

Value-Based Health Care Delivery

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


London, England
January 24, 2011

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.

Redefining Health Care Delivery

- Achieving 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

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

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

Today, 21st century medical technology is often delivered with 19th century organization structures, management practices, and payment models

- Care pathways, safety initiatives, disease management and other **overlays** to the current structure are beneficial, but not sufficient

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 a patient's condition** over the care cycle

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 of illness
- 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 recurrences, relapses, flare ups, or acute episodes
- Slower disease progression
- Greater functionality and 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

Creating a Value-Based Health Care Delivery System

The Strategic Agenda

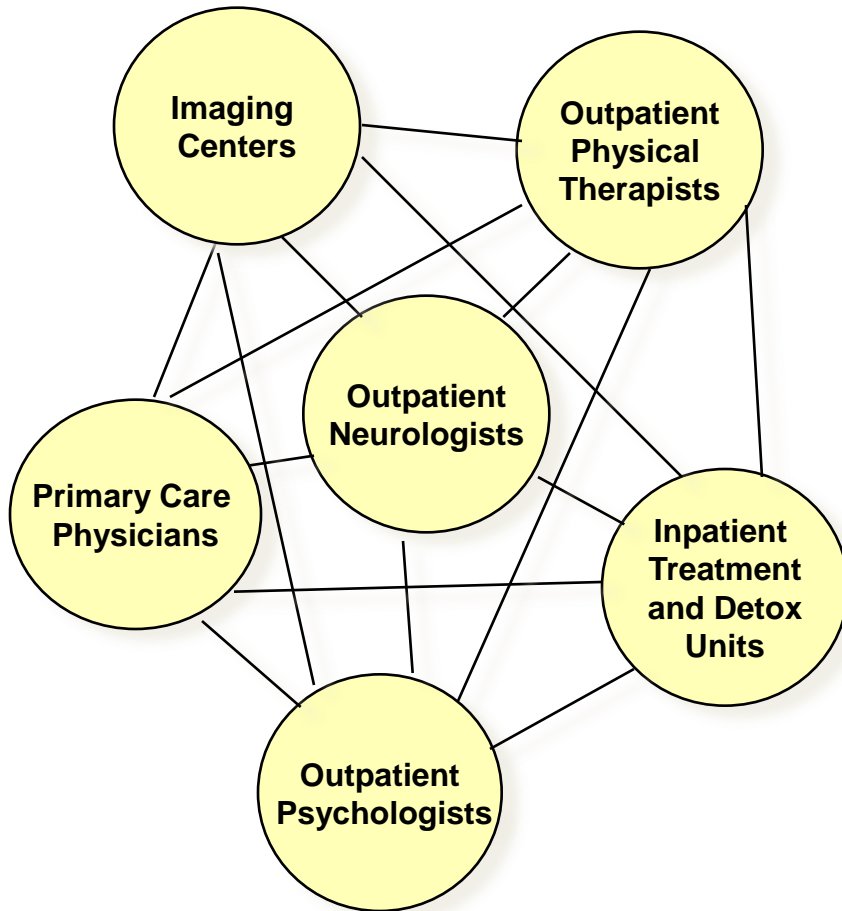
1. Organize into Integrated Practice Units (IPUs) Around Patient Medical Conditions
 - Organize primary and preventive care to serve **distinct patient populations**
2. Establish Universal Measurement of Outcomes and Cost for Every Patient
3. Move to Bundled Prices for Care Cycles
4. Integrate Care Delivery Across Separate Facilities
5. Expand Excellent IPUs Across Geography
6. Create an Enabling Information Technology Platform

1. Organize Around Patient Medical Conditions

Migraine Care in Germany

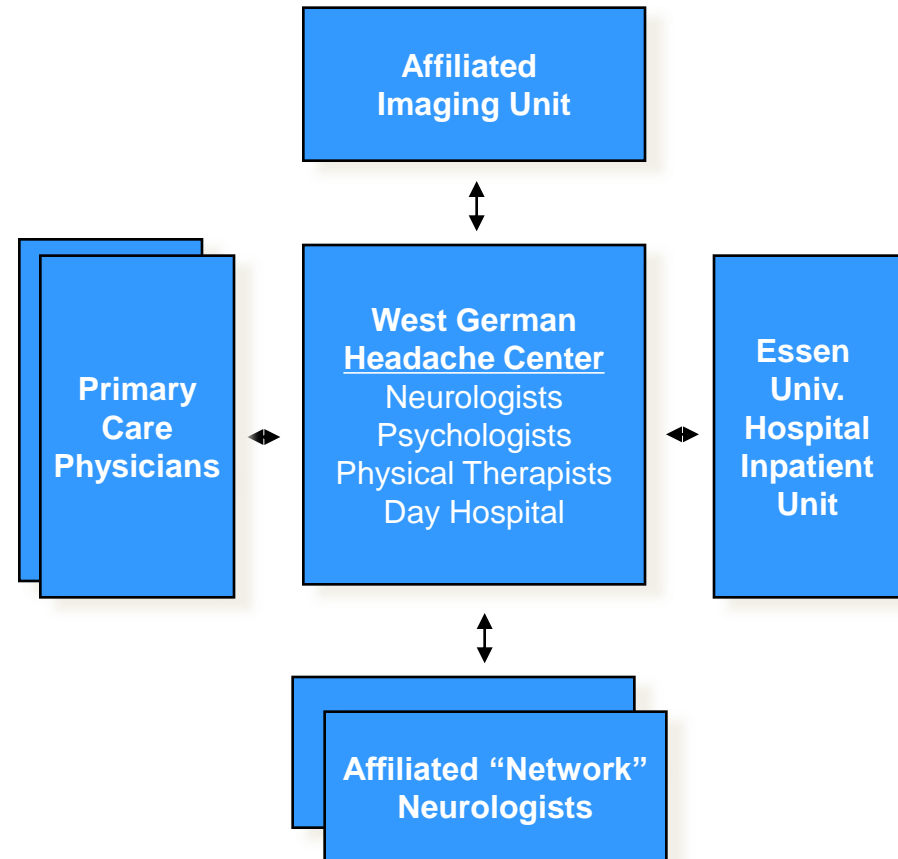
Existing Model:

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

Integrating Across the Cycle of Care

Breast Cancer

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

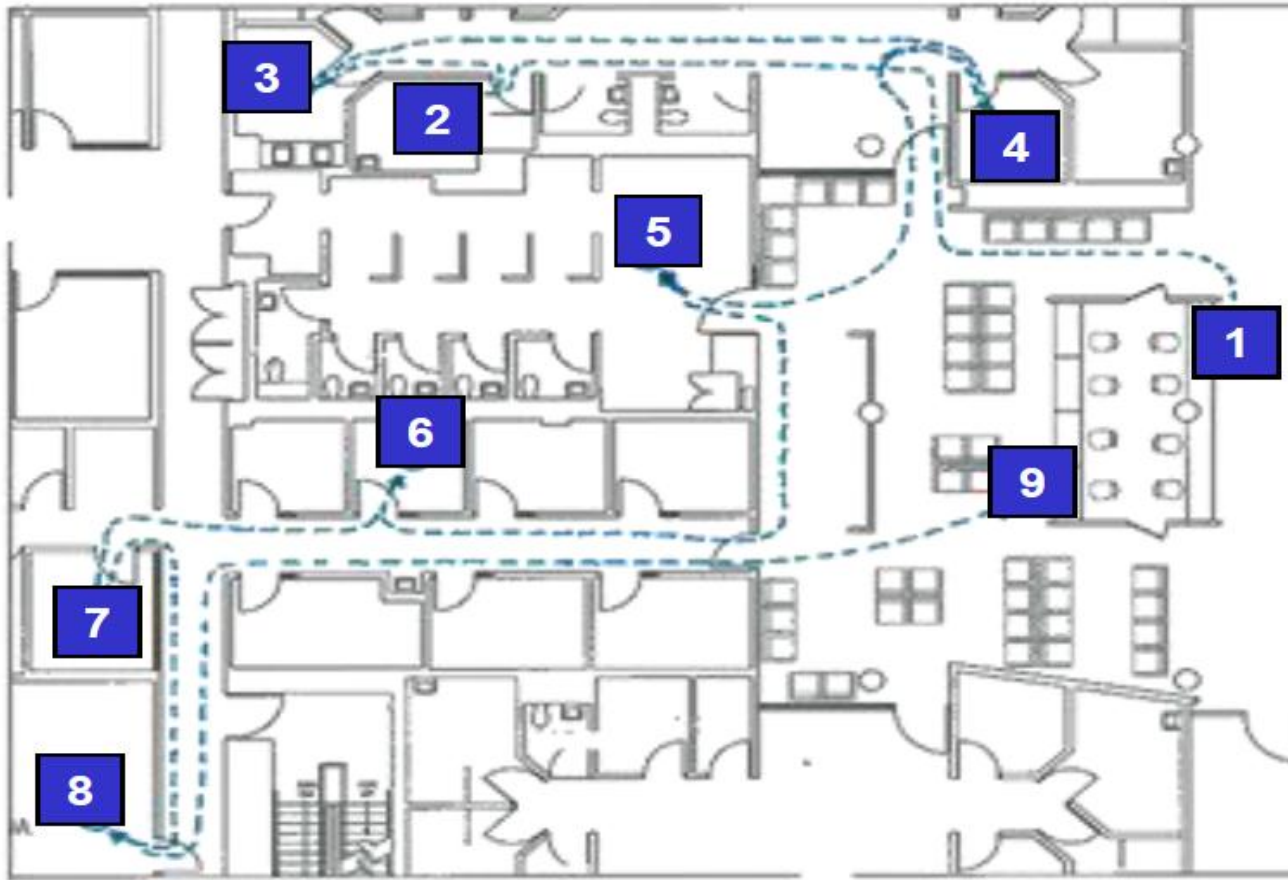
Breast Cancer Specialist
 Other Provider Entities

What is Integrated Care?

Attributes of an Integrated Practice Unit (IPU):

1. Organized around the **patient's medical condition**
2. Involves a **dedicated, multidisciplinary team** who devote a significant portion of their time to the condition
3. Where providers are part of a **common organizational unit**
4. Utilizing a **single administrative** and **scheduling structure**
5. Providing 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)
 - Including **patient education, engagement** and **follow-up**
6. **Co-located** in **dedicated facilities**
7. With a **physician team captain** and a **care manager** who oversee each patient's care process
8. Where the team **meets formally and informally** on a regular basis
9. And measures **outcomes** and **processes** as a **team**, not individually using a common **information platform**
10. Accepting **joint accountability** for outcomes and costs

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.

What is Not Integrated Care?

Integrated care is **not the same as:**

- Co-location per se
- Care delivered by the same organization
- A multispecialty group practice
- Freestanding focused factories
- A clinical pathway
- An institute or center
- A Center of Excellence
- A health plan/provider system (e.g. Kaiser Permanente)
- Medical homes
- Accountable care organizations

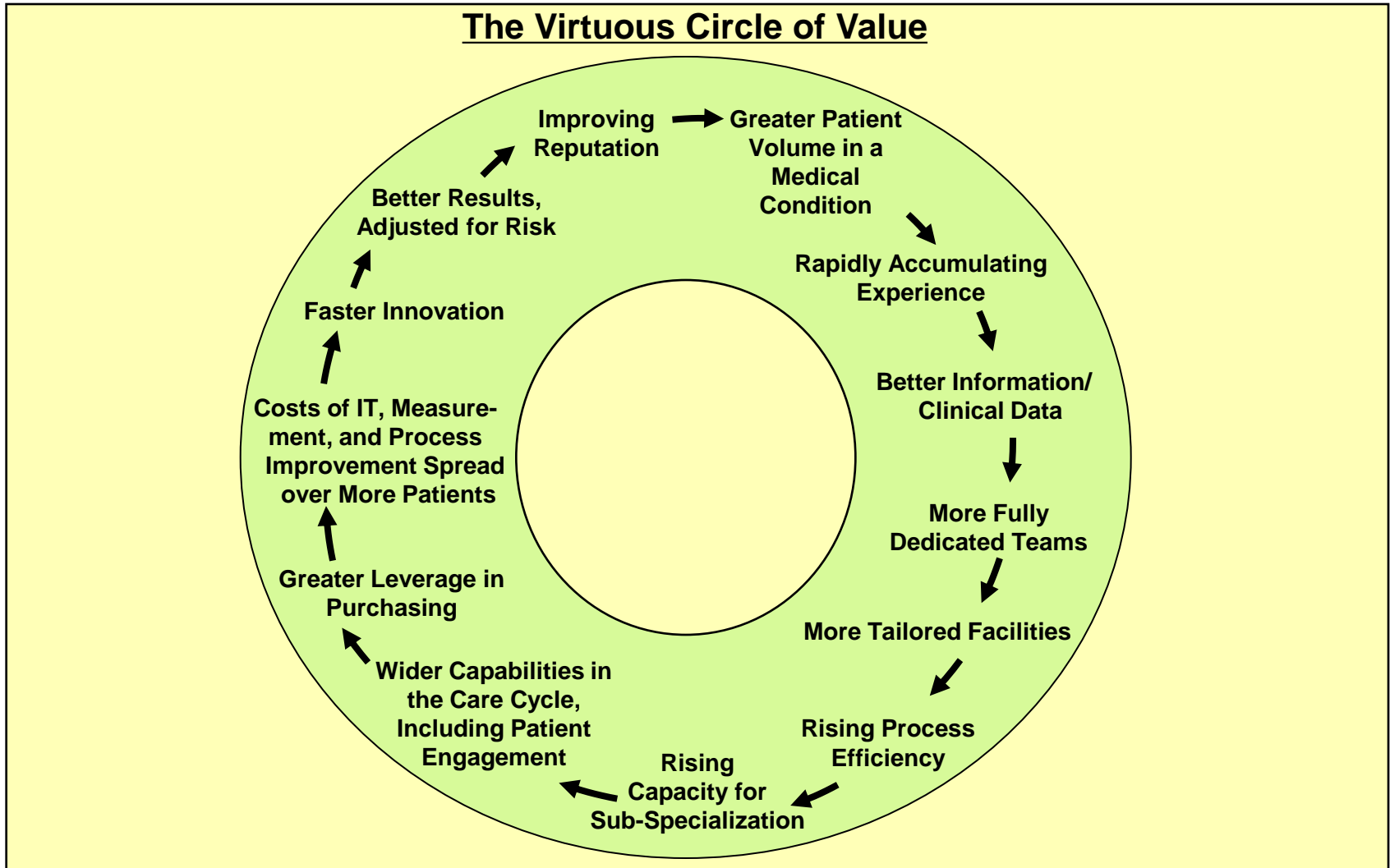
Integrated Models of Primary Care

- 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, type II diabetics) 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

