

# Introduction to Value-Based Health Care Delivery

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Value Based Health Care Delivery Seminar  
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This presentation draws on *The Strategy That Will Fix Health Care*, by Michael E. Porter and Thomas H. Lee published in Harvard Business Review October 2013; *Redefining German Health Care* (with Clemens Guth), Springer Press, February 2012; *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, Elizabeth O. Teisberg, and Clemens Guth.

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# Creating a Value-Based Health Care Delivery System

## The Strategic Agenda

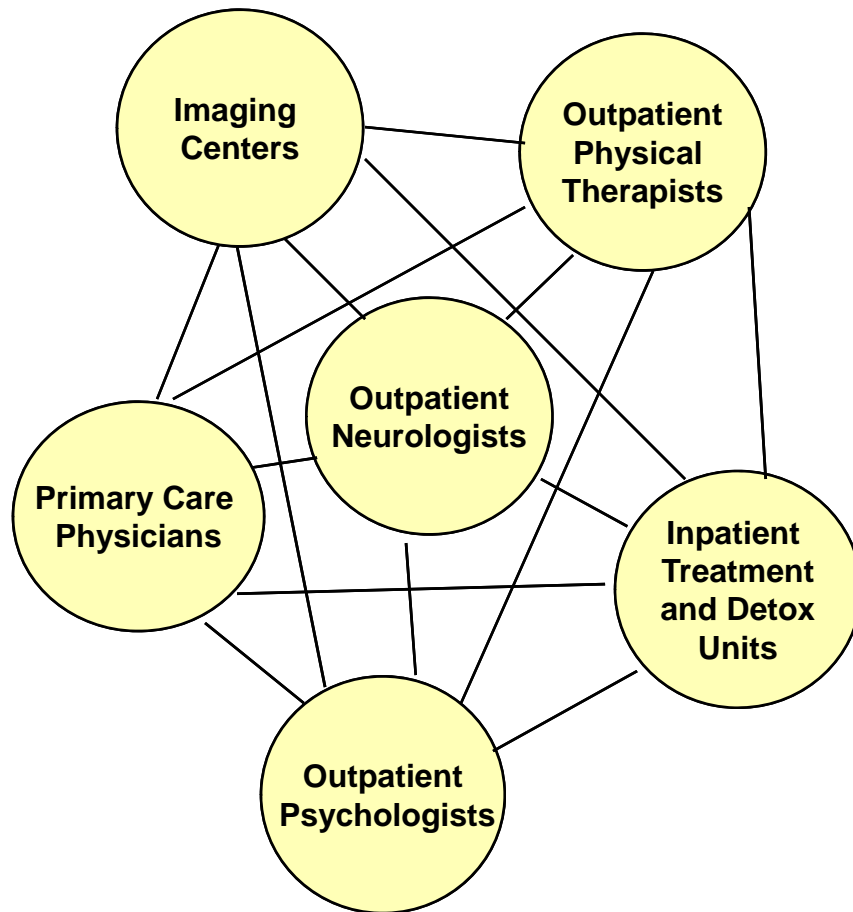
1. Organize Care into **Integrated Practice Units (IPUs)** around Patient Medical Conditions
  - For primary and preventive care, organize to serve **distinct patient segments**
2. Measure **Outcomes** and **Costs** for Every Patient
3. Move to **Bundled Payments** for Care Cycles
4. Integrate Care Delivery **Systems**
5. Expand **Geographic Reach**
6. Build an Enabling **Information Technology Platform**

# 1. Organize Care Around Patient Medical Conditions

## Migraine Care in Germany

### Existing Model:

Organize by Specialty and  
Discrete Service



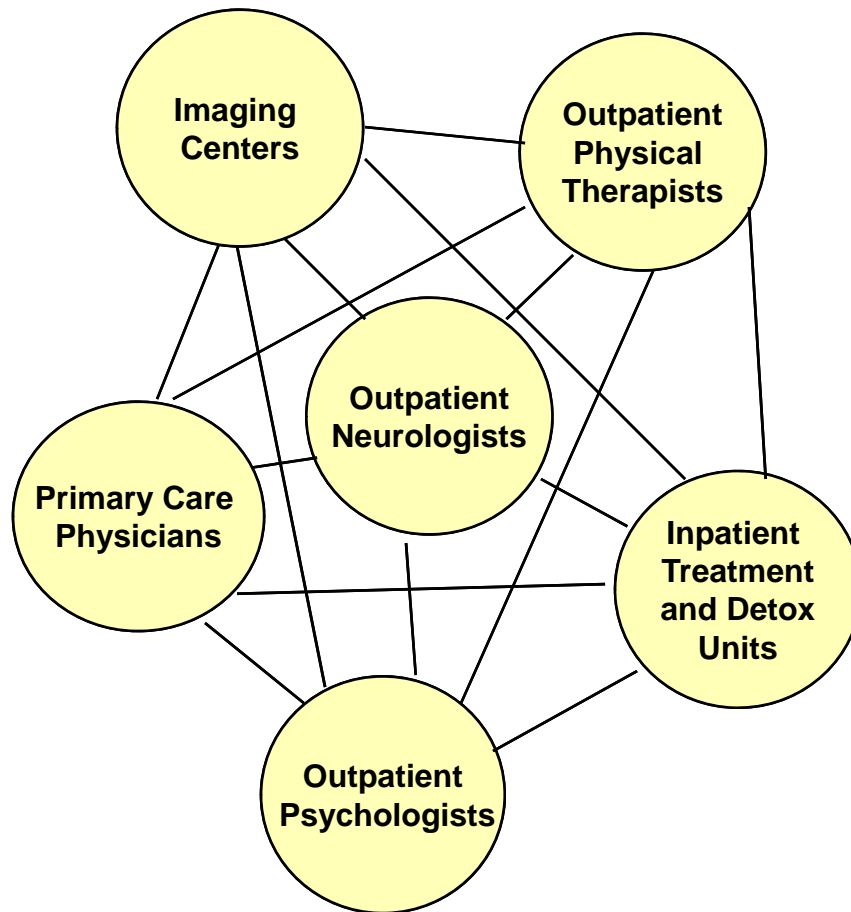
Source: Porter, Michael E., Clemens Guth, and Elisa Dannemiller, *The West German Headache Center: Integrated Migraine Care*, Harvard Business School Case 9-707-559, September 13, 2007

# 1. Organize Care Around Patient Medical Conditions

## Migraine Care in Germany

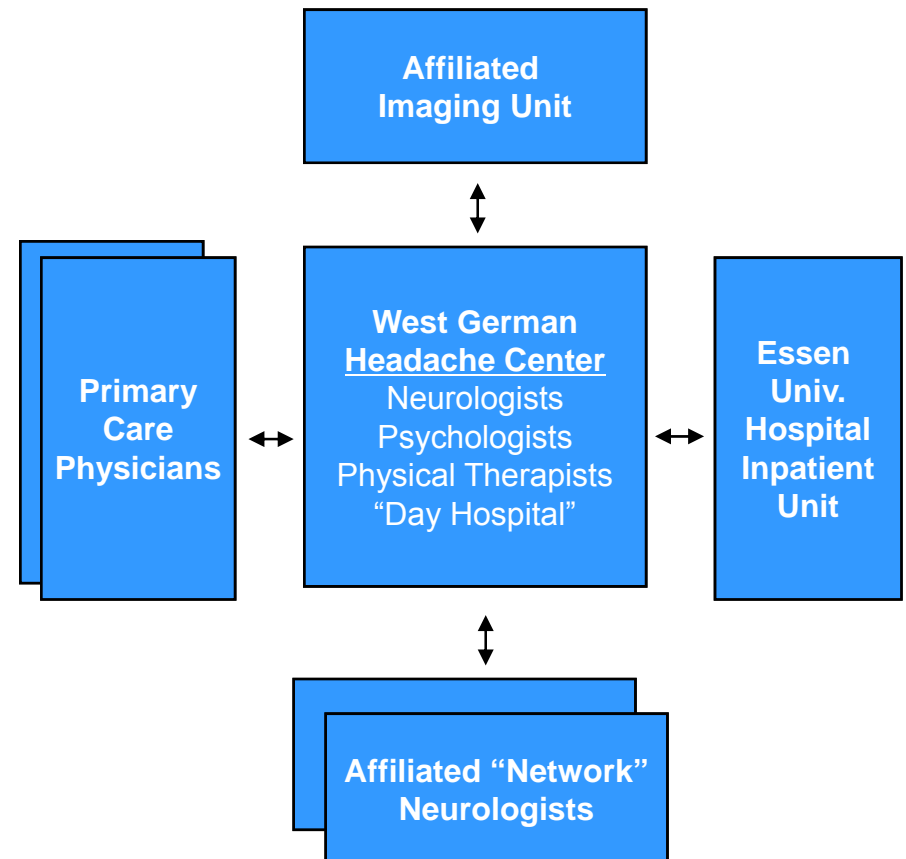
### Existing Model:

