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. 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.

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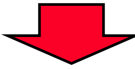
Redefining Health Care Delivery

- 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

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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, case managers, disease management and other **overlays** to the current structure are beneficial, but not sufficient

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Principles of Value-Based Health Care Delivery

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

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

  - Outcomes are the **health results that matter for a patient's condition** over the care cycle
  - Costs are the **total costs of care for a patient's condition** over the care cycle

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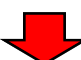
Principles of Value-Based Health Care Delivery

- **Quality improvement** is the most powerful driver of fundamental cost containment and value improvement, where quality is **health outcomes**

- Prevention of illness - Early detection - Right diagnosis - Right treatment to the right patient - Rapid cycle time of diagnosis and treatment - Treatment earlier in the causal chain of disease - Less invasive treatment methods	- Fewer complications - Fewer mistakes and repeats in treatment - Faster recovery - More complete recovery - Greater functionality and less need for long term care - Fewer recurrences, relapses, flare ups, or acute episodes - Reduced need for ER visits - Slower disease progression - Less care induced illness



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

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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
   - Organize primary and preventive care to serve distinct patient segments
2. Measure Outcomes and Cost for Every Patient
3. Reimburse through Bundled Prices for Care Cycles
4. Integrate Care Delivery Across Facilities in Health Systems
5. Expand Areas of Excellence Across Geography
6. Build an Enabling Information Technology Platform

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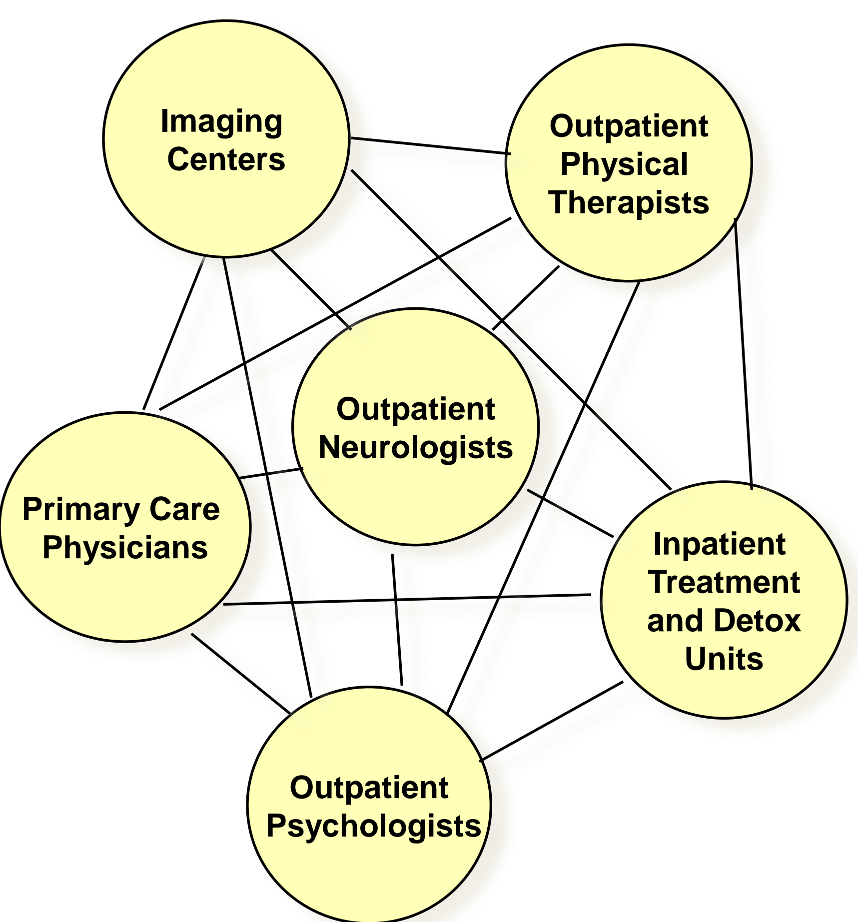
1. Organizing Care Around Patient Medical Conditions

Migraine Care in Germany

Existing Model:
Organize by Specialty and Discrete Services



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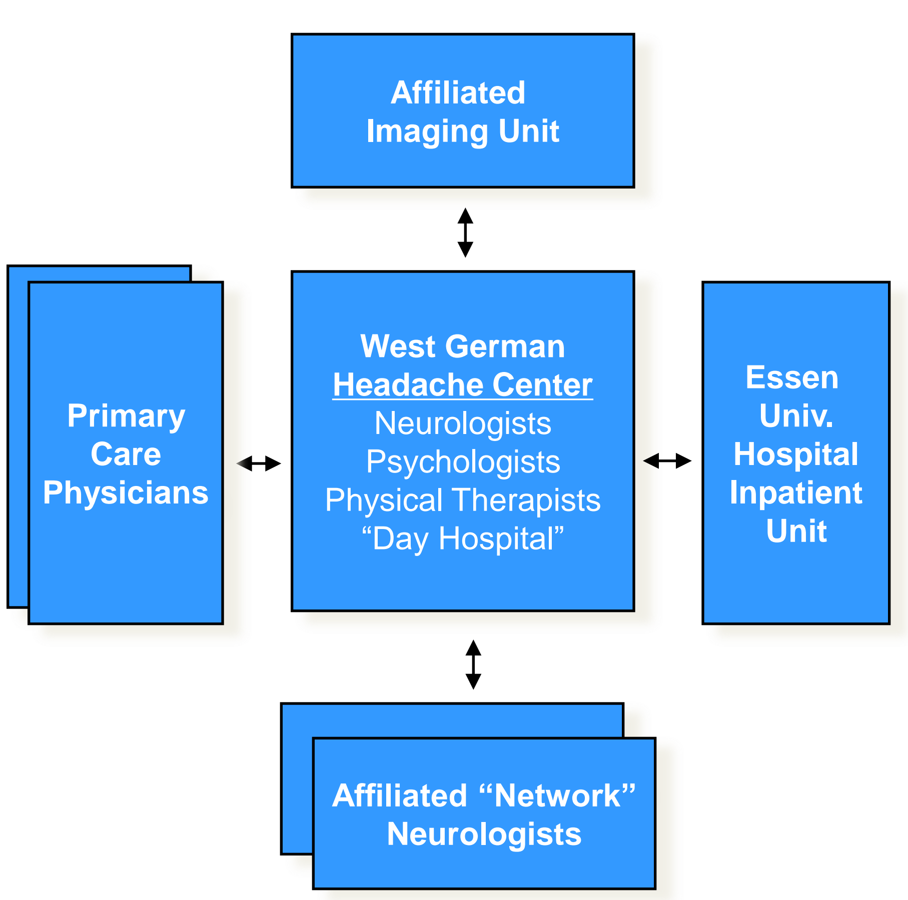
1. Organizing Care Around Patient Medical Conditions

Migraine Care in Germany

Existing Model:
Organize by Specialty and Discrete Services

Imaging Centers
Outpatient Physical Therapists
Outpatient Neurologists
Primary Care Physicians
Inpatient Treatment and Detox Units
Outpatient Psychologists

New Model:
Organize into Integrated Practice Units (IPUs)



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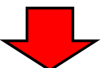
What is a Medical Condition?

