Value-Based Health Care Delivery

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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.

Redefining Health Care Delivery

- 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 delivery system that **dramatically improves patient value**
- 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, 21st century medical technology is often delivered with 19th century organization structures, management practices, measurement methods, and payment models

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

Creating The Right Kind of Competition on Value

- **Competition** and **choice** for patients/subscribers are powerful forces to encourage restructuring of care and continuous improvement in value
- Today's competition in health care **is often not aligned with value**

Financial success of system participants	$\neq$	Patient success

- Creating positive-sum **competition on value** is integral to health care reform in every country

Principles of Value-Based Health Care Delivery

- The overarching goal in health care must be **value for patients**, not cost containment, convenience, or customer service

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

  - Outcomes are the **full set of patient health results** 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 a powerful driver of cost containment and value improvement, where quality is **health outcomes**

- Prevention of illness	- Fewer complications
- Early detection	- Fewer mistakes and repeats in treatment
- Right diagnosis	- Faster recovery
- Right treatment to the right patient	- More complete recovery
- Early and timely treatment	- Less disability
- Treatment earlier in the causal chain of disease	- Fewer recurrences, relapses, flare ups, or acute episodes
- Rapid cycle time of diagnosis and treatment	- Slower disease progression
- Less invasive treatment methods	- 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 Organization

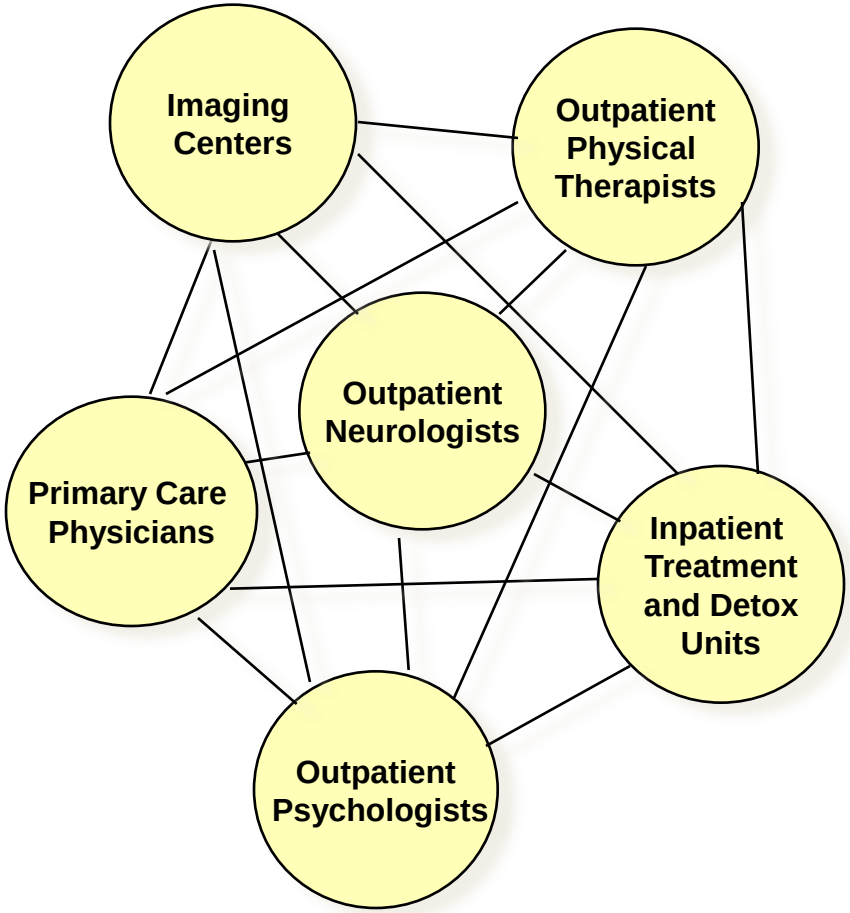
The Strategic Agenda

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

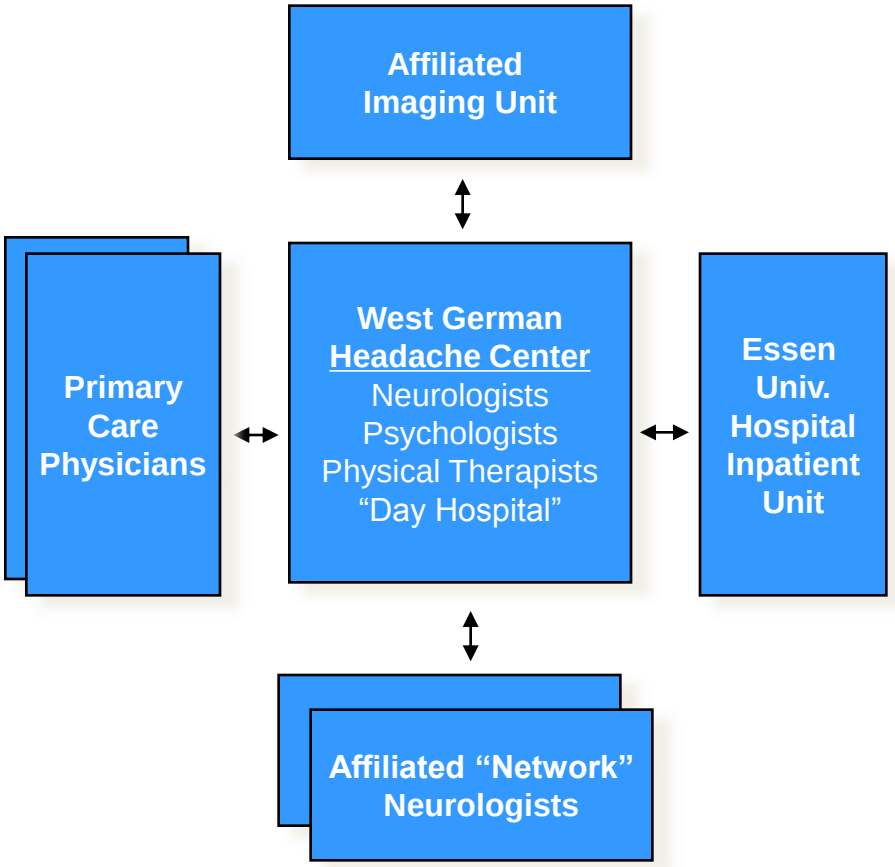
1. Organizing Around Patient Medical Conditions

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's Medical Condition

- A medical condition is **an interrelated set of patient medical circumstances best addressed in an integrated way**
  - Defined from the **patient's** perspective
  - **Including** common co-occurring conditions and complications
  - Involving **multiple** specialties and services
- In primary / preventive care, the organizational unit for care is a **defined patient population** (e.g. healthy adults, frail elderly)

- IPUs 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** and **unit of value measurement** in health care delivery