Organize by Specialty and Discrete Service



### 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

# What is a Medical Condition?

## Specialty Care

- A medical condition is **an interrelated set of patient medical circumstances best addressed in an integrated way**
  - Defined from the **patient's** perspective
  - Involving **multiple** specialties and services
  - **Including** common co-occurring conditions and complications**Examples:** diabetes, breast cancer, knee osteoarthritis

## Primary/Preventive Care

- The corresponding unit of value creation is **defined patient segments** with similar preventive, diagnostic, and primary treatment needs (e.g. healthy adults, patients with complex chronic conditions, frail elderly)
- 
- The medical condition / patient segment is the proper **unit of value creation and value measurement** in health care delivery

# The Care Delivery Value Chain

## Acute Knee-Osteoarthritis Requiring Replacement

INFORMING AND ENGAGING	<ul style="list-style-type: none"> <li>Importance of exercise, weight reduction, proper nutrition</li> </ul>	<ul style="list-style-type: none"> <li>Meaning of diagnosis</li> <li>Prognosis (short- and long-term outcomes)</li> <li>Drawbacks and benefits of surgery</li> </ul>	<ul style="list-style-type: none"> <li>Setting expectations</li> <li>Importance of nutrition, weight loss, vaccinations</li> <li>Home preparation</li> </ul>	<ul style="list-style-type: none"> <li>Expectations for recovery</li> <li>Importance of rehab</li> <li>Post-surgery risk factors</li> </ul>	<ul style="list-style-type: none"> <li>Importance of rehab adherence</li> <li>Longitudinal care plan</li> </ul>	<ul style="list-style-type: none"> <li>Importance of exercise, maintaining healthy weight</li> </ul>
	<ul style="list-style-type: none"> <li>Joint-specific symptoms and function (e.g., WOMAC scale)</li> <li>Overall health (e.g., SF-12 scale)</li> </ul>	<ul style="list-style-type: none"> <li>Loss of cartilage</li> <li>Change in subchondral bone</li> <li>Joint-specific symptoms and function</li> <li>Overall health</li> </ul>	<ul style="list-style-type: none"> <li>Baseline health status</li> <li>Fitness for surgery (e.g., ASA score)</li> </ul>	<ul style="list-style-type: none"> <li>Blood loss</li> <li>Operative time</li> <li>Complications</li> </ul>	<ul style="list-style-type: none"> <li>Infections</li> <li>Joint-specific symptoms and function</li> <li>Inpatient length of stay</li> <li>Ability to return to normal activities</li> </ul>	<ul style="list-style-type: none"> <li>Joint-specific symptoms and function</li> <li>Weight gain or loss</li> <li>Missed work</li> <li>Overall health</li> </ul>
ACCESSING	<ul style="list-style-type: none"> <li>PCP office</li> <li>Health club</li> <li>Physical therapy clinic</li> </ul>	<ul style="list-style-type: none"> <li>Specialty office</li> <li>Imaging facility</li> </ul>	<ul style="list-style-type: none"> <li>Specialty office</li> <li>Pre-op evaluation center</li> </ul>	<ul style="list-style-type: none"> <li>Operating room</li> <li>Recovery room</li> <li>Orthopedic floor at hospital or specialty surgery center</li> </ul>	<ul style="list-style-type: none"> <li>Nursing facility</li> <li>Rehab facility</li> <li>PT clinic</li> <li>Home</li> </ul>	<ul style="list-style-type: none"> <li>Specialty office</li> <li>Primary care office</li> <li>Health club</li> </ul>
	MONITORING/PREVENTING	DIAGNOSING	PREPARING	INTERVENING	RECOVERING/REHABBING	MONITORING/MANAGING
CARE DELIVERY	<b>MONITOR</b> <ul style="list-style-type: none"> <li>Conduct PCP exam</li> <li>Refer to specialists, if necessary</li> </ul>	<b>IMAGING</b> <ul style="list-style-type: none"> <li>Perform and evaluate MRI and x-ray               <ul style="list-style-type: none"> <li>-Assess cartilage loss</li> <li>-Assess bone alterations</li> </ul> </li> </ul>	<b>OVERALL PREP</b> <ul style="list-style-type: none"> <li>Conduct home assessment</li> <li>Monitor weight loss</li> </ul>	<b>ANESTHESIA</b> <ul style="list-style-type: none"> <li>Administer anesthesia (general, epidural, or regional)</li> </ul>	<b>SURGICAL</b> <ul style="list-style-type: none"> <li>Immediate return to OR for manipulation, if necessary</li> </ul>	<b>MONITOR</b> <ul style="list-style-type: none"> <li>Consult regularly with patient</li> </ul>
	<b>PREVENT</b> <ul style="list-style-type: none"> <li>Prescribe anti-inflammatory medicines</li> <li>Recommend exercise regimen</li> <li>Set weight loss targets</li> </ul>	<b>CLINICAL EVALUATION</b> <ul style="list-style-type: none"> <li>Review history and imaging</li> <li>Perform physical exam</li> <li>Recommend treatment plan (surgery or other options)</li> </ul>	<b>SURGICAL PREP</b> <ul style="list-style-type: none"> <li>Perform cardiology, pulmonary evaluations</li> <li>Run blood labs</li> <li>Conduct pre-op physical exam</li> </ul>	<b>SURGICAL PROCEDURE</b> <ul style="list-style-type: none"> <li>Determine approach (e.g., minimally invasive)</li> <li>Insert device</li> <li>Cement joint</li> </ul>	<b>MEDICAL</b> <ul style="list-style-type: none"> <li>Monitor coagulation</li> </ul>	<b>MANAGE</b> <ul style="list-style-type: none"> <li>Prescribe prophylactic antibiotics when needed</li> <li>Set long-term exercise plan</li> </ul>
					<b>LIVING</b> <ul style="list-style-type: none"> <li>Provide daily living support (showering, dressing)</li> <li>Track risk indicators (fever, swelling, other)</li> </ul>	<ul style="list-style-type: none"> <li>Revise joint, if necessary</li> </ul>
				<b>PAIN MANAGEMENT</b> <ul style="list-style-type: none"> <li>Prescribe preemptive multimodal pain meds</li> </ul>	<b>PHYSICAL THERAPY</b> <ul style="list-style-type: none"> <li>Daily or twice daily PT sessions</li> </ul>	

