

Medical Education and the “Science” of Health Care Delivery

Harvard Medical School Board of Fellows

Jim Yong Kim, M.D., Ph.D.

Michael E. Porter, Ph.D

April 17, 2009



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 system that **dramatically improves value**
 - Ownership of entities is secondary (e.g. non-profit vs. for profit vs. government)
- How to create 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 delivered with 19th century organization structures, management practices, and pricing models

- TQM, process improvements, safety initiatives, pharmacy management, and disease management overlays are beneficial but **not sufficient** to substantially improve value
- Consumers **cannot fix the dysfunctional structure** of the current system

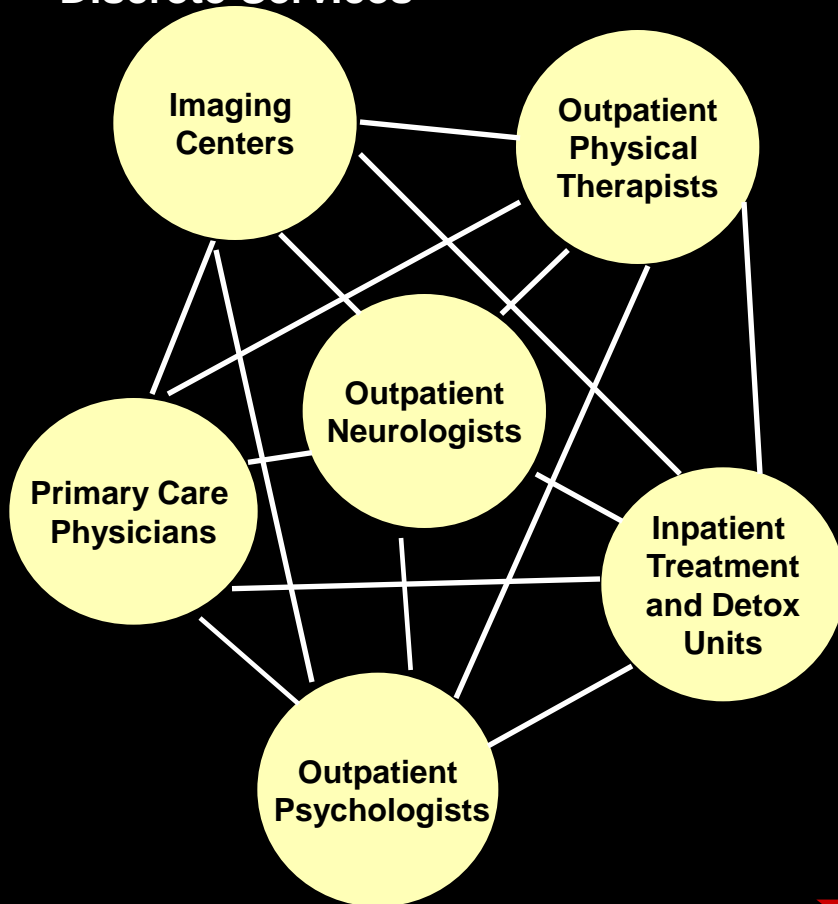


Restructuring Care Delivery

Migraine Care in Germany

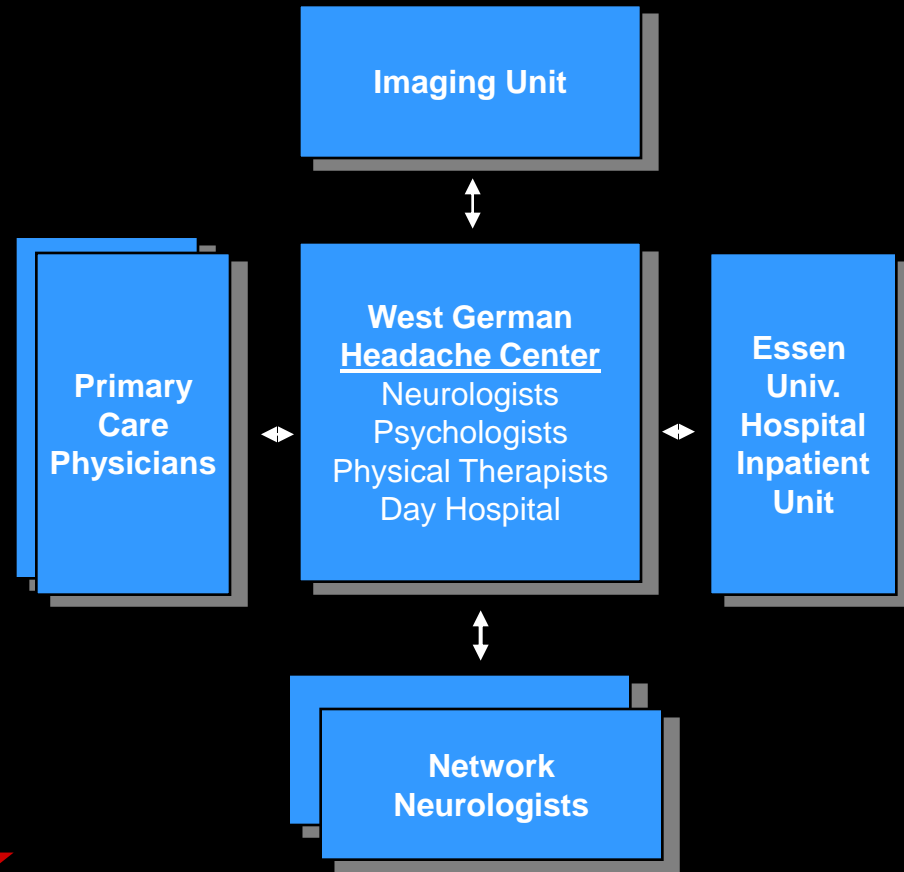
Existing Model:

Organize by Specialty and Discrete Services



New Model:

Organize into Integrated Practice Units (IPUs)



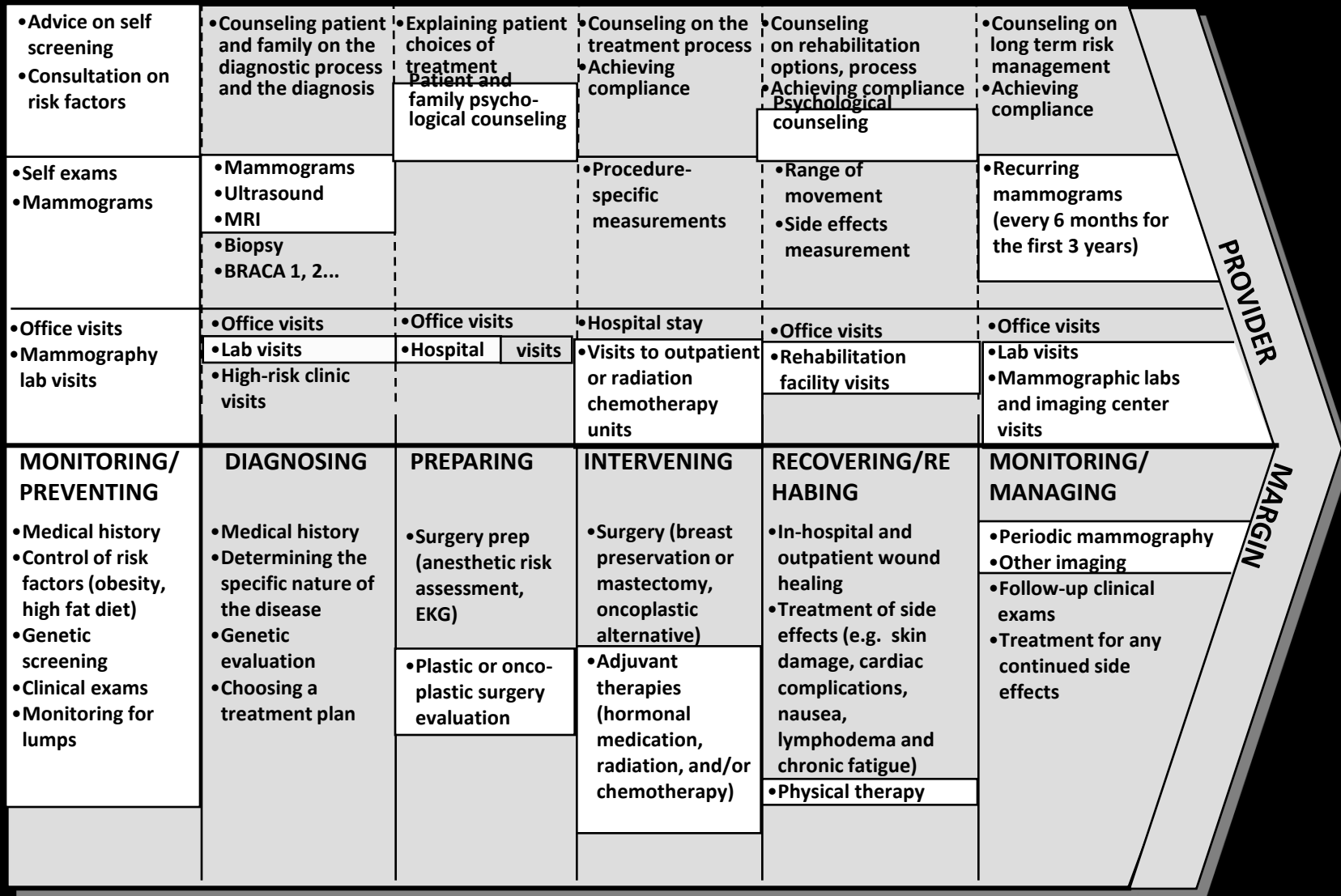
- The health plan was crucial to this transformation

