Value-Based Health Care Delivery
IPUs, Outcomes and Cost Measurement, and 
Bundled Pricing

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This presentation draws on Redefining Health Care: Creating Value-Based Competition on Results (with Elizabeth O. Teisberg), Harvard Business School Press, May 2006; “A Strategy for Health Care Reform—Toward a Value-Based System,” New England Journal of Medicine, June 3, 2009; “Value-Based Health Care Delivery,” Annals of Surgery 248: 4, October 2008; “Defining and Introducing Value in Healthcare,” Institute of Medicine Annual Meeting, 2007. Additional information about these ideas, as well as case studies, can be found the Institute for Strategy & Competitiveness Redefining Health Care website at http://www.hbs.edu/rhc/index.html. 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 and Elizabeth O. Teisberg.
Creating a Value-Based Health Care Delivery System

The Strategic Agenda

1. Organize into Integrated Practice Units (IPUs) Around Patient Medical Conditions
   - Organize primary and preventive care to serve distinct patient populations

2. Establish Universal Measurement of Outcomes and Cost for Every Patient

3. Move to Bundled Prices for Care Cycles

4. Integrate Care Delivery Across Separate Facilities

5. Expand Excellent IPUs Across Geography

6. Create an Enabling Information Technology Platform
1. Organizing Around Patient Medical Conditions
   
   Integrated Diabetes Care: Joslin Diabetes Center

   1. Check-in
   2. Endocrinologist
   3. Nurse Coordinator
   4. Eye Exam
   5. Laboratory – Blood, urine
   6. Diabetes Education
   7. Mental Health
   8. Renal
   9. Check-out

   Source: Joslin company documents.
Integrated Care Delivery Includes the Patient

• Value in health care is **co-produced** by clinicians and the patient

• Unless patients **comply** with care and take steps to improve their health, even the best delivery team will fail

• For chronic care, patients **are often the best experts** on their own health and personal barriers to compliance

• Today’s fragmented system creates **obstacles** to patient education, involvement, and adherence to care

  • **IPUs** dramatically improve patient engagement
    – Focus, resources, sustained patient contact and accountability
    – Education and support services

• Simply forcing consumers to pay more is a **false solution**
Integrated Models of Primary Care

• Today’s primary care is fragmented and attempts to address overly broad needs with limited resources

• Organize primary care around teams serving specific patient populations (e.g. healthy adults, adults with one or more related chronic conditions (diabetes), frail elderly, rather than attempting to be all things to all patients)

• Deliver defined service bundles covering appropriate prevention, screening, diagnosis, and health maintenance

• Provide services with multidisciplinary teams including ancillary health professionals and support staff

• Form alliances with specialty IPUs covering the prevalent medical conditions represented in the patient population

• Deliver services not only in traditional settings but at the workplace, schools, community organizations, and in other locations offering regular patient contact and the ability to develop a group culture of wellness
Organizing Around Patient Medical Conditions

Attributes of an Integrated Practice Unit (IPU):

1. Organized around the **patient medical condition** or set of closely related conditions
2. Involves a **dedicated, multidisciplinary team** who devotes a significant portion of their time to the condition
3. Providers are part of or affiliated with a **common organizational unit**
4. Provides the **full cycle of care** for the condition
   - Encompassing **outpatient, inpatient**, and **rehabilitative** care as well as **supporting services** (e.g. nutrition, social work, behavioral health)
5. Includes **patient education, engagement, and follow-up**
6. Utilizes a **single administrative and scheduling structure**
7. **Co-located in dedicated facilities**
8. Care led by a **physician team captain** and a **care manager** who oversee each patient’s care process
9. **Meets formally and informally** on a regular basis to discuss patients, processes and results
10. **Measures** outcomes, costs, and processes for each patient using a common **information platform**
11. Accepts **joint accountability** for outcomes and costs
What is Not Integrated Care?

Integrated care is not the same as:

- **Co-location** per se
- Care delivered by the **same organization**
- A clinical **pathway**
- A **multispecialty group** practice
- A **medical home**
- An **accountable care organization** (ACO)
- An **institute**
- A **center** of excellence
- Freestanding **focused factories**
- A **health plan/provider** system (e.g. Kaiser Permanente)
2. Measuring Outcomes and Cost for Every Patient

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

- **Processes**
  - Patient Compliance
  - E.g., Hemoglobin A1c levels for diabetics

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

Tier 1
Health Status Achieved or Retained
- Survival

Tier 2
Process of Recovery
- Degree of health/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
The Outcome Measures Hierarchy

Breast Cancer

**Survival**
- Survival rate
  - (One year, three year, five year, longer)

**Degree of recovery / health**
- Degree of remission
- Functional status
- Breast conservation
- Depression

**Time to recovery or return to normal activities**
- Time to remission
- Time to functional status

**Disutility of care or treatment process**
- Nosocomial infection
- Nausea/vomiting
- Febrile neutropenia
- Suspension of therapy
- Failed therapies
- Limitation of motion
- Depression