 Orthopedic Specialist  
 Other Provider Entities

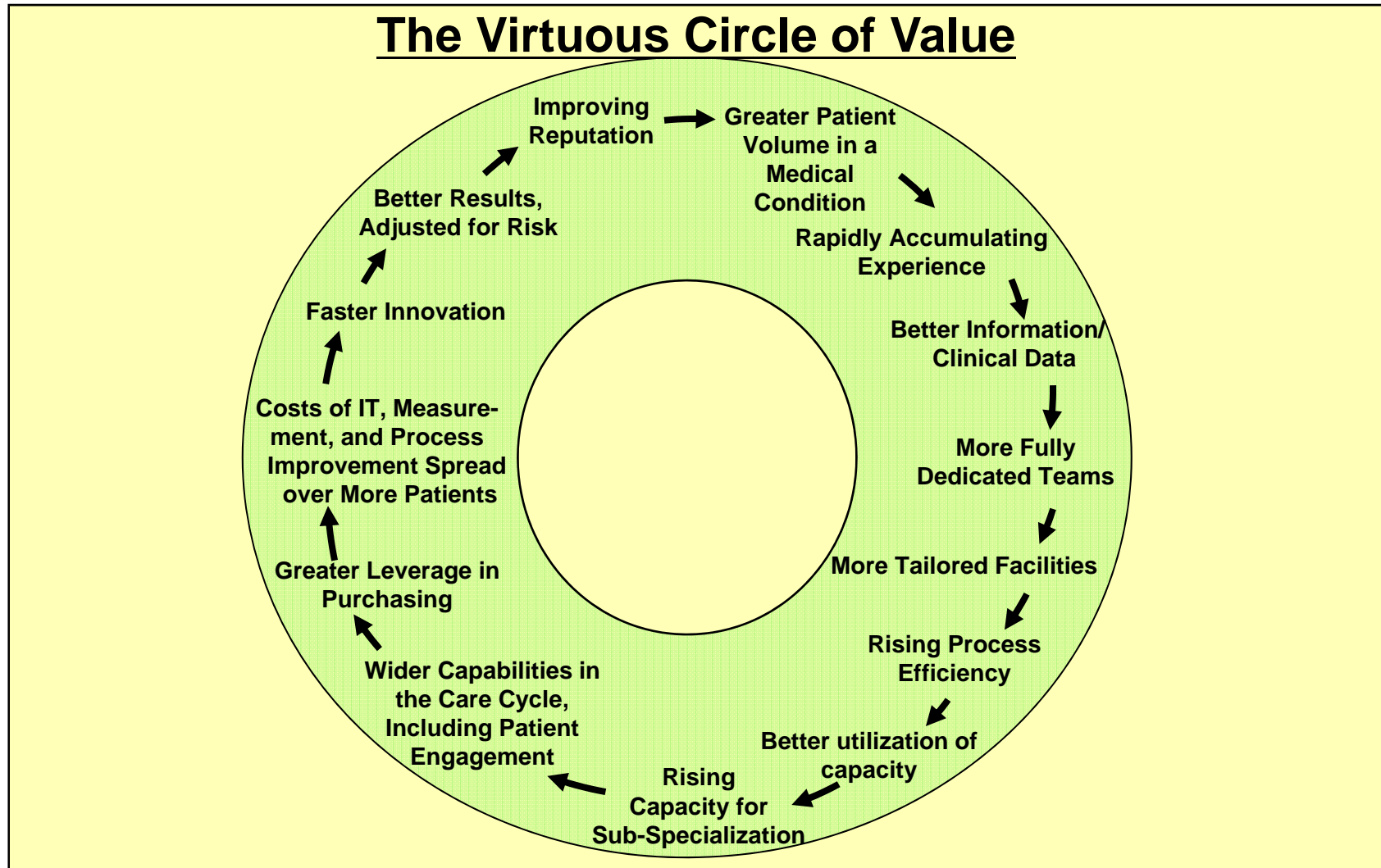
# **Integrating Across the Care Cycle**

## **An Orthopedic Surgeon Teaches A Course to Physical Therapists About Treatment Post-Surgery**





# Volume in a Medical Condition Enables Value



- 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

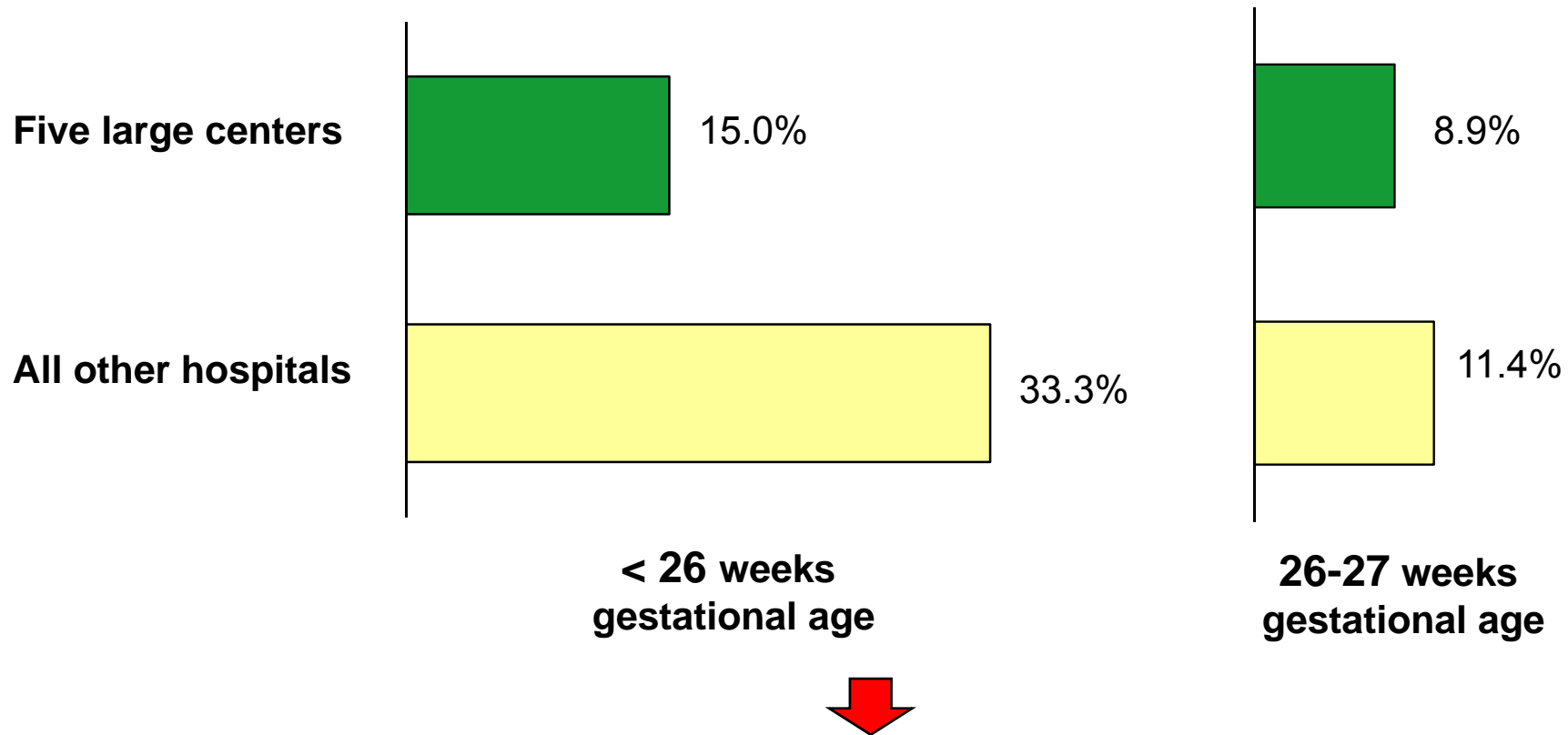
## Fragmentation of Hospital Services in Sweden

DRG	Number of admitting providers	Average percent of total national admissions	Average admissions/ provider/ year	Average admissions/ provider/ week
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.