The Cycle of Care Breast Cancer

ENGAGING

MEASURING

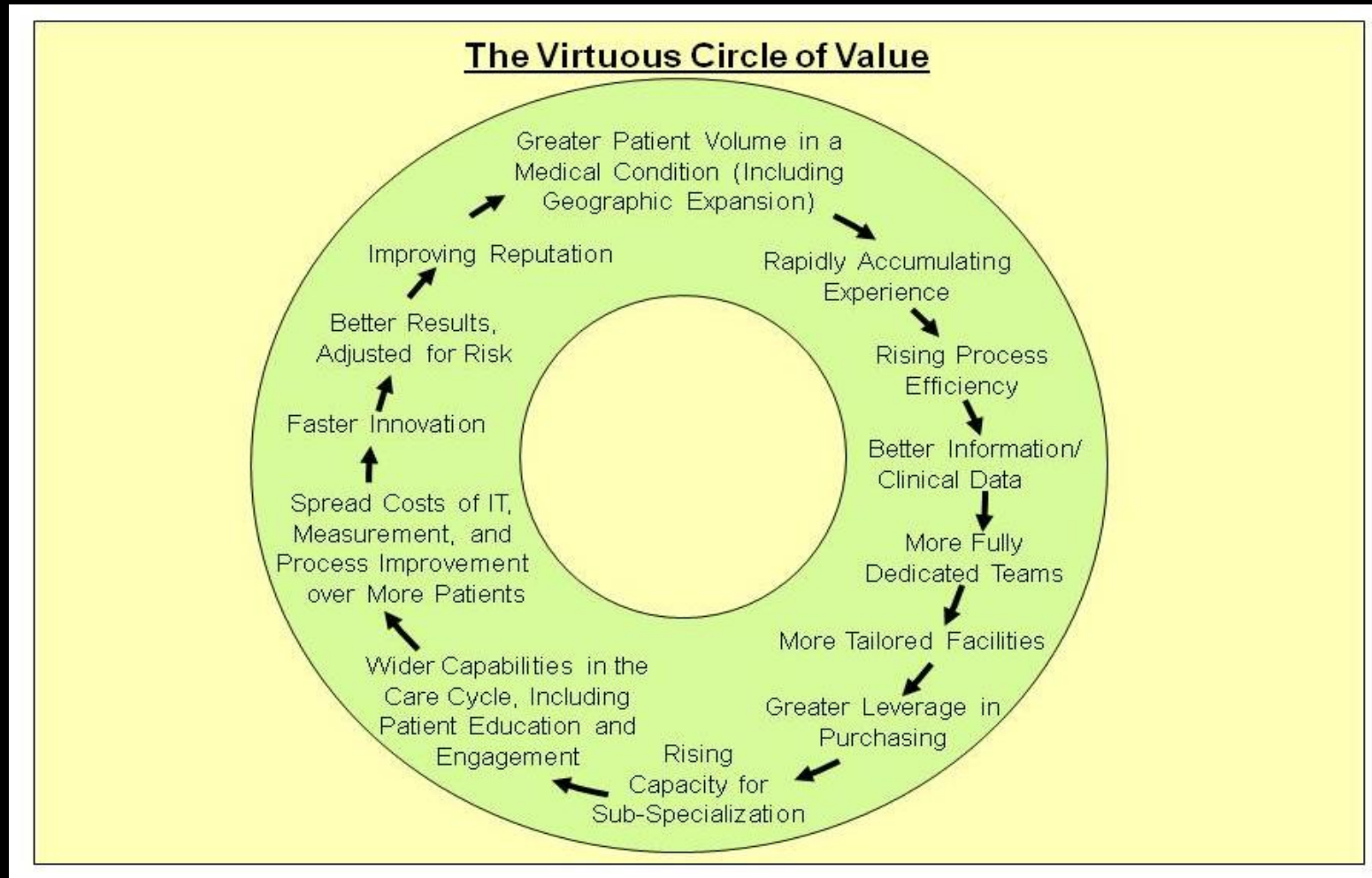
ACCESSING



■ Breast Cancer Specialist
■ Other Provider Entities

Principles of Value-Based Health Care Delivery

Value is enhanced by increasing provider **experience, scale,** and **learning** at the **medical condition level**



- The virtuous circle extends **across geography** when care for a medical condition is integrated across locations

Fragmentation of Hospital Services

Sweden

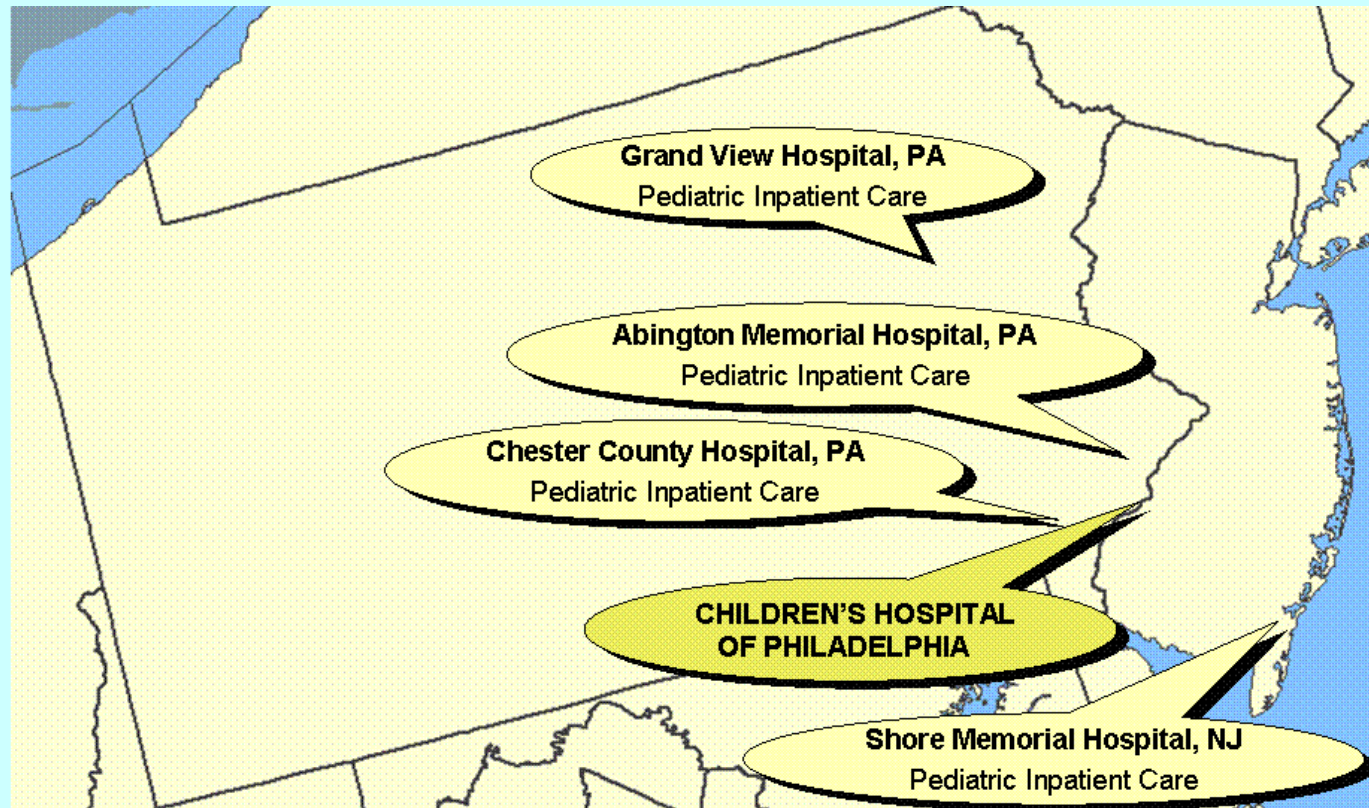
DRG	Total admissions per year nationwide	Number of admitting providers	Average admissions/ provider / year	Average admissions/ provider / week	Average percent of total national admissions per provider
Diabetes age > 35	7,649	80	96	2	1.3%
Kidney failure	7,742	80	97	1	1.3%
Multiple sclerosis and cerebellar ataxia	2,218	78	28	1	1.3%
Inflammatory bowel disease	4,816	73	66	1	1.4%
Implantation of cardiac pacemaker	6,324	51	124	2	2.0%
Splenectomy age > 17	129	37	3	<1	2.6%
Cleft lip & palate repair	583	7	83	2	14.2%
Heart transplant	74	6	12	<1	16.6%