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



- The medical condition / patient segment is the proper **unit of value creation** and the **unit of value measurement** in health care delivery

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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

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Value-Based Primary Care

Organize primary care **around patient segments** with similar health circumstances and care needs:

Illustrative Segments

- Healthy adults
- Mothers and children
- Adults at risk of developing chronic or acute disease
  - E.g. family history, environmental exposures, lifestyle
- Chronically ill adults with one or more complex chronic conditions
  - E.g. moderate mental illness, diabetes, COPD, heart failure
- Adults with rare conditions
- Frail elderly or disabled

Tailor the Care Delivery Team and Facilities to Each Segment

- Physicians, psychologists, nurses, social workers, educators, and other staff best equipped to meet the medical and non-medical needs of the segment
- Care delivered in locations reflecting patient circumstances in the segment

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What is Not Integrated Care?

Integrated care is not the same as:

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

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Volume in a Medical Condition Enables Value

The Virtuous Circle of Value

- Greater Patient Volume in a Medical Condition
- Rapidly Accumulating Experience
- Better Information/ Clinical Data
- More Fully Dedicated Teams
- More Tailored Facilities
- Rising Process Efficiency
- Better utilization of capacity
- Rising Capacity for Sub-Specialization
- Wider Capabilities in the Care Cycle, Including Patient Engagement
- Greater Leverage in Purchasing
- Costs of IT, Measure-ment, and Process Improvement Spread over More Patients
- Faster Innovation
- Better Results, Adjusted for Risk
- Improving Reputation

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

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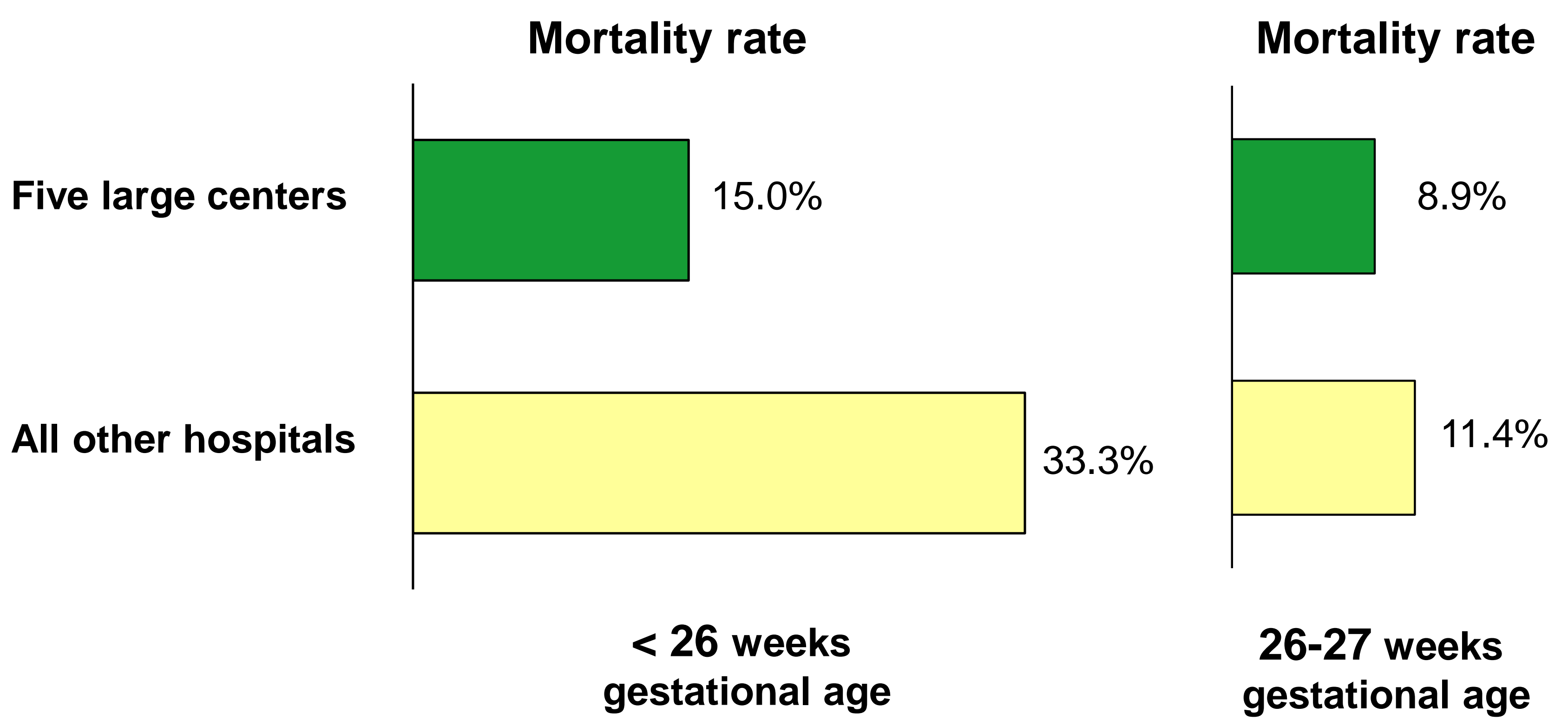
Low Volume Undermines Value

Mortality of Low-birth Weight Infants in Baden-Würtemberg, Germany



Source: Hummer et al, Zeitschrift für Geburtshilfe und Neonatologie, 2006; Results duplicated in AOK study: Heller G, Gibt es einen Volumen-Outcome-Zusammenhang bei der Versorgung von Neugeborenen mit sehr niedrigem Geburtsgewicht in Deutschland – Eine Analyse mit Routinedaten, Wissenschaftliches Institut der AOK (WIdO)

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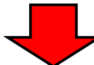
Implications for Mental Health

- Care for mental illness should be organized around **patient conditions**.
- Mental health and physical health are **inextricably linked**
- Care for physical and mental illness should involve the **integration of physical and mental health providers**



1. Create IPUs to care for **acute or complex mental health** patients
2. Integrate **mental health care** into physical health IPUs
3. Integrate care of **common mental health conditions** into primary care

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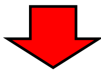
Organizing Care for Acute or Complex Mental Health Conditions

- E.g., severe forms of depression, bipolar disorder, eating disorders, schizophrenia, etc.
- Care should be delivered in **condition-specific IPUs**
- By a **dedicated, multidisciplinary team** led by mental health providers
- Mental health IPUs **should incorporate the relevant physical health clinicians** to treat the common complications of mental illness, building experience and expertise in those areas



- Aggregating acute or complex mental health care into high volume centres of excellence will dramatically **improve outcomes**, **increase efficiency**, and **reduce excess capacity**

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Organizing Care for Acute or Complex Mental Health Conditions

Schön Klinik Roseneck: Eating Disorders Care

- Schön Klinik Roseneck is the **highest volume inpatient eating disorder provider in Germany**, treating over 500 patients per year