# Low Volume Undermines Value

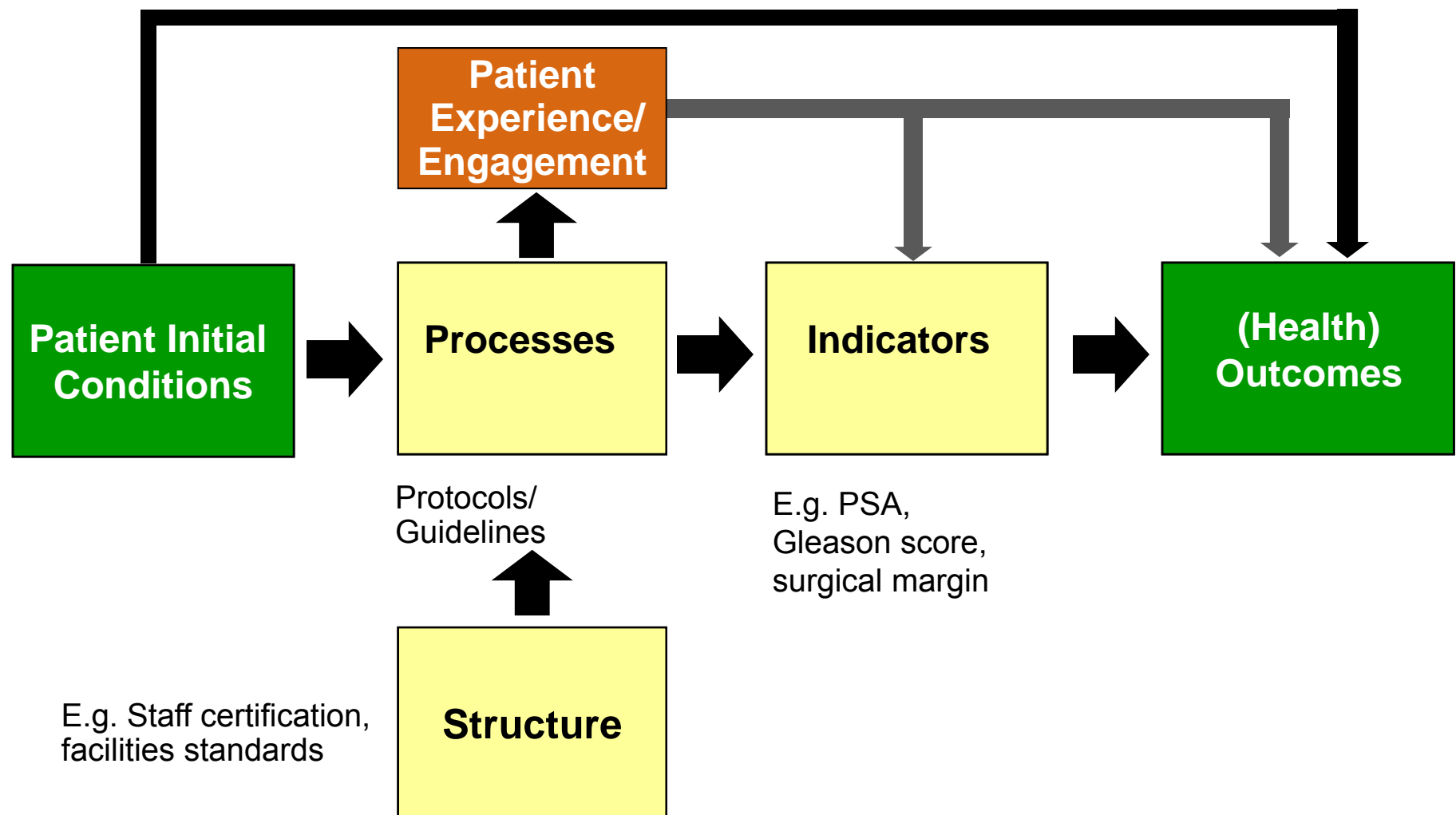
## Mortality of Low-birth Weight Infants in Baden-Württemberg, Germany



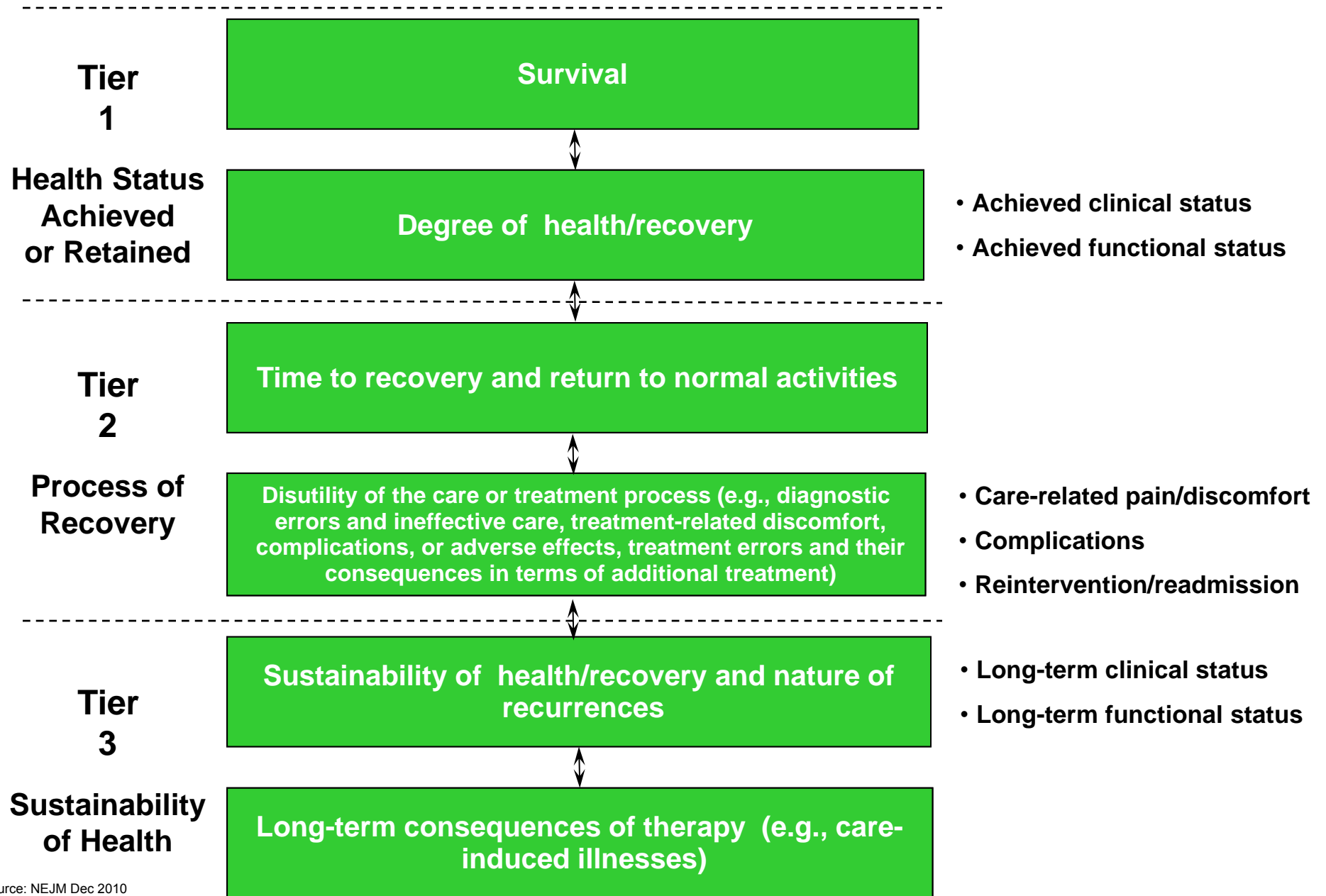
- **Minimum volume standards** are an interim step to drive value and service consolidation in the absence of rigorous outcome information

