

# Value-Based Health Care Delivery

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This presentation draws on Michael E. Porter and Elizabeth Olmsted Teisberg: Redefining Health Care: Creating Value-Based Competition on Results, Harvard Business School Press, May 2006, and Porter, Michael E. "A Strategy for Health Care Reform." *New England Journal of Medicine*. June 3, 2009. Porter, Michael E. "Defining and Introducing value in Health Care." Evidence-Based Medicine and the Changing Nature of Healthcare: Meeting Summary (IOM Roundtable on Evidence-Based <http://www.nap.edu/catalog/12041.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 Olmsted Teisberg. Further information about these ideas, as well as case studies, can be found on the website of the Institute for Strategy & Competitiveness at <http://www.isc.hbs.edu>.

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# Redefining Health Care Delivery

- Universal coverage and access to care are **essential, but not enough**
- The core issue in health care is the **value of health care delivered**

Value: Patient health outcomes per dollar spent



- How to design a health care system that **dramatically improves patient value**
  - Ownership of entities is secondary (e.g. non-profit vs. for profit vs. government)
- How to construct a **dynamic system** that keeps rapidly improving

# Creating a Value-Based Health Care System

- Significant improvement in value will require **fundamental restructuring of health care delivery**, not incremental improvements

Today, 21<sup>st</sup> century medical technology is often delivered with 19<sup>th</sup> century organization structures, management practices, and pricing models

- Process improvements, lean production concepts, safety initiatives, care pathways, disease management and other **overlays** to the current structure are beneficial but not sufficient
- Consumers **cannot fix the dysfunctional structure** of the current system

# Zero-Sum Competition in U.S. Health Care

## Bad Competition

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



Zero or Negative Sum  
Competition

## Good Competition

- Competition to **increase value for patients**



Positive Sum  
Competition

# Principles of Value-Based Health Care Delivery

The central goal in health care must be **value for patients**, not access, volume, convenience, or cost containment

$$\text{Value} = \frac{\text{Health outcomes}}{\text{Costs of delivering the outcomes}}$$

- Outcomes are the **full set of patient health outcomes** over the care cycle
- Costs are the **total costs of care for the patient's condition**, not just the cost of a single provider or a single service



How to design a health care system that **dramatically improves patient value**

# Principles of Value-Based Health Care Delivery

**Quality improvement** is the key driver of cost containment and value improvement, where quality is **health outcomes**

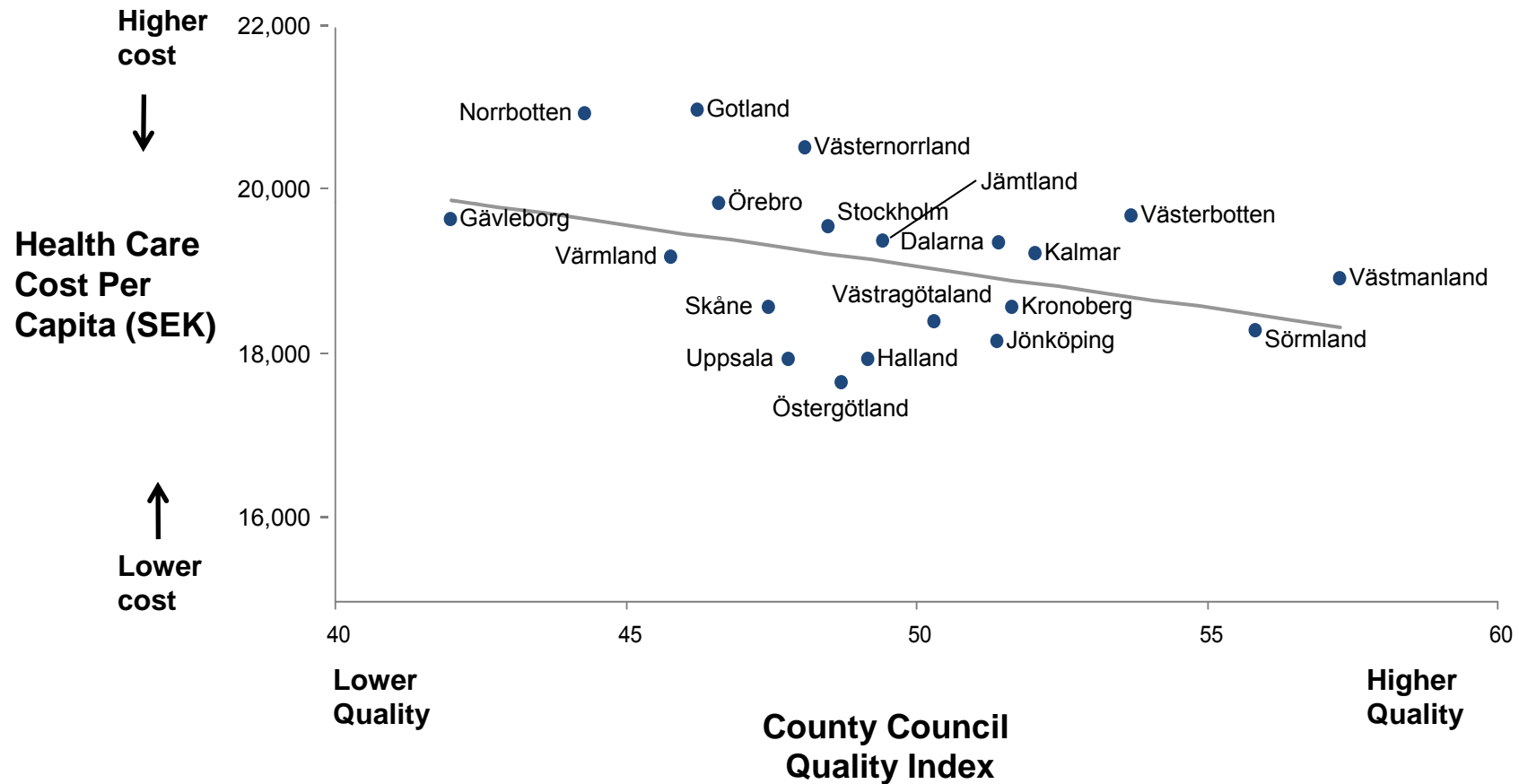
- Prevention
- Early detection
- Right diagnosis
- Right treatment to the right patient
- Early and timely treatment
- Treatment earlier in the causal chain of disease
- Rapid cycle time of diagnosis and treatment
- Less invasive treatment methods
- Fewer complications
- Fewer mistakes and repeats in treatment
- Faster recovery
- More complete recovery
- Less disability
- Fewer relapses or acute episodes
- Slower disease progression
- Less need for long term care
- Less care induced illness



- **Better health** is the goal, not more treatment
- Better health is **inherently less expensive** than poor health

# Cost versus Quality, Sweden

## Health Care Spending by County, 2008



Note: Cost including; primary care, specialized somatic care, specialized psychiatry care, other medical care, political health- and medical care activities, other subsidies (e.g. drugs)  
 Source: Öppna jämförelser, Socialstyrelsen 2008; Sjukvårdsdata i fokus 2008; BCG analysis

# Value-Based Health Care Delivery

## The Strategic Agenda

1. Organize into Integrated Practice Units Around the Patient's Medical Condition (IPUs)
  - Including primary and preventive care for **distinct patient populations**
2. Measure 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