Integrating Across the Cycle of Care
Breast Cancer

	MONITORING/ PREVENTING	DIAGNOSING	PREPARING	INTERVENING	RECOVERING/ REHABING	MONITORING/ MANAGING
INFORMING AND ENGAGING	• Advice on self screening • Consultations on risk factors	• Counseling patient and family on the diagnostic process and the diagnosis	• Explaining patient treatment options/ shared decision making • Patient and family psychological counseling	• Counseling on the treatment process • Education on managing side effects and avoiding complications • Achieving compliance	• Counseling on rehabilitation options, process • Achieving compliance • Psychological counseling	• Counseling on long term risk management • Achieving compliance
MEASURING	• Self exams • Mammograms	• Mammograms • Ultrasound • MRI • Labs (CBC, etc.) • Biopsy • BRACA 1, 2… • CT • Bone Scans	• Labs	• Procedure-specific measurements	• Range of movement • Side effects measurement	• MRI, CT • Recurring mammograms (every six months for the first 3 years)
ACCESSING THE PATIENT	• Office visits • Mammography unit • Lab visits	• Office visits • Lab visits • High risk clinic visits	• Office visits • Hospital visits • Lab visits	• Hospital stays • Visits to outpatient radiation or chemo-therapy units • Pharmacy visits	• Office visits • Rehabilitation facility visits • Pharmacy visits	• Office visits • Lab visits • Mammographic labs and imaging center visits
	• Medical history • Control of risk factors (obesity, high fat diet) • Genetic screening • Clinical exams • Monitoring for lumps	• Medical history • Determining the specific nature of the disease (mammograms, pathology, biopsy results) • Genetic evaluation • Labs	• Choosing a treatment plan • Surgery prep (anesthetic risk assessment, EKG) • Plastic or onco-plastic surgery evaluation • Neo-adjuvant chemotherapy	• Surgery (breast preservation or mastectomy, oncoplastic alternative) • Adjuvant therapies (hormonal medication, radiation, and/or chemotherapy)	• In-hospital and outpatient wound healing • Treatment of side effects (e.g. skin damage, cardiac complications, nausea, lymphedema and chronic fatigue) • Physical therapy	• Periodic mammography • Other imaging • Follow-up clinical exams • Treatment for any continued or later onset side effects or complications

Care Delivery Value Chain
Severe Knee Osteoarthritis Requiring Replacement

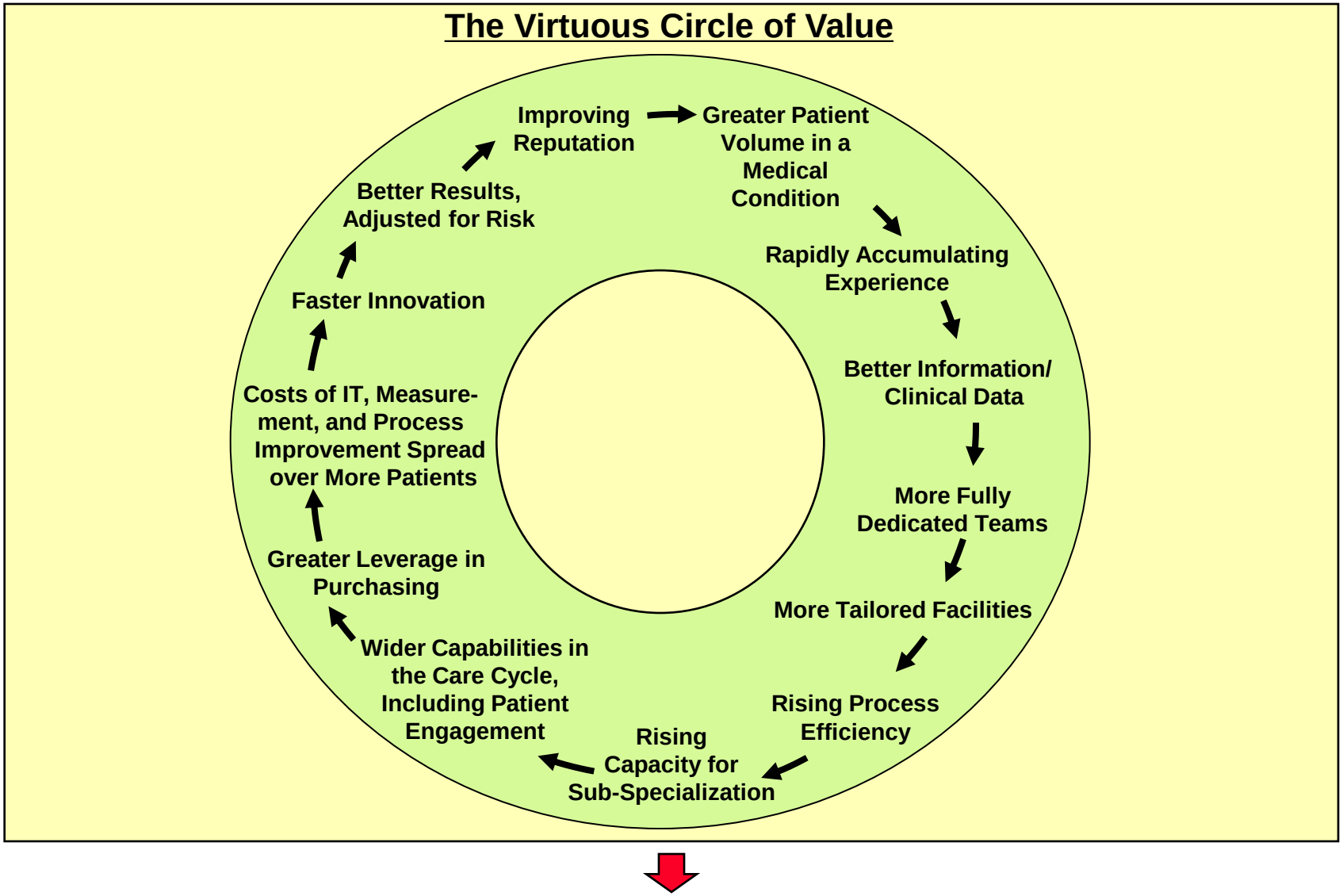
	MONITORING/ PREVENTING	DIAGNOSING	PREPARING	INTERVENING	RECOVERING/ REHABING	MONITORING/ MANAGING
INFORMING AND ENGAGING	• Education and promotion of exercise, weight reduction, proper nutrition	• Education on the meaning of diagnosis and prognosis of disease – short and long term outcomes • Expectation setting	• Counseling on benefits/ drawbacks of surgery • Shared Decision Making • Weight loss, nutrition, vaccination counseling • Home preparation • Calibrating expectations • Communicating timeline / location for recovery	• Set expectations for surgical recovery and immediate next steps • Maintenance and reassurance of expectations and the importance of rehab • Assuring team consistency	• Counseling on necessity of rehab, rehab exercises, and compliance • Monitoring compliance	• Counsel to maintain exercise and healthy weight
MEASURING	• Self-reported loss of function • Pain • WOMAC, SF-36	• MRI, X-Ray results – Kellgran Lawrence scale- level of osteoarthritis – Assess loss of cartilage/ alternations in subchondral bone • Pain level • WOMAC, SF-36 • Mental Status (Gestalt)	• Range of motion • Pain level • WOMAC, SF-36 • Blood pressure • Blood labs	• Heart rate • Temperature • Blood pressure • Blood loss • Complications	• Infections (i.e. UTI) • Post-op X-ray • Range of motion • Pain level • WOMAC, SF-36 • Ability to live independently • Return to work • Weight gain/loss • Mental state (gestalt)	• Range of motion • Pain level • WOMAC, SF-36 • Activities • Missed work • Mental state
ACCESSING	• PCP office visit • Health club • Physical therapy office	• Specialty office • Imaging facility	• Specialty office • Pre-operative area (hospital or surgical center)	• Operating room, recovery, orthopedic floor (e.g. arthroplasty specific ward) at hospital or specialty surgery center	• Home, Skilled Nursing Facility, or Rehab Facility • PT at home or at PT office • Operating Room	• Specialty office • Primary care office • Health club
	Monitor • PCP medical exam • Referral to specialists if problem persists **Prevent** • Prescription of anti-inflammatory medicines • Exercise • Weight loss	• Review MRI, X-Ray results – Assess loss of cartilage – Assess alterations in subchondral bone • Orthopedic/Rheumatologic Evaluation	**Overall Prep** • Home assessment • Weight loss **Surgical Prep** • Cardiology, pulmonary consults • Blood labs • Preoperative physical examination	**Anesthesia Options** • General • Epidural • Regional blocks • 1 or 2 day **Surgical Procedure Options** • Devices • Dement • Minimally Invasive • Computer Assisted **Pain Management** • Multimodal • Preemptive	**Surgical** • *Immediate return to OR for manipulation (1% of cases)* **Medical** • Coagulation monitoring **Living** • Daily living support (e.g. showering, dressing) • Contact provider for specific set of risk indicators (e.g. fever, increased swelling, increased pain, breathing difficulties, other) **Physical Therapy** • Extensive daily or twice daily PT sessions to build up lost muscle and assure range of motion • Education on exercises to perform between PT sessions • Continuous motion machine	• Regular consultations with orthopedic specialists (6 weeks, 6 months, 1 year, 3-4 yeas as needed (MORE?) • Prophylactic antibiotics • Long term exercise • Revision if necessary