## 2. Measure Outcomes and Costs for Every Patient

### The Measurement Landscape

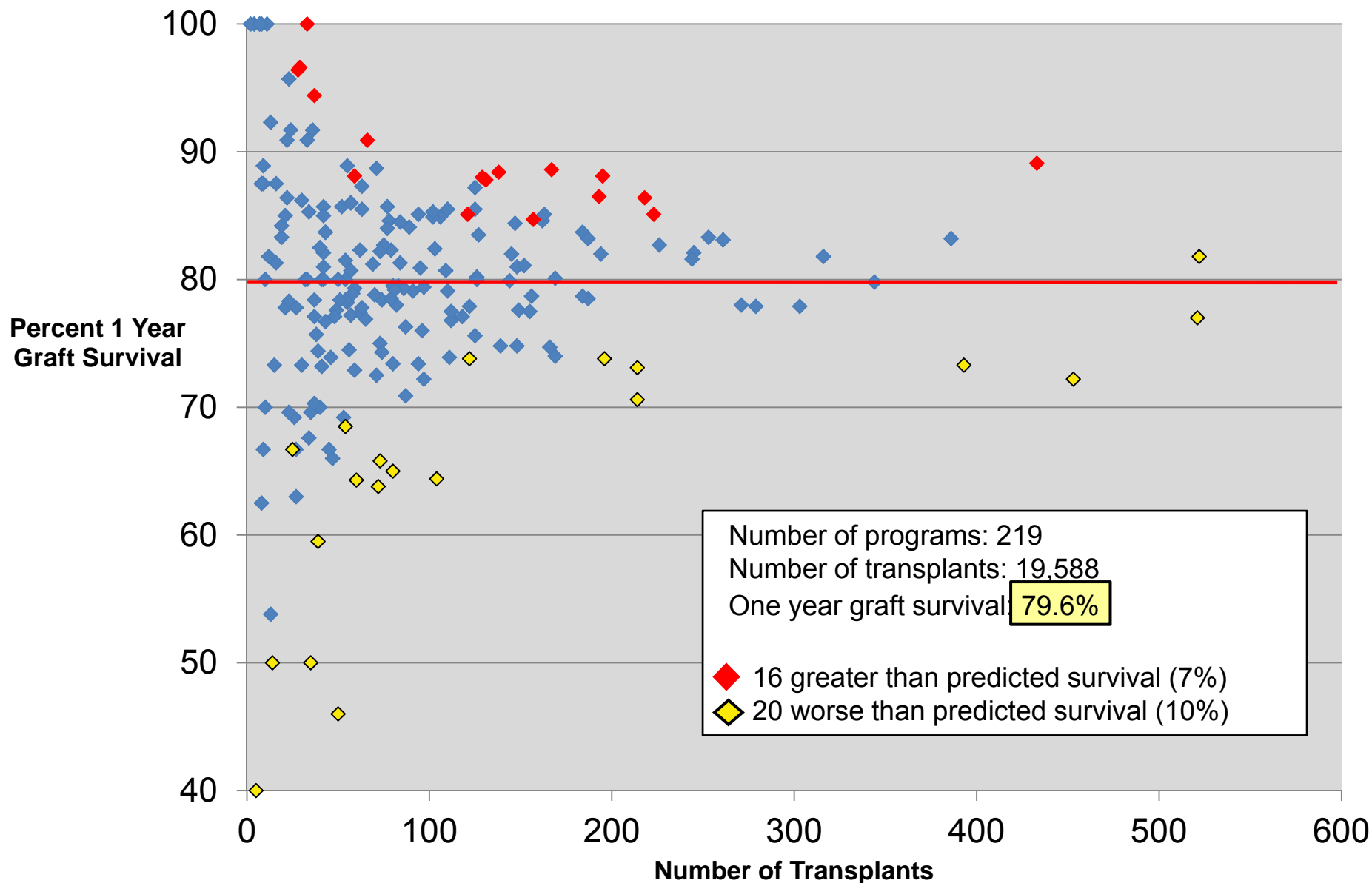


# The Outcome Measures Hierarchy



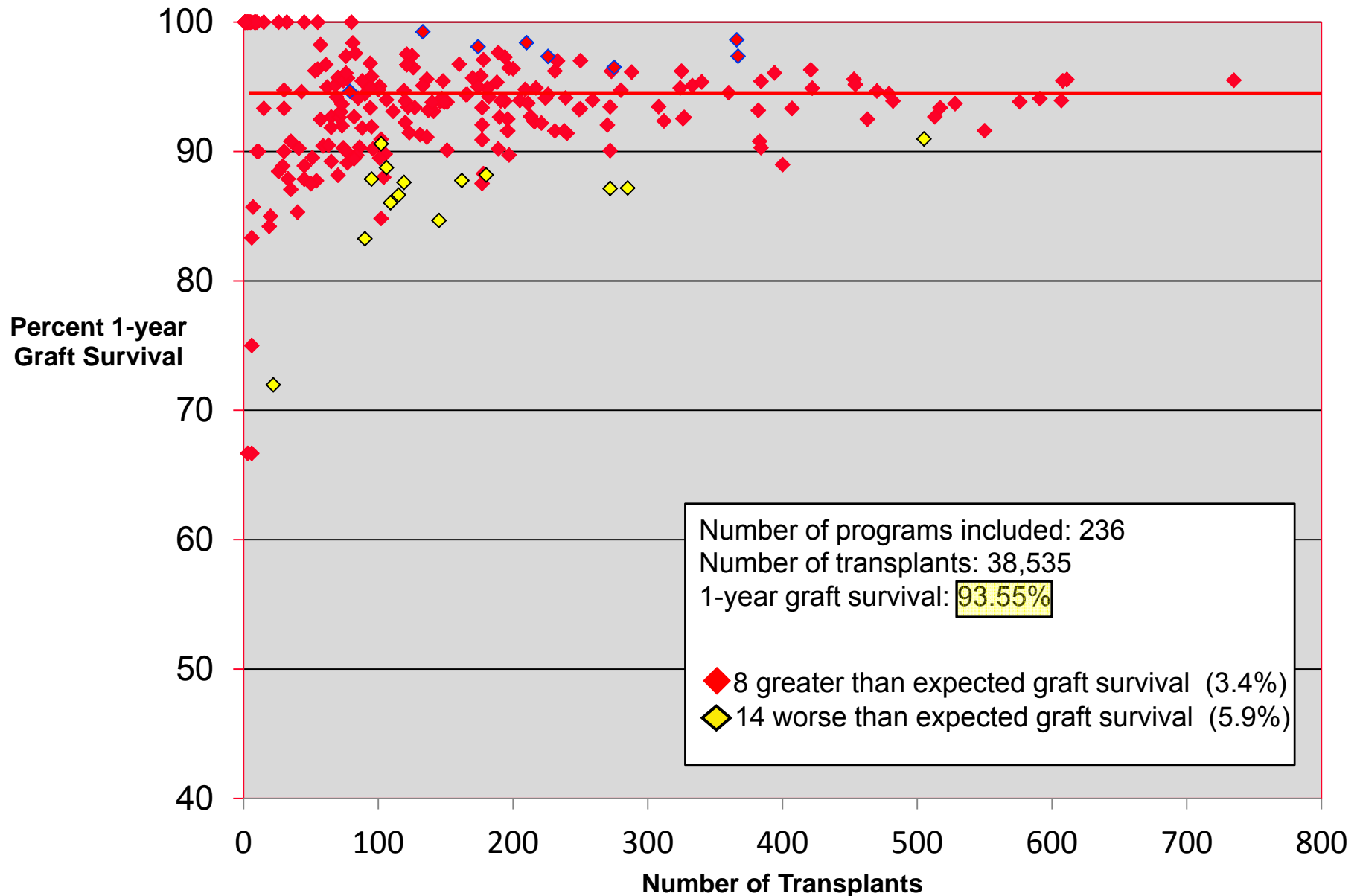
# Comparing Outcomes across Centers

## Adult Kidney Transplants, US Centers, 1987-1989



# Comparing Outcomes across Centers

## Adult Kidney Transplants, US Centers, 2008-2010



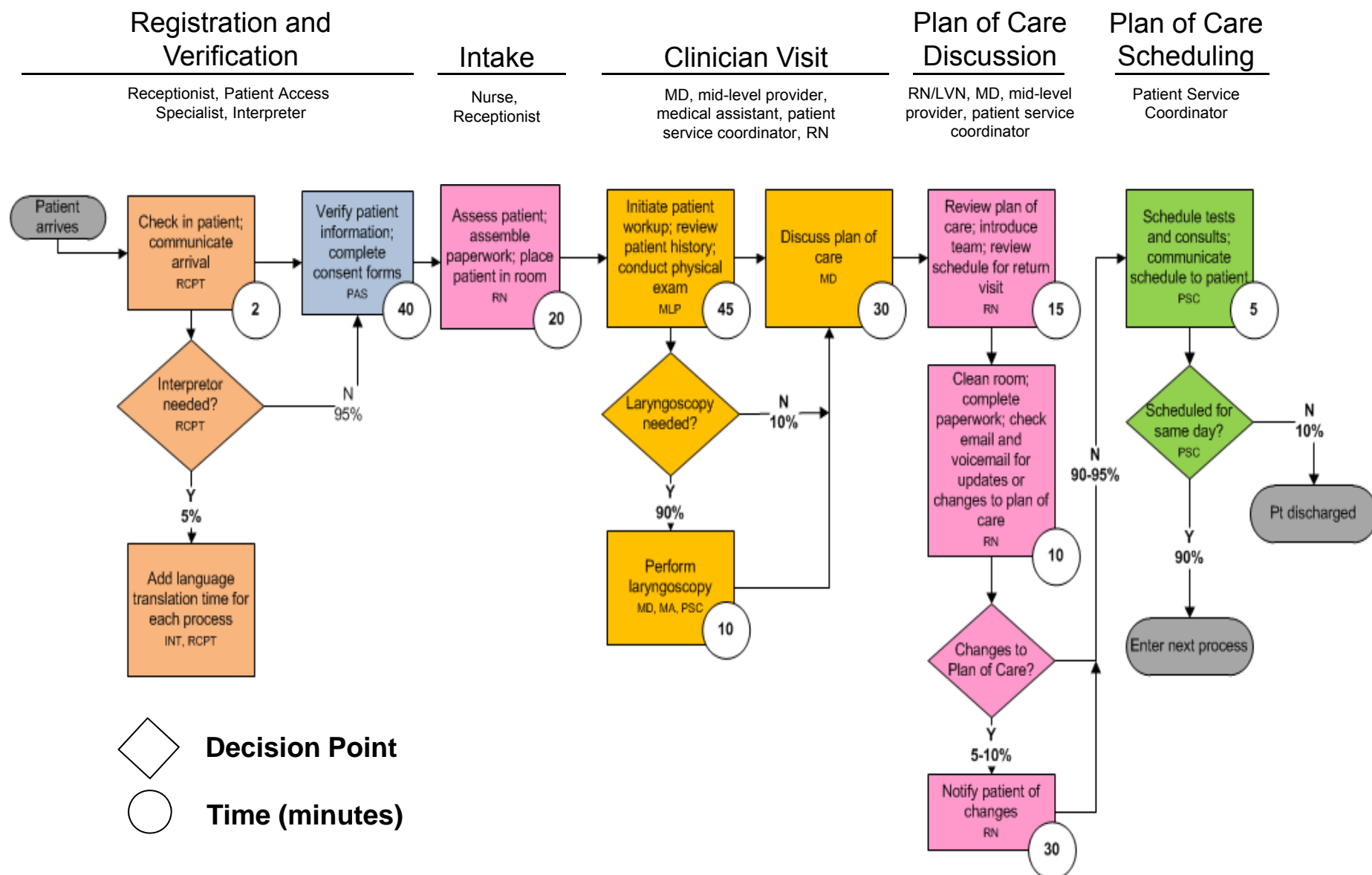


# Measuring the Cost of Care Delivery: Principles

- Cost is the **actual expense** of patient care, not the **tariff** billed or collected
- Cost should be measured around the **patient**, not just the department or provider organization
- Cost should be aggregated over the **full cycle of care for the patient's medical condition**
- Cost depends on the **actual use of resources** involved in a patient's care process (personnel, facilities, supplies)

# Mapping Resource Utilization

## MD Anderson Cancer Center – New Patient Visit

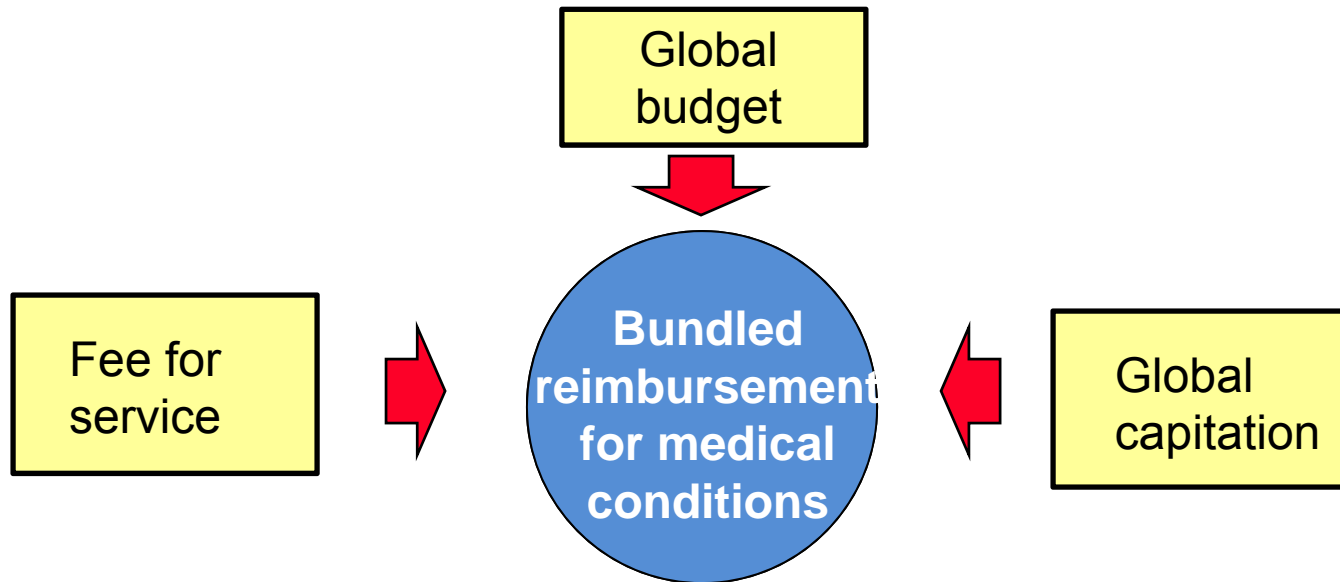


# Major Cost Reduction Opportunities in Health Care

- Reduce **process variation** that lowers efficiency and raises inventory without improving outcomes
- Eliminate **low-** or **non-value added** services or tests
  - Sometimes driven by protocols or to justify billing