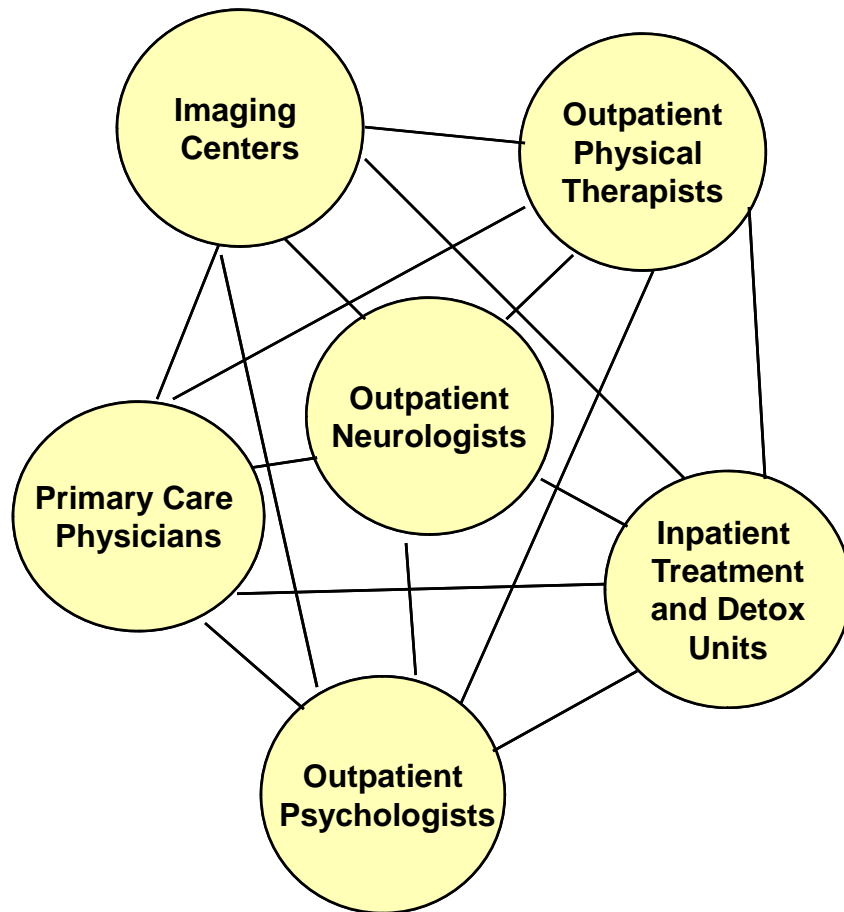


# 1. Organize into Integrated Practice Units

## Migraine Care in Germany

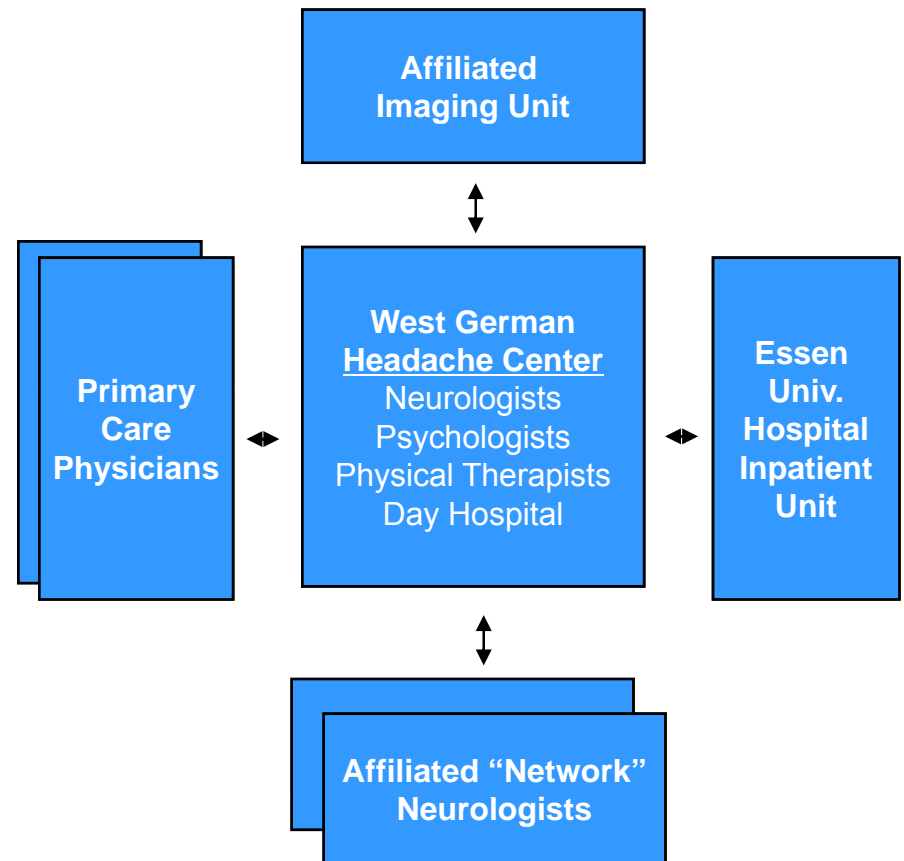
### Existing Model:

Organize by Specialty and Discrete Services




### New Model:

Organize into Integrated Practice Units (IPUs)



Source: Porter, Michael E., Clemens Guth, and Elisa Dannemiller, *The West German Headache Center: Integrated Migraine Care*, Harvard Business School Case 9-707-559, September 13, 2007

# Organizing Around the Patient

- A medical condition is **an interrelated set of patient medical circumstances best addressed in an integrated way**
    - Defined from the **patient's** perspective
    - **Including** the most common co-occurring conditions and complications
    - Involving **multiple** specialties and services
  - IPU's can address a single medical condition or **groups of closely related medical conditions** involving similar specialties, services, and expertise
- 
- The patient's medical condition is the **unit of value creation** in health care delivery

# Integrating Across the Cycle of Care

## Breast Cancer

<b>INFORMING AND ENGAGING</b>	<ul style="list-style-type: none"> <li>Advice on self screening</li> <li>Consultations on risk factors</li> </ul>	<ul style="list-style-type: none"> <li>Counseling patient and family on the diagnostic process and the diagnosis</li> </ul>	<ul style="list-style-type: none"> <li>Explaining patient treatment options/shared decision making</li> </ul>	<ul style="list-style-type: none"> <li>Counseling on the treatment process</li> <li>Education on managing side effects and avoiding complications of treatment</li> <li>Achieving compliance</li> </ul>	<ul style="list-style-type: none"> <li>Counseling on rehabilitation options, process</li> <li>Achieving compliance</li> <li>Psychological counseling</li> </ul>	<ul style="list-style-type: none"> <li>Counseling on long term risk management</li> <li>Achieving Compliance</li> </ul>
			<ul style="list-style-type: none"> <li>Patient and family psychological counseling</li> </ul>			
<b>MEASURING</b>	<ul style="list-style-type: none"> <li>Self exams</li> <li>Mammograms</li> </ul>	<ul style="list-style-type: none"> <li>Mammograms</li> <li>Ultrasound</li> <li>MRI</li> <li>Labs (CBC, Blood chems, etc.)</li> <li>Biopsy</li> <li>BRACA 1, 2...</li> <li>CT</li> <li>Bone Scans</li> </ul>	<ul style="list-style-type: none"> <li>Labs</li> </ul>	<ul style="list-style-type: none"> <li>Procedure-specific measurements</li> </ul>	<ul style="list-style-type: none"> <li>Range of movement</li> <li>Side effects measurement</li> </ul>	<ul style="list-style-type: none"> <li>MRI, CT</li> <li>Recurring mammograms (every six months for the first 3 years)</li> </ul>
<b>ACCESSING</b>	<ul style="list-style-type: none"> <li>Office visits</li> <li>Mammography lab visits</li> </ul>	<ul style="list-style-type: none"> <li>Office visits</li> </ul>	<ul style="list-style-type: none"> <li>Office visits</li> </ul>	<ul style="list-style-type: none"> <li>Hospital stays</li> </ul>	<ul style="list-style-type: none"> <li>Office visits</li> </ul>	<ul style="list-style-type: none"> <li>Office visits</li> </ul>
		<ul style="list-style-type: none"> <li>Lab visits</li> </ul>	<ul style="list-style-type: none"> <li>Hospital visits</li> <li>Lab visits</li> </ul>	<ul style="list-style-type: none"> <li>Visits to outpatient radiation or chemotherapy units</li> <li>Pharmacy</li> </ul>	<ul style="list-style-type: none"> <li>Rehabilitation facility visits</li> <li>Pharmacy</li> </ul>	<ul style="list-style-type: none"> <li>Lab visits</li> <li>Mammographic labs and imaging center visits</li> </ul>
		<ul style="list-style-type: none"> <li>High risk clinic visits</li> </ul>				
	<b>MONITORING/ PREVENTING</b>	<b>DIAGNOSING</b>	<b>PREPARING</b>	<b>INTERVENING</b>	<b>RECOVERING/ REHABING</b>	<b>MONITORING/MANAGING</b>
	<ul style="list-style-type: none"> <li>Medical history</li> <li>Control of risk factors (obesity, high fat diet)</li> <li>Genetic screening</li> <li>Clinical exams</li> <li>Monitoring for lumps</li> </ul>	<ul style="list-style-type: none"> <li>Medical history</li> <li>Determining the specific nature of the disease (mammograms, pathology, biopsy results)</li> <li>Genetic evaluation</li> <li>Labs</li> </ul>	<ul style="list-style-type: none"> <li>Choosing a treatment plan</li> <li>Surgery prep (anesthetic risk assessment, EKG)</li> <li>Plastic or onco-plastic surgery evaluation</li> <li>Neo-adjuvant chemotherapy</li> </ul>	<ul style="list-style-type: none"> <li>Surgery (breast preservation or mastectomy, oncoplastic alternative)</li> <li>Adjuvant therapies (hormonal medication, radiation, and/or chemotherapy)</li> </ul>	<ul style="list-style-type: none"> <li>In-hospital and outpatient wound healing</li> <li>Treatment of side effects (e.g. skin damage, cardiac complications, nausea, lymphodema and chronic fatigue)</li> <li>Physical therapy</li> </ul>	<ul style="list-style-type: none"> <li>Periodic mammography</li> <li>Other imaging</li> <li>Follow-up clinical exams</li> <li>Treatment for any continued or later onset side effects or complications</li> </ul>