Dedicated to Eating Disorders Care	Shared with other Conditions
MDs and PhDs - 6 Chief Psychiatrists - 6 Attending Psychiatrists - 12 Staff Psychiatrists - 24 Psychologists - 1 Chief Internist **Skilled Staff** - 18 Nurses - 2 Nutritionists - 3 Dieticians	**MDs – rotate through one day per week** - 1 Dermatologist - 1 Orthopedist - 1 Ear/nose/throat Specialist - 1 Pain Specialist **MDs – on call** - 1 Neurologist - 2 Internists - 1 Physical Medicine Specialist **Skilled Staff** - 4 Social Workers - 4 Physical Therapists - 9 Exercise Physiologists - 7 Art therapists

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Integrating Mental Health into Physical Health IPUs

- More than a quarter of adults with physical health problems **also suffer from mental illness**
- The mental health challenges of acute or complex specialty care are often **related to the medical condition being treated**
- Physical condition centered IPUs should include **dedicated mental health providers** who understand the mental health needs of the patients they treat, detect developing mental illness, and intervene early
  - Social workers or other mid-level providers can occupy such roles, referring out complex cases to psychologists or psychiatrists

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Integrating Mental Health into Physical Health IPUs

MD Anderson Head and Neck Center

- MD Anderson Cancer Center is one of the highest volume hospitals for head and neck cancer in the US, treating **over 2,000 new patients** each year

Dedicated	Shared
Center Management Team - 1 Center Medical Director (MD) - 2 Associate Medical Directors (MD) - 1 Center Administrative Director (RN)	
Dedicated MDs - 8 Medical Oncologists - 12 Surgical Oncologists - 8 Radiation Oncologists - 5 Dentists - 1 Diagnostic Radiologist - 1 Pathologist - 4 Opthalmologists	**Shared MDs** - Endocrinologists - Other specialists as needed (cardiologists, plastic surgeons, etc.) - Psychiatrists
Skilled Staff - 22 Nurses - 3 Social Workers - 4 Speech Pathologists - 1 Nutritionist - 1 Patient Advocate	**Skilled Staff** - Dietician - Inpatient Nutritionists - Radiation Nutritionists - Smoking Cessation Counselors

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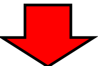
Integrating Mental Health into Primary Care

- Mental illness is common, yet **underrecognized** and **undertreated**
  - 25% of primary care patients have depression or anxiety
  - Primary care providers recognize only **half** of all mental illnesses
  - Among patients with recognized illness, only **half** are offered medication
- Patients with mental illness frequently present to primary care with **physical health symptoms** (e.g., fatigue, insomnia, palpitations)
- Primary care providers, focusing on physical ailments can overlook **underlying psychological causes**



- Incorporating **mental health clinicians** into primary care will dramatically improve patient value

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Integrating Mental Health into Primary Care

Four Examples

Veteran Health Affairs	Cherokee Health System, Tennessee
• Co-location of Psychiatrists and Primary Care Physicians as core members of the primary care team • Open access to Psychiatrists • Weekly interdisciplinary team meetings with geographically distant team members via video conferencing	• Behavioural health consultants address psychosocial issues related to chronic illness, including obesity • Use of shared electronic medical record
DIAMOND Initiative, Minnesota	**Intermountain Healthcare, Utah**
• Care managers, supervised by Psychiatrists, provide care for people with depression. • Bundled payment includes all care manager activity required by the patient, on a monthly basis. • Disease registry for patients with depression using PHQ-9	• All patients complete questionnaire containing multiple outcome measures e.g., PHQ-9 • Patients segmented into mild, moderate or high complexity • Detailed evidence based guidelines

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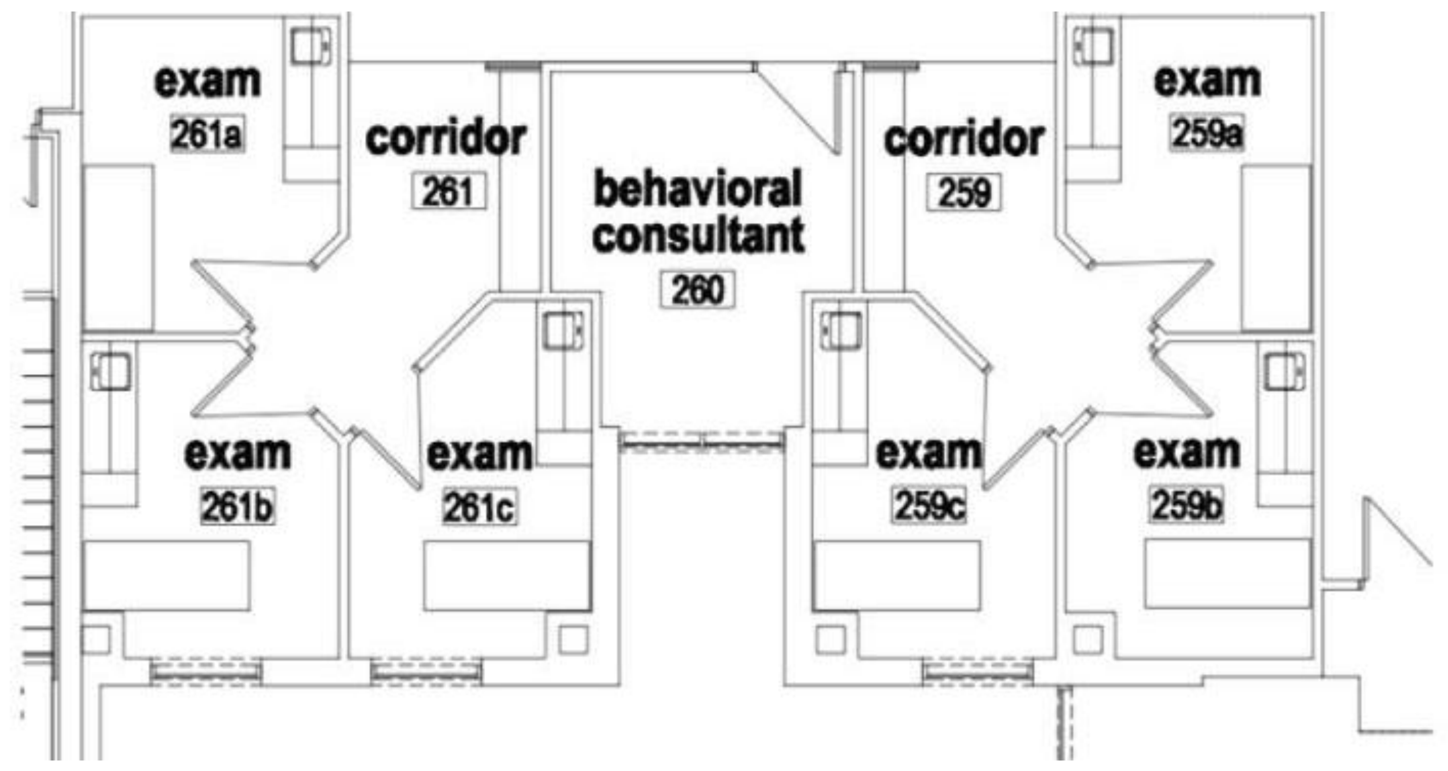
Integrating Mental Health Care into Primary Care