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

Fragmentation of Services

Hospital Services in Sweden

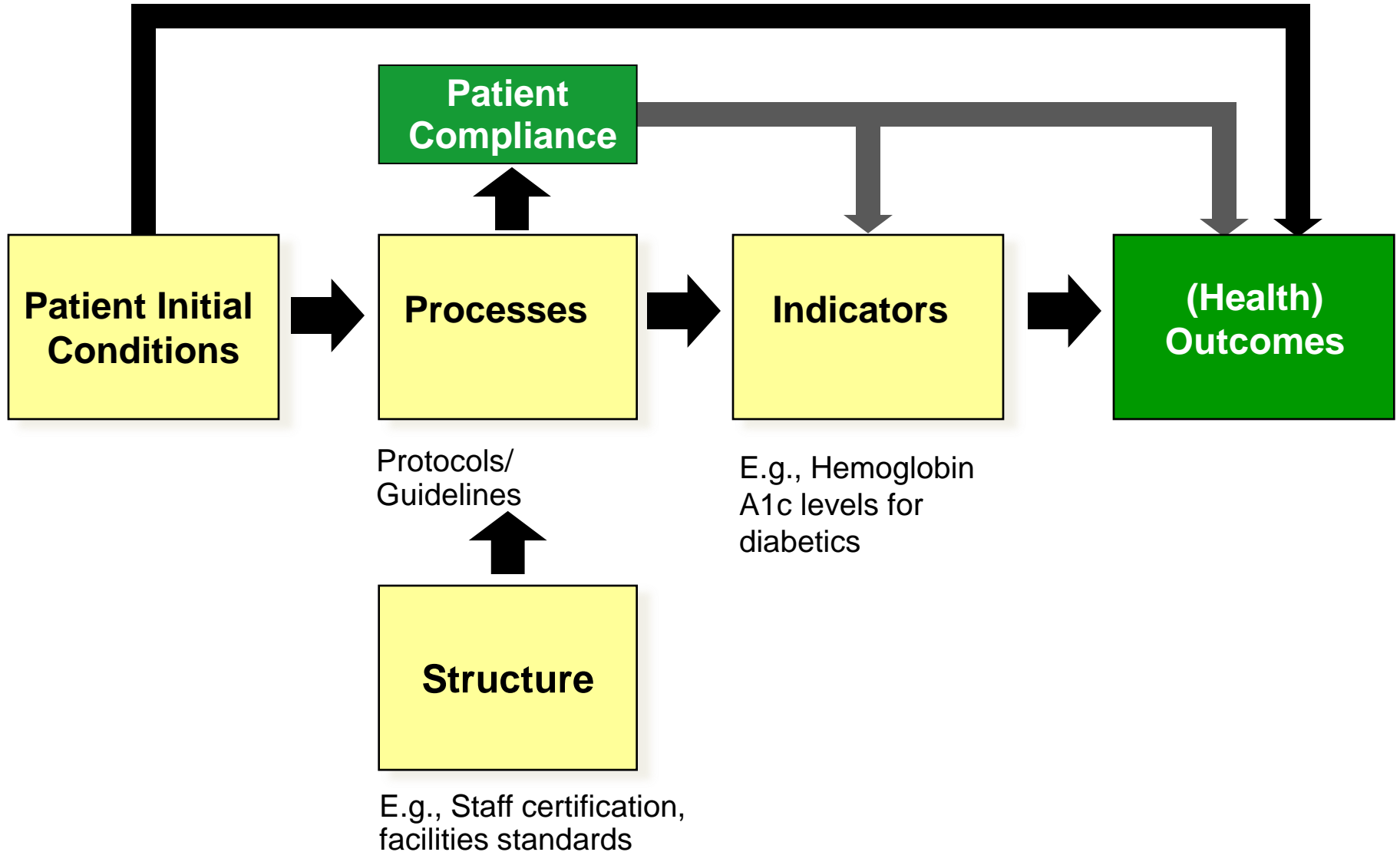
DRG	Number of admitting providers	Average percent of total national admissions	Average admissions/ provider/ year	Average admissions/ provider/ week
Knee Procedure	68	1.5%	55	1
Diabetes age > 35	80	1.3%	96	2
Kidney failure	80	1.3%	97	2
Multiple sclerosis and cerebellar ataxia	78	1.3%	28	1
Inflammatory 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.