**Sustainability of recovery or health over time**
- Cancer recurrence
- Sustainability of functional status

**Long-term consequences of therapy**
- Incidence of secondary cancers
- Brachial plexopathy
- Fertility/pregnancy complications
- Premature osteoporosis

**Initial Conditions/Risk Factors**
- Stage upon diagnosis
- Type of cancer (infiltrating ductal carcinoma, tubular, medullary, lobular, etc.)
- Estrogen and progesterone receptor status (positive or negative)
- Sites of metastases
- Previous treatments
- Age
- Menopausal status
- General health, including comorbidities
- Psychological and social factors
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, 2005-2007

Number of programs: 240
Number of transplants: 38,515
One year graft survival: \(93.2\%\)

- 16 greater than expected graft survival (6.6%)
- 19 worse than expected graft survival (7.8%)
Creating an Outcome Measurement System
Schön Klinik

1. Designate the medical conditions to measure
   • Define medical conditions and boundaries
   • Chart the CDVC

2. Develop outcome dimensions, measures, and risk adjustments
   • Measures developed by convening groups of involved physicians and members of Schön’s quality improvement team
   • Five metrics per medical condition

3. Create infrastructure for data collection
   • Physicians and nurses enter data during the patient’s stay
   • Data can be extracted from the EMR to reduce the burden of capture
   • Collection of long term follow-up data still done manually

4. Introduce incentives for data reporting
   • Involvement in the metrics development process increases physician buy-in
   • Reporting of all metrics is mandated for all physicians
   • Outcome data captured for 70% of patients

5. Compliance and accuracy validation
   • Accuracy validated through trend analysis

6. Outcome reporting
   • Report results internally at the individual physician level
   • Annual quality report (27 process and outcome measures) disseminated externally

7. Institutionalize a process for outcome improvement
   • Physicians trust metrics and are convinced of their value in driving improvement
   • Physician pay linked to quality of care delivered
Selected Swedish National Quality Registers, 2007

Respiratory Diseases
- Respiratory Failure Register (Swedevox)
- Swedish Quality Register of Otorhinolaryngology

Childhood and Adolescence
- The Swedish Childhood Diabetes Registry (SWEDIABKIDS)
- Childhood Obesity Registry in Sweden (BORIS)
- Perinatal Quality Registry/Neonatology (PNQn)
- National Registry of Suspected/Confirmed Sexual Abuse in Children and Adolescents (SÖK)

Circulatory Diseases
- Swedish Coronary Angiography and Angioplasty Registry (SCAAR)
- Registry on Cardiac Intensive Care (RIKS-HIA)
- Registry on Secondary Prevention in Cardiac Intensive Care (SEPHIA)
- Swedish Heart Surgery Registry
- Grown-Up Congenital Heart Disease Registry (GUCH)
- National Registry on Out-of-Hospital Cardiac Arrest
- Heart Failure Registry (RiksSvikt)
- National Catheter Ablation Registry
- Vascular Registry in Sweden (Swedvasc)

- National Quality Registry for Stroke (Riks-Stroke)
- National Registry of Atrial Fibrillation and Anticoagulation (AuriculA)

Endocrine Diseases
- National Diabetes Registry (NDR)
- Swedish Obesity Surgery Registry (SOREg)
- Scandinavian Quality Register for Thyroid and Parathyroid Surgery

Gastrointestinal Disorders
- Swedish Hernia Registry
- Swedish Quality Registry on Gallstone Surgery (GallRiks)
- Swedish Quality Registry for Vertical Hernia

Musculoskeletal Diseases
- Swedish Shoulder Arthroplasty Registry
- National Hip Fracture Registry (RIKSHÖFT)
- Swedish National Hip Arthroplasty Register
- Swedish Knee Arthroplasty Register
- Swedish Rheumatoid Arthritis Registry
- National Pain Rehabilitation Registry
- Follow-Up in Back Surgery
- Swedish Cruciate Ligament Registry – X-Base
- Swedish National Elbow Arthroplasty Register (SAAR)

* Registers Receiving Funding from the Executive Committee for National Quality Registries in 2007
Flawed Cost Measurement in Health Care

• Current cost accounting practices in health care obscure understanding of the actual costs of care delivery and severely compromise true cost reduction.

Cost Definition Problem

• Costs are widely confused with prices, or allocated based on prices.
• Reimbursement has been based on past reimbursement rates, rather than actual costs.

Cost Aggregation Problem

• Costs are measured and aggregated for departments, specialties, discrete services, and line items (e.g. devices).
• Costs are measured independent of outcomes.
• Costs should be aggregated for patient medical conditions over the full care cycle.

Cost Allocation Problem

• Resource costs are allocated across departments and to patients using averages or estimates.
• Unbilled serves are included in overhead.
• Costs should be allocated to individual patients based on the actual use of the resources involved in their care.