Breast Cancer Specialist  
 Other Provider Entities

# Integrated Models of Primary Care

- Today's primary care is **fragmented** and attempts to address **overly broad** needs with limited resources



## Value-Based Primary Care

- Prevention, screening, diagnosis, wellness and health maintenance **service bundles**
- Designed around **specific patient populations** (e.g. healthy adults, frail elderly, type II diabetics) rather than attempting to be all things to all patients
- Services are provided by **multidisciplinary teams, including** ancillary health professionals and support staff in **dedicated facilities**
- Delivered not only in traditional facilities but at the **workplace, community organizations**, and in **other settings** that offer regular patient contact and the ability to develop a group culture of wellness
- With **formal alliances** with specialty IPUs for the prevalent medical conditions represented in the patient base



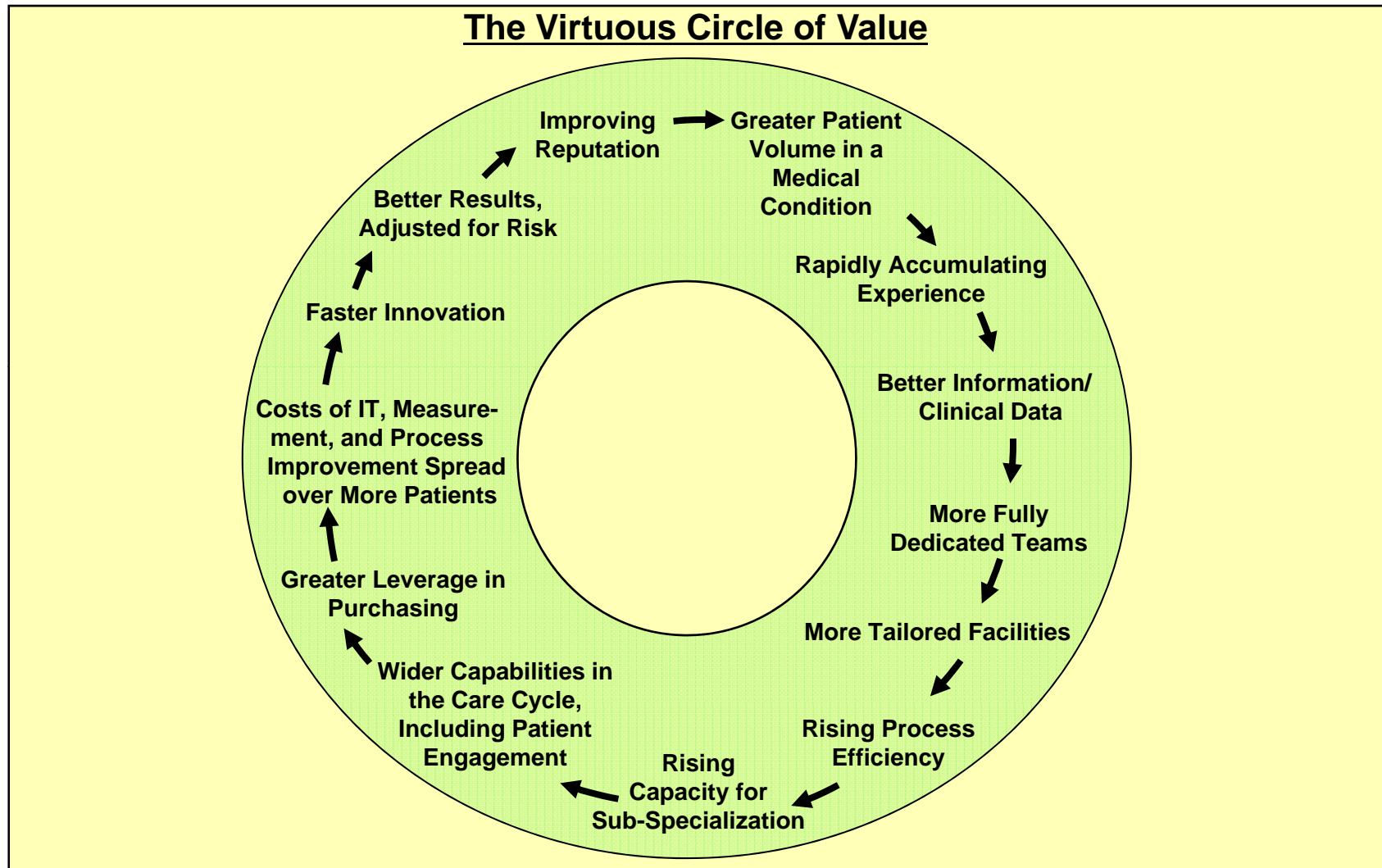
# IPUs and Value

Outcomes

Cost

- 
- The diagram consists of two overlapping circles. The left circle is light blue and labeled 'Outcomes'. The right circle is light yellow and labeled 'Cost'. The intersection of the two circles is shaded in a light green color and contains a list of benefits. The text in the intersection is as follows:
- **Better decisions** in terms of **diagnosis** and treatment
    - Specialized experience and expertise
    - Better coordination/peer review
    - Better integration of co-occurrences
  - **Better execution** of treatment
    - Specialized experience and expertise
    - Tailored facilities
    - Seamless management of common co- occurrences
  - **Faster cycle time**
  - **Full range of support services** needed to achieve success for the patient (e.g. nutrition, rehabilitation, psychological counseling)
  - **Improved patient compliance and engagement with care**
  - Vastly greater **patient convenience**
- In the yellow circle (Cost), the following text is present:
- Greater **provider and team efficiency**
  - Better **utilization of facilities**
  - Streamlined **administrative costs**

# Volume and Experience in a Medical Condition Drive Patient Value



- Volume and experience have an **even greater** impact on value in an IPU structure than in the current system

# Fragmentation of Hospital Services

## Sweden

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

Source: Compiled from The National Board of Health and Welfare Statistical Databases – DRG Statistics, Accessed April 2, 2009.