Cherokee Health Systems, Tennessee



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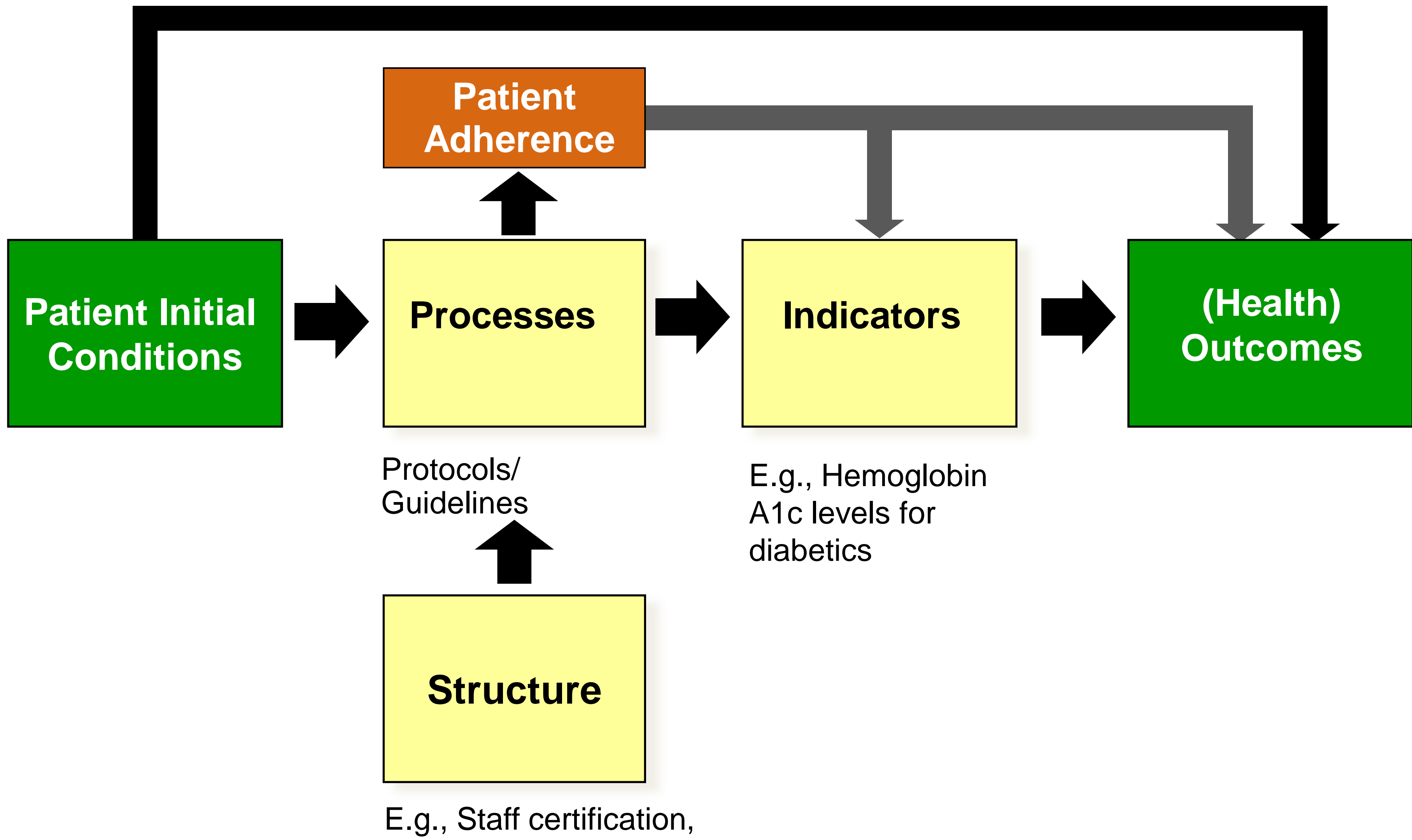
2. Measuring Outcomes and Cost for Every Patient



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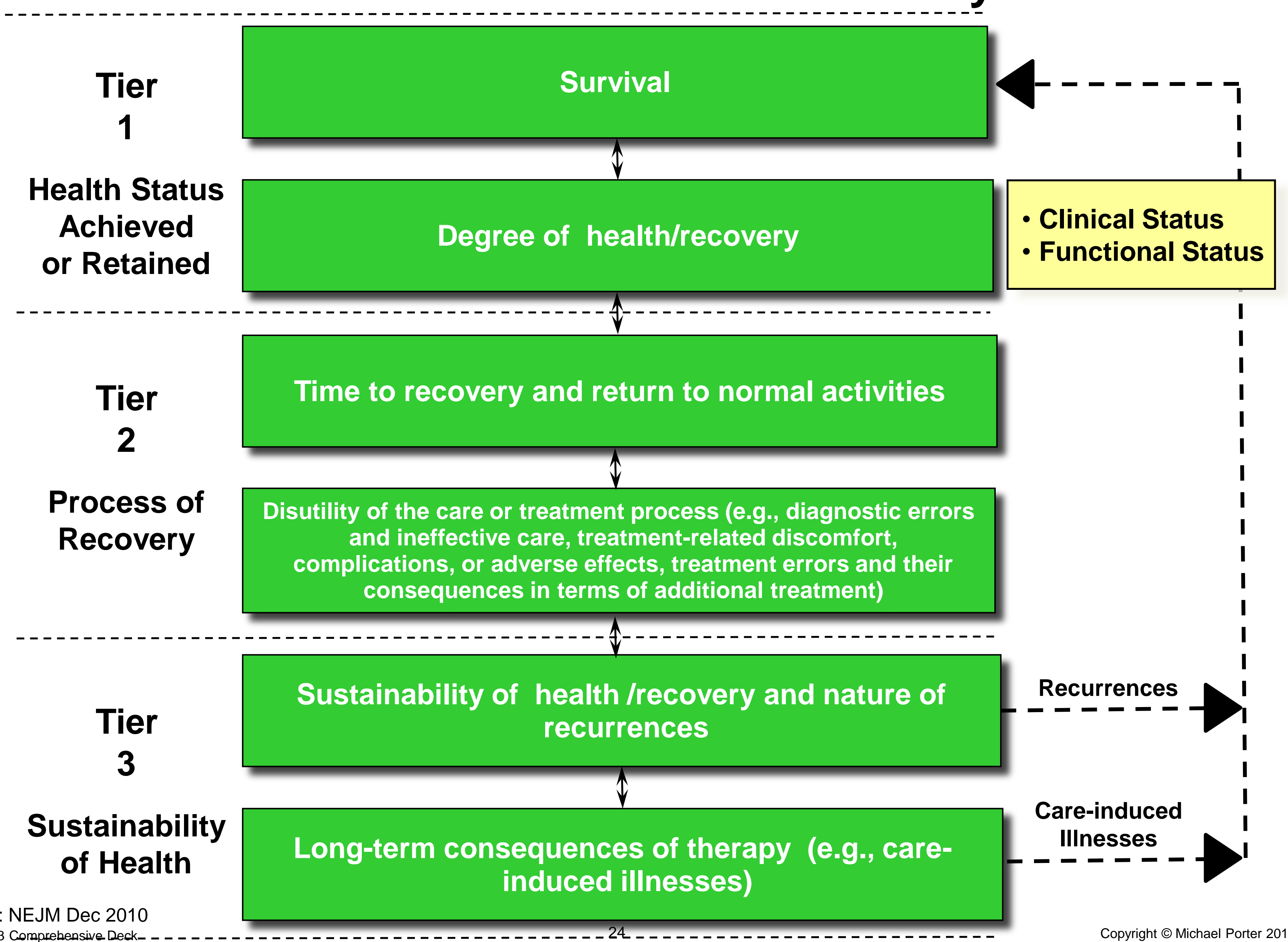
The Outcome Measures Hierarchy