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

Principles of Value-Based Health Care Delivery

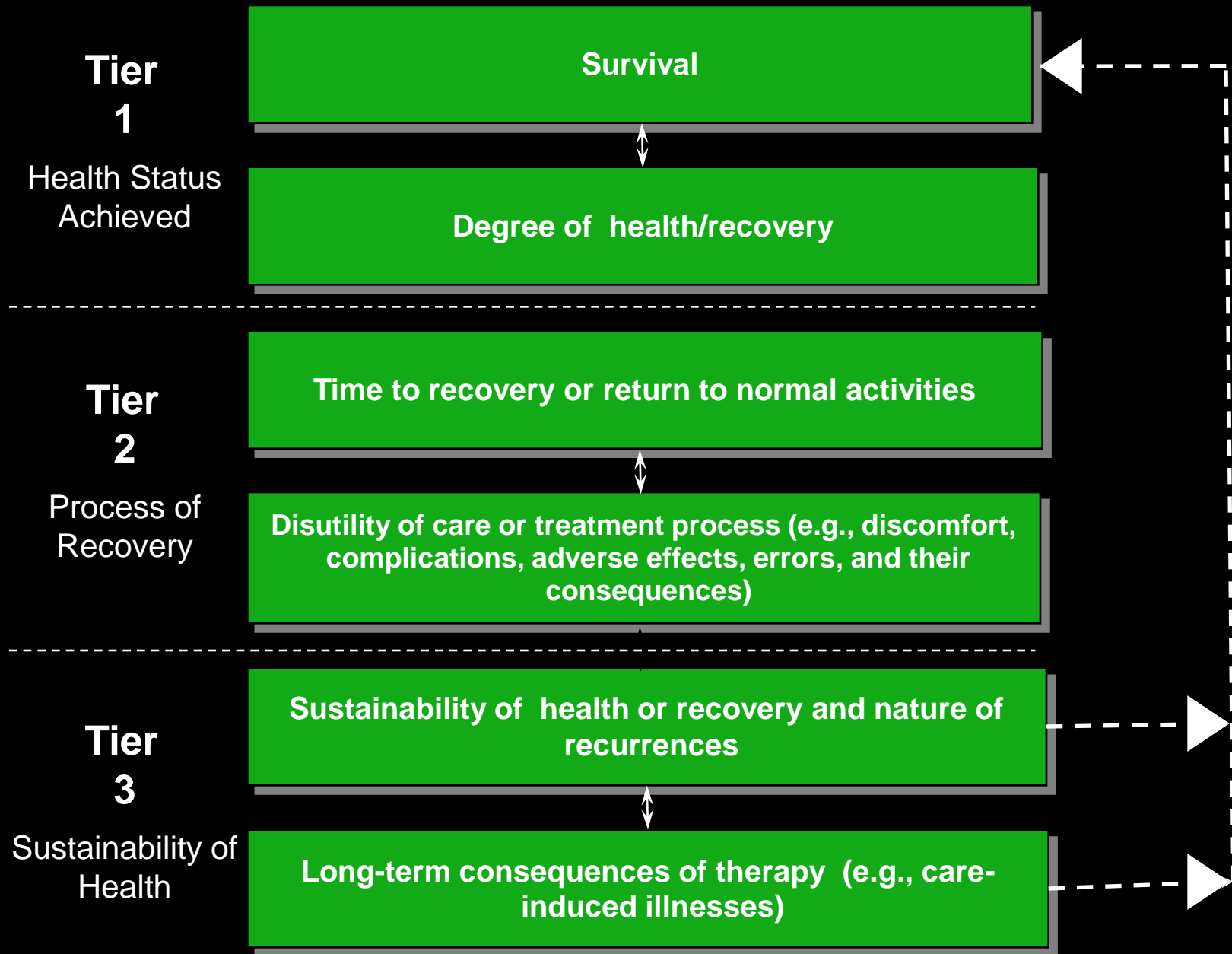
Care should be **integrated across facilities** and **across regions** rather than duplicate services in stand-alone units

