

Value-Based Health Care Delivery

Professor Michael E. Porter
Harvard Business School

Managing Global Health
March 4, 2010

This presentation draws on Michael E. Porter and Elizabeth Olmsted Teisberg: *Redefining Health Care: Creating Value-Based Competition on Results*, Harvard Business School Press, May 2006, and “How Physicians Can Change the Future of Health Care,” *Journal of the American Medical Association*, 2007; 297:1103:1111. No part of this publication may be reproduced, stored in a retrieval system, or transmitted in any form or by any means — electronic, mechanical, photocopying, recording, or otherwise — without the permission of Michael E. Porter and Elizabeth Olmsted Teisberg. Further information about these ideas, as well as case studies, can be found on the website of the Institute for Strategy & Competitiveness at <http://www.isc.hbs.edu>.

Redefining Health Care Delivery

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

Value: Patient health outcomes per dollar spent



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

Creating a Value-Based Health Care System

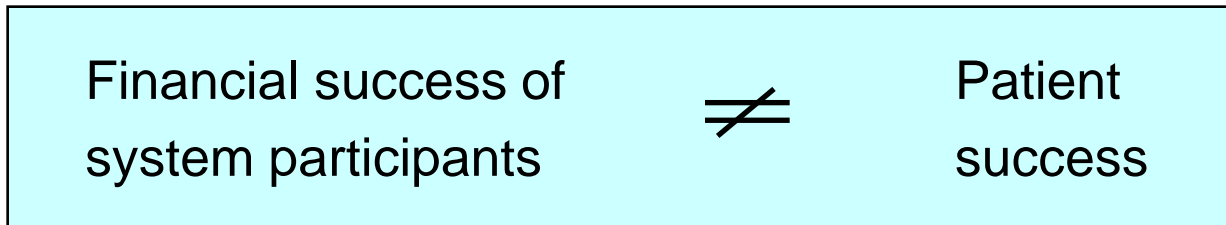
- Significant improvement in value will require **fundamental restructuring of health care delivery**, not incremental improvements

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

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

Aligning Competition with Value

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



- Creating positive-sum **competition on value** is a central challenge in health care reform in every country

Principles of Value-Based Health Care Delivery

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

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

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

Principles of Value-Based Health Care Delivery

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

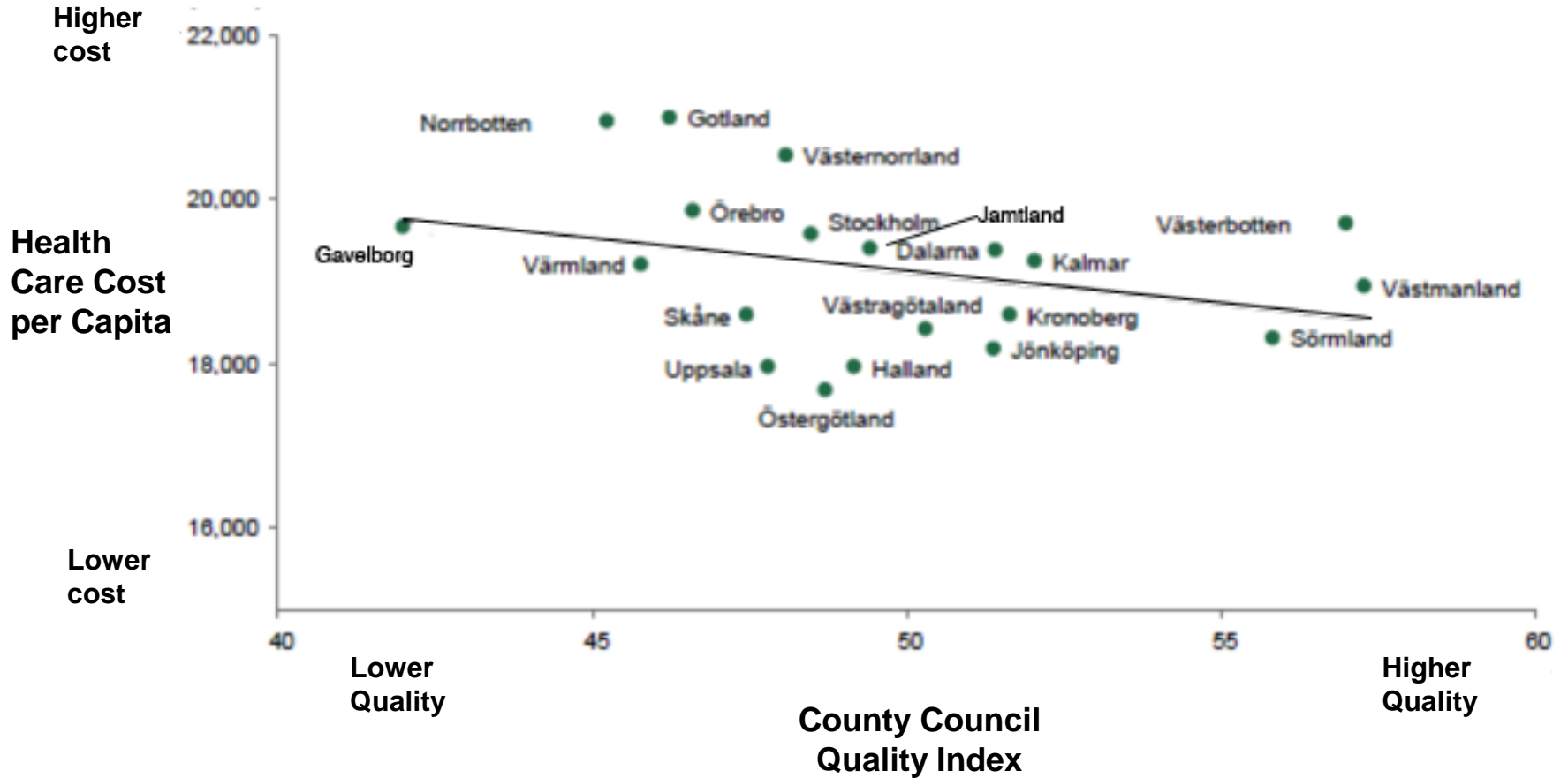
- Prevention
- Early detection
- Right diagnosis
- Right treatment to the right patient
- Early and timely treatment
- Treatment earlier in the causal chain of disease
- Rapid cycle time of diagnosis and treatment
- Less invasive treatment methods
- Fewer complications
- Fewer mistakes and repeats in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



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

Cost versus Quality Sweden

Health Care Spending by County, 2008



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

Value-Based Health Care Delivery

The Strategic Agenda

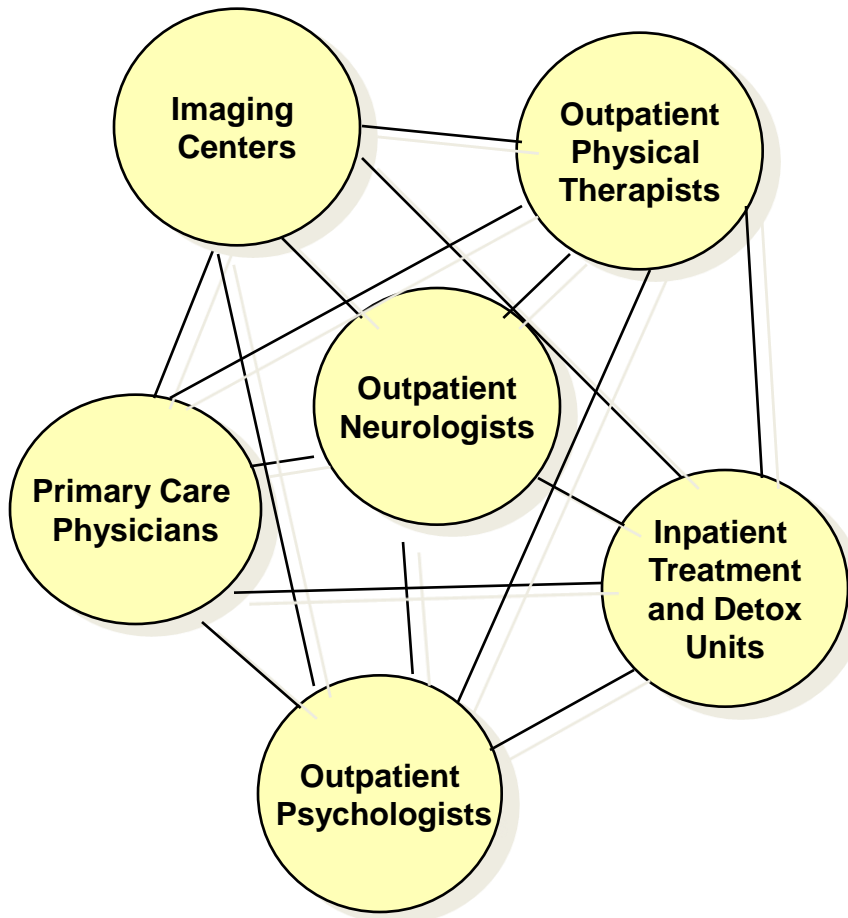
1. **Organize into Integrated Practice Units around the Patient's Medical Condition (IPUs)**
 - Including primary and preventive care for **distinct patient populations**
2. **Measure Outcomes and Cost for Every Patient**
3. **Move to Bundled Prices for Care Cycles**
4. **Integrate Care Delivery Across Separate Facilities**
5. **Grow by Expanding Excellent IPUs Across Geography**
6. **Create an Enabling Information Technology Platform**