Source: NEJM Dec 2010

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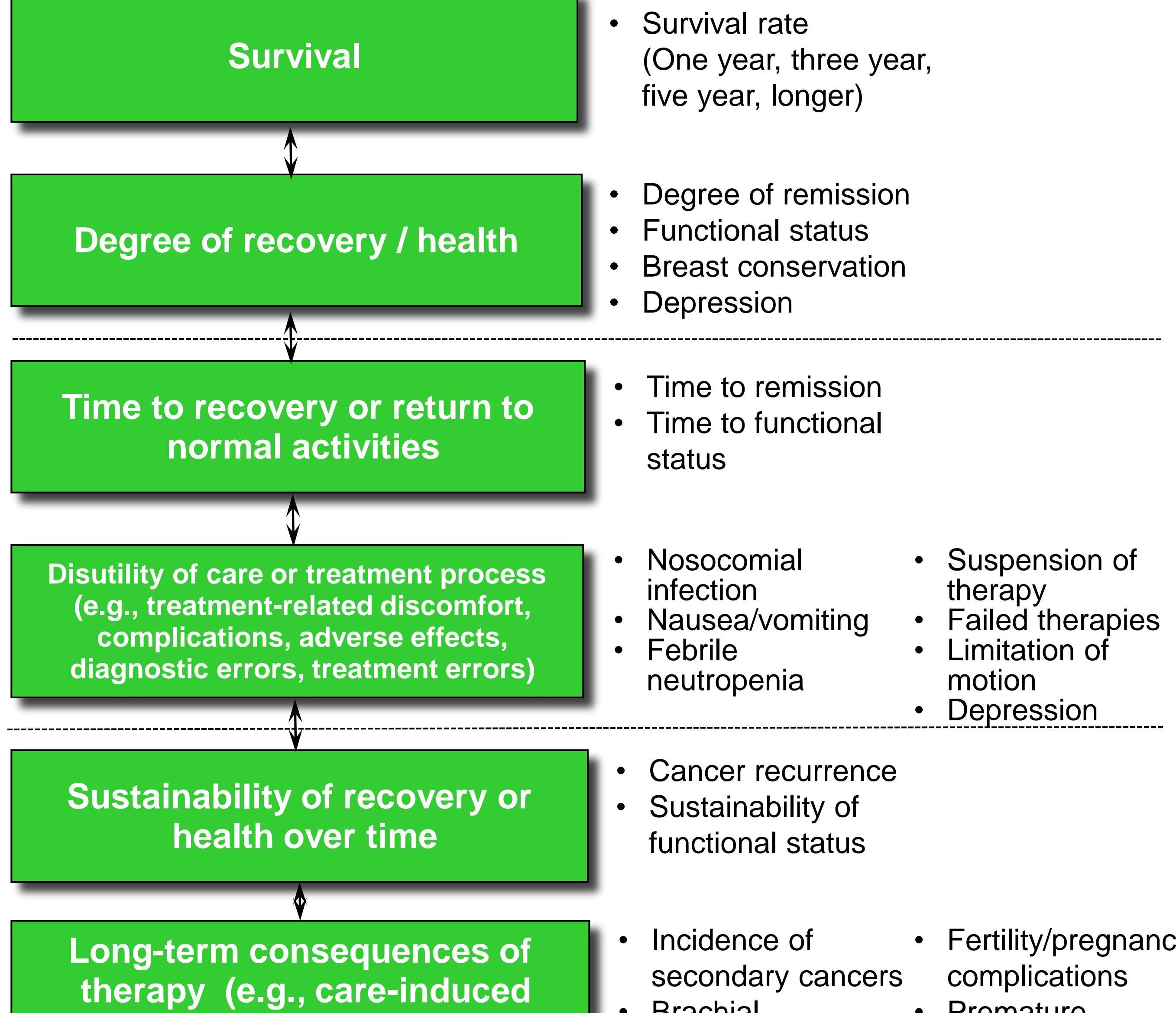
The Outcome Measures Hierarchy

Breast Cancer



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

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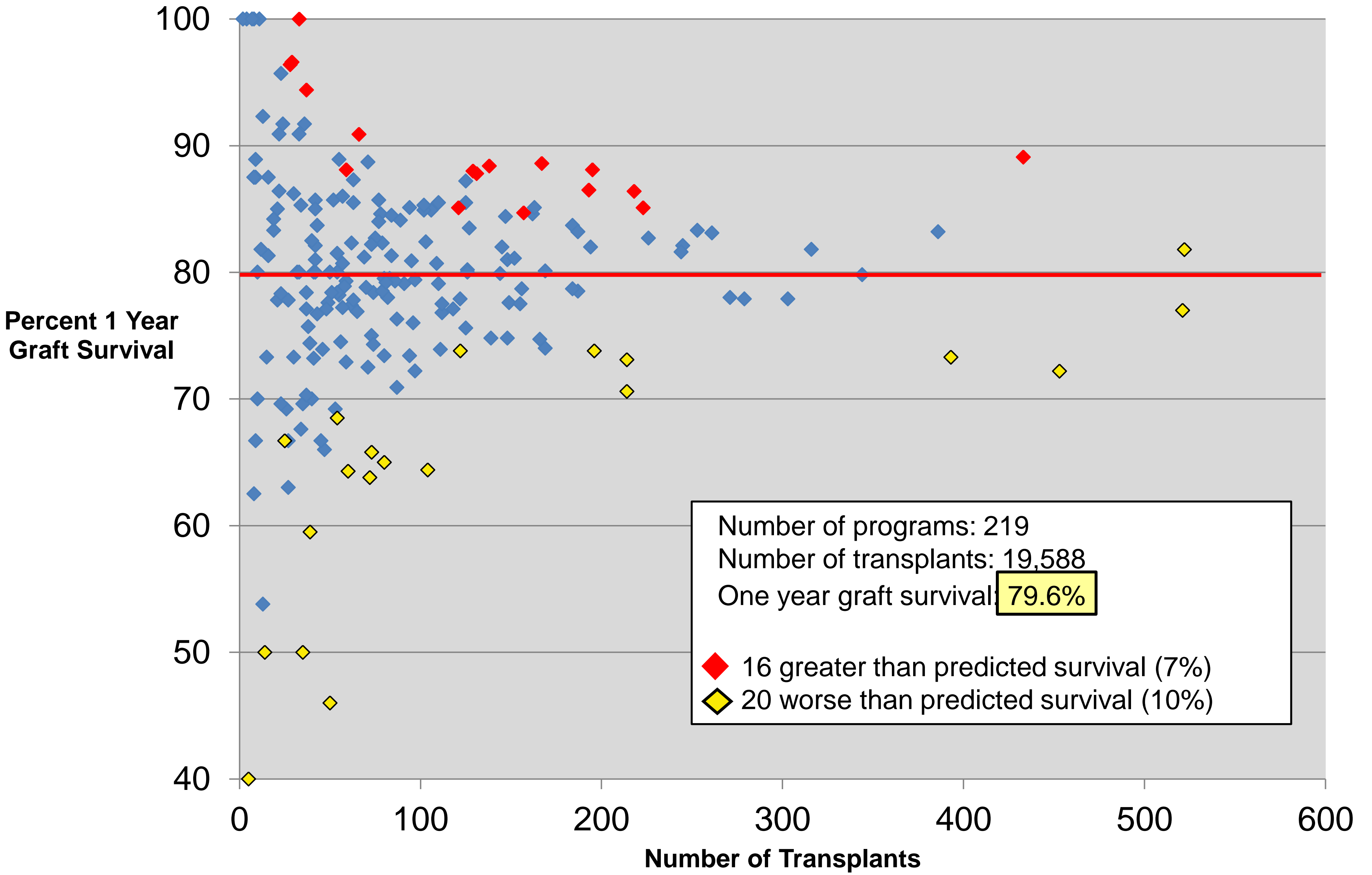
Adult Kidney Transplant Outcomes
U.S. Centers, 1987-1989