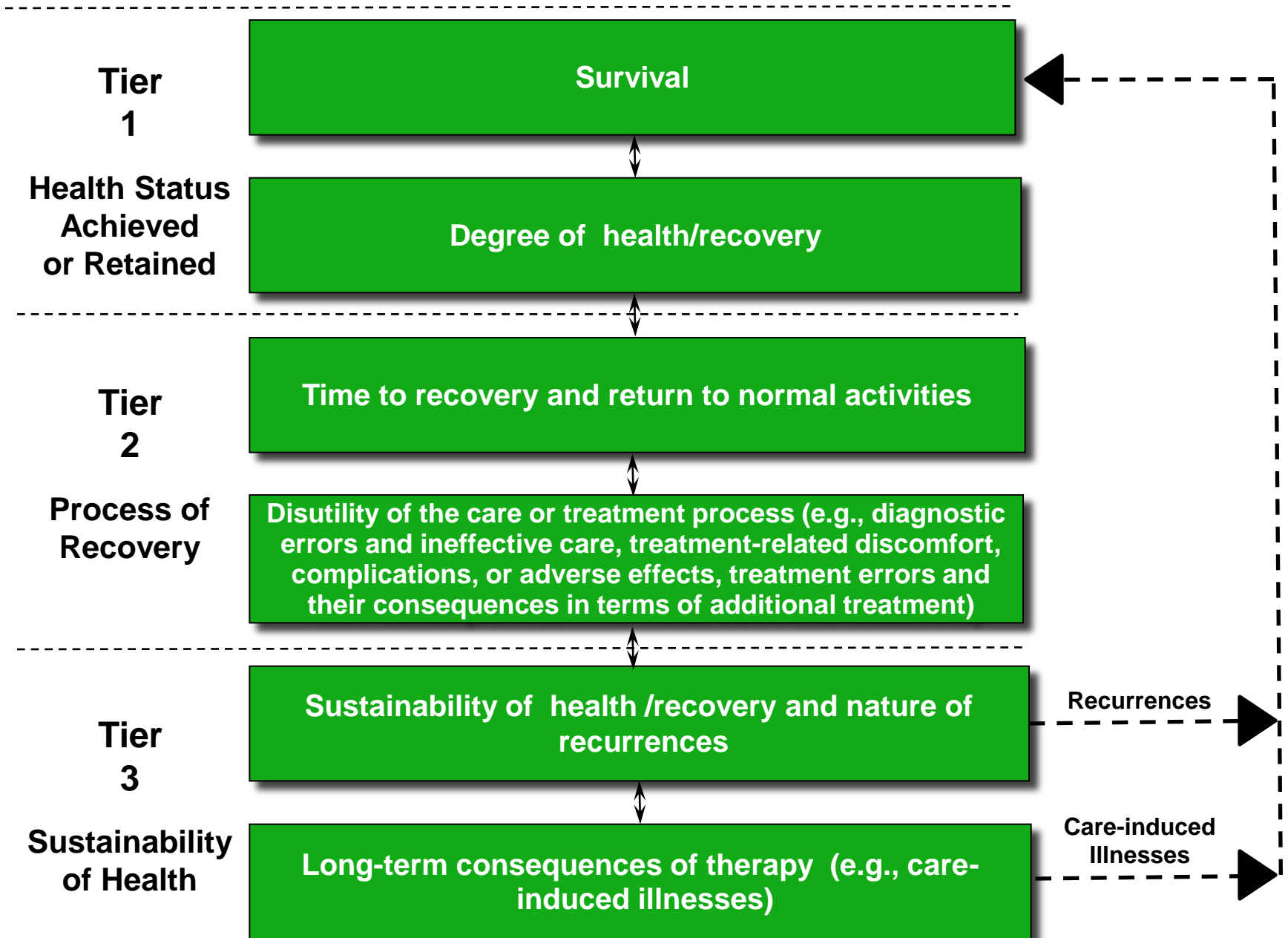


- **Minimum volume standards** are an interim step to drive service consolidation until comprehensive outcome information is available