1. Organize into Integrated Practice Units

Migraine Care in Germany

Existing Model:

Organize by Specialty and Discrete Services

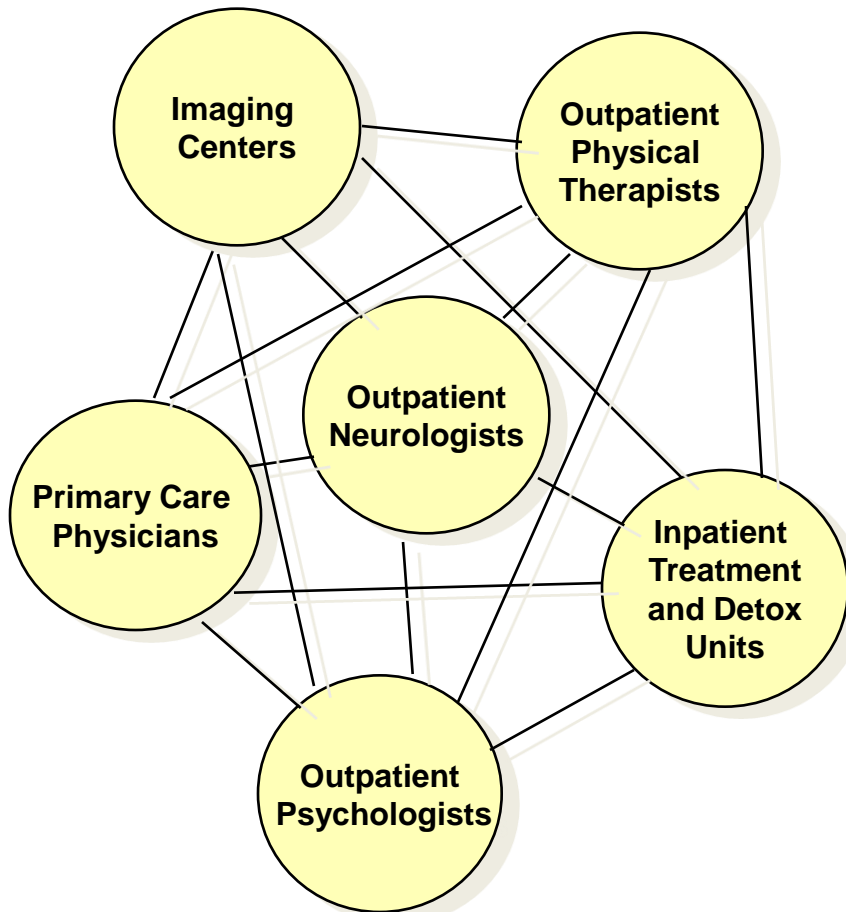


1. Organize into Integrated Practice Units

Migraine Care in Germany

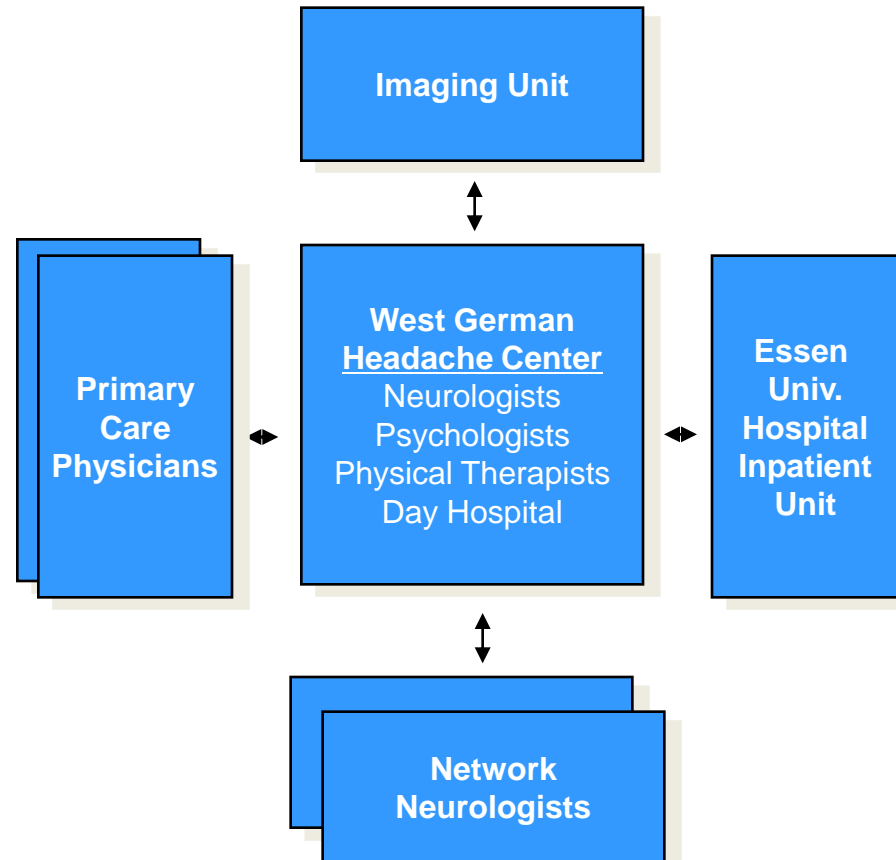
Existing Model:

Organize by Specialty and Discrete Services



New Model:

Organize into Integrated Practice Units (IPUs)



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

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 	<ul style="list-style-type: none"> ▪ Counseling on the treatment process ▪ Education on managing side effects and avoiding complications of treatment ▪ 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
			<ul style="list-style-type: none"> ▪ Patient and family psychological counseling 			
MEASURING	<ul style="list-style-type: none"> ▪ Self exams ▪ Mammograms 	<ul style="list-style-type: none"> ▪ Mammograms ▪ Ultrasound ▪ MRI ▪ Labs (CBC, Blood chems, etc.) 	<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	<ul style="list-style-type: none"> ▪ Office visits ▪ Mammography lab visits 	<ul style="list-style-type: none"> ▪ Office visits 	<ul style="list-style-type: none"> ▪ Office visits 	<ul style="list-style-type: none"> ▪ Hospital stays 	<ul style="list-style-type: none"> ▪ Office visits 	<ul style="list-style-type: none"> ▪ Office visits
		<ul style="list-style-type: none"> ▪ Biopsy ▪ BRACA 1, 2... ▪ CT ▪ Bone Scans 	<ul style="list-style-type: none"> ▪ Hospital visits ▪ Lab visits 	<ul style="list-style-type: none"> ▪ Visits to outpatient radiation or chemotherapy units ▪ Pharmacy 	<ul style="list-style-type: none"> ▪ Rehabilitation facility visits ▪ Pharmacy 	<ul style="list-style-type: none"> ▪ Lab visits ▪ Mammographic labs and imaging center visits
		<ul style="list-style-type: none"> ▪ High risk clinic 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) 	<ul style="list-style-type: none"> ▪ Surgery (breast preservation or mastectomy, oncoplastic alternative) 	<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) 	<ul style="list-style-type: none"> ▪ Periodic mammography ▪ Other imaging
			<ul style="list-style-type: none"> ▪ Plastic or onco-plastic surgery evaluation ▪ Neo-adjuvant chemotherapy 	<ul style="list-style-type: none"> ▪ Adjuvant therapies (hormonal medication, radiation, and/or chemotherapy) 	<ul style="list-style-type: none"> ▪ Physical therapy 	<ul style="list-style-type: none"> ▪ Follow-up clinical exams ▪ Treatment for any continued or later onset side effects or complications