Orthopedic Specialist Other Provider Entities

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

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

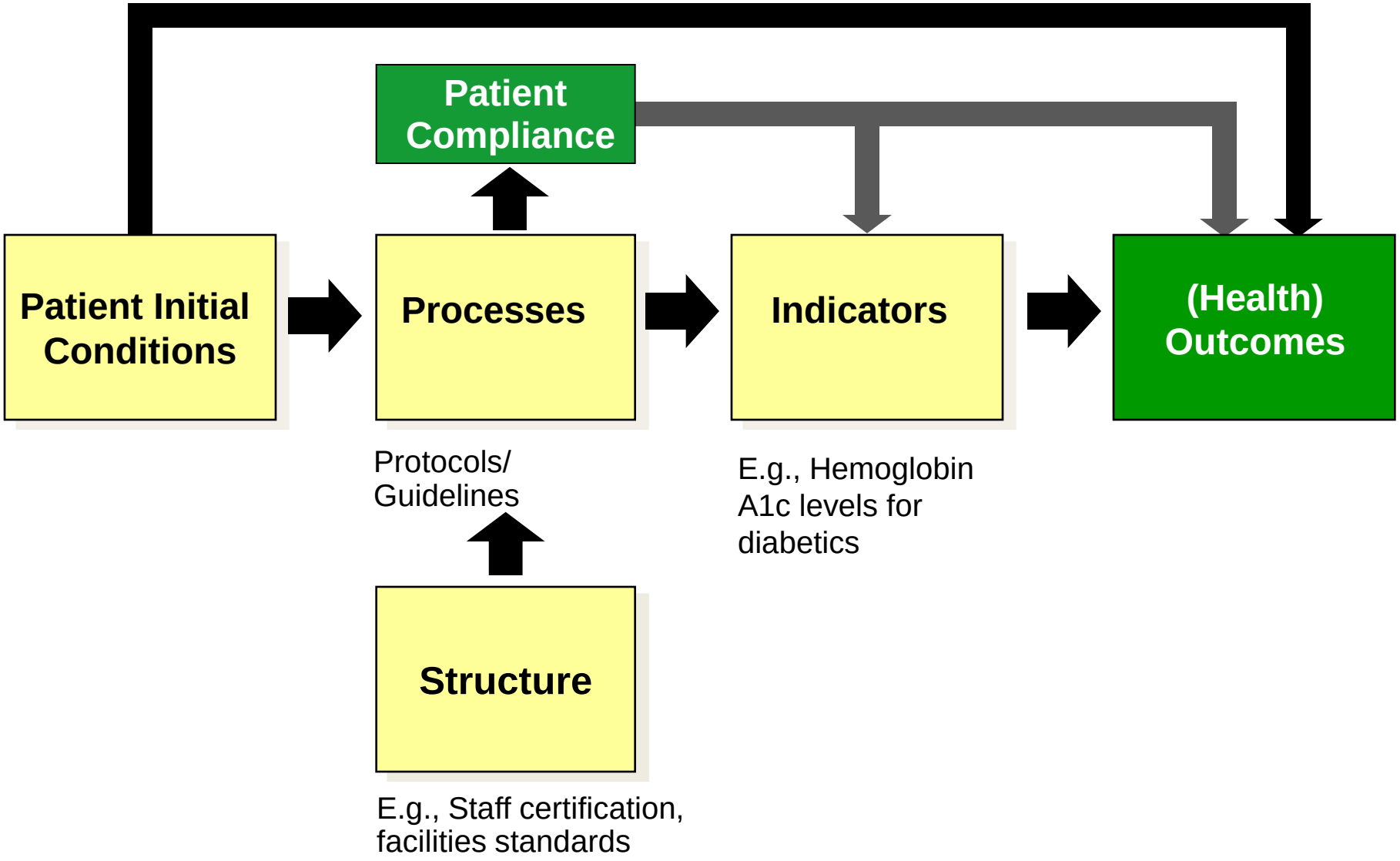
Fragmentation of Hospital Services in Sweden

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

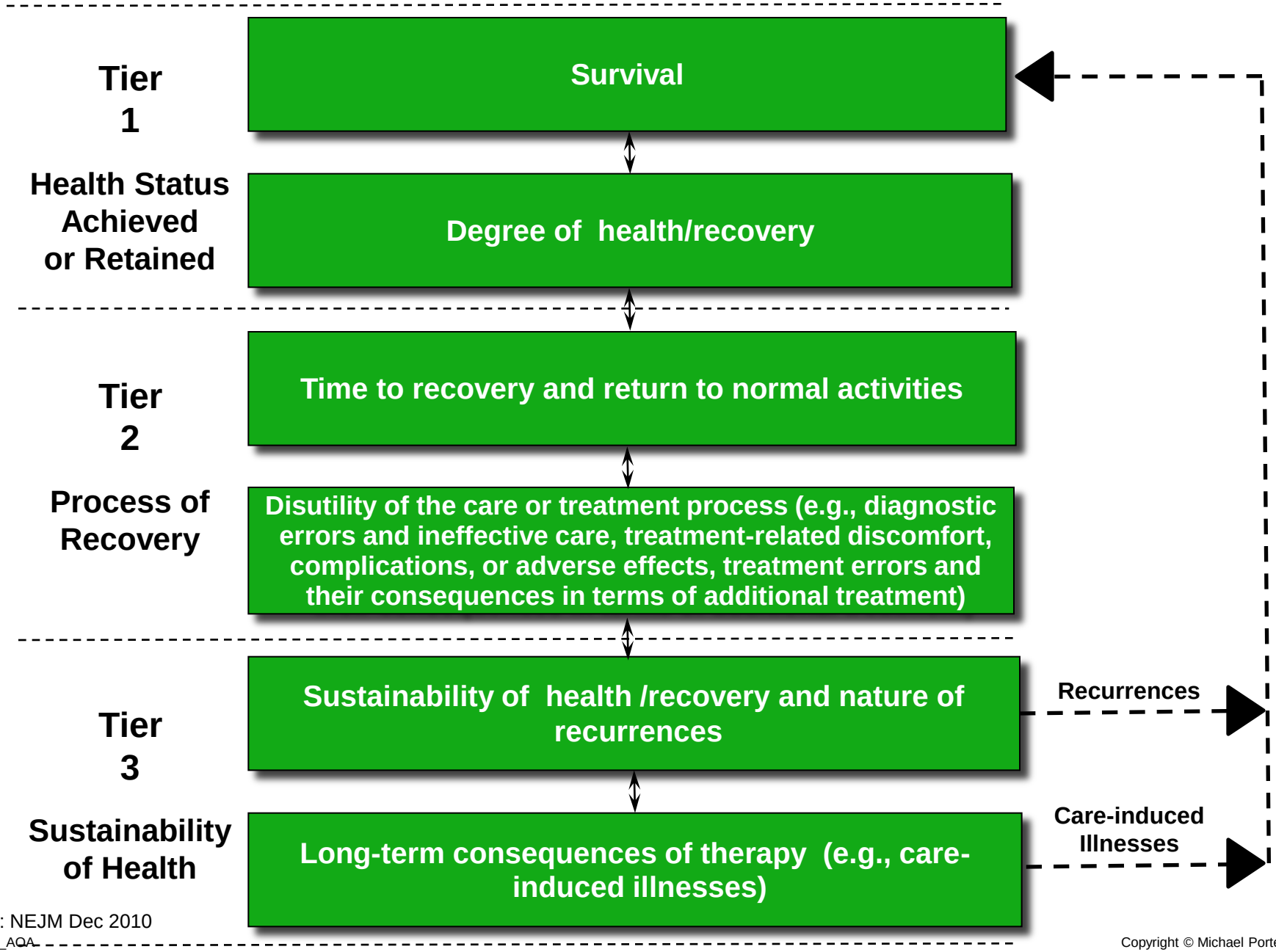
Source: Compiled from The National Board of Health and Welfare Statistical Databases – DRG Statistics, Accessed April 2, 2009.