2. Measure Outcomes and Cost for Every Patient

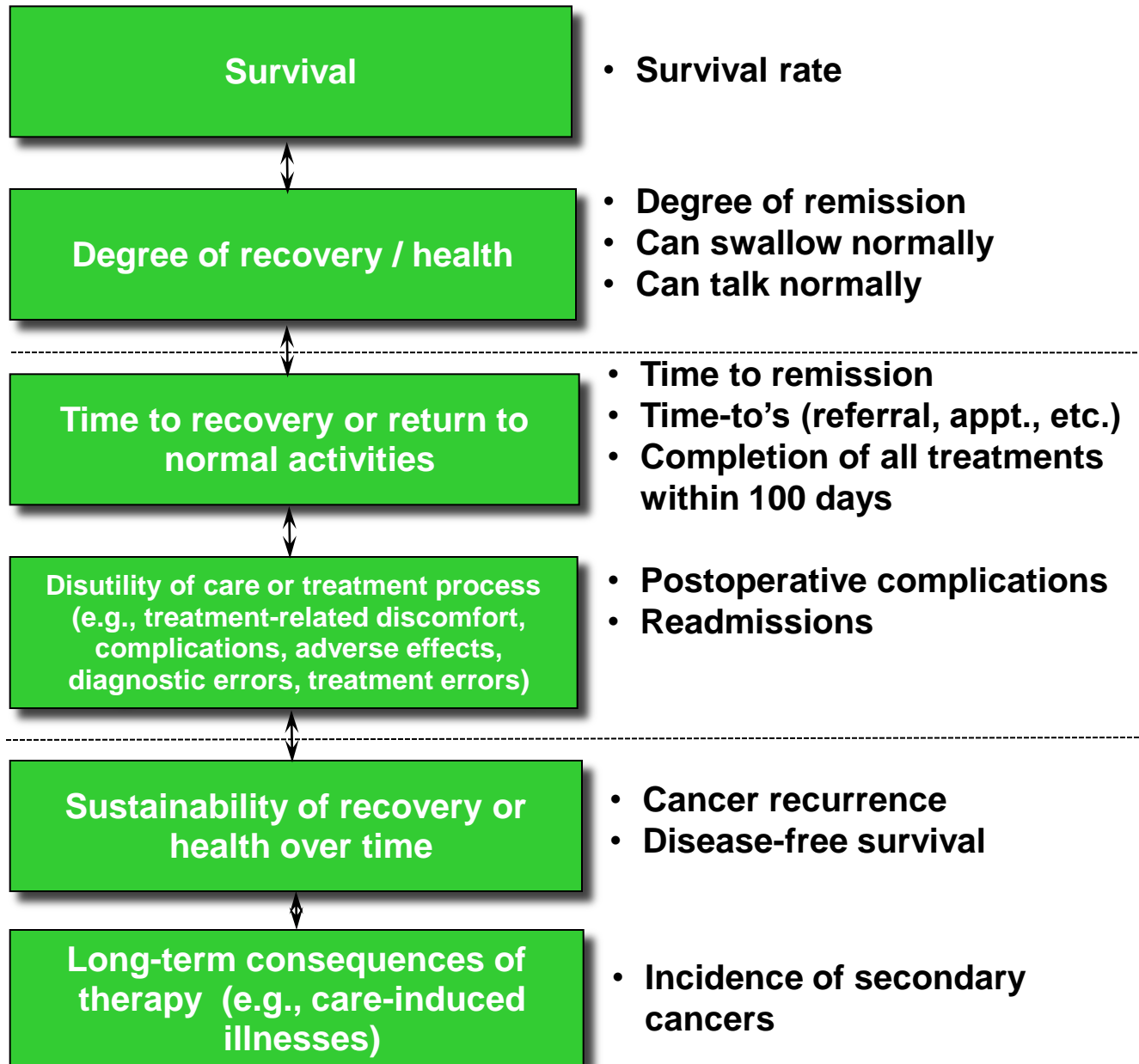


The Outcome Measures Hierarchy



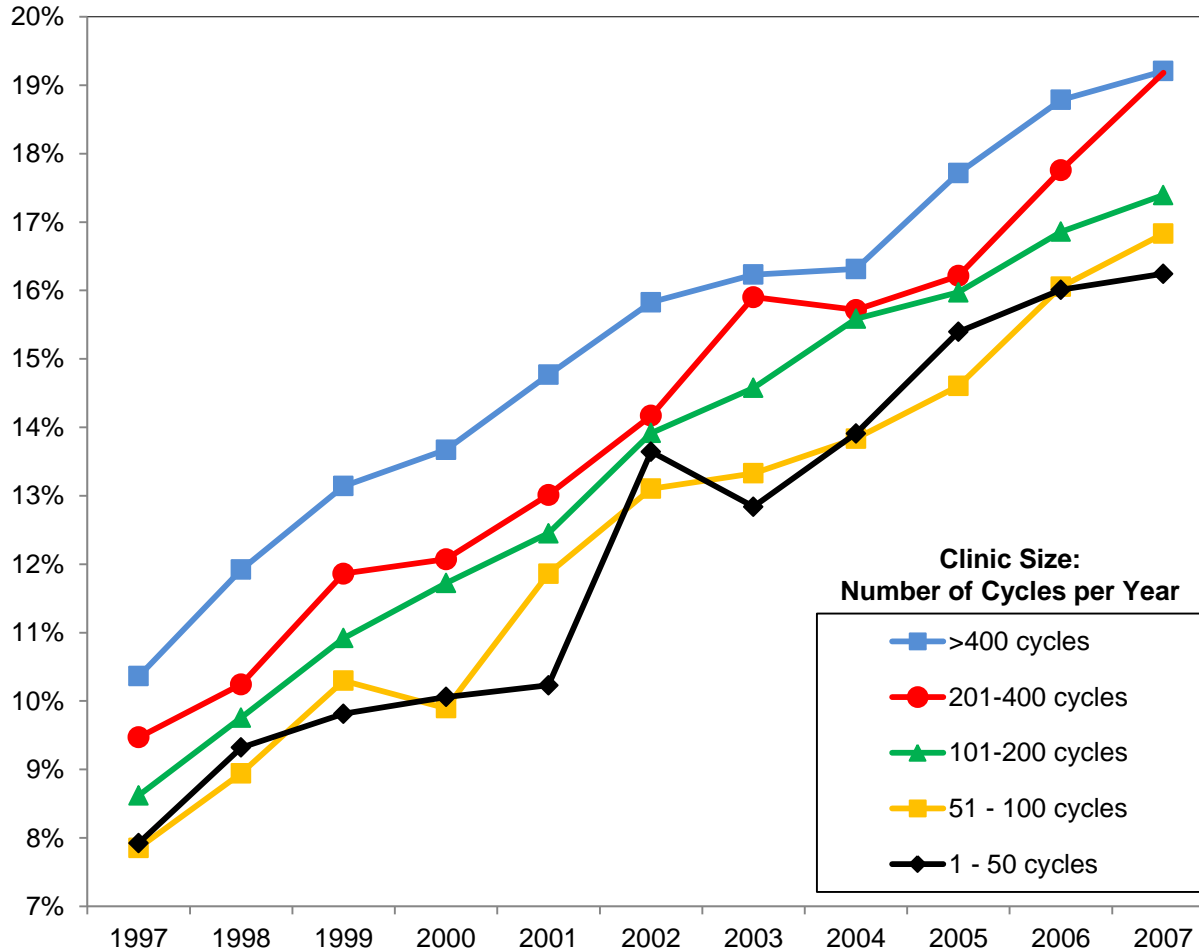
Measuring Head and Neck Cancer Outcomes

MD Anderson Cancer Center



In-vitro Fertilization Success Rates Over Time

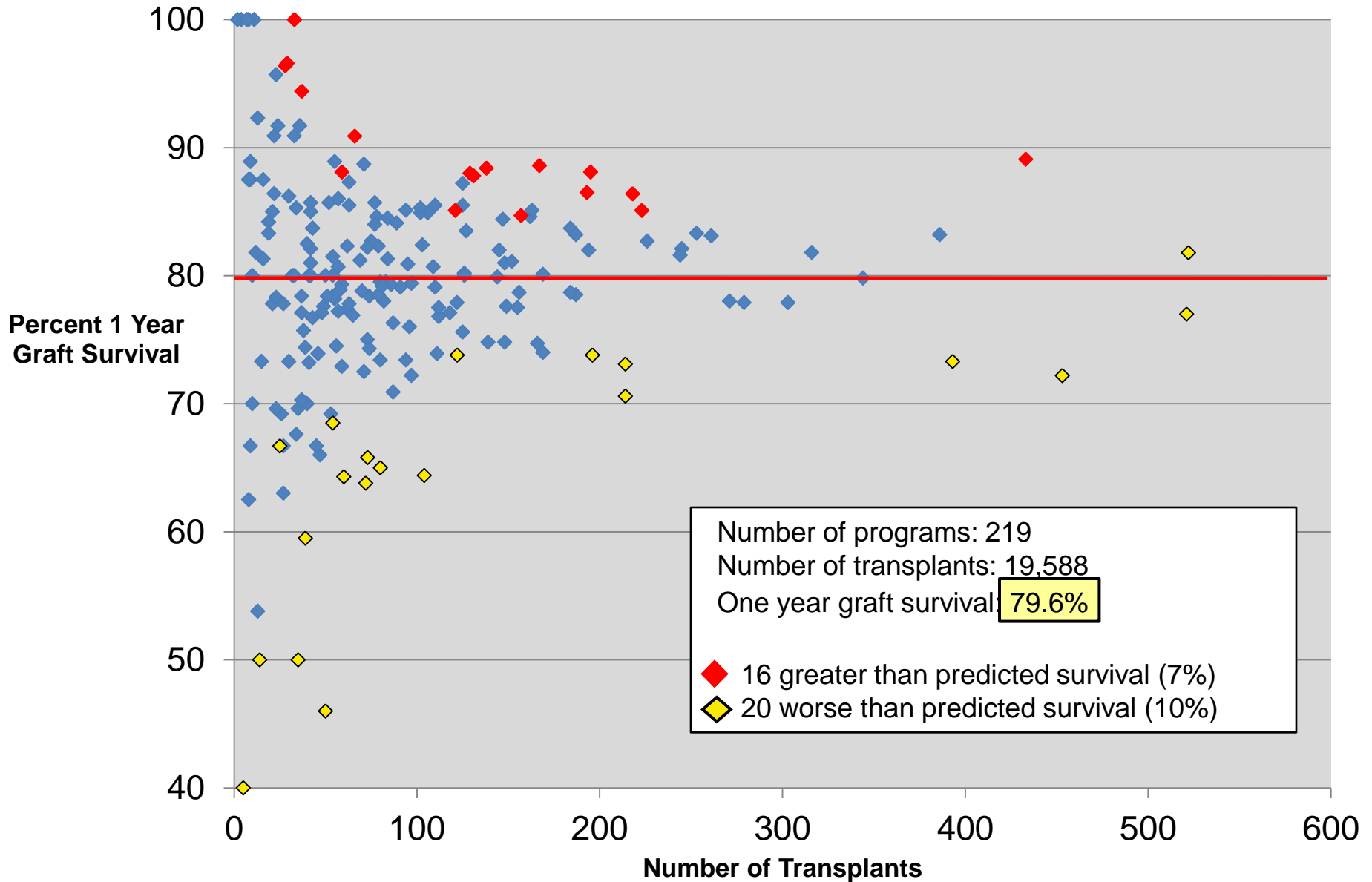
Percent Live Births per Fresh, Non-Donor Embryo Transferred by Clinic Size
Women Age <38, 1997-2007



Source: Michael Porter, Saquib Rahim, Benjamin Tsai, *Invitro Fertilization: Outcomes Measurement*. Harvard Business School Press, 2008
 Data: Center for Disease Control and Prevention. "Annual ART Success Rates Reports." <<http://www.cdc.gov/art/ARTReports.htm>>, Dec. 12, 2010.