Breast Cancer Specialist
 Other Provider Entities

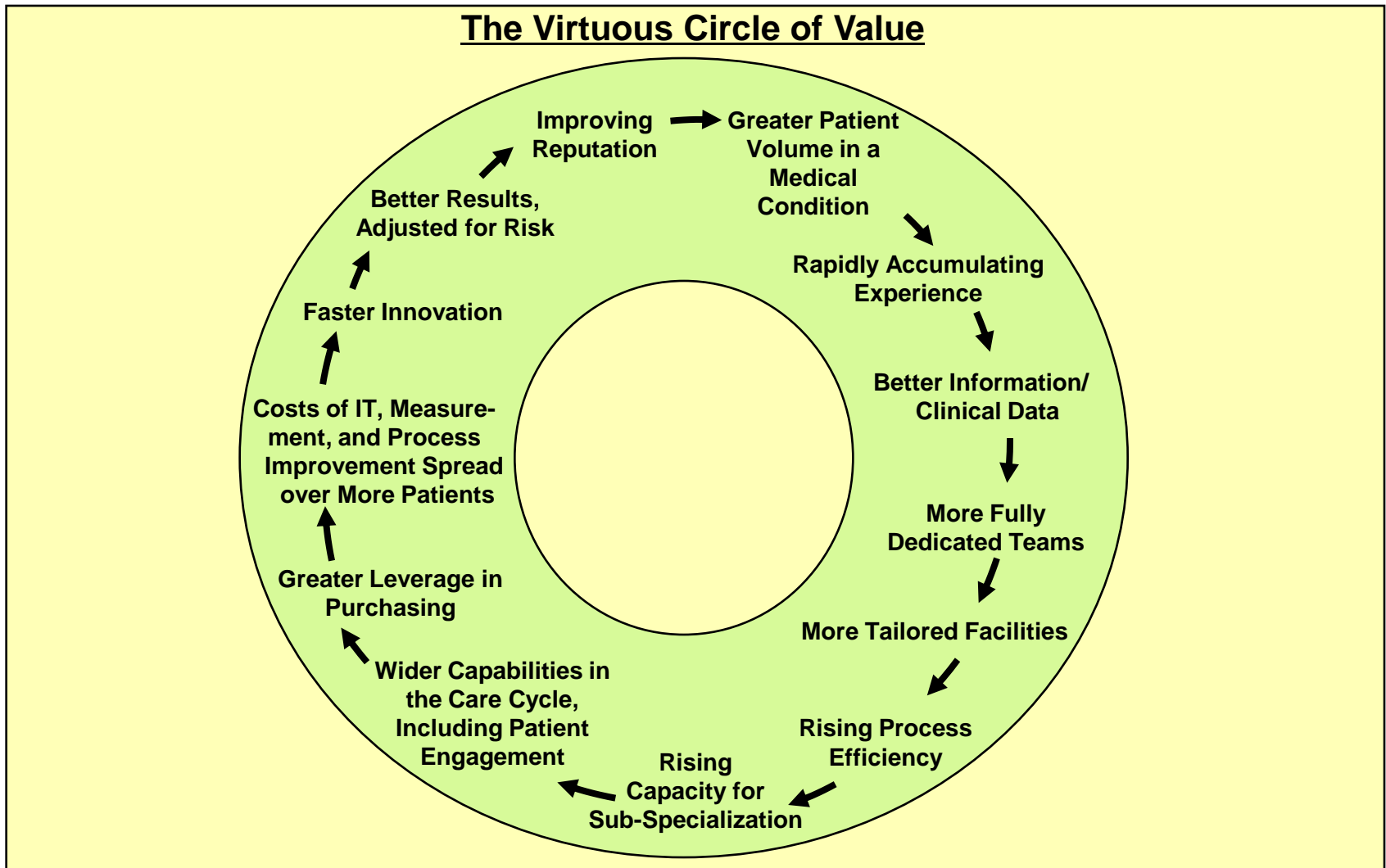
Integrating Across the Cycle of Care

Breast Cancer

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 of treatment Achieving compliance	Counseling on rehabilitation options, process Achieving compliance Psychological counseling	Counseling on long term risk management Achieving Compliance
MEASURING	Self exams Mammograms	<ul style="list-style-type: none"> • Mammograms • Ultrasound • MRI • Labs (CBC, Blood chems, etc.) 	Labs	Procedure-specific measurements	Range of movement Side effects measurement	MRI, CT Recurring mammograms (every six months for the first 3 years)
ACCESSING	Office visits Mammography lab visits	Office visits	Office visits	Hospital stays	Office visits	Office visits
		Lab visits	Hospital visits Lab visits	Visits to outpatient radiation or chemotherapy units Pharmacy	Rehabilitation facility visits Pharmacy	Lab visits Mammographic labs and imaging center visits
		High risk clinic visits				
MONITORING/ PREVENTING	DIAGNOSING	PREPARING	INTERVENING	RECOVERING/ REHABING	MONITORING/MANAGING	
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)	Surgery (breast preservation or mastectomy, oncoplastic alternative)	In-hospital and outpatient wound healing Treatment of side effects (e.g. skin damage, cardiac complications, nausea, lymphedema and chronic fatigue)	Periodic mammography Other imaging	Follow-up clinical exams Treatment for any continued or later onset side effects or complications
		Plastic or onco-plastic surgery evaluation Neo-adjuvant chemotherapy	Adjuvant therapies (hormonal medication, radiation, and/or chemotherapy)	Physical therapy		

Breast Cancer Specialist
 Other Provider Entities

Volume and Experience in a Medical Condition Drives Patient Value



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

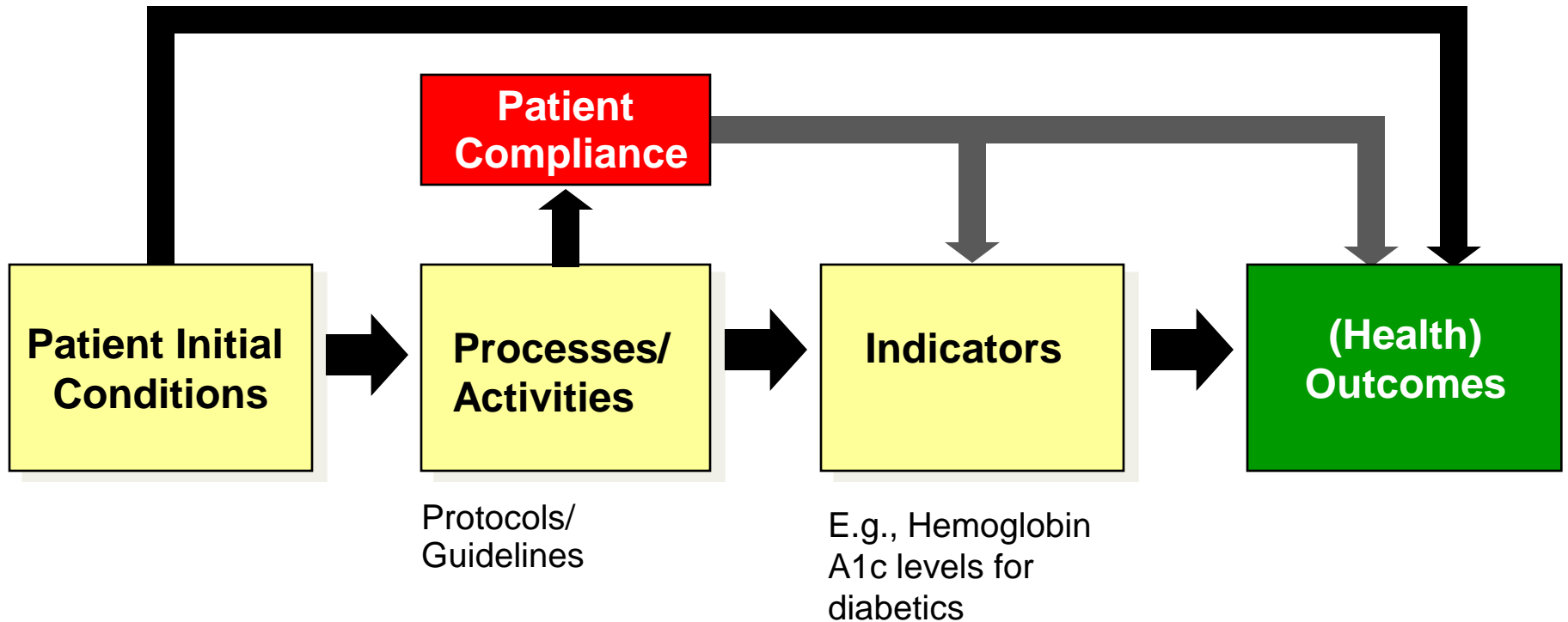
Fragmentation of Hospital Services

Sweden

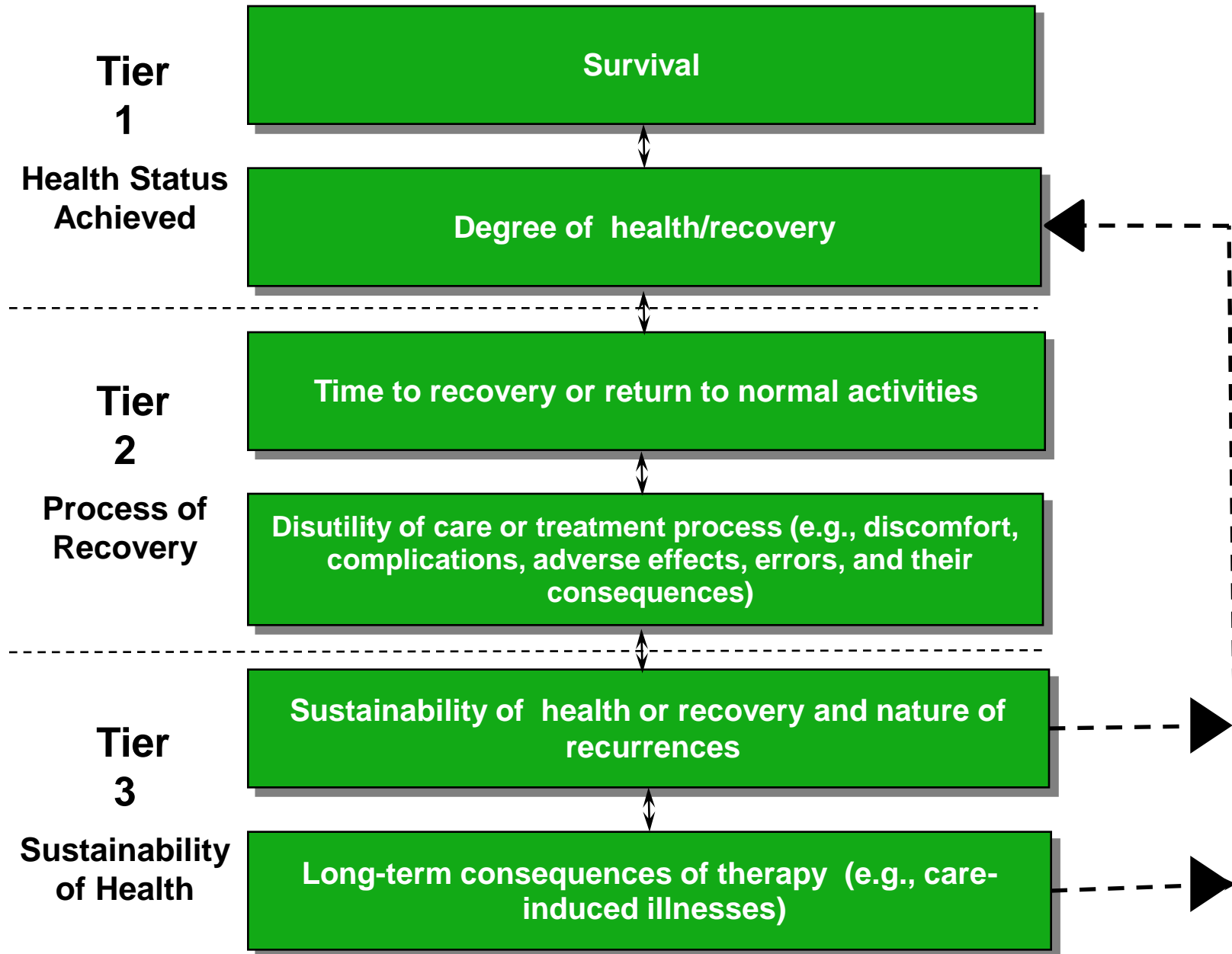
DRG	Number of admitting providers	Average percent of total national admissions	Average admissions/ provider/ year	Average admissions/ provider/ week
Knee Procedure	68	1.5%	55	1
Diabetes age > 35	80	1.3%	96	2
Kidney failure	80	1.3%	97	2
Multiple sclerosis and cerebellar ataxia	78	1.3%	28	<1
Inflammatory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