## 2. Measure Outcomes and Cost for Every Patient

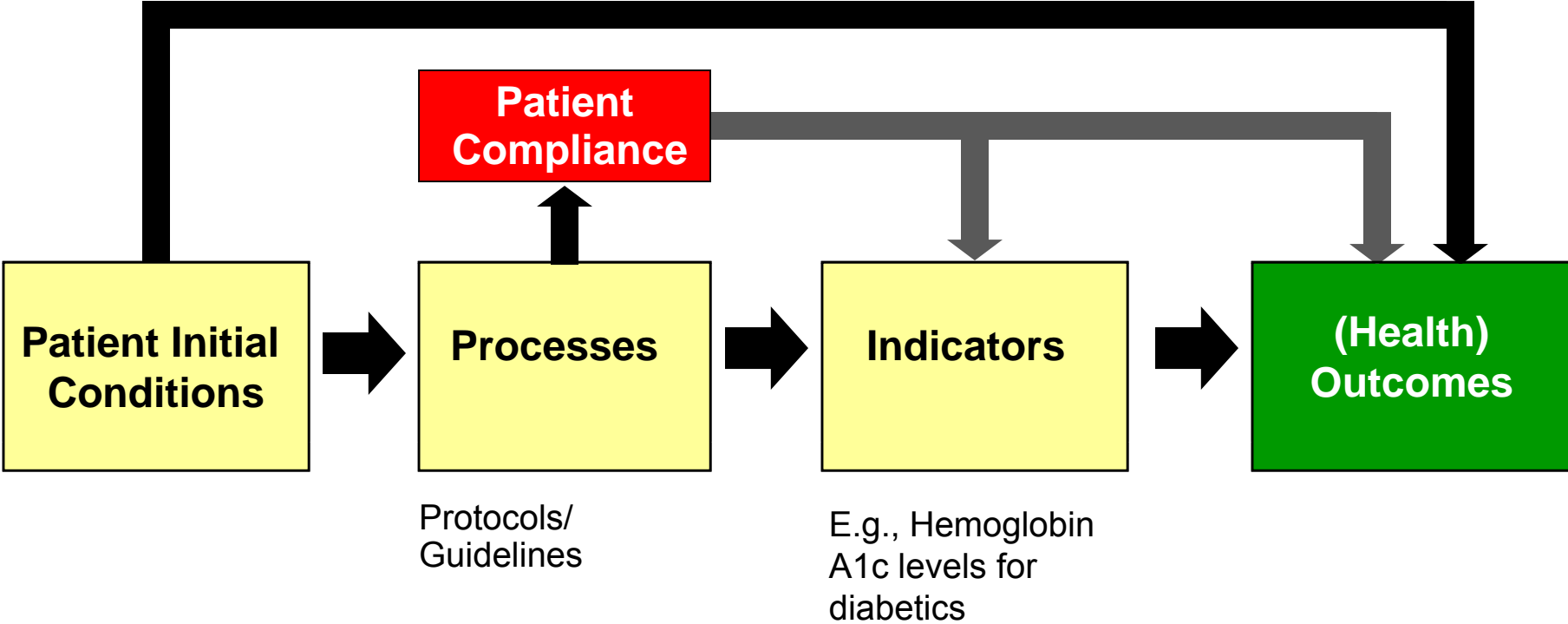
- **For** medical conditions
- **Real time** and “**on-line**” in care delivery, not just retrospective
- **Not** for interventions or short episodes
- **Not** separately for types of service (e.g. inpatient, outpatient, tests, rehabilitation)
- **Not** for practices, departments, clinics, or entire hospitals



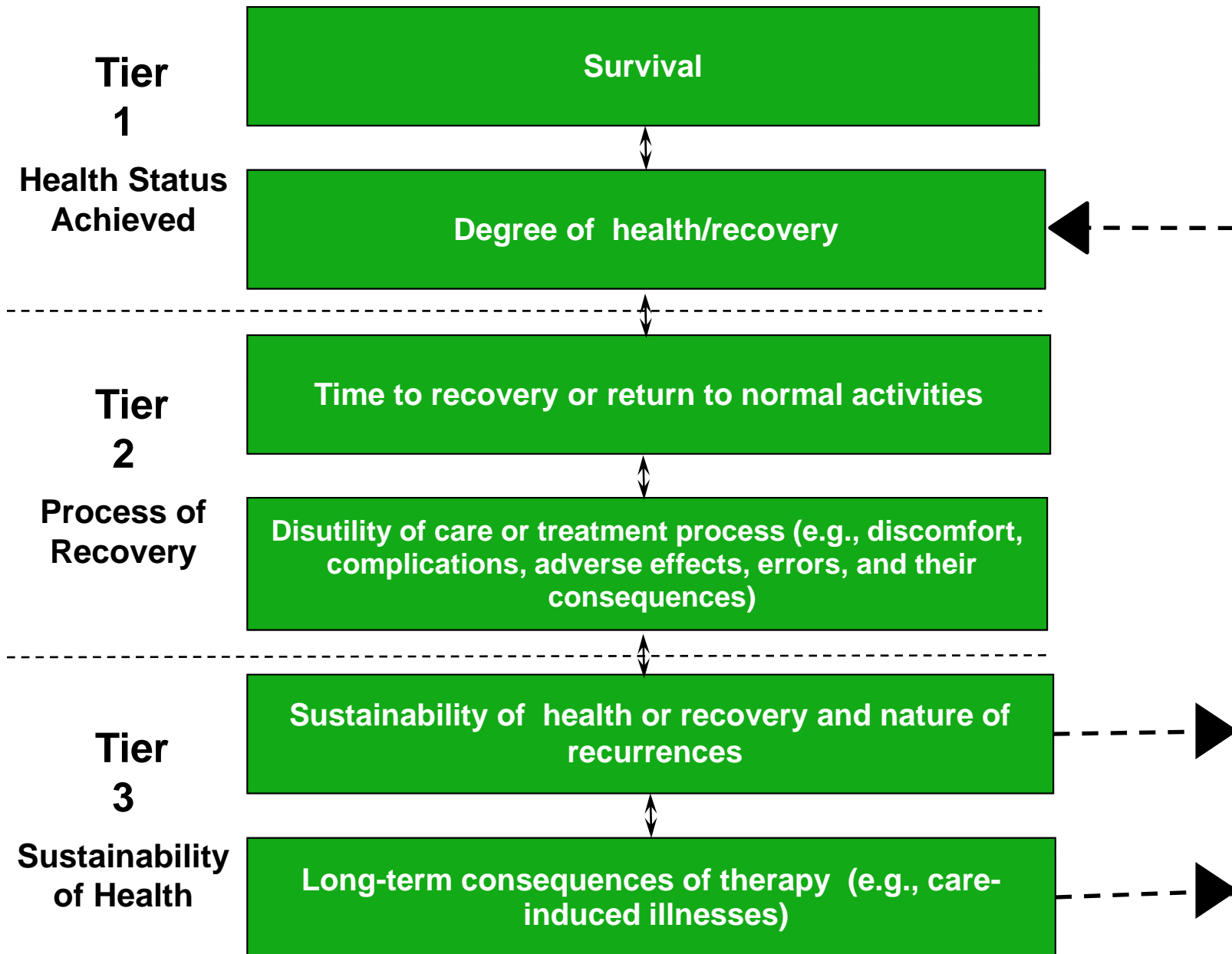
**Volume** measurement and reporting by medical condition is an interim first step



# Dimensions of Measurement



# The Outcome Measures Hierarchy



# 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 (e.g., treatment-related discomfort, complications, adverse effects, diagnostic errors, treatment errors)**

- 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 (e.g., care-induced illnesses)**