- **Minimum volume standards** in lieu of rigorous outcome information are an interim step to drive service consolidation

2. Measure Outcomes and Cost for Every Patient



The Outcome Measures Hierarchy



Source: NEJM Dec 2010

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The Outcomes Measures Hierarchy

Severe Knee-Osteoarthritis Requiring Replacement

- Mortality

- Functional level achieved
- Range of motion achieved
- Pain level relief achieved
- Degree of independence
- Extent of return to physical activities
- Ability to return to work

- Length of hospital stay
- Time to highest functional level
- Time to return to work
- Time to return to physical activities and independence

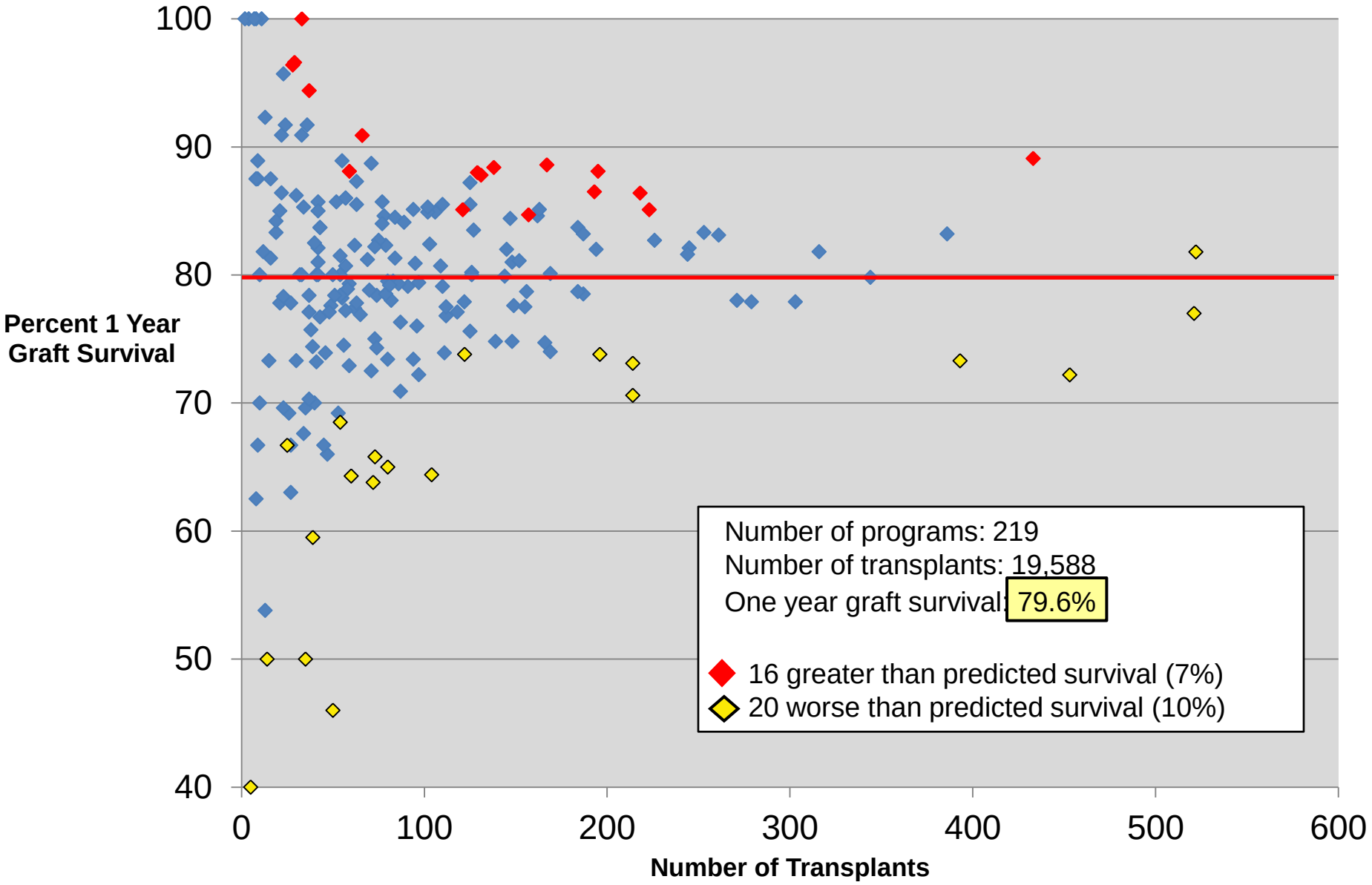
- Pain
- Infection rate (Urinary Tract)
- Pulmonary embolism
- Deep vein thrombosis
- Pneumonia
- Myocardial infarction
- Delirium

- Need for revision/re-operation (immediate failure, implant failure secondary to wear)
- Maintained functional level
- Ongoing pain status
- Ability to continue working
- Ability to live independently

- Loss of mobility due to inadequate rehab
- Associated cardiac complications
- Risk of complex fracture
- Susceptibility to infection
- Stiff knee due to unrecognized complication
- Regional pain syndrome