2. Measure Outcomes and Cost For Every Patient



The Outcome Measures Hierarchy



Measuring Cost

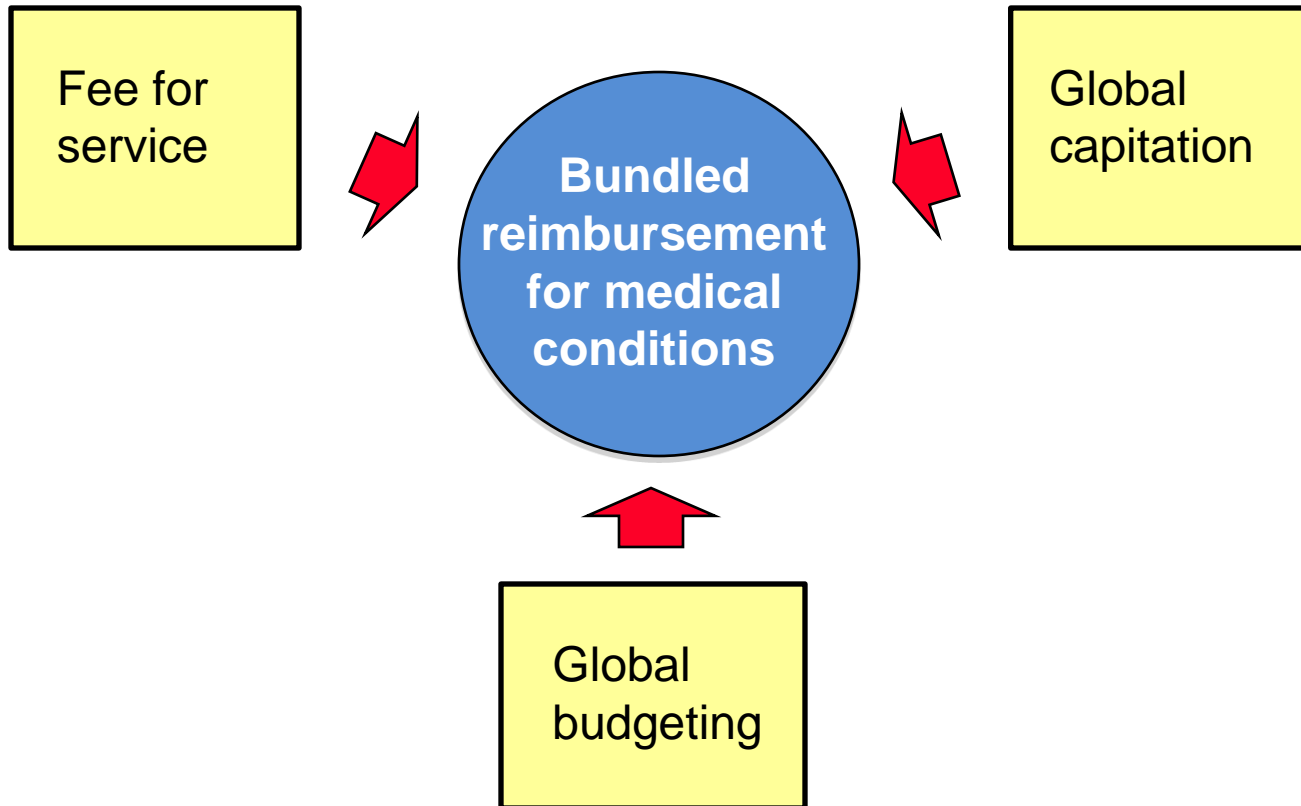
Aspiration

- Cost should be measured **for each patient**, aggregated across the **full cycle of care**
- Cost should be measured for **each medical condition** (which includes common co-occurring conditions), not for all services
- The cost of each activity or input attributed to a patient should reflect **that patient's use of resources** (e.g. time, facilities, service), not average allocations
- The only way to properly measure cost per patient is to track the **time devoted to each patient** by providers, facilities, support services, and other shared costs

Reality

- Most providers track **charges** not costs
- Most providers track cost by **billing category**, not for medical conditions
- Most providers cannot **accumulate total costs** for particular patients
- Most providers use **arbitrary or average** allocation of shared resources, not patient specific allocations

3. Move to Bundled Prices for Care Cycles



What is Bundled Payment?

- **Total package price** for the care cycle for a medical condition
 - Includes responsibility for **avoidable complications**
 - Medical condition capitation
- The bundled price should be **severity adjusted**

What is Not Bundled Payment

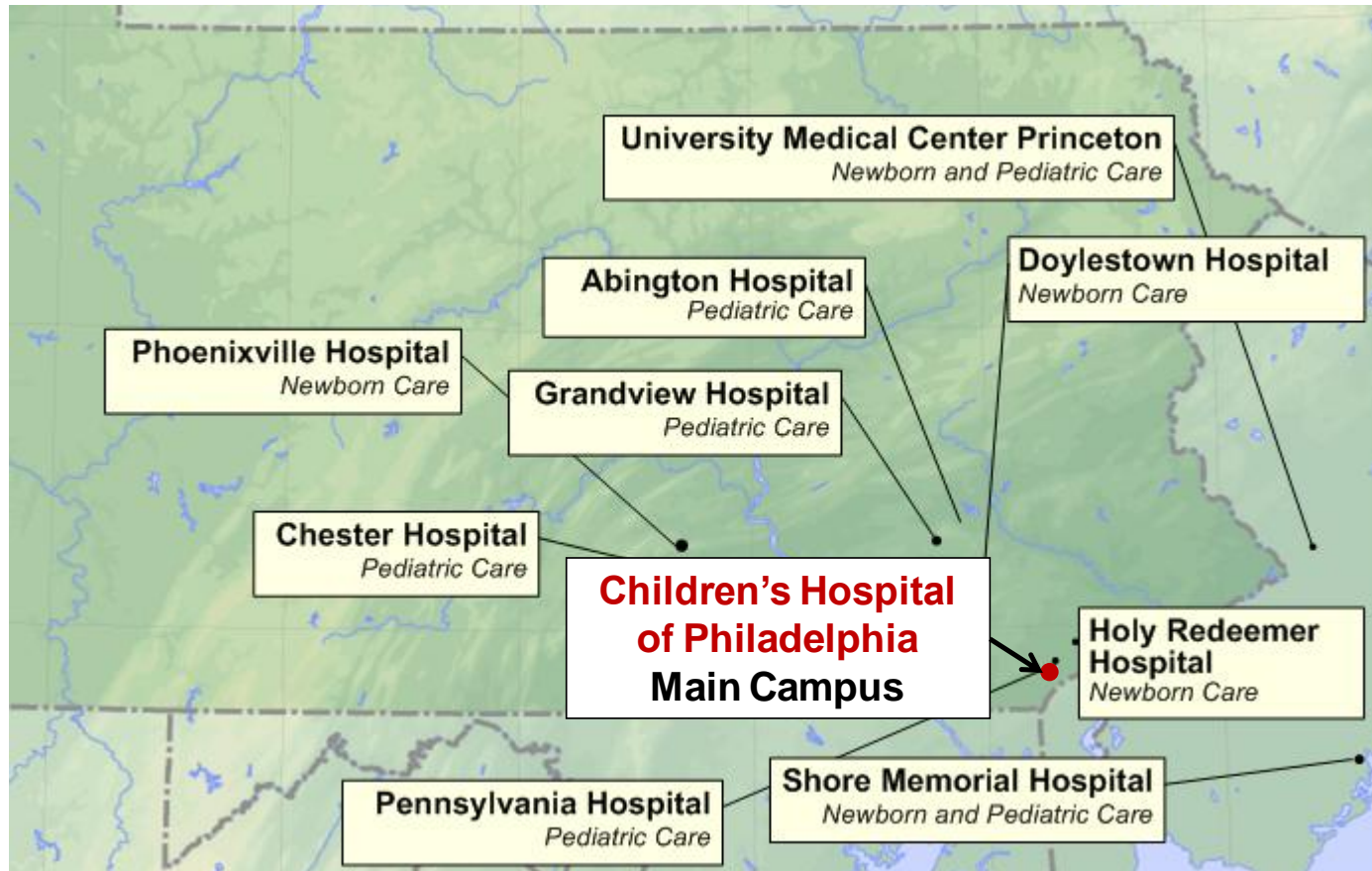
- Prices for **short** episodes (e.g. inpatient only, procedure only)
- **Separate** payments for physicians and facilities
- **Pay-for-performance** bonuses
- “**Medical Home**” payment for care coordination