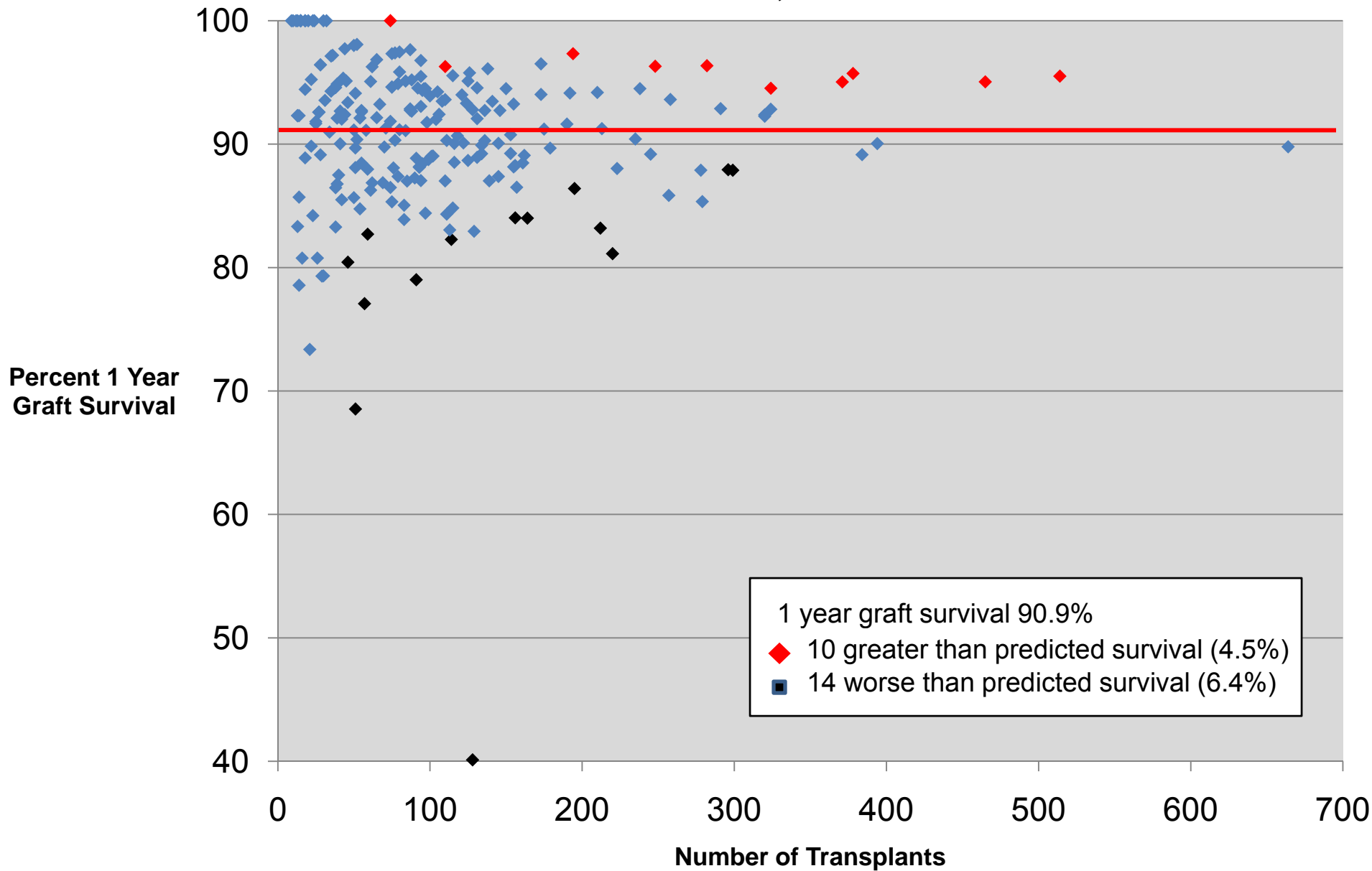
- Incidence of secondary cancers
- Brachial plexopathy
- Fertility/pregnancy complications
- Premature osteoporosis