- Rationalize redundant **administrative** and **scheduling** units
- **Improve utilization** of expensive physicians, staff, clinical space, and facilities by reducing duplication and service fragmentation
- Minimize use of **physician and skilled staff** time for less skilled activities
- Reduce the provision of routine or uncomplicated services in **highly-resourced** facilities
- **Reduce cycle times** across the care cycle
- **Optimize total care cycle cost** versus minimizing cost of individual service
- Increase **cost awareness** in clinical teams
- Many cost reduction opportunities will actually **improve outcomes**



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



#### Bundled Price

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

# Bundled Payment in Practice

## Hip and Knee Replacement in Stockholm, Sweden

- **Components** of the bundle

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

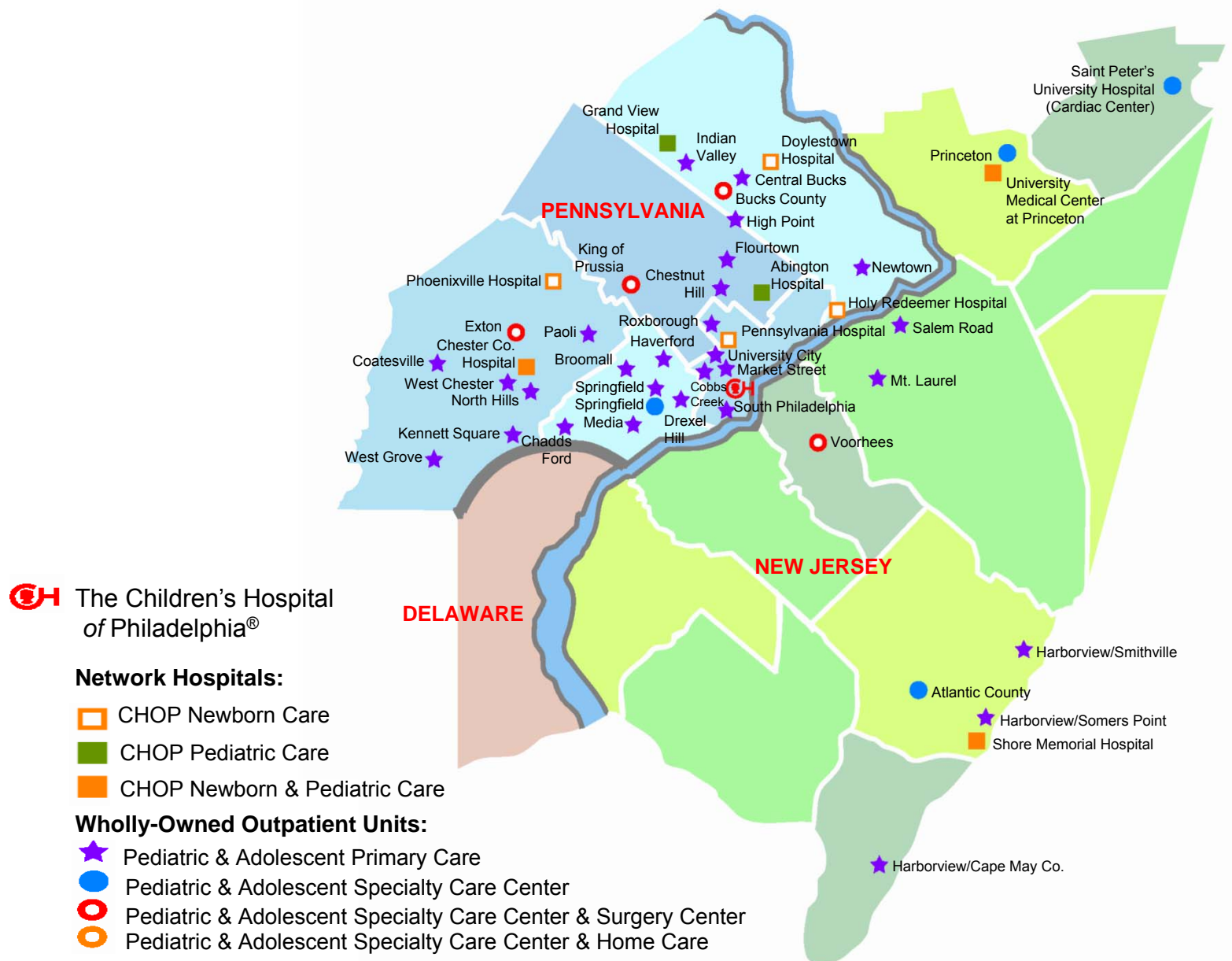
- Currently applies to all **relatively healthy patients** (i.e. ASA scores of 1 or 2)
- The same **referral process** from PCPs is utilized as the traditional system
- **Mandatory reporting** by providers to the joint registry plus supplementary reporting
- Applies to **all** qualifying patients. Provider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