- DRGs can be a **starting point** for bundled models

4. Integrate Care Delivery Across Separate Facilities

Children's Hospital of Philadelphia (CHOP) Hospital Affiliates



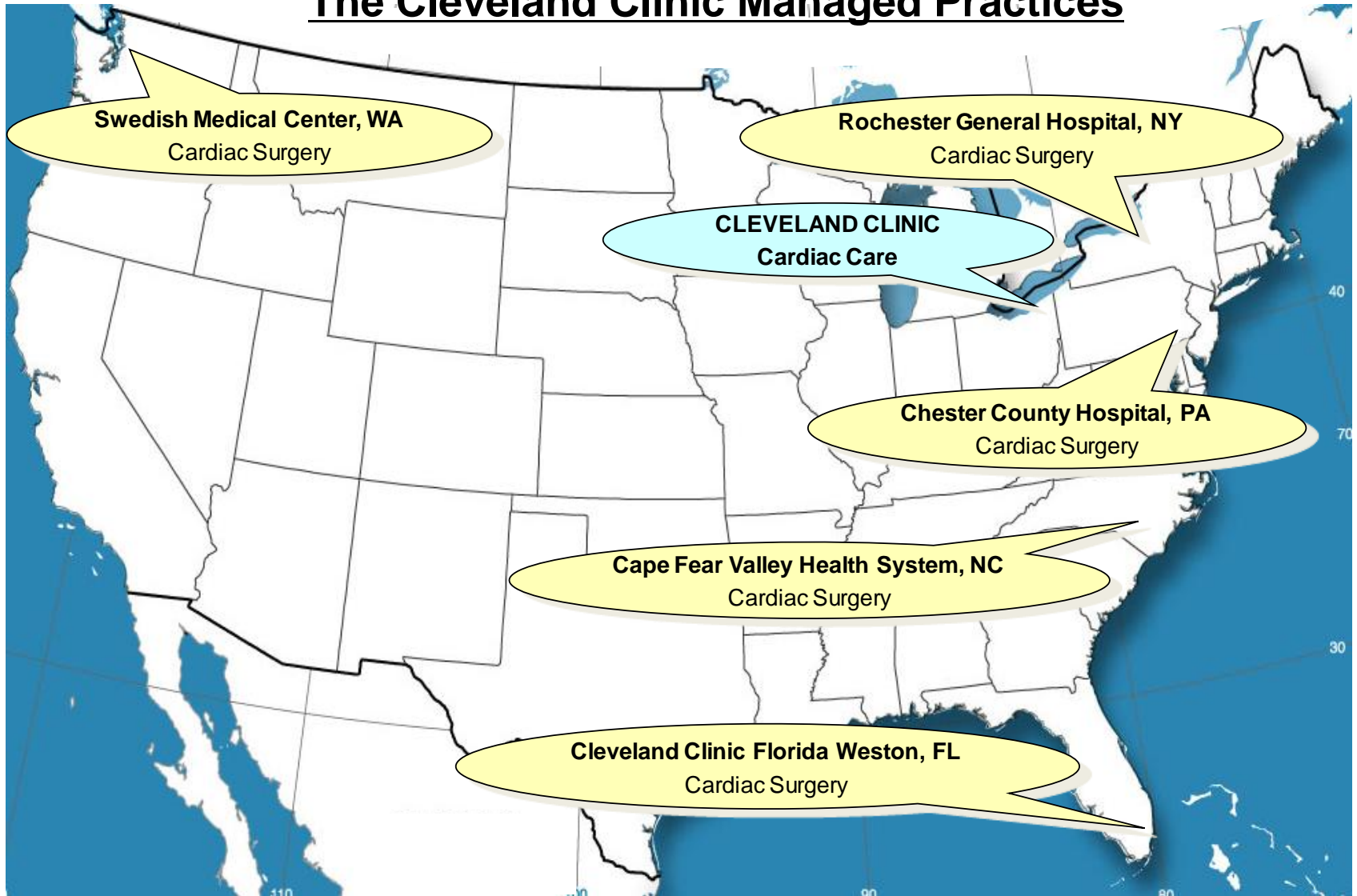
- Deliver services in the **appropriate** facility, not every facility
- Excellent providers can manage care delivery across **multiple facilities in multiple geographic areas**

Levels of System Integration

1. **Rationalize service lines/ IPU**s across facilities to improve volume, avoid duplication, play to strength, and concentrate excellence
2. Offer specific services at the **appropriate facility**
 - E.g. acuity level, cost level, need for convenience
 - Patient referrals across units
3. Clinically integrate care **across facilities**, within an IPU structure
 - Develop consistent protocols and provide access to experts by providers throughout the network
 - **Expand coverage** of the care cycle and **integrate care** across the cycle
 - Connecting **ancillary service** units to IPUs
 - E.g. home care, rehabilitation, behavioral health, social work, addiction treatment (organize within service units to align with IPUs)
 - Linking **preventive/primary care** units to specialty IPUs

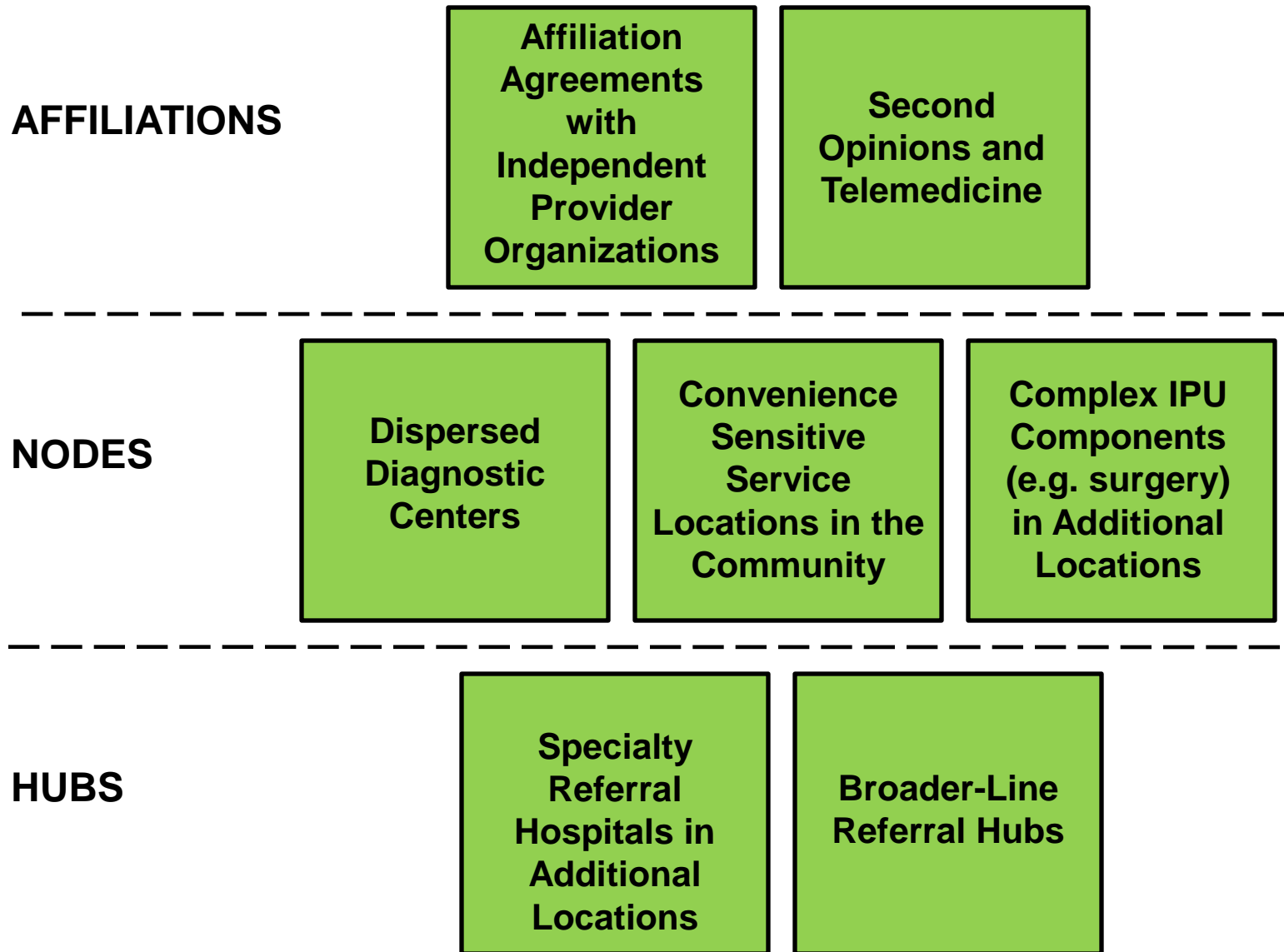
5. Grow by Expanding Excellent IPU's Across Geography