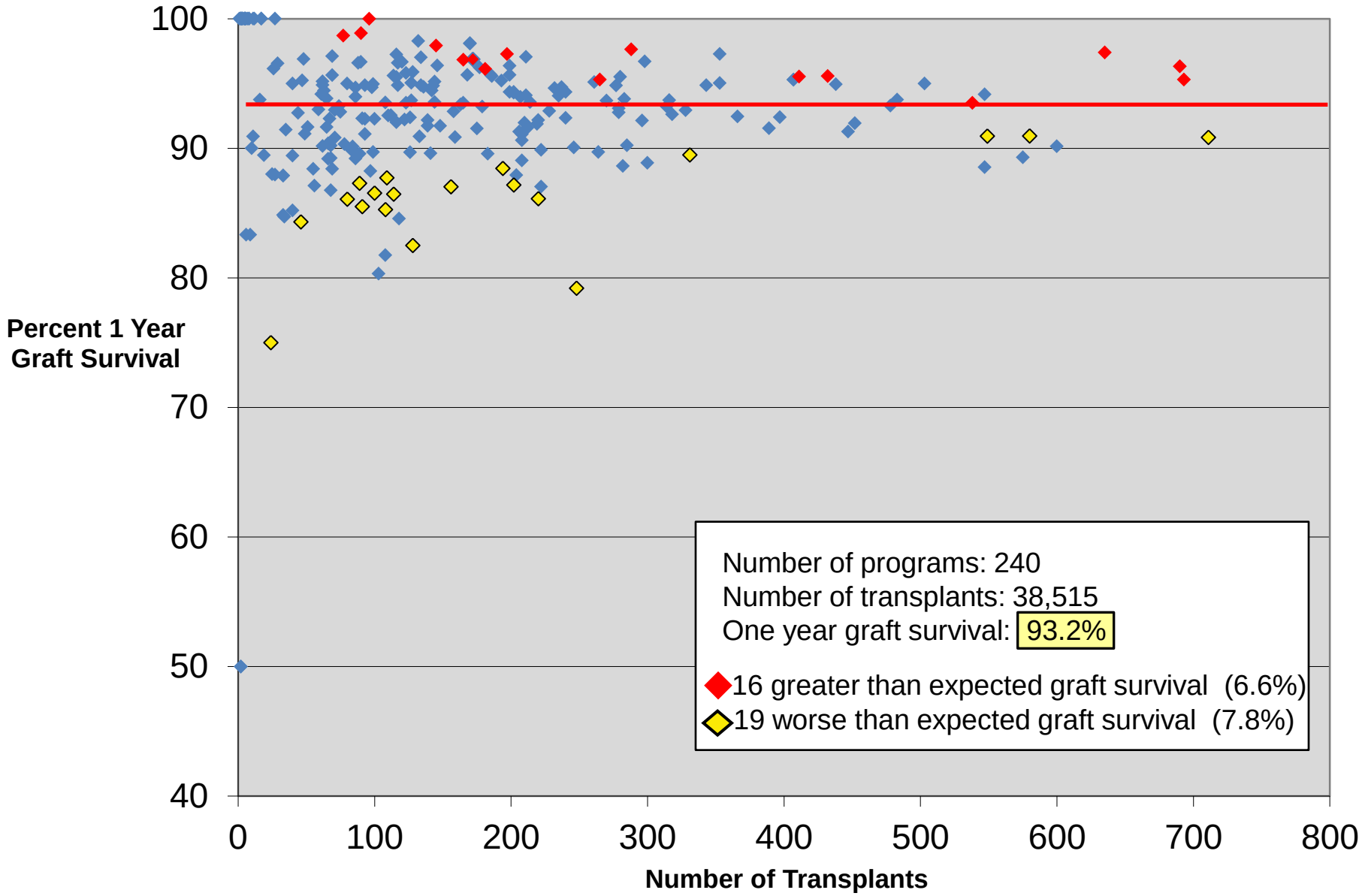
Adult Kidney Transplant Outcomes

U.S. Centers, 1987-1989



Adult Kidney Transplant Outcomes

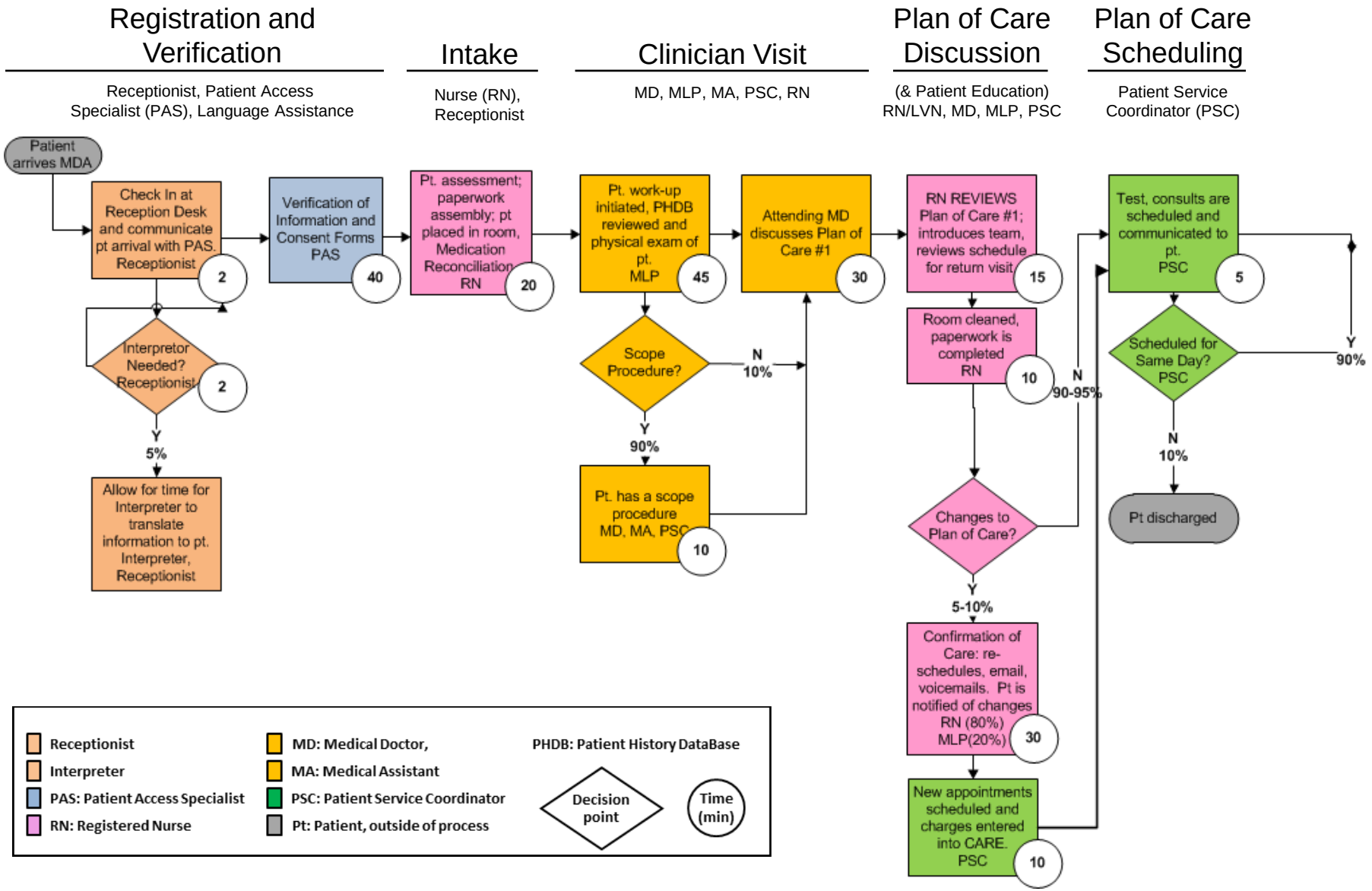
U.S. Centers, 2005-2007



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**.