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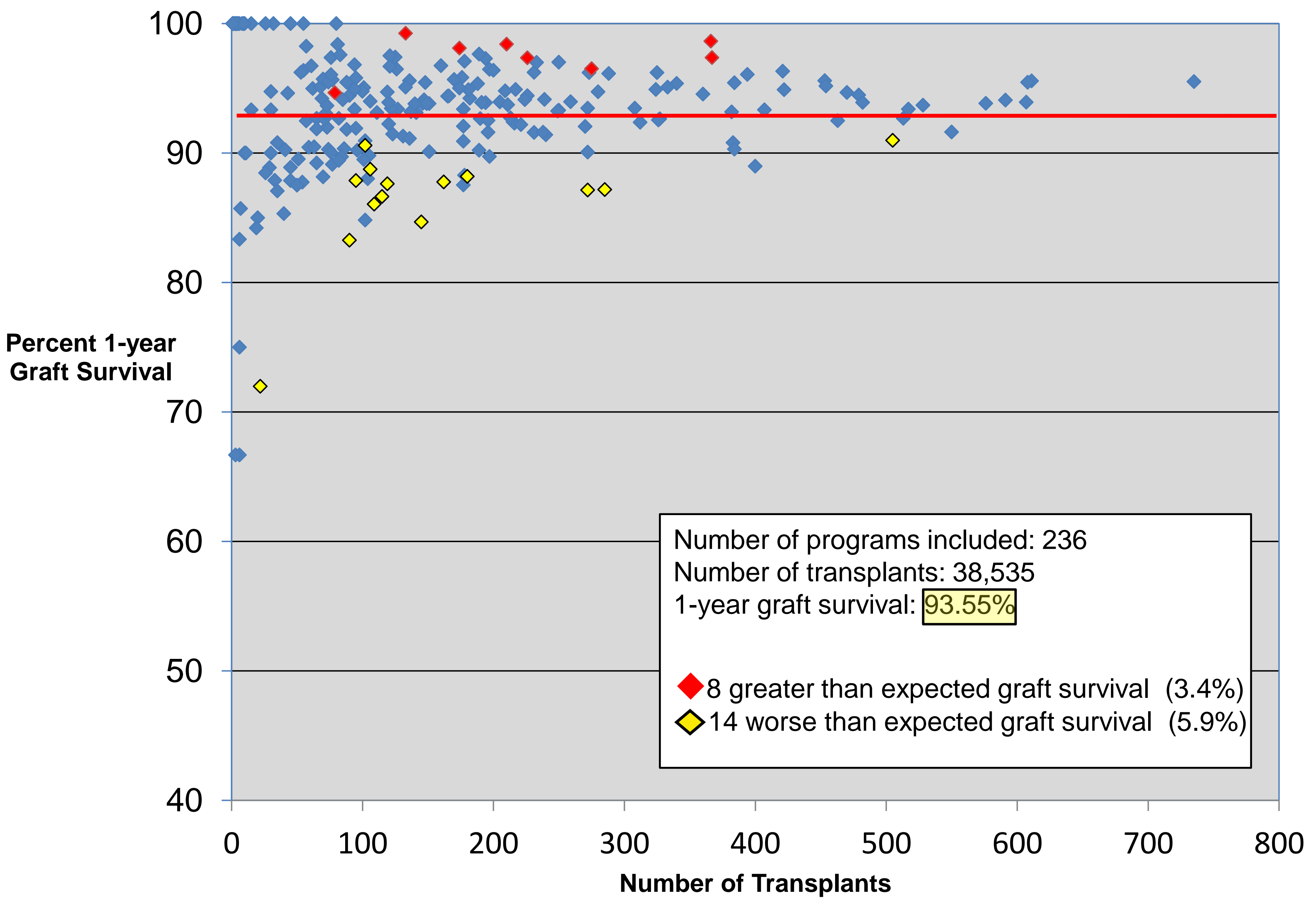

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Measuring Outcomes for Acute or Complex Mental Health Conditions

Eating Disorders

Outcome Dimension	Measures
Survival	• Survival
Degree of recovery / health	• Body Mass Index (weight-to-height ratio) • Eating disorder severity (E.g., SIAB-S, EDI-2) • Depression severity (E.g., PHQ-9, BDI) • General mental health status (E.g., GSI-BSI)
Time to recovery or return to normal activities	• Time to diagnosis and treatment • Length of stay (days) • Time to symptom improvement • Time to return to school/work
Disutility of care or treatment process (e.g., treatment-related discomfort, complications, adverse effects, diagnostic errors, treatment errors)	• Prevalence of refeeding syndrome • Readmissions • Prevalence of disengagement with therapy
Sustainability of recovery or health over time	• Maintenance of BMI
Long-term consequences of therapy (e.g., care-induced illnesses)	• Infertility • Premature osteoporosis • Self-harm behavior e.g., cutting, suicide attempt

Initial Conditions /Risk Factors

- Age
- Gender
- Ethnicity
- Family history
- Family or life stressors
- Co-morbid psychiatric diagnoses
- Length of time with condition
- Higher BMI
- History of dieting
- Sexual abuse

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Outcomes Measurement for Mental Health Conditions