The Cleveland Clinic Managed Practices



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

Models of Geographic Expansion

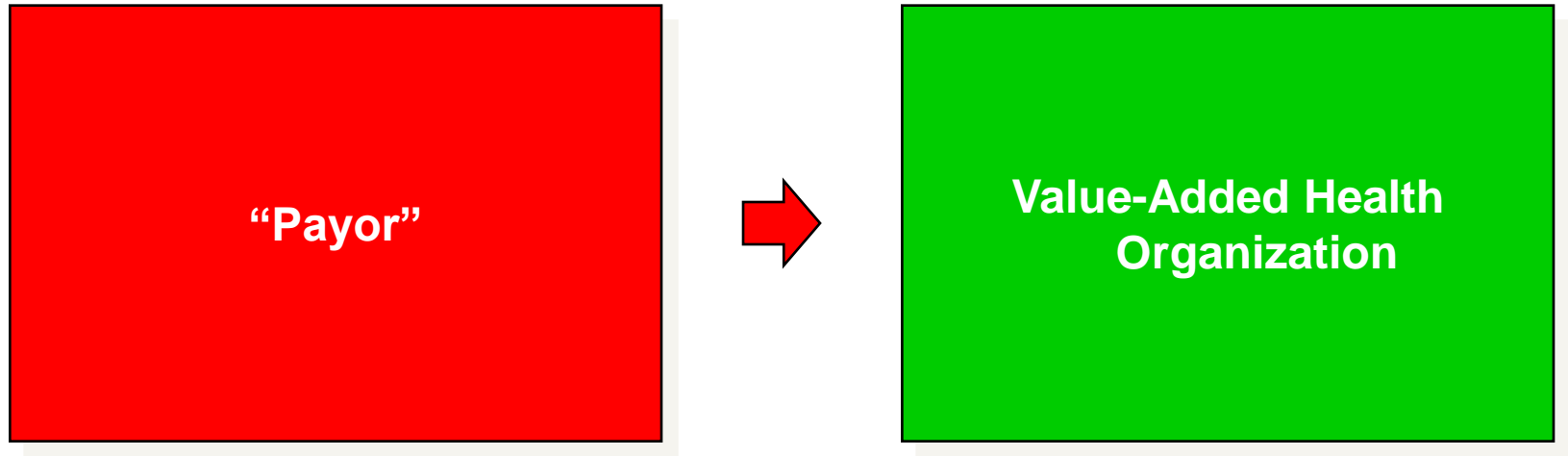


6. Create an Enabling Information Technology Platform

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

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

Value-Based Healthcare Delivery: Implications for Health Plans



Health Care Delivery in Resource-Poor Settings Suffers from Similar Problems

Current Model

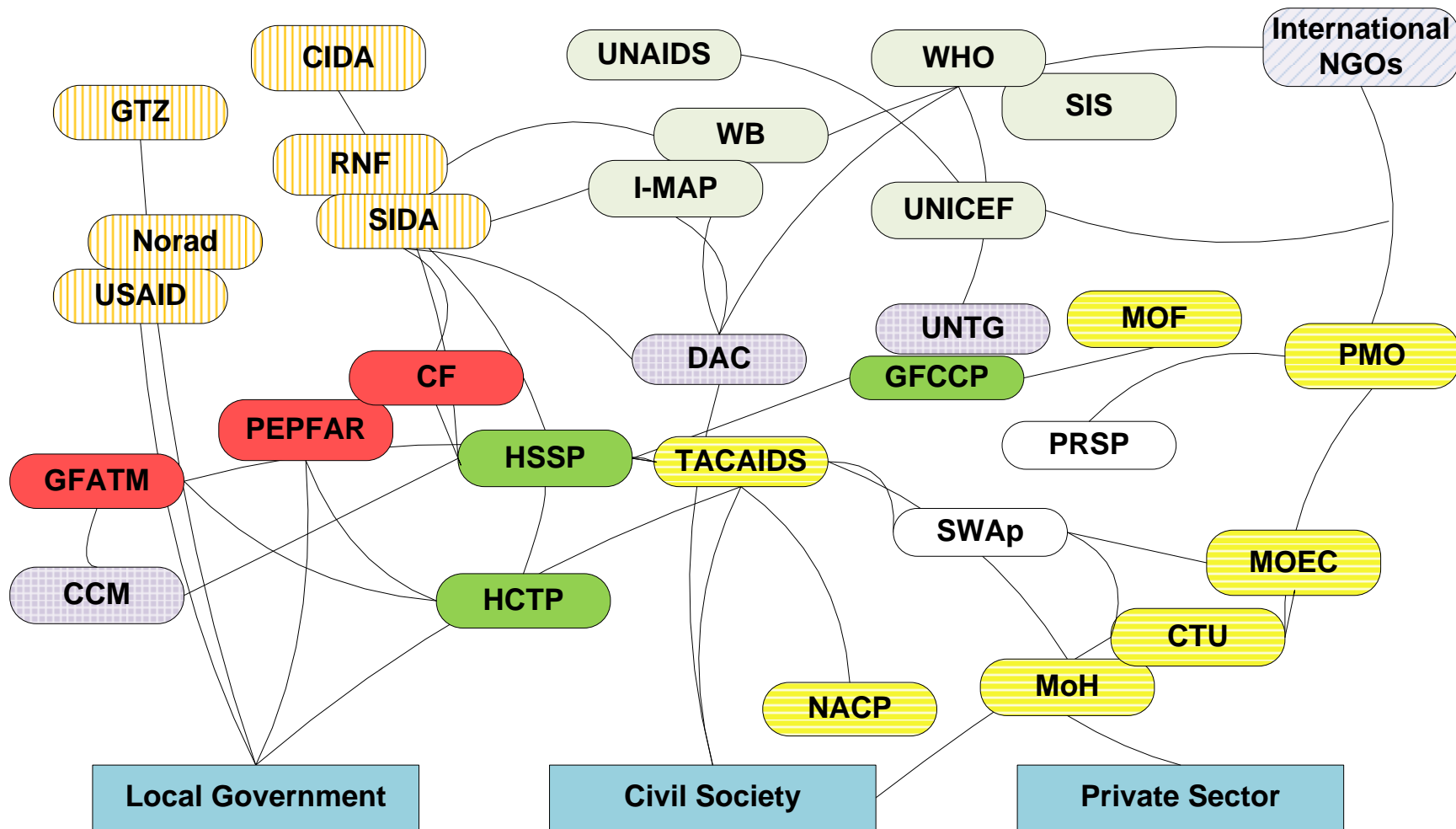
- The product is **treatment**
- Measure **volume** of services (number of tests, treatments)
- Discrete **interventions**
- **Individual** diseases
- **Fragmented, localized,** pilots, programs, and entities



New Model

- The product is **health**
- Measure **value** of services (health outcomes per unit of cost)
- **Care cycles**
- Sets of prevalent **co-occurring conditions**
- **Integrated** care delivery system