Mapping Resource Utilization
MD Anderson Cancer Center



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- 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

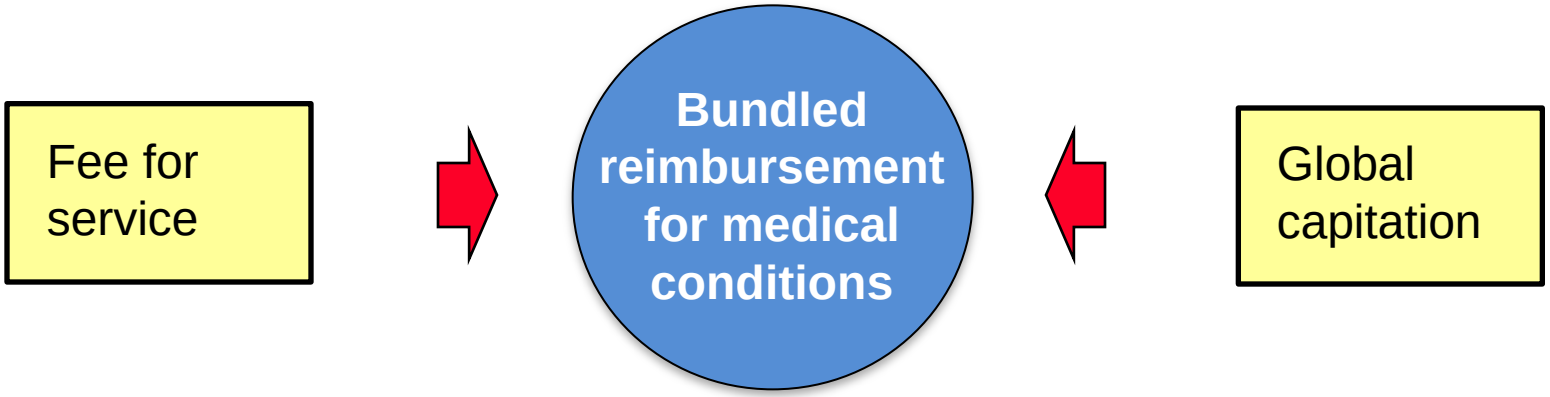
- Combining actual costs and outcomes will **transform the discussion** about care improvement

Selected Cost Reduction Opportunities in Health Care

- **Process variation** that reduces efficiency without improving outcomes
- Over-provision of **low-** or **non-value adding** services or tests
  - Sometimes to justify billing or follow rigid protocols
- Redundant **administrative** and **scheduling** units
- **Low utilization** of expensive physicians, staff, clinical space and equipment partly due to duplication and service fragmentation
- Use of **physicians and skilled staff** for less skilled activities
- Delivering care 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 minimizing the costs of discrete services rather than **optimizing the total cost** of the care cycle
- Lack of **cost awareness** in clinical teams

- There are numerous cost reduction opportunities that do not require outcome **tradeoffs**, but will actually **improve outcomes**

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**

Bundled Payment in Practice
Hip and Knee Replacement in Stockholm, Sweden

- **Components** of the bundle

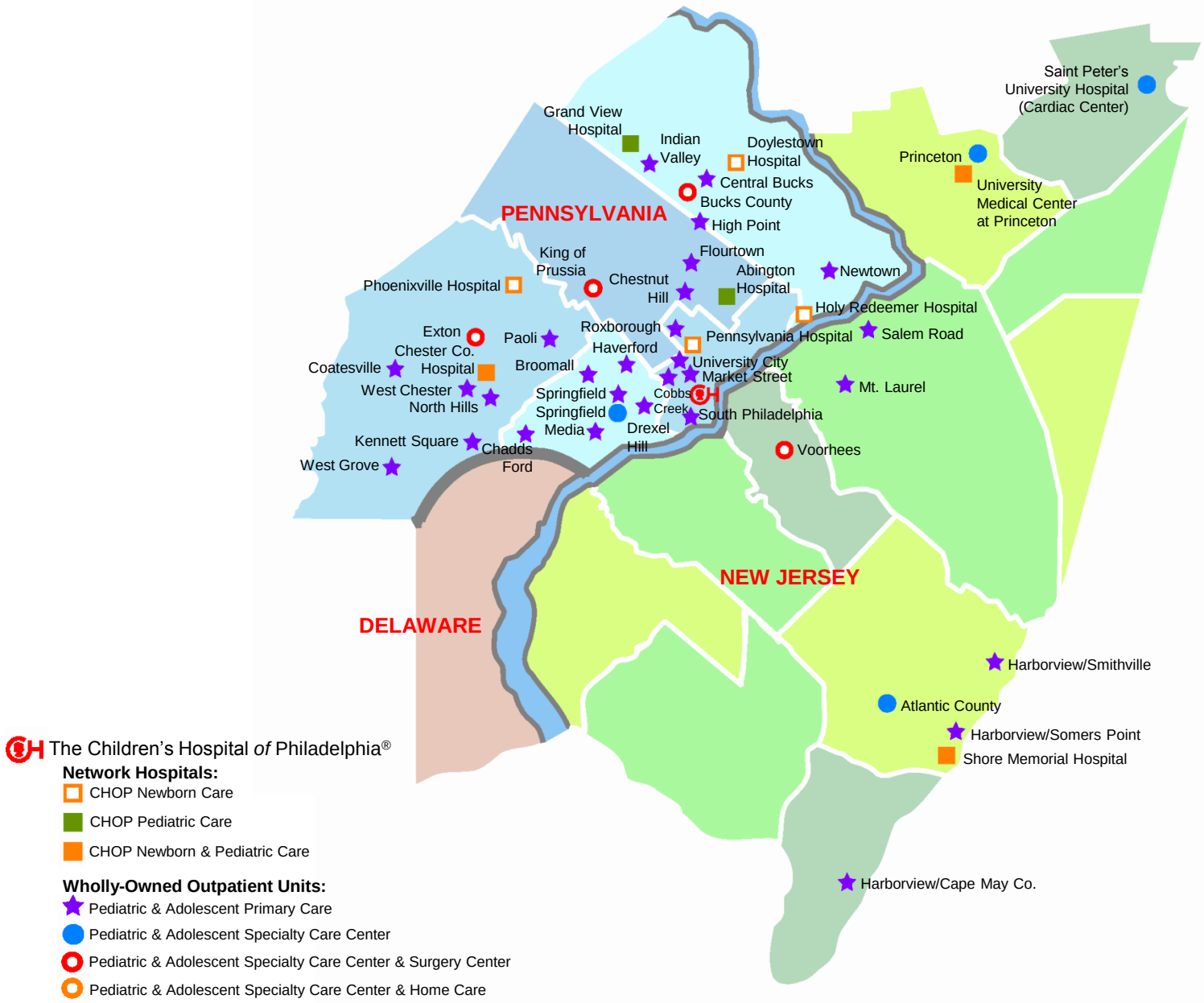
- Pre-op evaluation - Lab tests - Radiology - Surgery & related admissions - Prosthesis - Drugs - Inpatient rehab, up to 6 days	- All physician and staff fees and costs - 1 follow-up visit within 3 months - Any additional surgery to the joint within 2 years - If post-op infection requiring antibiotics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

- 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**

4. Integrating Care Delivery Across Separate Facilities

Children's Hospital of Philadelphia Care Network



Four Levels of Provider System Integration

1. Choosing the **overall scope of service lines** in which each provider entity can achieve excellence
2. **Rationalizing service lines / IPUs** across facilities to improve volume, avoid duplication, and deepen teams
3. Offering specific services at the **appropriate facility**
   - E.g. acuity level, resource intensity, cost level, need for convenience
4. Clinically integrating care **across facilities** and **entities**, within an IPU structure
   - **Widening** and **integrating** the care cycle
   - Better **connecting** preventive/primary care units to specialty IPUs
   - **Satellite units** and **affiliations** with excellent IPUs