### 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 co-morbidities
- Psychological and social factors

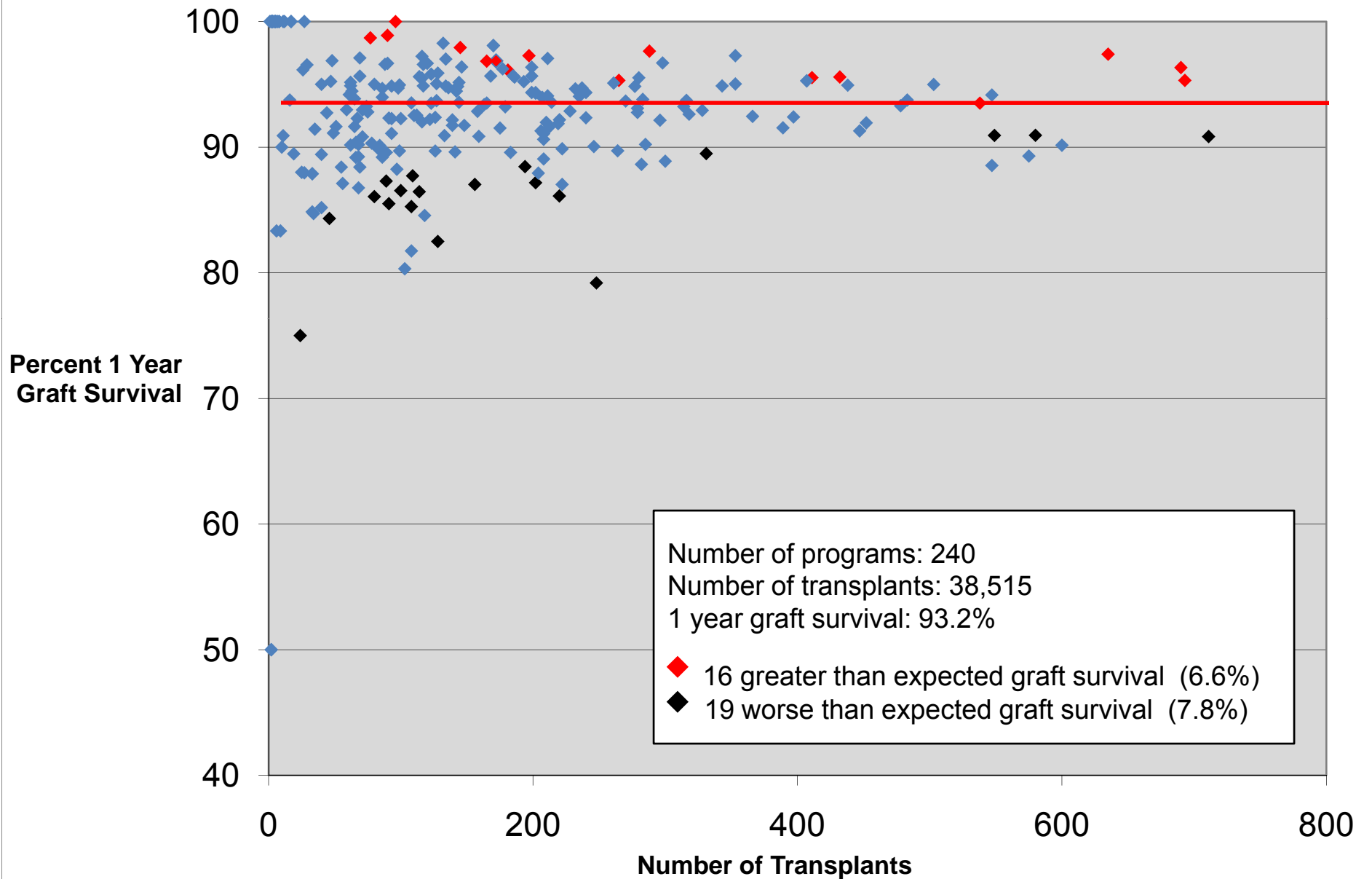


# Adult Kidney Transplant Outcomes, U.S. Center Results, 1998-2000



# Adult Kidney Transplant Outcomes

## U.S. Center Results, 2005-2007



# 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

# Measuring the Costs of Health Care

## Aspiration

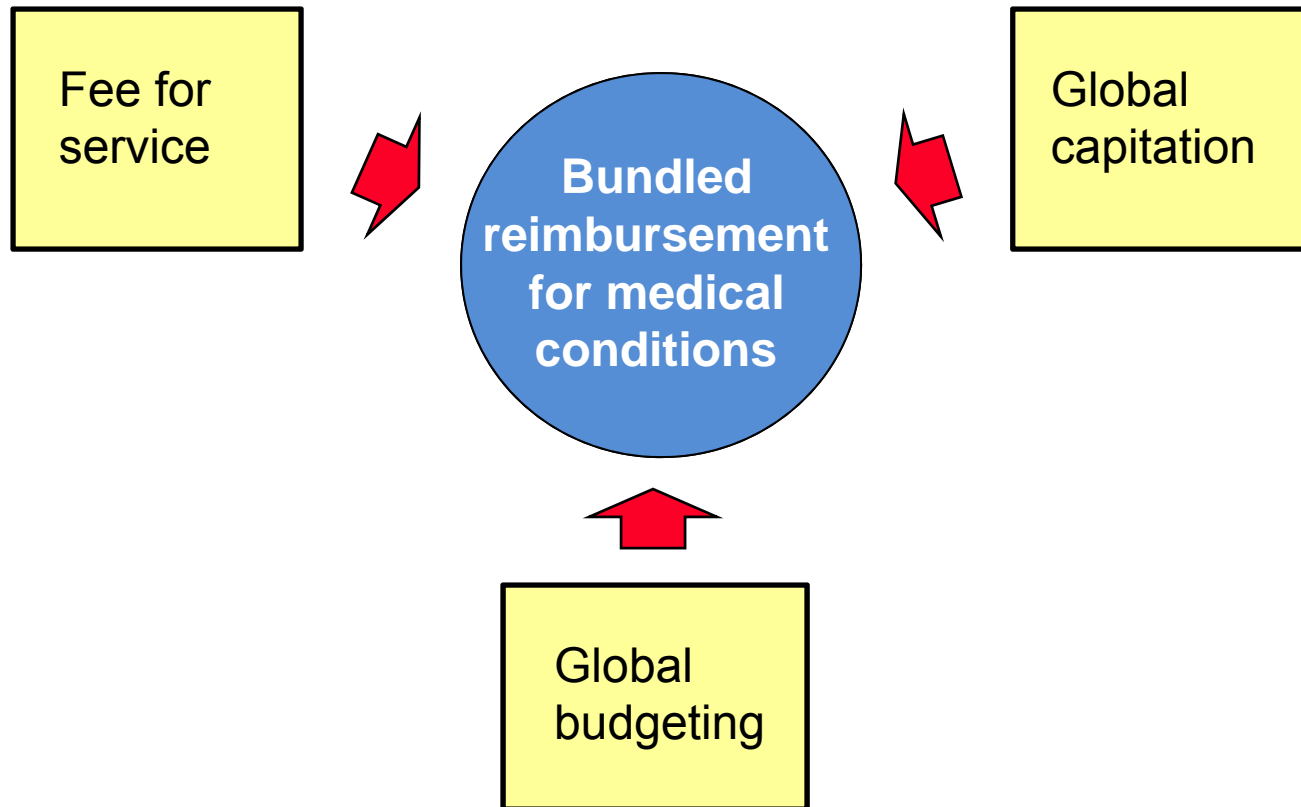
- Cost should be aggregated at the **medical condition level** (which includes common co-occurring conditions), not for services or entire facilities
- Cost should be aggregated **for each patient** across the **full cycle of care**
- The cost of each activity involved in caring for a patient should reflect **that patient's use of resources** (e.g. time, staff, facilities, service), rather than average allocations or allocations based on charges
- The only way to properly measure cost per patient is to track the **time** or **shared resource capacity** devoted to each patient by providers, facilities, support services, and other shared costs

## Current Reality

- Most providers track **charges** not costs
- Most providers track cost by **billing category**, not for medical conditions
- Most providers cannot **accumulate total costs** over the care cycle for particular patients
- Most providers use **arbitrary or average** allocations of cost categories, not patient specific allocations
- Many providers allocate cost based in part on **charge levels**, which biases cost estimates




### 3. Move to Bundled Prices for Care Cycles



## What is a Bundled Payment?

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

### What is Not a Bundled Payment

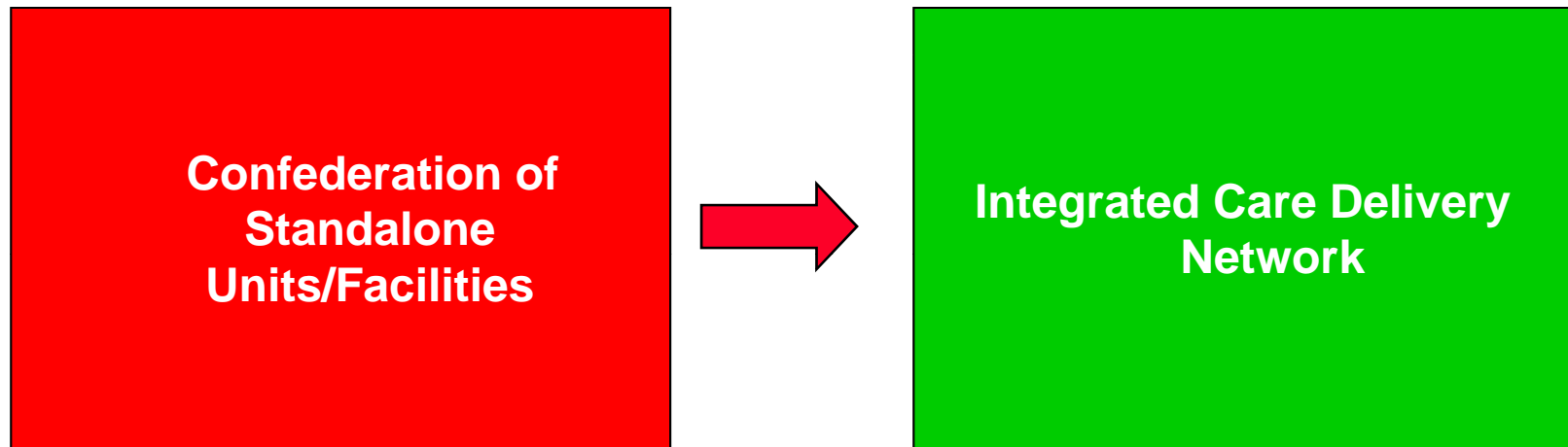
- Price for a **short** episode (e.g. inpatient only, procedure only)
  - **Separate** payments for physicians and facilities
  - **Pay-for-performance** bonuses
  - “**Medical Home**” payment for care coordination
- 
- DRGs can be a **starting point** for bundled payment models
  - **Providers** and **health plans** should be proactive in driving new reimbursement models, not wait for government

# Bundled Payment in Practice

## Hip and Knee Replacement in Sweden

- Beginning in 2009, all joint replacements (hip and knee) in Stockholm County Council are reimbursed with a **bundled price** that includes:
  - Pre-op evaluation
  - Lab tests
  - Radiology
  - Surgery & related admission
  - Prosthesis
  - Drugs
  - Inpatient rehab, up to 6 days
  - 1 follow-up visit within 3 months
  - Any additional surgery to the joint within 2 years
  - If post-op infection requiring antibiotics occurs, guarantee extends to 5 years
- The bundled price 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
- There is **mandatory reporting** by providers to the joint registry plus supplementary reporting
- Provider participation is **voluntary** but all providers are involved
  - 6 public hospitals, 4 private hospitals
  - 3400 patients treated in 2009
- The bundled price for a knee or hip replacement is about **US \$8,000**