Relationships Between Various Stakeholders in Tanzania



United Nations

Bilateral Aid

Drug-delivery programs

Tanzanian government

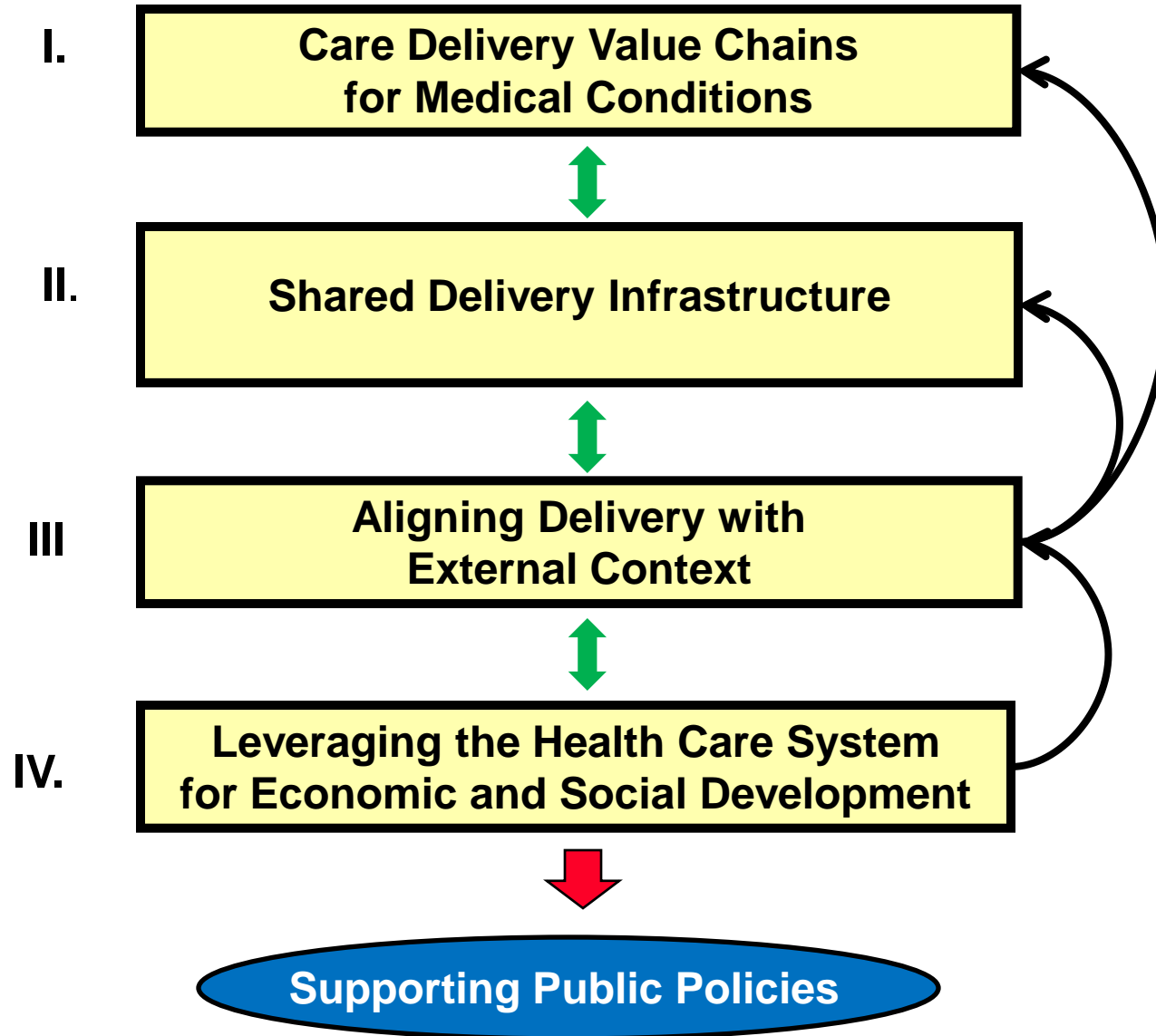
Coordinating committees

Plans and programs

IMF/World Bank

Nongovernment organizations

A Framework for Global Health Delivery



The Care Delivery Value Chain

HIV/AIDS

INFORMING/ ENGAGING	<ul style="list-style-type: none"> Prevention counseling on modes of transmission and condom use 	<ul style="list-style-type: none"> Explanation of diagnosis and the implications Explaining the course of HIV and the prognosis 	<ul style="list-style-type: none"> Explanation of the approach to forestalling progression 	<ul style="list-style-type: none"> Explanation of Medication Instructions and Side-Effects 	<ul style="list-style-type: none"> Counseling about adherence; understanding factors for non-adherence 	<ul style="list-style-type: none"> Explanation of the co-morbid diagnoses and the implications End-of Life Counseling
MEASURING	<ul style="list-style-type: none"> HIV testing Screen for sexually transmitted infections Collect baseline demographics 	<ul style="list-style-type: none"> HIV testing for others at risk Clinical examination CD4+ count and other labs Testing for common co-morbidities such as tuberculosis and sexually transmitted diseases Pregnancy testing 	<ul style="list-style-type: none"> CD4+ Count Monitoring (Continuous Staging) Regular Primary Care Assessment HIV Testing for Others at Risk Laboratory Evaluation for Medication Initiation 	<ul style="list-style-type: none"> HIV Staging and Medication Response Highly Frequency Primary Care Assessment Assessing/Managing Complications of Therapy HIV testing for others at risk (bi-annually) Laboratory Evaluation 	<ul style="list-style-type: none"> HIV Staging and Medication Response Regular Primary Care Assessment Laboratory Evaluation 	<ul style="list-style-type: none"> HIV Staging and Medication Response Regular Primary Care Assessment Laboratory Evaluation
ACCESSING	<ul style="list-style-type: none"> Testing centers High risk settings Primary Care Clinics 	<ul style="list-style-type: none"> Primary Care Clinics On-sight laboratories at Primary Care Clinics Testing Centers 	<ul style="list-style-type: none"> Primary Care Clinics Laboratories (on-site at primary clinic) Pharmacy Food Centers Community Health Workers/ Home Visits Support Groups 	<ul style="list-style-type: none"> Primary Care Clinics Laboratories (on-site at primary clinic) Pharmacy Community Health Workers/ Home Visits Support Groups 	<ul style="list-style-type: none"> Primary Care Clinics Laboratories (on-site at primary clinic) Pharmacy Community Health Workers/ Home Visits Support Groups 	<ul style="list-style-type: none"> HIV Staging and Medication Response Regular Primary Care Assessment Laboratory Evaluation Food Centers Primary Care Clinics (Labs on site) Community Health Workers / Home Visits Hospitals & Hospice Facilities Support Groups
SCREENING/PREVENTING	DIAGNOSING/STAGING	DELAYING PROGRESSION	INITIATING ANTIRETROVIRAL THERAPY	ONGOING DISEASE MANAGEMENT	MANAGEMENT OF CLINICAL DETERIORATION	
<ul style="list-style-type: none"> Connecting patients with primary care system Identifying high risk individuals Testing at-risk individuals Promoting appropriate risk reduction strategies Modifying behavioral risk factors Creating a medical record 	<ul style="list-style-type: none"> Formal diagnosis and staging Determine method of transmission and others at potential risk Identify others at risk Screen for TB, syphilis, and other sexually transmitted diseases Pregnancy testing and contraceptive counseling Create management plan, including scheduling of follow-up visits Formulate a treatment plan 	<ul style="list-style-type: none"> Initiate therapies that can delay onset, including vitamins and food Treat co-morbidities that affect progression of disease, especially tuberculosis Improve patient awareness of disease progression, prognosis, and transmission Connect patient to care team, including community health work 	<ul style="list-style-type: none"> Initiate comprehensive anti-retroviral therapy and assess medication readiness Prepare patient for disease progression and side-effects of associated treatment Manage secondary infections and associated illnesses 	<ul style="list-style-type: none"> Managing effects of associated illnesses Managing side effects of treatment Determine supporting nutritional modifications Preparing patient for end-of-life management Primary care and health maintenance 	<ul style="list-style-type: none"> Identifying clinical and laboratory deterioration Initiating second-line, third-line drug therapies Managing acute illness and opportunistic infection either through aggressive outpatient management or hospitalization Provide additional community/ social support if needed Access to Hospice Care 	

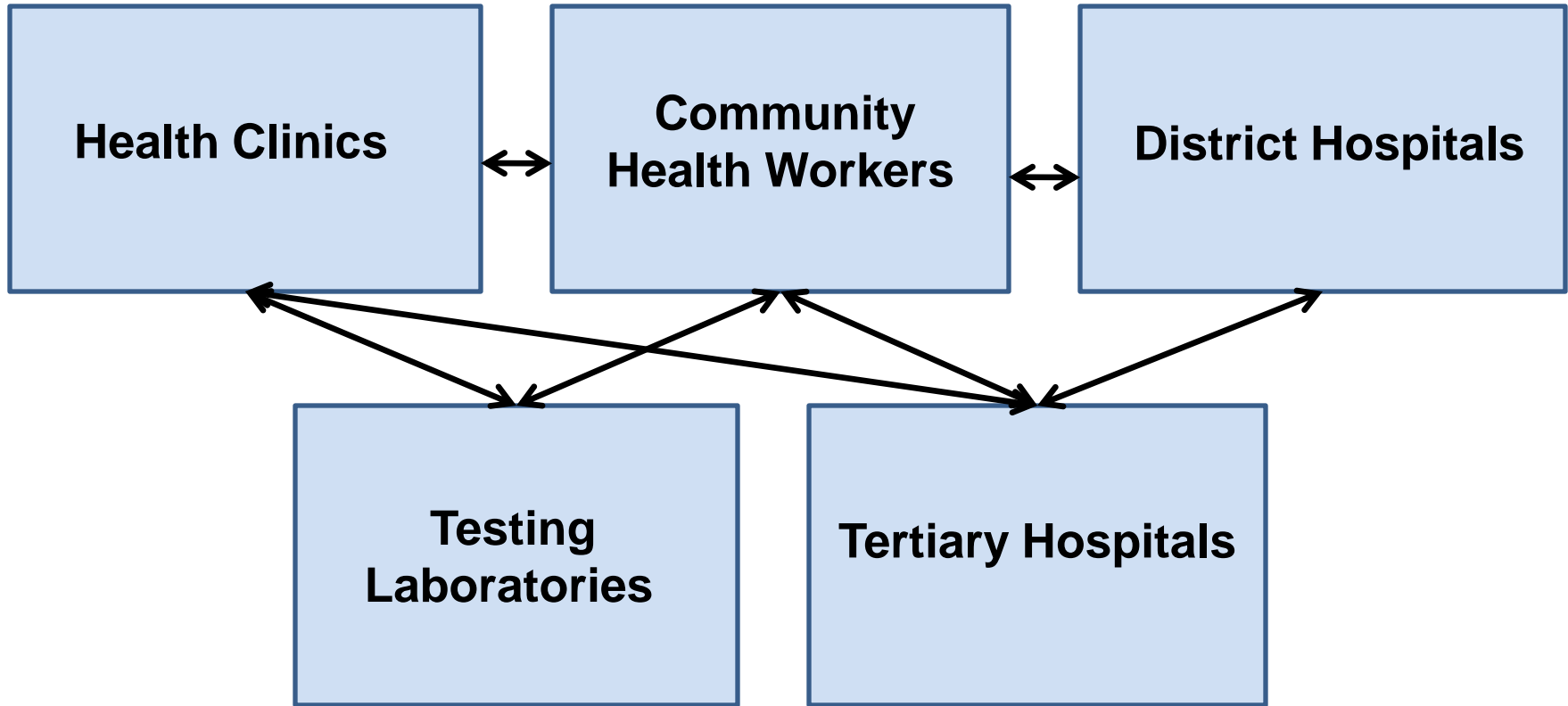


Care Delivery Value Chain

Illustrative Implications for HIV/AIDS Care

- **Targeted prevention** for at-risk individuals creates more value than across the board efforts
- **Early diagnosis** helps in forestalling disease progression
- **Intensive evaluation and treatment at the time of the diagnosis** can forestall disease progression
- **Improving compliance with first stage drug therapy** lowers drug resistance and the need to move to more costly second line therapies