- There are major value improvements from **aggregating medical condition volume** and **moving care out** of heavily resourced hospital, tertiary and quaternary facilities

5. Expanding Excellent IPUs Across Geography

Leading Providers

- Grow **areas of excellence across locations**:
  - Satellite pre- and post-acute services
  - Affiliations with community providers
  - New IPU hubs

NOT:

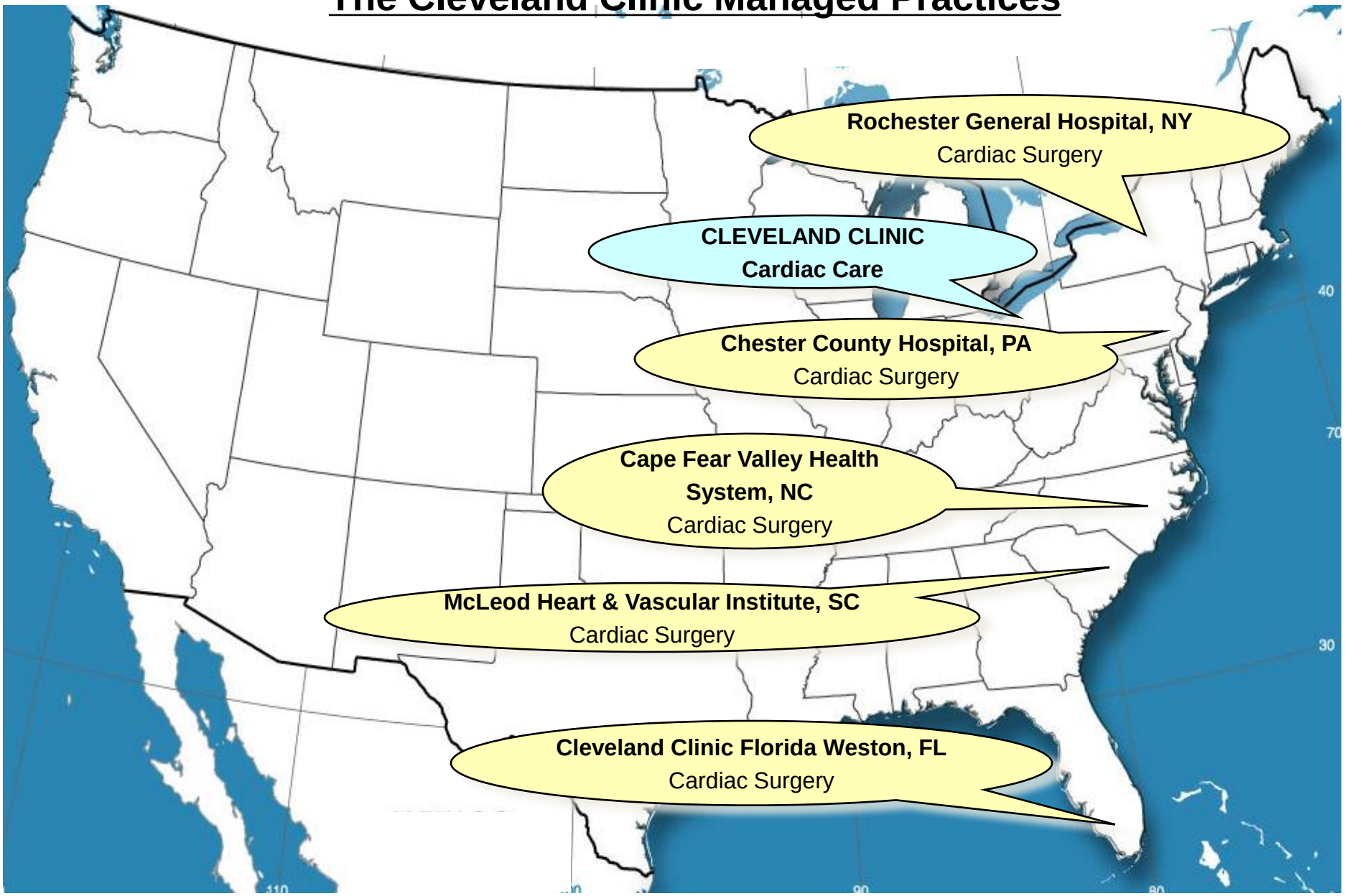
  - Further widening the service line locally
  - Growing through new broad line, stand-alone units

Community Providers

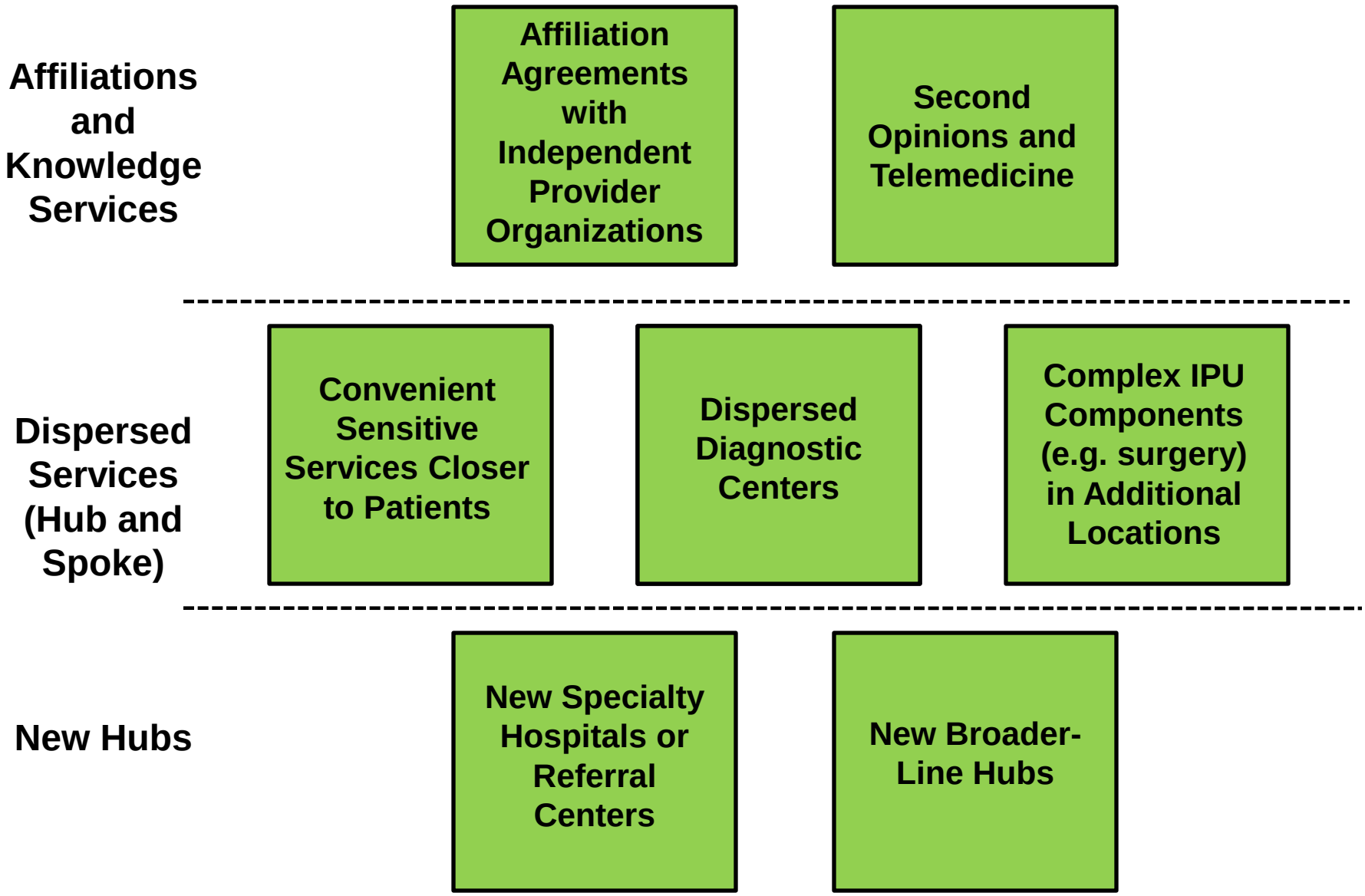
- **Affiliate with excellent providers** in medical conditions and patient populations to access sufficient volume, expertise, and sophisticated facilities and services to achieve superior value
  - New roles for rural and community hospitals