Schön Klinik Roseneck: Eating Disorders Care

- Measures outcomes for **every eating disorder patient**:
  - Body-mass Index (BMI)
  - Structured Interview for Anorexia and Bulimia (SIAB)
  - Eating Disorder Inventory II (EDI-2)
  - Beck Depression Inventory (BDI)
  - Brief Symptom Inventory Global Severity Index (BSI-GSI)
  - Personal Health Questionnaire: Depression (PHQ:Depression)
- Structured **process for learning and improvement**
  - **Quality Reviews**: senior management meets with medical director, quality manager, nursing director, and senior doctors to review patient outcomes and discuss areas for improvement
  - **Practice Group Meetings**: hospital CEO meets with multi-disciplinary group of clinical and administrative leaders treating similar medical conditions to discuss outcomes performance and variation across hospitals

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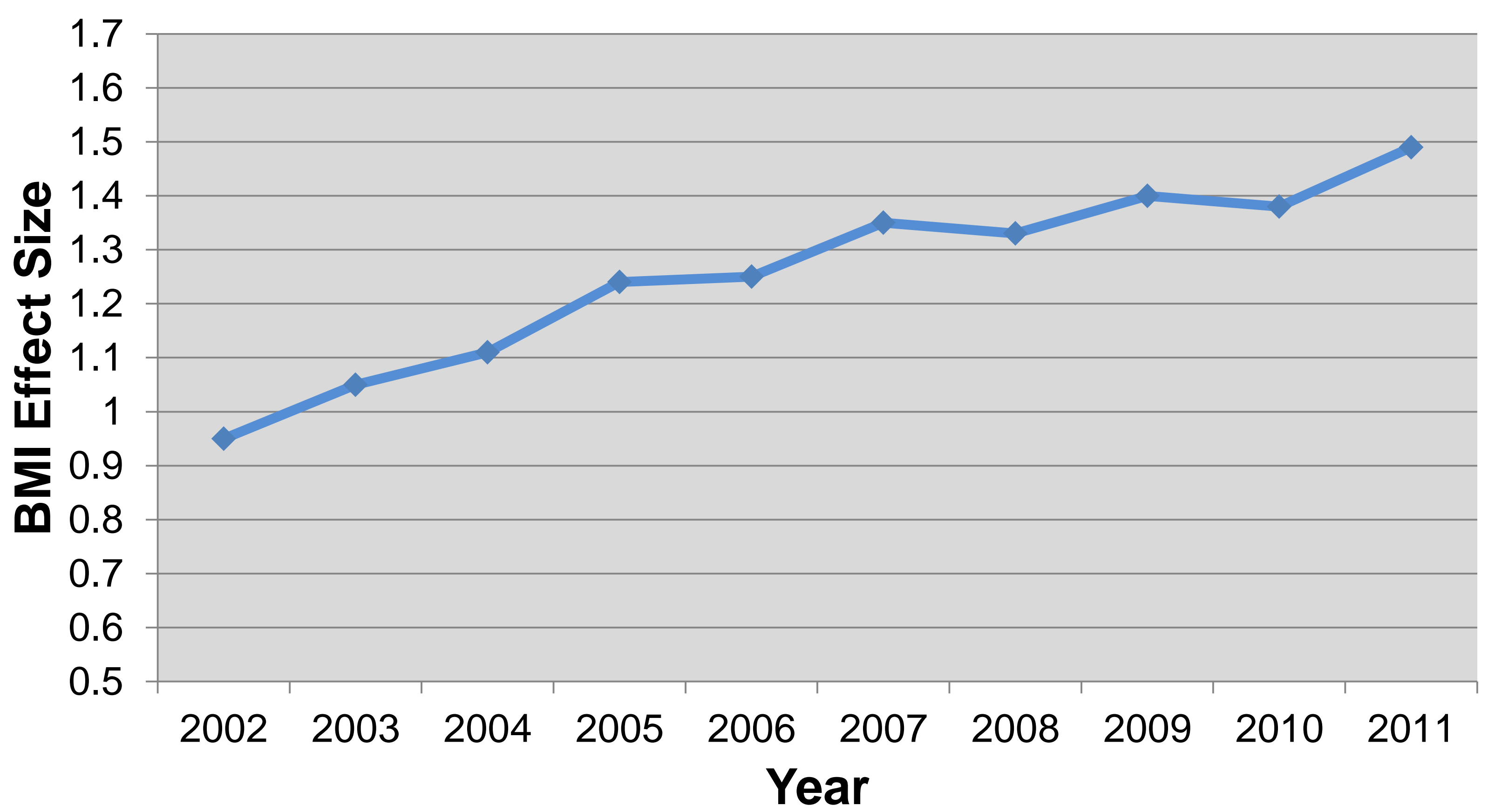
Outcomes Measurement for Mental Health Conditions

Schön Klinik Roseneck: Eating Disorders Care



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Measuring the Cost of Care Delivery: Principles

- Cost is the **actual expense** of patient care, not the **charges** billed or collected
- Cost should be measured around the **patient**
- Cost should be aggregated over the **full cycle of care for the patient's medical condition,** not for departments, services, or line items
- Cost depends on the **actual use of resources** involved in a patient's care process (personnel, facilities, supplies)
  - The **time** devoted to each patient by these resources
  - The **capacity cost** of each resource
  - The **support costs** required for each patient-facing resource

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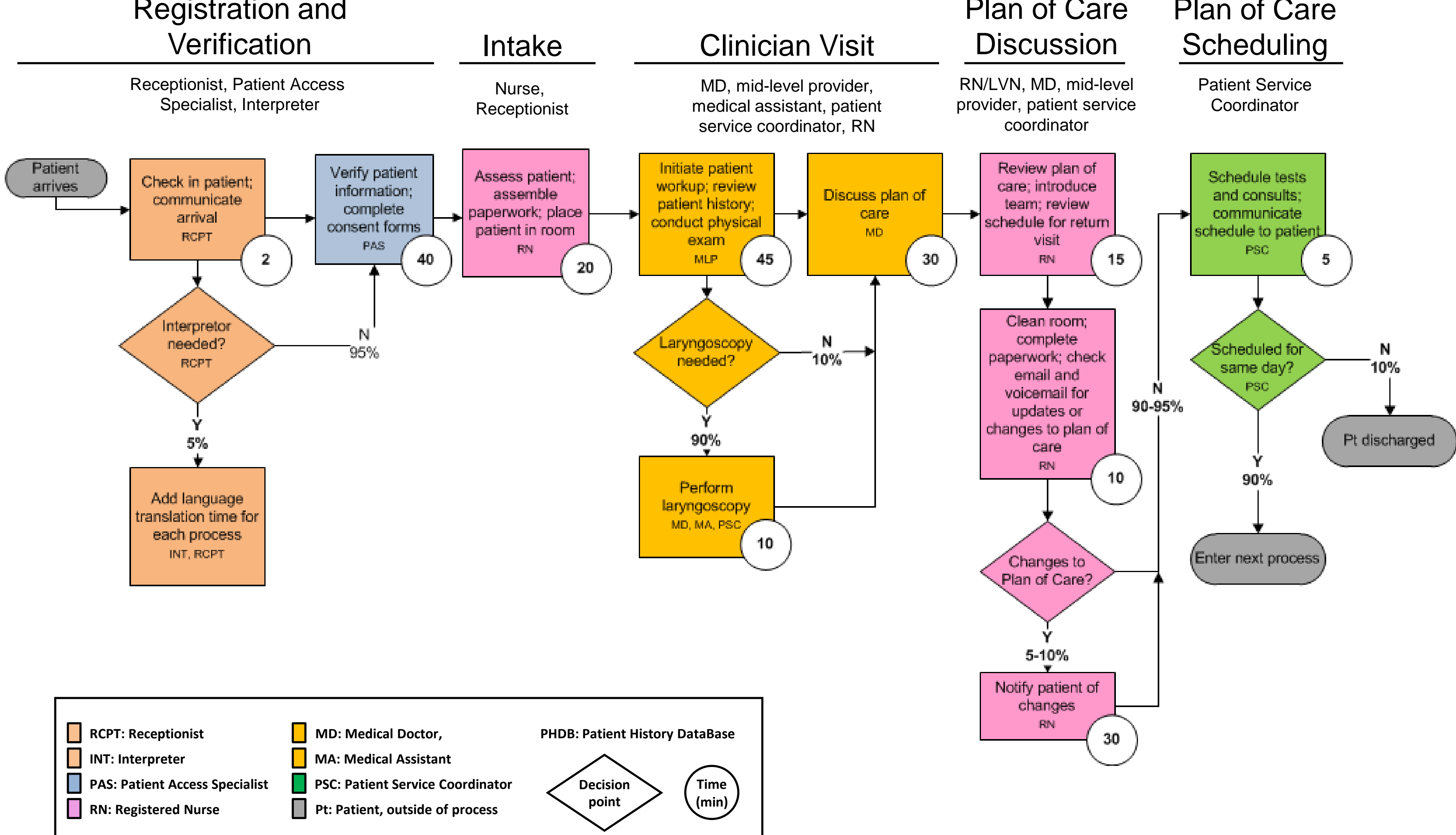
Mapping Resource Utilization