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

## 4. Integrate Care Delivery Systems

### Children's Hospital of Philadelphia Care Network



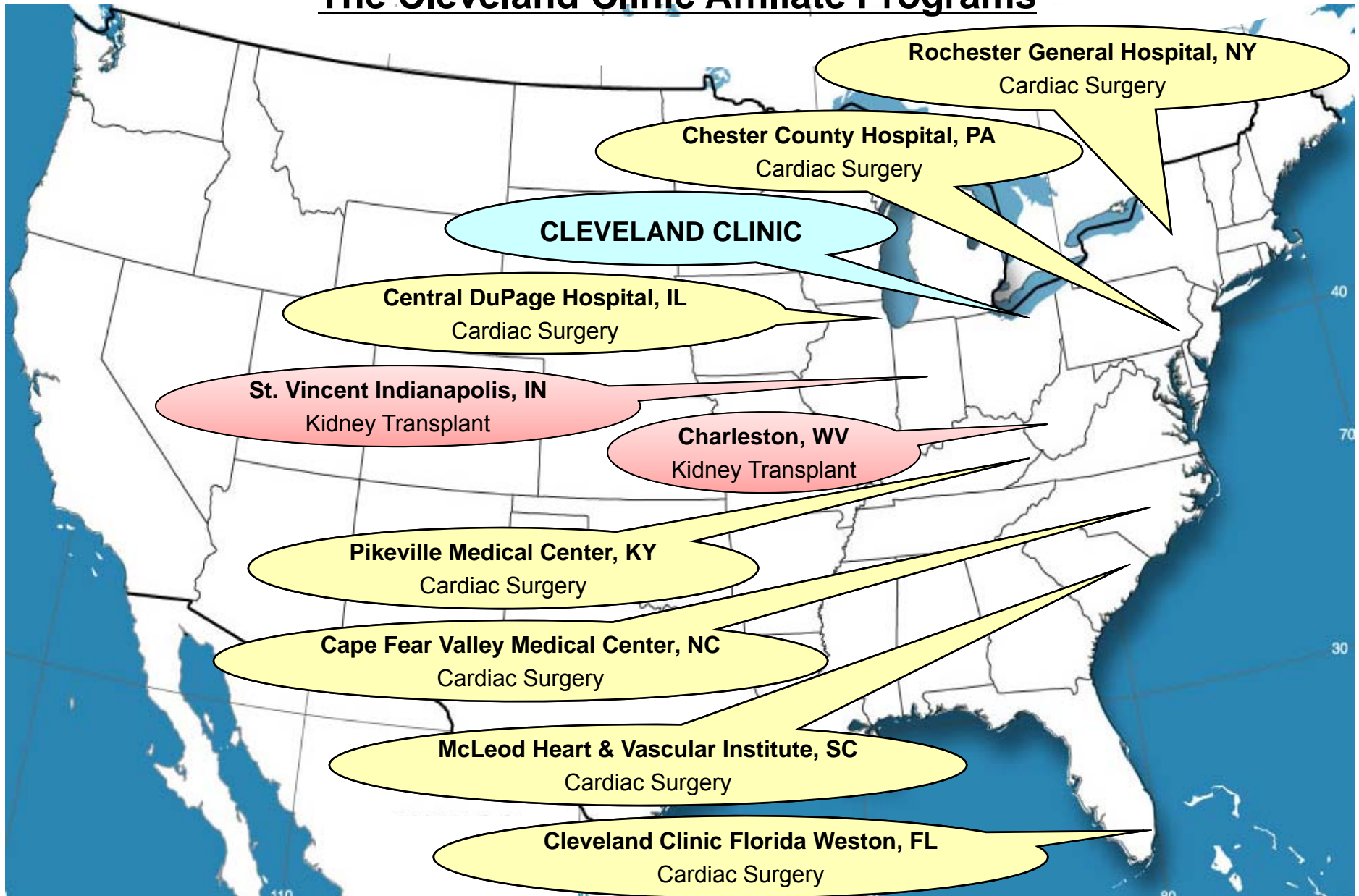


## Four Levels of Provider System Integration

1. **Define the overall scope of services** where the provider can achieve high value
2. **Concentrate volume in fewer locations** in the conditions that providers treat
3. Choose the **right location for each service** based on medical condition, acuity level, resource intensity, cost level and need for convenience
  - E.g., shift routine surgeries out of tertiary hospitals to smaller, more specialized facilities
4. **Integrate care across appropriate locations** through IPU structures