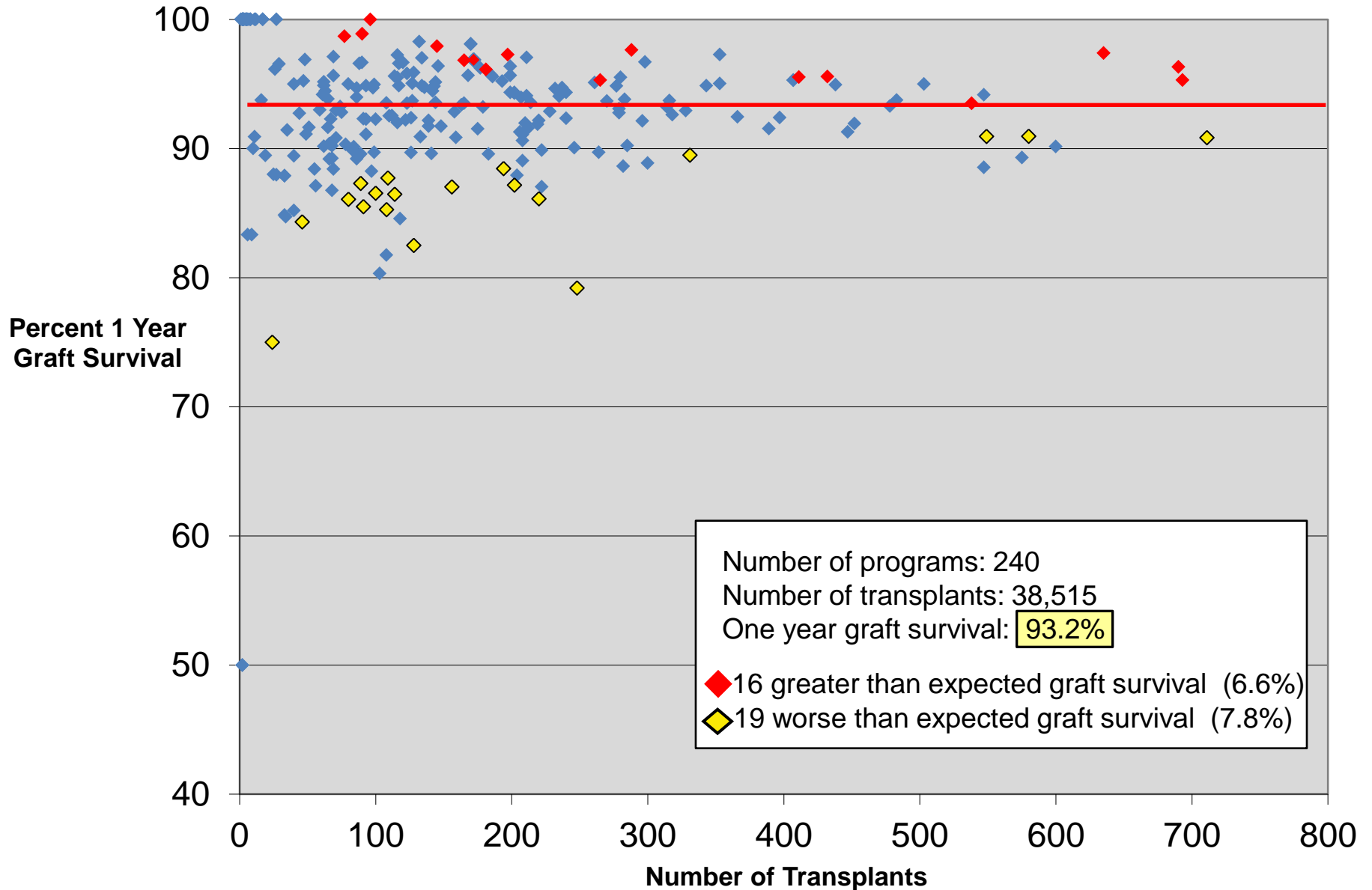
Adult Kidney Transplant Outcomes

U.S. Centers, 1987-1989



Adult Kidney Transplant Outcomes

U.S. Centers, 2005-2007



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

Creating an Outcome Measurement System

Schön Klinik

1. Designate 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. Data collection infrastructure

- Physicians and nurses enter data during the patient's stay
- Data can be extracted from the EMR reducing the burden of capture
- Collection of long term follow-up data still done manually

4. Incentives and mechanisms for data reporting

- Reporting of all metrics is mandated for all physicians
- Involvement in the metrics development process increases physician buy-in

5. Compliance and accuracy validation

- Accuracy validated through trend analysis

6. Outcome reporting

- Outcome data captured for 70% of patients
- Report results internally at the individual physician level
- Annual quality report (27 process and outcome measures) disseminated externally

7. Process for outcome improvement

- Physicians trust metrics and are convinced of their value in driving improvement
- Physician pay linked to quality of care delivered

Measuring Cost 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 **charges**, or allocated based on charges

Cost Aggregation Problem

- Cost are measured and aggregated for departments, specialties, discrete services, and line items (e.g. devices)
- Costs should be aggregated over the **full care cycle for the patient's medical condition**


Cost Allocation Problem

- Shared resources are allocated using **averages or estimates**
- Costs should be allocated to **individual patients** based on their **actual use of the resources involved**

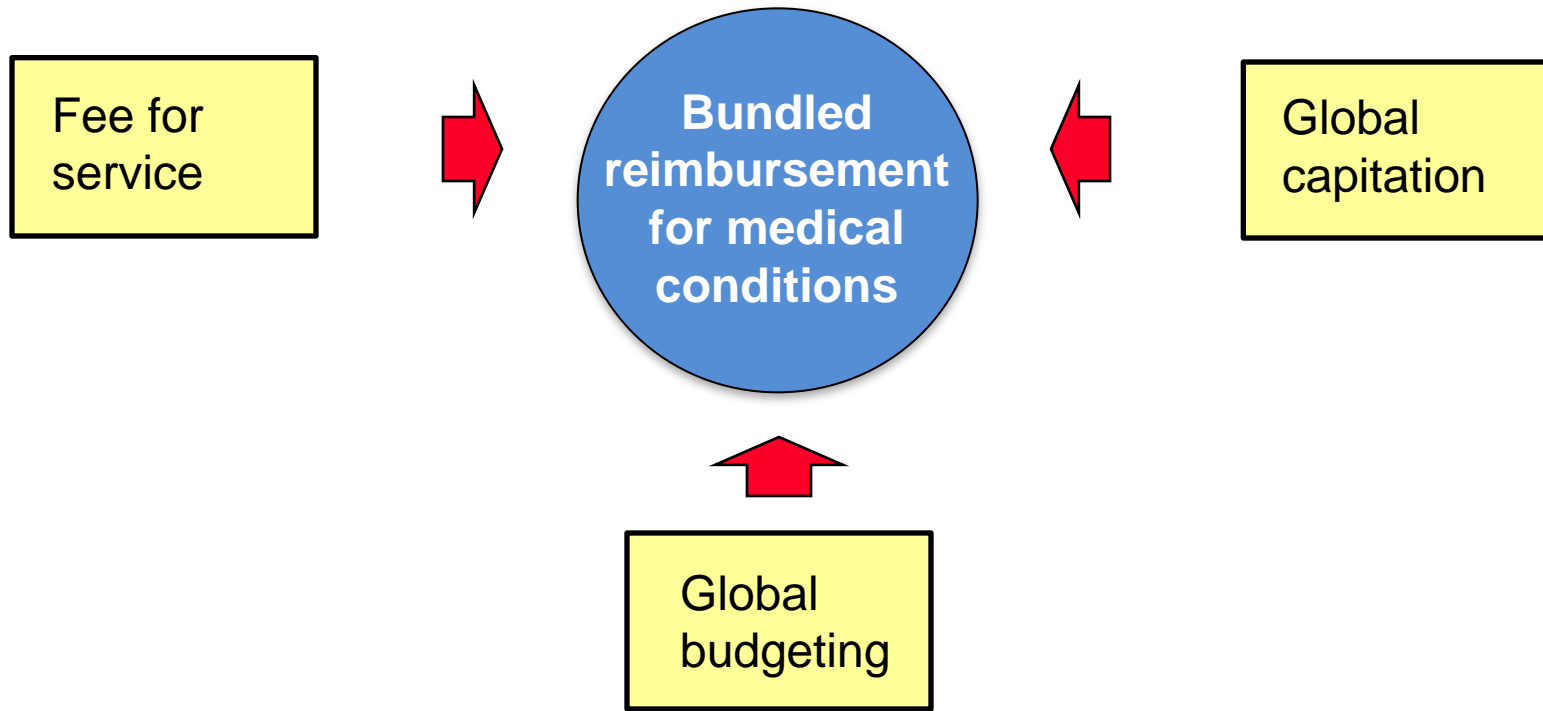


- The application of **time-driven activity-based costing** to health care delivery reveals many structural opportunities for cost reduction