Shared Delivery Infrastructure

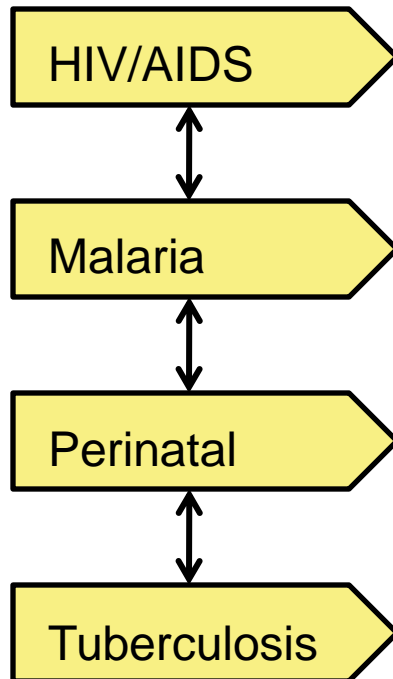


Cross Cutting Issues

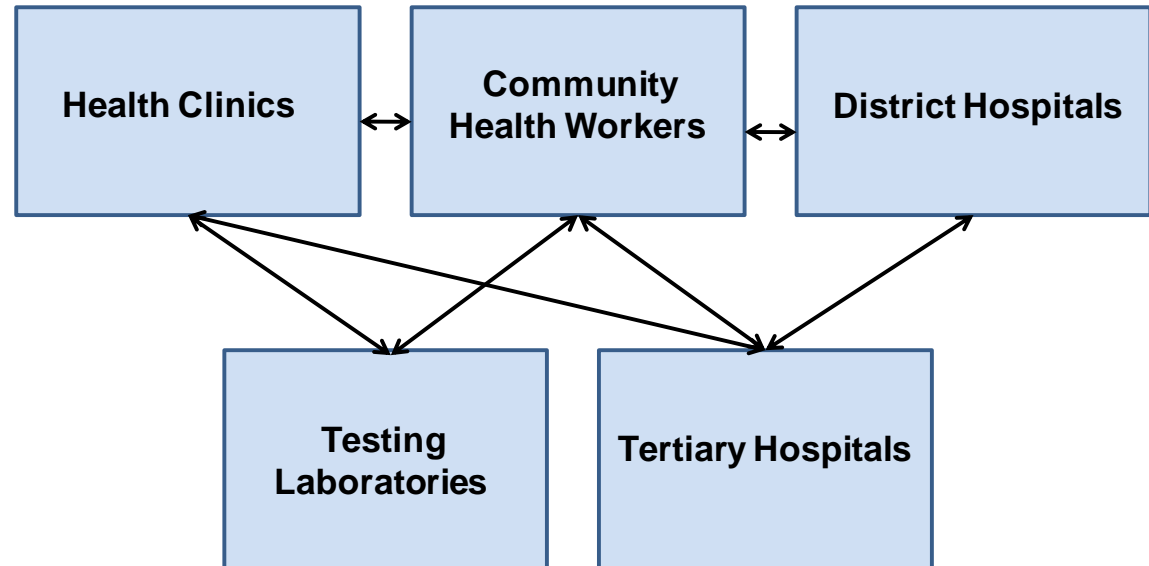
- Supply Chain Management
- Information and IT
- Human Resource Development
- Insurance and Financing

Integrating “Vertical” and “Horizontal”

Care Delivery Value Chains



Shared Delivery Infrastructure



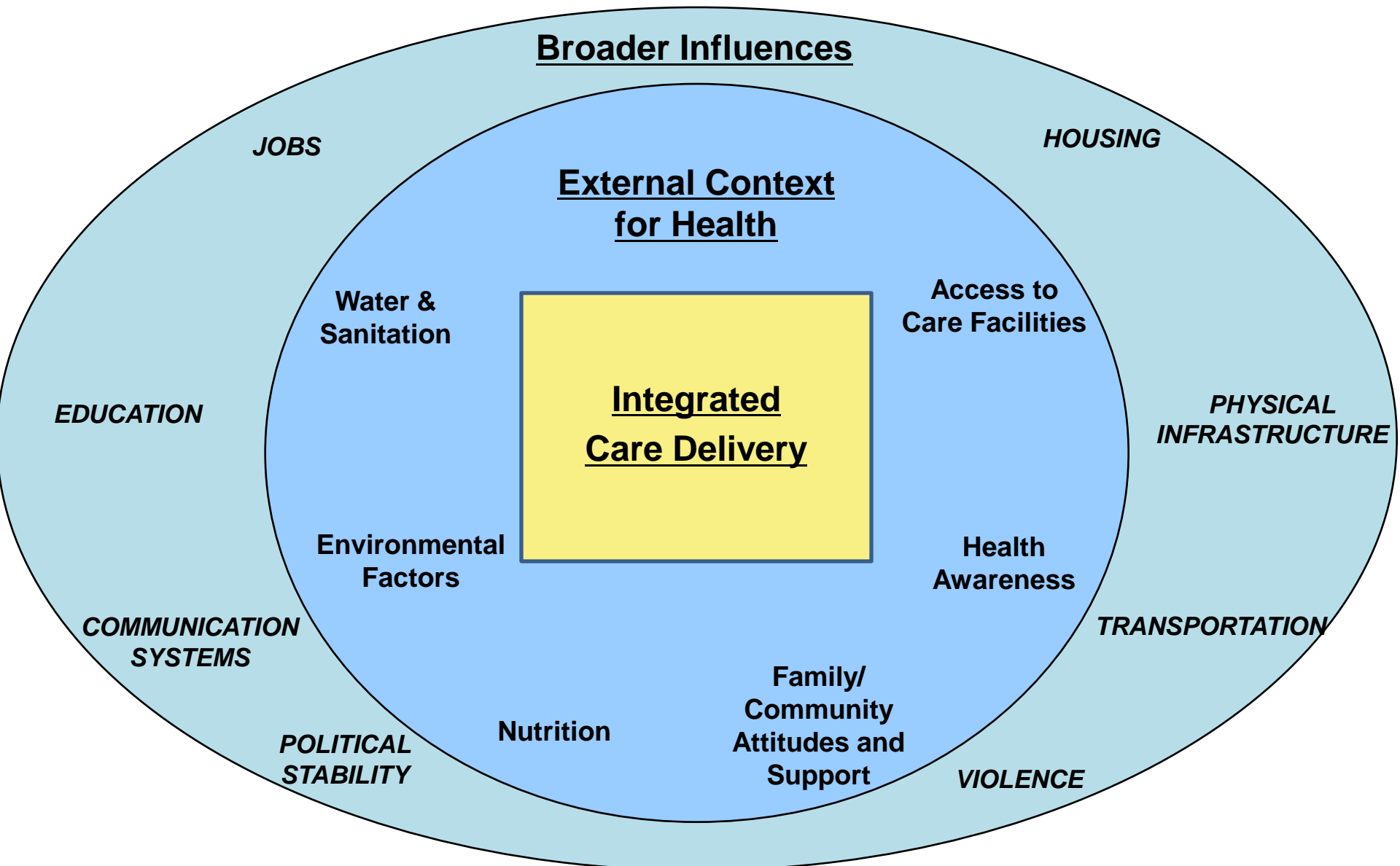
- Integrating care across related diseases
- What care at what facilities
- Integrating care across the system

Shared Delivery Infrastructure

Illustrative Implications for HIV/AIDS Care


- Screening is most effective when **integrated into a primary health care system**
- Providing **maternal and child health** care services is integral to the HIV/AIDS care cycle by substantially **reducing the incidence of new cases of HIV**
- Community health workers can not only improve compliance with ARV therapy but can **simultaneously address other conditions**

Integrating Delivery and Context



Integrating Care Delivery and Social/Economic Context

Illustrative Implications for HIV/AIDS Care

- Community health workers can have a major role in **overcoming transportation and other barriers to access and compliance** with care
 - Providing **nutrition support** can be important to success in ARV therapy
 - Integrating HIV screening and treatment into routine primary care facilities can help address the **social stigma** of seeking care for HIV/AIDS
 - Gender dynamics **limit the use of some prevention options** in certain settings
- 
- Management of **social** and **economic barriers** is critical to the treatment and prevention of HIV/AIDS

The Relationship Between Health Systems and Economic Development

Better Health **Enables** Economic Development

- Enables people to work
- Raises productivity

Health System Development **Fosters** Economic Development

- Direct employment (health sector jobs)
- Local procurement
- Catalyst for infrastructure (e.g. cell towers, internet, and electrification)

A New Field of Health Care Delivery