Expanding Across Geography

The Cleveland Clinic Managed Practices



Models of Geographic Expansion

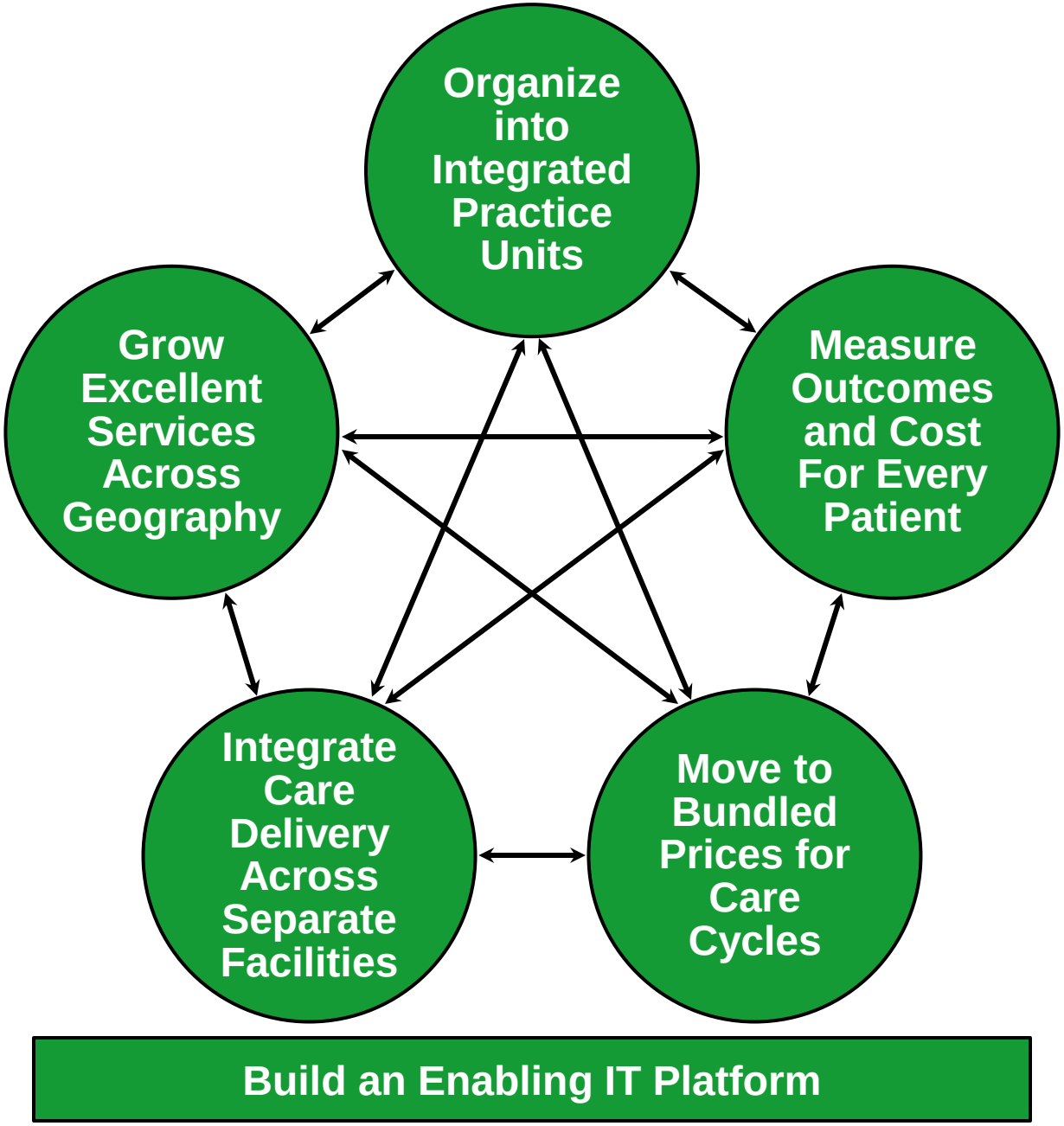


6. Building an Enabling Information Technology Platform

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 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



Creating a Value-Based Health Care Delivery Organization

Implications for Physician Leaders

1. Organize into Integrated Practice Units (IPUs) Around Patient Medical Conditions
   - **Lead multidisciplinary teams, not specialty divisions or departments**
2. Establish Universal Measurement of Outcomes and Cost for Every Patient
   - **Become an expert in measurement and process improvement**
3. Move to Bundled Prices for Care Cycles
   - **Redefine the financial model and the way to generate income**
4. Integrate Care Delivery Across Separate Facilities
   - **View relationships across inpatient and outpatient units or with sister hospitals from a value perspective, not based on autonomy or power**
5. Expand Excellent IPUs Across Geography
   - **Aspire to influence patient care outside the local area**
6. Create an Enabling Information Technology Platform
   - **Become a champion for the right EMR systems, not an obstacle to adoption and use**

Moving to a Value-Based System

Leverage Points for Government

1. **Organize into Integrated Practice Units (IPUs) Around Patient Medical Conditions and Patient Populations**
   - Provider **certification** based on **care integration measures** (e.g. multidisciplinary teams, unified outcome measurement, dedicated facilities)
   - Reduce **regulatory obstacles** to care integration (e.g. Stark Laws, corporate practice of medicine)

2. **Establish Universal Measurement of Outcomes and Cost for Every Patient**
   - Create a **national outcome registry framework**
   - Tie reimbursement to outcome **reporting** (e.g. through registries)
   - Require provider reporting of **patient volume by medical condition** as an interim step
   - Measure **costs at the patient level unit of analysis** across the care cycle and assign these accurately
   - **Modify reimbursement levels** based on comprehensive outcome and cost data

3. **Move to Bundled Prices for Care Cycles**
   - Combine evaluation, treatment, and follow-up reimbursement in a **single payment**
   - **Expand DRG** care episodes and set guidelines for bundled payment reimbursement requirements
   - Create a **bundled pricing framework** and rollout schedule

Moving to a Value-Based System

Leverage Points for Government

4. **Integrate Care Delivery Across Separate Facilities**
   - Introduce **minimum volume standards** by medical condition
5. **Expand Excellent IPUs Across Geography**
   - Encourage **affiliations** between community / rural providers and qualifying centers of excellence for complex care
6. **Create an Enabling Information Technology Platform**
   - Set **standards** for common data definitions, interoperability, and the ability to easily extract outcome, process, and costing measures for all HIT systems