## 4. Integrate Care Delivery Across Separate Facilities



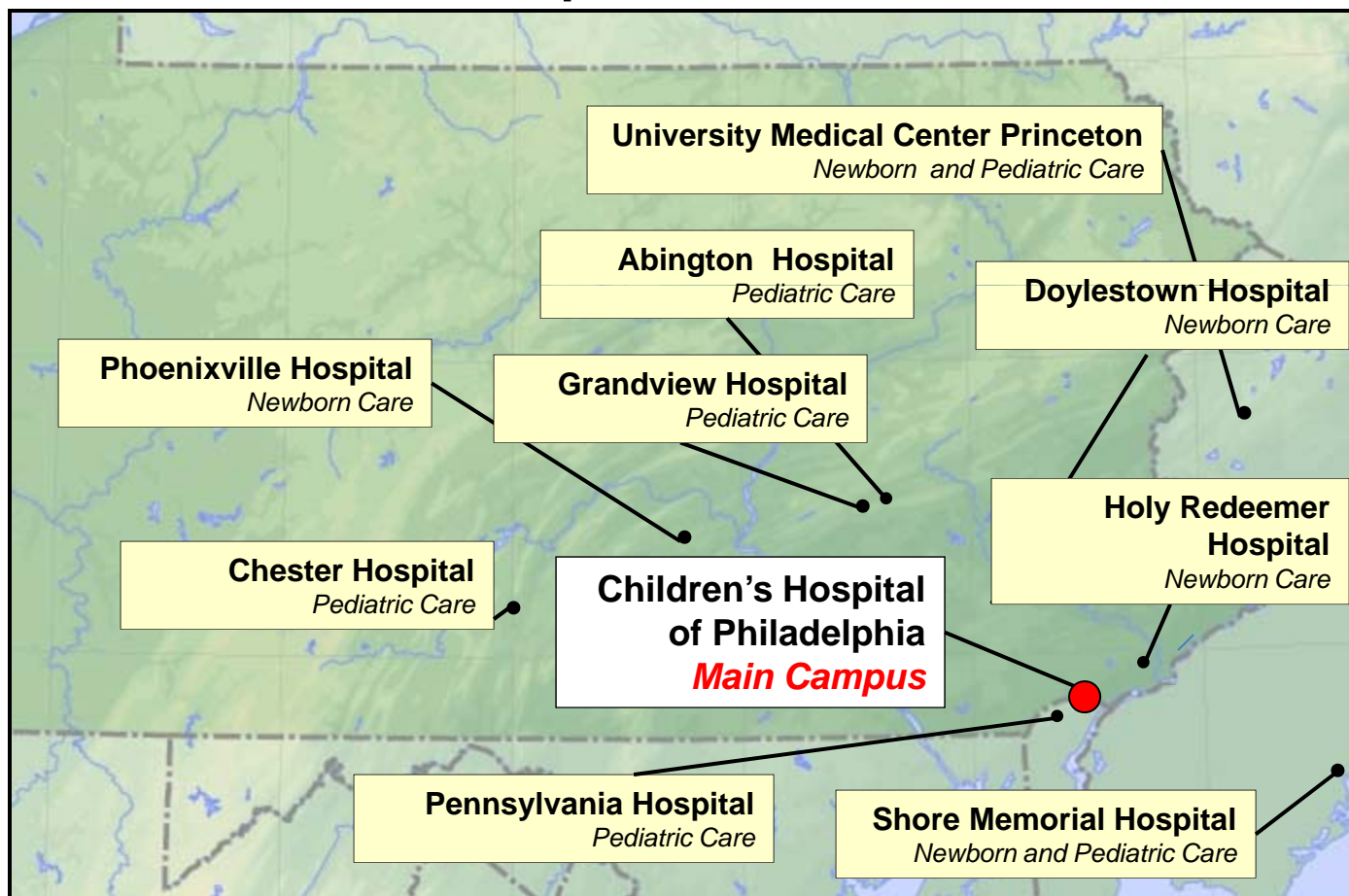
- Increase overall **volume**  
↓
- Benefits limited to **contracting** and **spreading limited fixed overhead**

- Increase **value**  
↓
- The network is **more than** the sum of its parts

# Building an Integrated Care System

## Children's Hospital of Philadelphia

### Hospital Affiliates

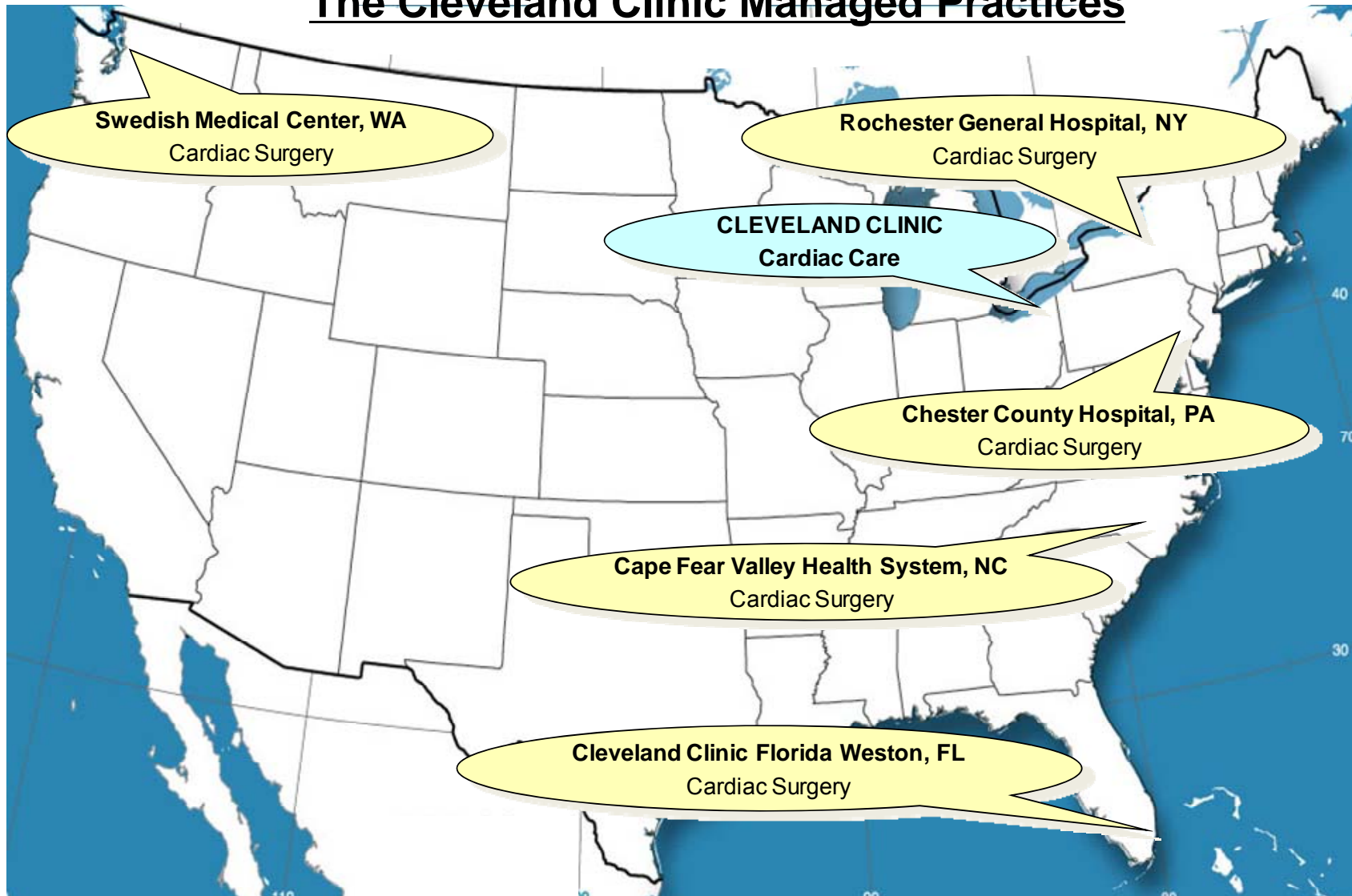


# Levels of System Integration

- **Rationalize service lines/ IPU**s across facilities to improve volume, avoid duplication, and concentrate excellence
- **Offer specific services** at the **appropriate facility**
  - E.g. acuity level, cost level, need for convenience
  - Patient referrals across units
- Clinically integrate care **across facilities**, within an IPU structure
  - **Expand** and **integrate** the care cycle
  - Better connect **preventive/primary care** units to specialty IPUs

