:
- Lowest Complexity
- Low
- Medium
- Highest Complexity
5. Expand Geographic Reach of Excellent Providers
The Cleveland Clinic Affiliate Programs

- Central DuPage Hospital, IL
  Cardiac Surgery

- St. Vincent Indianapolis, IN
  Kidney Transplant

- 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

- Chester County Hospital, PA
  Cardiac Surgery

- Charleston, WV
  Kidney Transplant

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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.

**Attributes of a Value-Based IT Platform**

- Combines **all types of data** (e.g. notes, images) for each patient
- Uses common **data definitions**
- Data encompasses the **full care cycle**, including care by referring entities
- Allows access and communication among **all involved parties**, including with patients
- Enables data exchange and aggregation among **different provider organizations** involved with each patient
- Provides **views and templates by medical condition** to enhance the user interface for IPU teams
- Creates searchable “**structured**” data vs. free text
- The architecture allows easy extraction of **outcome measures, process measures**, and **activity-based costing measures** for each patient /medical condition
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
A Mutually Reinforcing Strategic Agenda

Where to Start?

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
Measuring and Reporting Standardized Sets of Outcomes is the Single Most Important Step in Transforming Health Care

- Outcomes **define success** for every physician and health care organization, and are the ultimate motivator
- Outcomes drive the formation of **multidisciplinary Integrated Practice Units (IPUs)** and inform improvement
- Outcomes highlight and validate opportunities for **value-enhancing cost reduction**
- Outcomes are an essential part of **value-based bundles**
- Outcomes enable the delivery of the **right services** at the **right locations**
- Outcomes define the right areas for **service line growth** and **affiliation**
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. Centers, 2008-2010

Number of programs included: 236
Number of transplants: 38,535
1-year graft survival: 93.5%

- 8 greater than expected graft survival (3.4%)
- 14 worse than expected graft survival (5.9%)

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%)
Mission: Unlock the potential of Value-Based Health Care by defining global standard sets of outcome measures that matter most to patients for the most relevant medical conditions, and by driving adoption and reporting of these measures worldwide.

1. Define global minimum **Standard Outcome Sets** and risk factors for the most burdensome medical conditions

2. Enable **implementation** of Standard Sets through disseminating data collection best practices and certifying supporting technologies

3. Drive **adoption** of Standard Sets by providers, payors and governments

4. Create **data aggregation** and **global communities** of practice for each medical condition focused on outcome comparison, learning, and improvement
## ICHOM Standard Sets Developed

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<tr>
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<tbody>
<tr>
<td>- Coronary Artery Disease</td>
<td>- Parkinson’s disease</td>
<td>▪ Dementia</td>
</tr>
<tr>
<td>- Lower Back Pain</td>
<td>- Cleft Lip and Palate</td>
<td>- Heart Failure</td>
</tr>
<tr>
<td>- Cataracts</td>
<td>- Stroke</td>
<td>- Inflammatory bowel disease</td>
</tr>
<tr>
<td>- Localized Prostate Cancer</td>
<td>- Hip and knee osteoarthritis</td>
<td>- Gastro-esophageal reflux disease</td>
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<td></td>
<td>- Macular degeneration</td>
<td>- Frail elderly</td>
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<td></td>
<td>- Lung cancer</td>
<td>- Brain tumors</td>
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<td></td>
<td>- Depression and anxiety</td>
<td>- Breast cancer</td>
</tr>
<tr>
<td></td>
<td>- Advanced prostate cancer</td>
<td>- Colon cancer</td>
</tr>
<tr>
<td></td>
<td></td>
<td>- Pregnancy and childbirth</td>
</tr>
</tbody>
</table>

### Burden of Disease Covered

- **18%**
- **35%**
- **43%**

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An Agenda for Denmark

1. Move to **universal outcome measurement** and reporting
   - as a condition of payment
   - roll out on first on more complex conditions

2. Continue reorganization to the **IPU model**, beginning in complex, high cost conditions
   - certification of multidisciplinary team
   - minimum volume standards for approval to practice

3. Introduce **new costing practices** to guide costing efforts and more accurate reimbursements

4. **Enhance DRGs** and **full bundled payments** for conditions, including warranties and outcome-based performance payments
   - pay more for complex patients and good outcomes
Key References


Additional information about these ideas, as well as case studies, can be found at the Institute for Strategy and Competitiveness Redefining Health Care website at [http://www.hbs.edu/rhc/index.html](http://www.hbs.edu/rhc/index.html) For information about the VBHCD Curriculum please see: [http://www.isc.hbs.edu/resources/courses/health-care-courses/Pages/health-care-curriculum.aspx](http://www.isc.hbs.edu/resources/courses/health-care-courses/Pages/health-care-curriculum.aspx) For information about the International Consortium for Health Outcomes Measurement, please see [https://www.ichom.org/](https://www.ichom.org/)