Children's Hospital of Philadelphia (CHOP) Affiliations



- Excellent providers can manage care delivery **across multiple geographies**

The Outcome Measures Hierarchy



Gaps in health financing, human resources, and access to care have **fatal consequences** for millions in developing countries

- **Millions of deaths from preventable & treatable causes**
 - 6.3 million preventable childhood deaths
 - ½ million maternal deaths
 - 3 million HIV deaths – less than 1-in-8 on treatment
 - 2 million tuberculosis deaths
 - 1 million malaria deaths - mostly children

→ **Over 10 million needless deaths each year**
...from conditions for which safe, effective,
affordable prevention & treatment exist



the implementation bottleneck

- Vaccines
- Primary Health Care
- Drug Therapies
- Maternal and Child Health Care
- Basic Surgery





investment

Bill and Melinda Gates Foundation **\$6.5 B**

The Global Fund **\$8.6 B**

President's Emergency Plan for AIDS **\$15 B**

International Finance Facility **\$4 B**

Multi-Country HIV/AIDS Program **\$1.1 B**

Global Alliance **\$3 B**

Public-private partnerships **\$1.2 B**

Anti-Malaria Initiative in Africa (proposed) **\$1.2 B**

United Nations Fund **\$360 M**

Warren Buffet **\$37 B**

TOTAL \$77.7 B

*Funds pledged, committed, or spent. Overlap exists between organizations (e.g., PEPFAR money supports the Global Fund).

Adapted from Jon Cohen, The new world of global health. *Science* 2006;311(5758):162-167.



the implementation bottleneck

- Vaccines
 - Primary Health Care
 - Drug therapies
 - Maternal Child Health Care
 - Basic Surgery
- New Developments:**
- Microbicides and other preventive tools
 - New malaria and TB drugs, diagnostics
 - New combination therapies
 - Drugs for neglected diseases
 - >10 new vaccines