Cost Reduction Opportunities in Health Care

- Over-resourced facilities
 - E.g. routine care delivered in expensive hospital settings
 - Under-utilization of expensive clinical space, equipment, and facilities
 - Poor utilization of highly skilled physicians and staff
 - Over-provision of low- or no-value testing and other services in order to justify billing/follow rigid protocols
 - Long cycle times
 - Redundant administrative and scheduling personnel
 - Missed opportunities for volume procurement
 - Excess inventory and weak inventory management
 - Lack of cost knowledge and awareness in clinical teams
- 
- Such cost reduction opportunities **do not require outcome tradeoffs**, but may actually improve outcomes

3. Move to Bundled Prices for Care Cycles




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

Bundled Payment in Practice

Hip and Knee Replacement in Stockholm, Sweden

- **Components** of the bundle


- | | |
|---------------------------------|---|
| - Pre-op evaluation | - All physician and staff 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 | |

- 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** but all providers are involved
- 
- The bundled price for a knee or hip replacement is about **US \$8,000**

Moving to Value-Based Reimbursement

Bundled Payment vs. Global Capitation

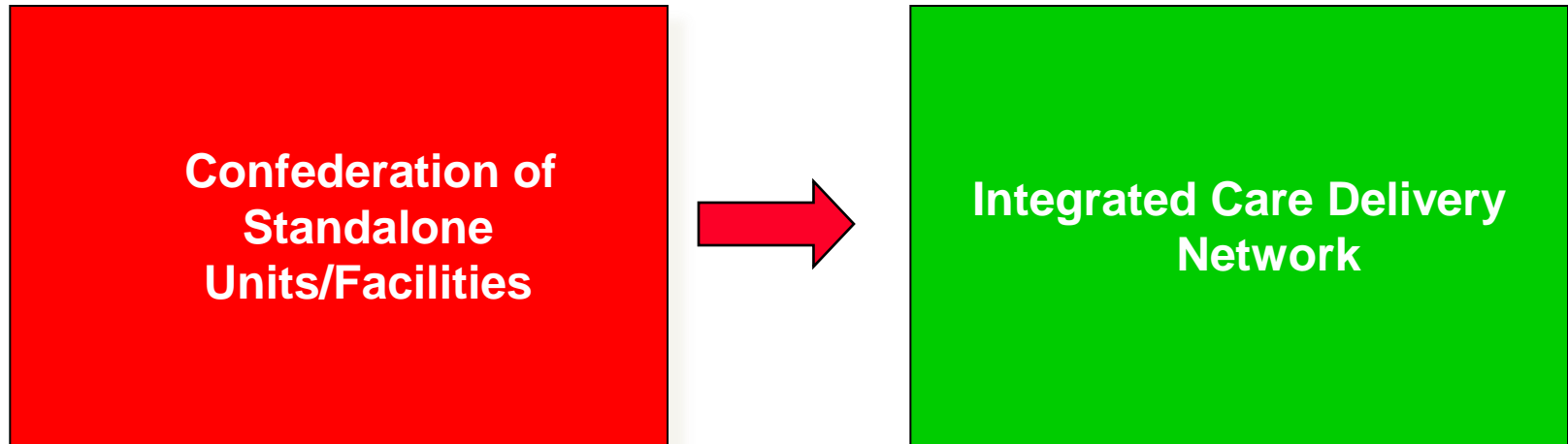
Medical Condition Capitation

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

Global Capitation

- Shifts overall **insurance risk to providers**
 - Encourages **overly broad services lines** and large, dominant provider systems
 - Introduces pressure to **ration services**
 - Strengthens provider incentive to **attract generally healthy patients**
 - **Decouples payment** from what providers can **control**
- 
- Aligns reimbursement with managing **insurance risk**
 - **Complicates** true care delivery integration

4. Integrate Care Delivery Across Separate Facilities



Building an Integrated Care System

Children's Hospital of Philadelphia Care Network



- Choose the **scope of service lines** where each provider unit can achieve excellence
- **Rationalize service lines/ IPU**s across facilities to improve volume, avoid duplication, and deepen teams
- **Offer specific services** at the **appropriate facility**
 - E.g. acuity level, cost level, need for convenience
- Clinically integrate **care across facilities**, within an IPU structure
 - **Widen** and **integrate** the care cycle
 - Better connect **preventive/primary care** units to specialty IPUs

5. Expand Excellent IPUs Across Geography

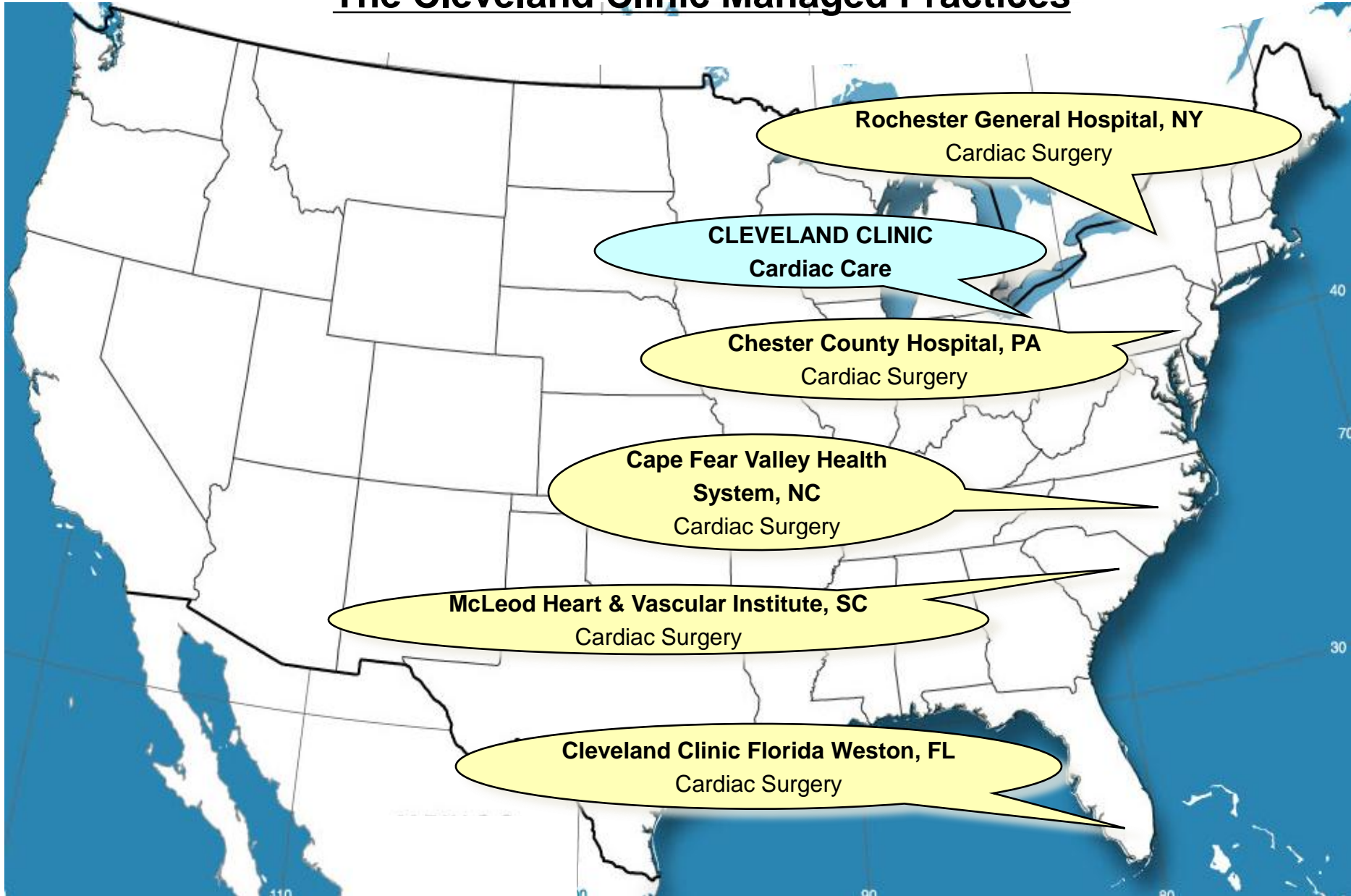
- Grow **areas of excellence across locations**, rather than:
 - offering every service in the local service area
 - growth through new broad line, stand-alone units