• The application of time-driven activity-based costing (TDABC) to health care delivery reveals many structural opportunities for cost reduction.
Measuring the Cost of Care Delivery: Principles

• Cost should be measured around the patient

• Cost depends on the actual use of resources involved in a patient’s care

• The only way to properly measure cost per patient is to track the time devoted to each patient by these resources (personnel, facilities, and support services) and resource capacity costs.

• Indirect and support costs should be allocated to direct resources based on the demand for the support they create

• Cost should be aggregated for the medical condition level for each patient over the full cycle of care, not for departments, services, or line items

• Cost measurement should be combined with outcome measurement to inform process improvement and cost reduction
  – E.g. Reduce high cost activities that do not contribute to superior outcomes

• Combining actual costs and outcomes will transform the discussion about care improvement
Selected Cost Reduction Opportunities in Health Care

- **Process variation** that reduces efficiency without improving outcomes
- Over-provision of **low- or non-value adding** services in order to justify billing or follow rigid protocols
- Redundant **administrative** and scheduling personnel
- **Low utilization** of expensive clinical space, equipment, and facilities due to duplication and service fragmentation
- Poor utilization of **physicians and skilled staff**
- Much care is delivered in **over-resourced** facilities
  - E.g. routine care delivered in expensive hospital settings
- Long **cycle times** and unnecessary delays
- Excess **inventory** and weak inventory management
- Focus on discrete services rather than **optimize the total cost** of care
- Lack of **cost awareness** in clinical teams

- There are numerous cost reduction opportunities that **do not require outcome tradeoffs**, but may actually improve outcomes
Integrating Costs and Outcomes

- **Cost** measurement and outcome measurement are most effective when brought together.

- Bringing costs and outcomes together for a medical condition **reveals inefficiencies** and opportunities for **reallocating resource use**
  - E.g. High cost activities which do not correspond to superior outcomes
  - Identify low cost activities delivering high value

- Knowledge of both costs and outcomes creates a different dynamic in **reimbursement discussions**
  - Understanding true costs for a medical condition is essential to constructing bundled payments
  - Better align objective charges and actual cost
  - Objective cost has been a missing link in debates about appropriate charges
  - Cost data is essential to justify the value of services being provided
3. Setting Bundled Prices for Care Cycles

Bundled Price

- A single price covering the **full care cycle for an acute medical condition**
- Time-based reimbursement for full care of a **chronic condition**
- Time-based reimbursement for **primary/preventive care for a defined patient population**
What is a Bundled Payment?

- A **total package price** for the care cycle for a **medical condition**
  - “Medical condition capitation”
- Time-based bundled reimbursement for **managing chronic conditions**
- Time-based reimbursement for defined **primary / preventative service bundles**
- Should include responsibility for **avoidable complications**
- The bundled price should be **severity adjusted**

What is Not a Bundled Payment

- **Separate** payments for physicians and facilities
- Payment for a **short** episode (e.g. inpatient only, procedure only)
- **Pay-for-performance** bonuses
- “Medical Home” payment for care coordination
- DRGs can be a **starting point** for bundled payment models
  - DRGs in **some countries** are closer to true bundles
- **Providers** and **health plans** should be **proactive** in driving new reimbursement models, not wait for government
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   |
| Surgery & related admissions | within 2 years |
| Prosthesis        | If post-op infection requiring        |
| Drugs             | antibiotics occurs, guarantee extends  |
| Inpatient rehab, up to 6 days | to 5 years |

• 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

• Provider participation is voluntary. All providers are participating

• The Stockholm bundled price for a knee or hip replacement is about **US $8,000**
Moving to Value-Based Reimbursement

Strengths of the Bundled Approach

• Fosters **integrated care delivery** (IPUs)
• Creates **strong incentives to improve value** through reducing delays, avoidable complications, and unnecessary services
• Reinforces focus on **areas of excellence**
• Promotes provider control and accountability for outcomes **at the medical condition level**
• Payment is aligned with areas providers can **directly control**

• Aligns reimbursement with **value creation**
• Accelerates care delivery **integration**
Creating a Bundled Pricing System

• Defining the Bundle
  – **Scope** of the medical condition and care cycle duration
  – **Services** included, but retaining flexibility on methods
  – **Complications** and **comorbidities** included/excluded

• Pricing the Bundle: Key Choices
  – **Level** of bundled price vs. sum of current charges
  – Price **stability** commitment
  – Extent of **severity/risk** adjustment
  – Extent of “**guarantees**” by providers
  – Mechanism for handling **outliers** and **unanticipated** complications
  – Bonuses for **excellent outcomes**?

• Implementing the Bundle
  – Internal **distribution of the payment** among providers (dividing the pie)
  – **Billing and claims** processes
  – **Outcome measurement** to minimize incentives to limit value-enhancing services

• **Accurate costing** at the medical condition level is a prerequisite for negotiating bundled prices