Global Delivery Failures



Intervention

ARVs for PMTCT

*Reduce HIV transmission
by 40%*

ITNs for Malaria Prevention

*Reduce infant mortality by
23%*

Implementation

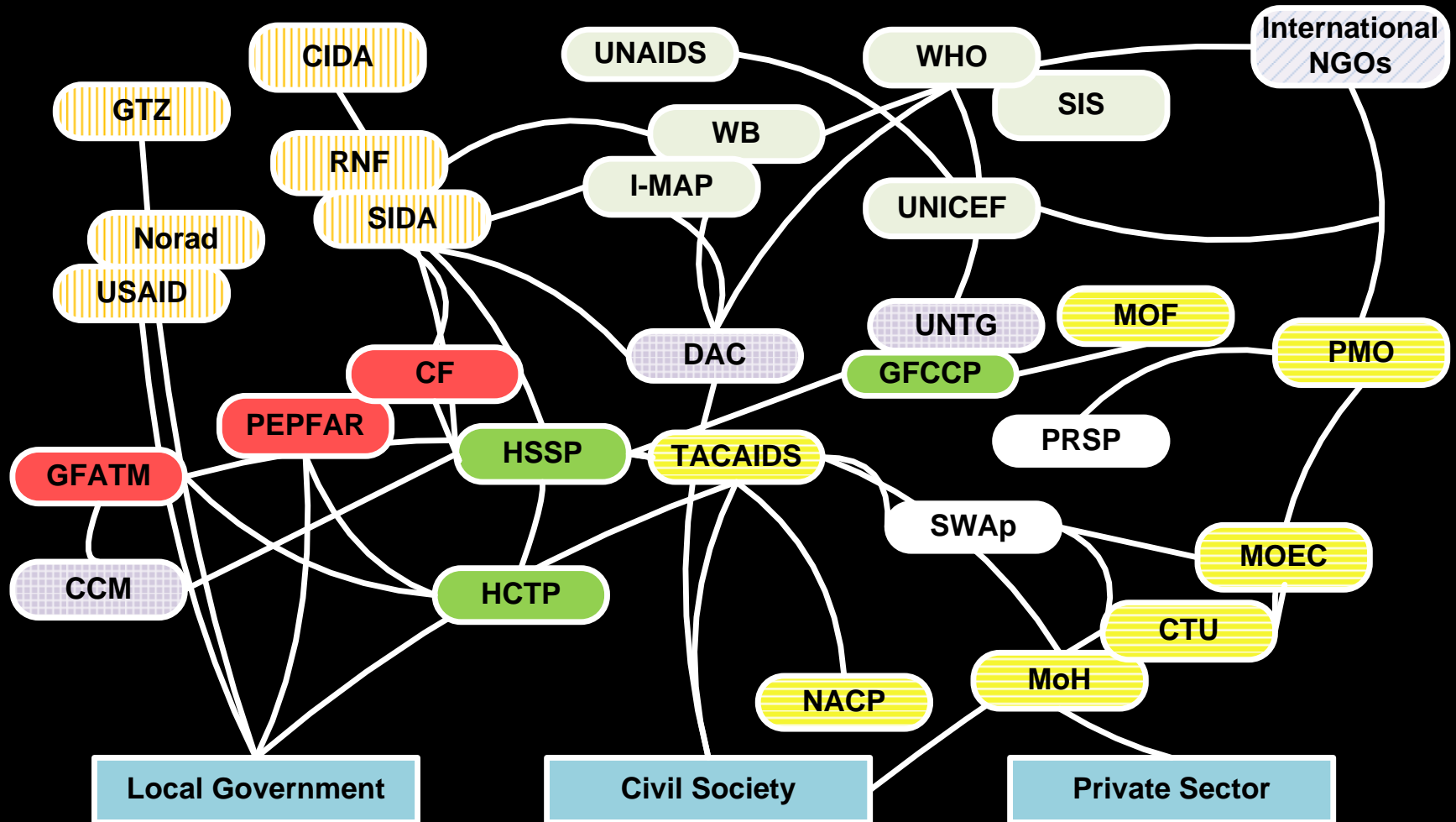
9% coverage of
women overall and
50% of women who
test positive in a clinic
are given ARVs for
PMTCT

Only **3%** of children in
endemic areas sleep
under nets

Source: WHO



Relationships Between Various Stakeholders in Tanzania



The Developed World and Resource-Poor Settings Suffer from Similar Delivery Problems

Current Model

- The product is **treatment**
- Measure **volume** of services (# tests, treatments)
- Focus on facilities, **specialties** or **types** of practitioners
- Discrete **interventions**
- Individual diseases
- **Fragmented** programs and entities
- **Localized** pilots and demonstration projects