- **Affiliate with excellent providers** in medical conditions and patient populations where there is insufficient volume or expertise to achieve superior value

Expanding Across Geography

The Cleveland Clinic Managed Practices

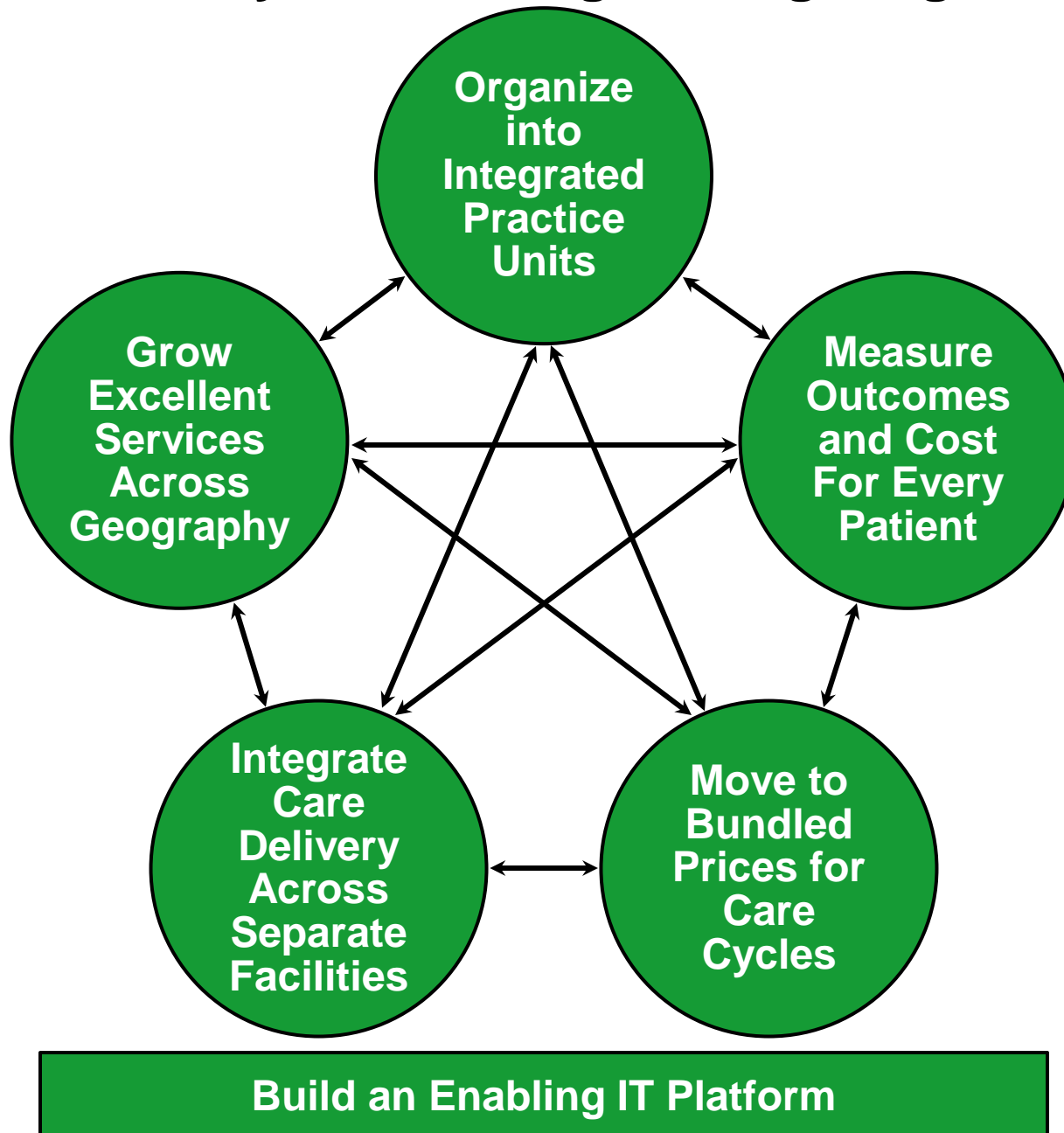


6. Build an Enabling Information Technology Platform

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 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



Moving to a Value-Based System

Implications for Government

1. Organize into Integrated Practice Units (IPUs) Around Patient Medical Conditions

- Provider reporting and certification based on **care integration measures** (e.g. multidisciplinary teams, dedicated facilities)

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

- Introduce **mandatory outcome measurement** by medical condition
- Require provider reporting of **patient volume by medical condition** as an interim step

3. Move to Bundled Prices for Care Cycles

- **Expand** DRG care episodes

4. Integrate Care Delivery Across Separate Facilities

- Introduce **minimum volume standards** by medical condition

5. Expand Excellent IPUs Across Geography

- Encourage **affiliations** between small or rural providers and qualifying centers of excellence

6. Create an Enabling Information Technology Platform


- Require universal **data definitions**, **interoperability**, and **the ability to easily extract** outcome, process, and costing measures by all HIT systems

For additional information on


Value-Based Health Care Delivery:

www.isc.hbs.edu

Value-Adding Roles of Payors

- 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 Delivery: The Role of Employers

- Employer interests are **closely aligned with patient interests**
 - 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
 - Group culture of wellness
 - On-site clinics for quick diagnosis and treatment, prevention, and screening
 - Consortia of smaller employers can spread their practices beyond large companies
 - Employers can **encourage and support** value-based delivery organizations and approaches