MD Anderson Cancer Center – New Head and Neck Patient Visit



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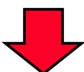
Selected Cost Reduction Opportunities in Health Care

- **Process variation** that reduces efficiency without improving outcomes
- Over-provision of **low-** or **non-value adding** services or tests
  - Sometimes to follow rigid protocols or justify billing
- 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**

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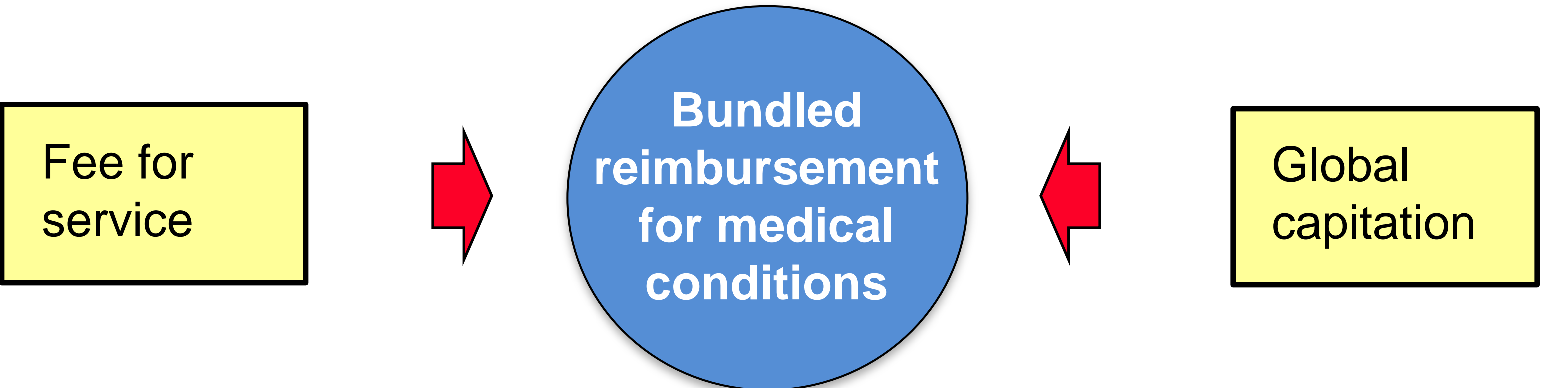
3. Reimbursing through Bundled Prices for Care Cycles



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**

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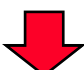
Bundled Payment in Practice
Hip and Knee Replacement in Stockholm, Sweden

- **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**

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Bundled Reimbursement for Mental Health Care

Depression Care at Schön Klinik

- In 2009, Schon Klinik negotiated a bundled price for **inpatient depression care**
  - Payment depended solely on the outcomes achieved, not the length of stay or services provided
  - Early results showed improved outcomes and shorter lengths of stay

	Patients under bundled payment	All Schön Klinik depression patients
Number of patients	136	8834
PHQ depression effect size	1.12	1.18
BDI-II effect size	1.26	1.2
BSI-GSI effect size	1.01	0.98
Average length of stay (days)	**42.8**	**49.8**

- In 2011, Schön extended the bundle to cover **pre- and post-admission outpatient care**
- Schön became the **single point of contact for newly-diagnosed severely depressed patients**, coordinating a network of hospitals, step-down units, and outpatient psychotherapists

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4. Integrating Care Delivery Across Separate Facilities

Children's Hospital of Philadelphia Care Network

The Children's Hospital *of* Philadelphia®

Network Hospitals:

- CHOP Newborn Care
- CHOP Pediatric Care
- CHOP Newborn & Pediatric Care

Wholly-Owned Outpatient Units:

- Pediatric & Adolescent Primary Care
- Pediatric & Adolescent Specialty Care Center
- Pediatric & Adolescent Specialty Care Center & Surgery Center
- Pediatric & Adolescent Specialty Care Center & Home Care

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5. Expanding Areas of Excellence Across Geography

The Cleveland Clinic Affiliate Practices

Rochester General Hospital, NY
Cardiac Surgery

Chester County Hospital, PA
Cardiac Surgery

CLEVELAND CLINIC

Central DuPage Hospital, IL
Cardiac Surgery

St. Vincent Indianapolis, IN
Kidney Transplant

Charleston, WV
Kidney Transplant

Pikeville Medical Center, KY
Cardiac Surgery

Cape Fear Valley Medical Center, NC
Cardiac Surgery

McLeod Heart & Vascular Institute, SC
Cardiac Surgery

Cleveland Clinic Florida Weston, FL
Cardiac Surgery

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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 both **physical and mental health providers** and 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**

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Creating a Value-Based Health Care Delivery Organization

Implications for Mental Health Providers

1. Organize Care into Integrated Practice Units (IPUs) Around Patient Medical Conditions
   - **Work in multidisciplinary teams, not in mental health silos**
2. Measure Outcomes and Cost for Every Patient
   - **Measure what matters to patients, including both physical and mental health outcomes**
3. Reimburse through Bundled Prices for Care Cycles
   - **Lead the development of new bundled reimbursement options**
4. Integrate Care Delivery Across Separate Facilities
   - **Champion service rationalization across hospitals, day treatment facilities, and outpatient providers**
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 EMR systems that improve communication between providers and facilitate long-term follow-up of patients**

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