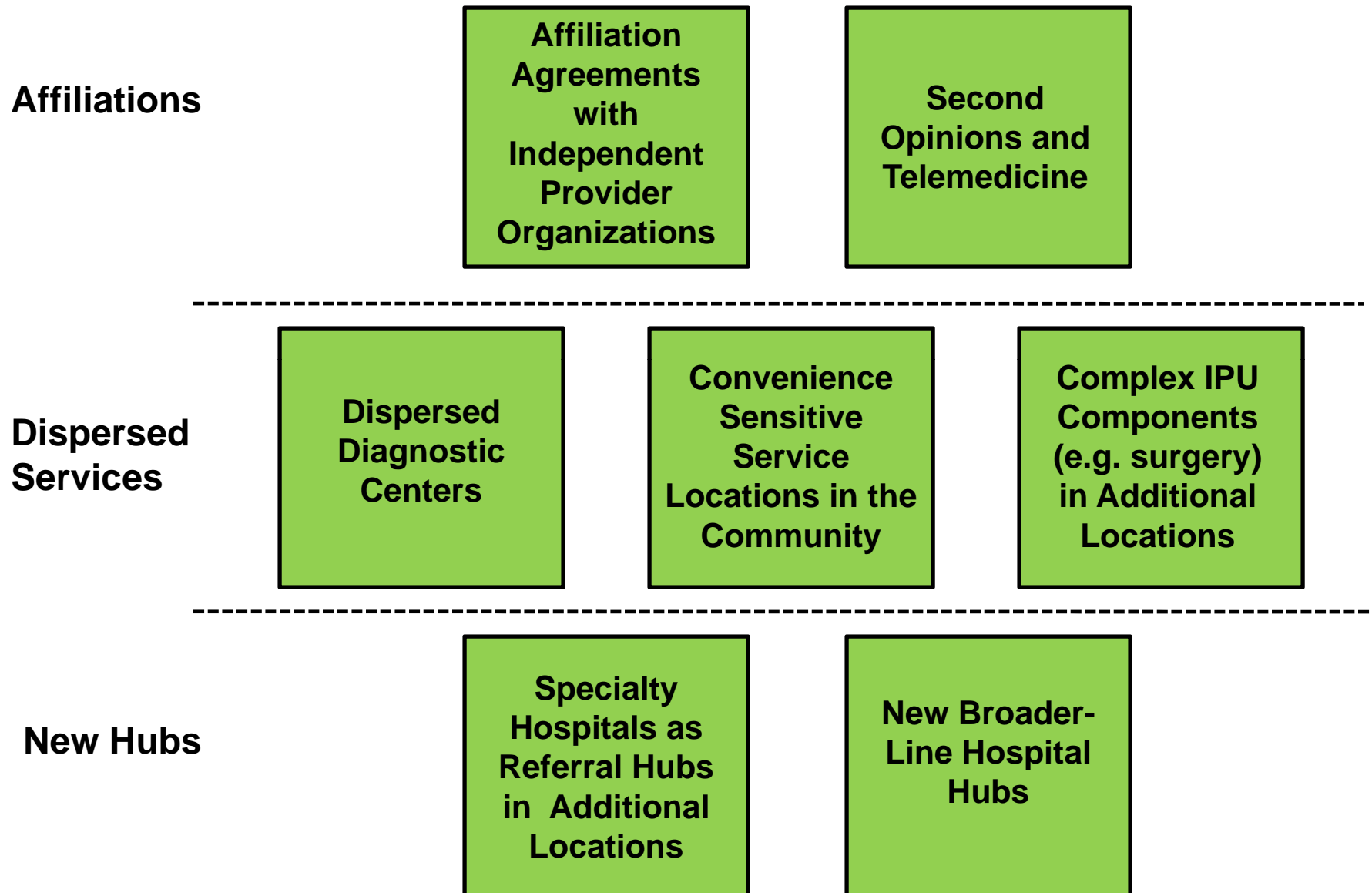
## 5. Expand Excellent IPUs Across Geography

### The Cleveland Clinic Managed Practices



- Grow in ways that improve **value**, not just volume

# Models of Geographic Expansion





## 6. Create 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

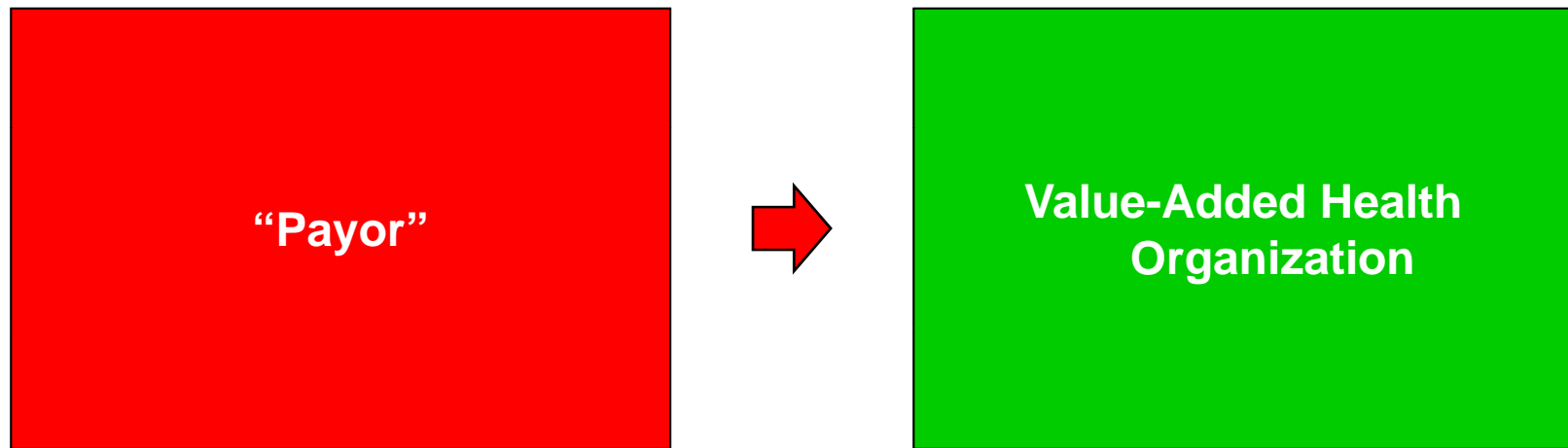
- Common **data definitions**
- Combine **all types of data** (e.g. notes, images) for each patient over time
- Data encompasses the **full care cycle**, including referring entities
- Allowing access and communication among **all involved parties**, including patients
- **“Structured”** data vs. free text
- **Templates** for medical conditions to enhance the user interface
- Architecture that allows **easy extraction of outcome, process, and cost measures**
- Interoperability standards enabling communication among **different provider systems**

# Value-Based Health Care Delivery


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# **Value-Based Healthcare Delivery: Implications for Contracting Parties/Health Plans**



# Value-Adding Roles of Health Plans

- Assemble, analyze and manage the **total medical records** of members
  - Provide for comprehensive and integrated **prevention, wellness, screening,** and **disease management** services to all members
  - Monitor and compare **provider results** by medical condition
  - Provide advice to patients (and referring physicians) in selecting **excellent providers**
  - Assist in coordinating patient care across the **care cycle** and **across medical conditions**
  - Encourage and reward **integrated practice unit** models by providers
  - Design new **bundled reimbursement structures** for care cycles instead of fees for discrete services
  - Measure and report **overall health results** for members by medical condition versus other plans
- 
- Health plans will require **new capabilities** and **new types of staff** to play these roles

# Value-Based Health Care: The Role of Employers

- Employer interests are **more closely aligned with patient interests** than any other system participant
    - Employers need healthy, high performing employees
    - Employers bear the costs of chronic health problems and poor quality care
- 
- The cost of poor health is 2 to 7 times more than the cost of health benefits
    - Absenteeism
    - Presenteeism
  - Employers are **uniquely positioned** to improve employee health
    - Daily interactions with employees
    - On-site clinics for quick diagnosis and treatment, prevention, and screening
    - Group culture of wellness
  - Providers can establish **direct relationships with employers** to enable value based approaches

# Value-Based Health Care Delivery: Implications for Government

- Remove obstacles to the **restructuring of health care delivery** around the integrated care of medical conditions
- Establish **universal measurement** and **reporting** of provider **health outcomes**
- Require universal reporting by **health plans** of health outcomes for members
- Shift reimbursement systems to **bundled prices for cycles of care** instead of payments for discrete treatments or services
- **Open up competition** among providers and across geography
- Mandate **EMR adoption** that enables integrated care and supports outcome measurement
  - National **standards** for data definitions, communication, and aggregation
  - **Software as a service** model for smaller providers
- Set policies that encourage greater **responsibility of individuals** for their health and their health care