## 5. Expand Geographic Reach

### The Cleveland Clinic Affiliate Programs

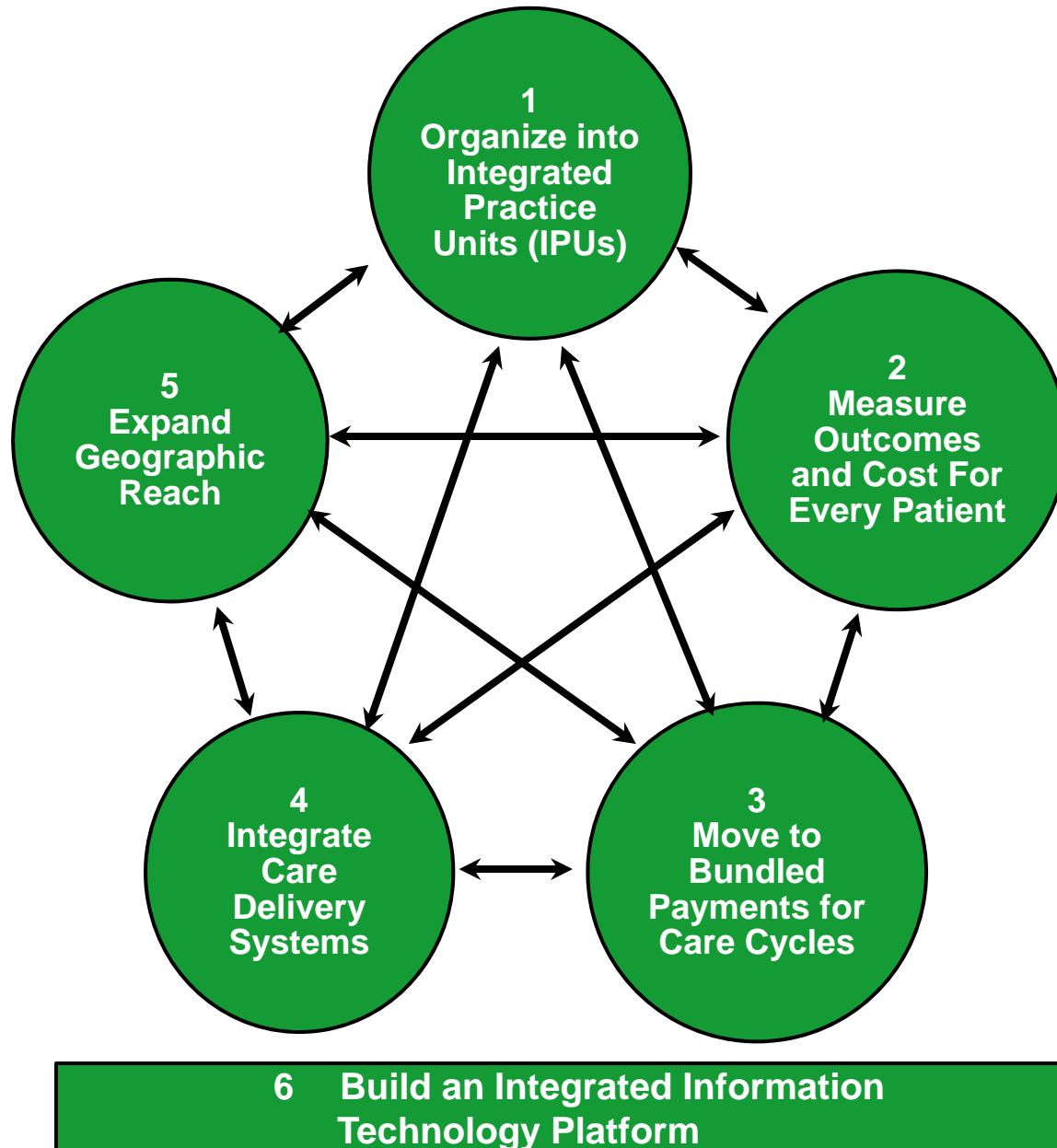


## 6. Build an Enabling Integrated IT Platform

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

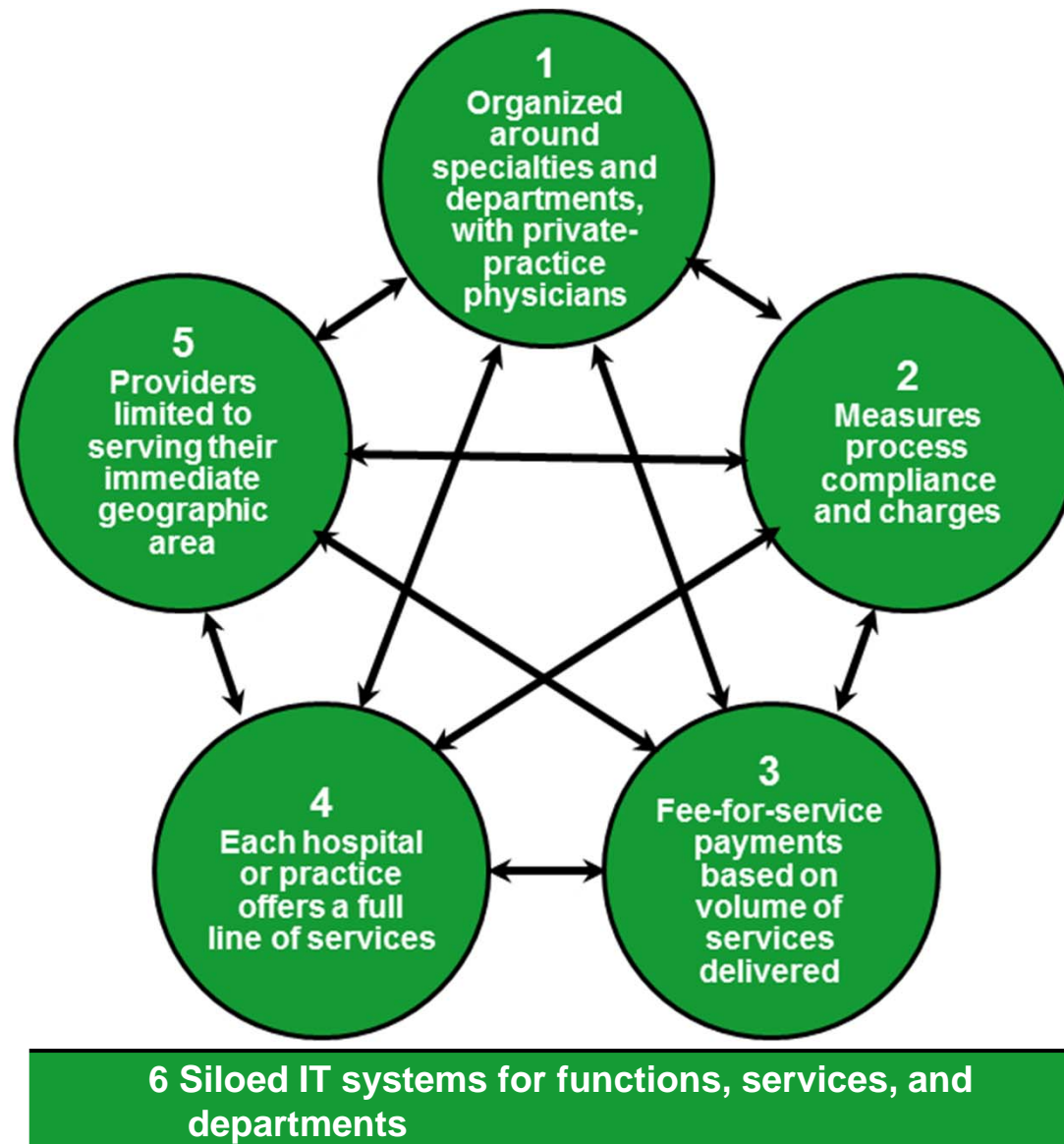
- Combine **all types of data** (e.g. notes, images) for each patient
- Common **data definitions**
- Data encompasses the **full care cycle**, including care by referring entities
- Allow access and communication among **all involved parties**, including with patients
- **Templates** for medical conditions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

# A Mutually Reinforcing Strategic Agenda



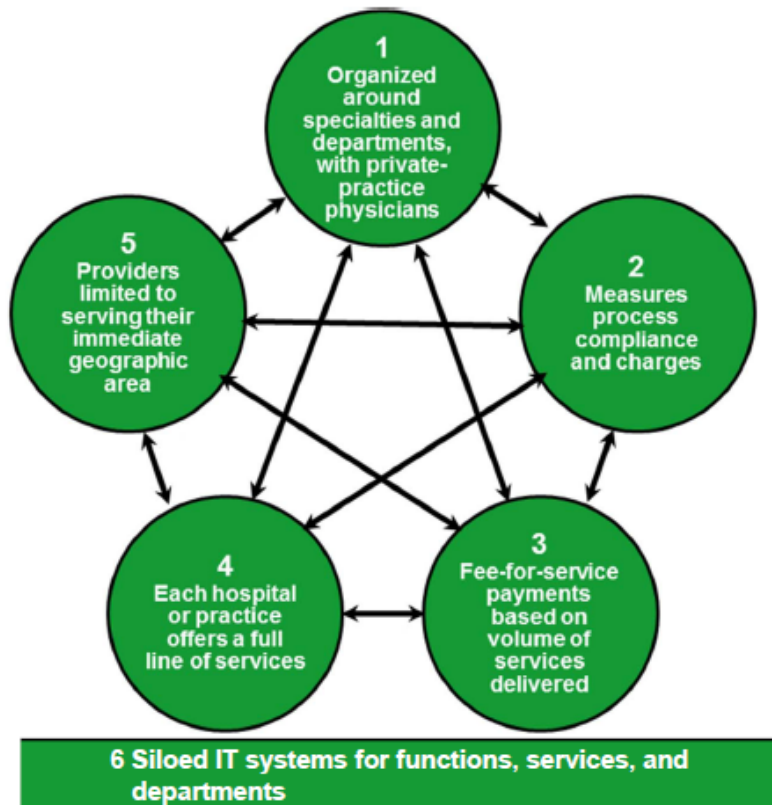
# Why We Have Been Stuck

## The Legacy System



# Getting Unstuck

## Legacy System



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## Value-Based System Agenda