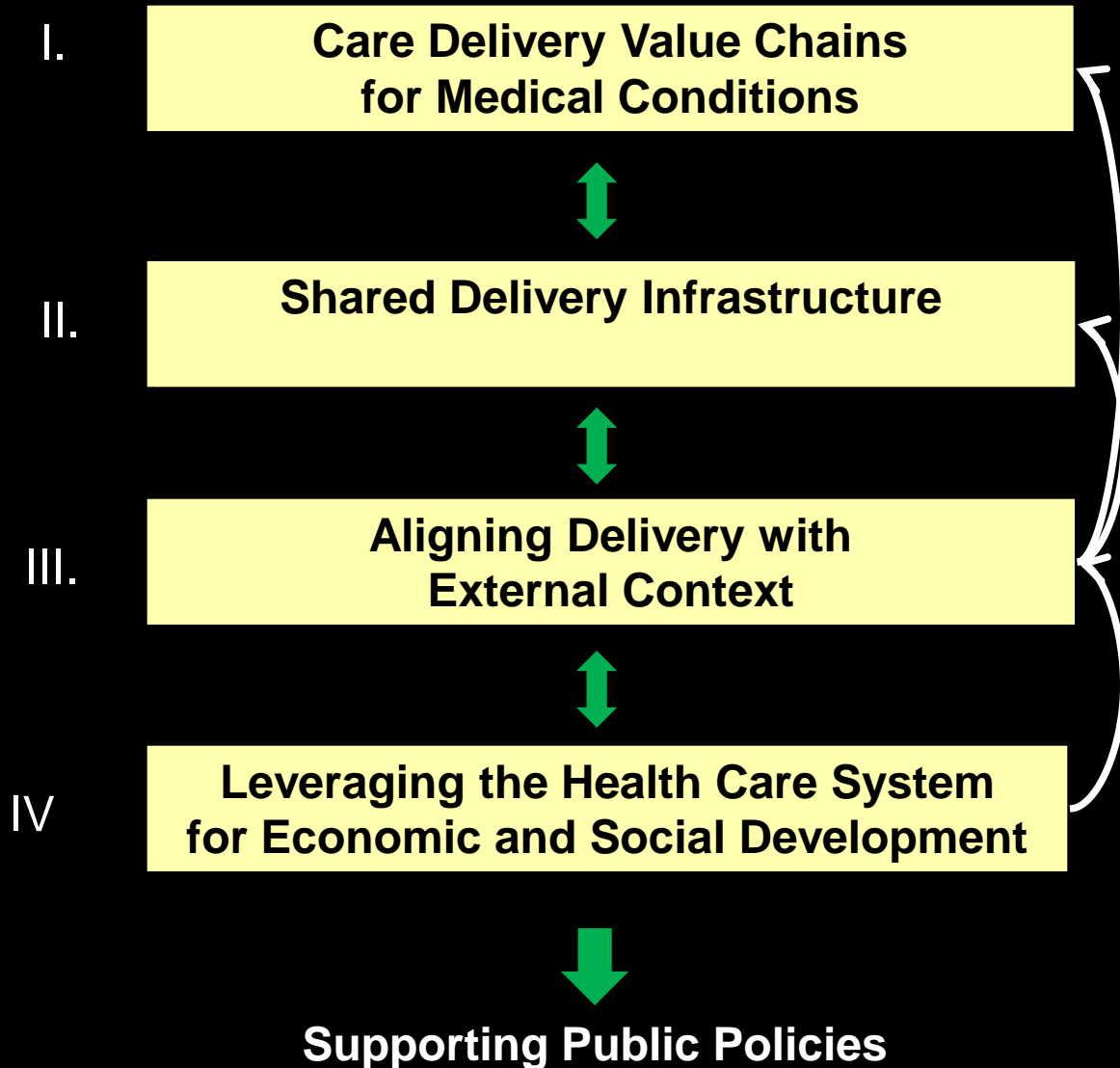


New Model

- The product is **health**
- Measure **value** of services (health outcomes per unit of cost)
- **Coordinated** and **integrated** care delivery
- **Care cycles**
- Sets of prevalent **co-occurrences**
- **Integrated** care delivery systems
- Integrated **systems across communities** and **regions**



A Framework for Global Health Delivery



<ul style="list-style-type: none"> • Prevention counseling on modes of transmission on risk factors 	<ul style="list-style-type: none"> • Explaining diagnosis and implications • Explaining course and prognosis of HIV 	<ul style="list-style-type: none"> • Explaining approach to forestalling progression 	<ul style="list-style-type: none"> • Explaining medical instructions and side effects 	<ul style="list-style-type: none"> • Counseling about adherence; understanding factors for non-adherence 	<ul style="list-style-type: none"> • Explaining co-morbid diagnoses • End-of-life counseling
<ul style="list-style-type: none"> • HIV testing • TB, STI screening • Collecting baseline demographics 	<ul style="list-style-type: none"> • HIV testing for others at risk • CD4+ count, clinical exam, labs 	<ul style="list-style-type: none"> • Monitoring CD4+ • Continuously assessing co-morbidities 	<ul style="list-style-type: none"> • Regular primary care assessments • Lab evaluations for initiating drugs 	<ul style="list-style-type: none"> • HIV staging, response to drugs • Managing complications 	<ul style="list-style-type: none"> • HIV staging, response to drugs • Regular primary care assessments
<ul style="list-style-type: none"> • Meeting patients in high-risk settings • Primary care clinics • Testing centers 	<ul style="list-style-type: none"> • Primary care clinics • Clinic labs • Testing centers 	<ul style="list-style-type: none"> • Primary care clinics • Food centers • Home visits 	<ul style="list-style-type: none"> • Primary care clinics • Pharmacy • Support groups 	<ul style="list-style-type: none"> • Primary care clinics • Pharmacy • Support groups 	<ul style="list-style-type: none"> • Primary care clinics • Pharmacy • Hospitals, hospices
PREVENTION & SCREENING <ul style="list-style-type: none"> • Connecting patient with primary care • Identifying high-risk individuals • Testing at-risk individuals • Promoting appropriate risk reduction strategies • Modifying behavioral risk factors • Creating medical records 	DIAGNOSING & STAGING <ul style="list-style-type: none"> • Formal diagnosis, staging • Determining method of transmission • Identifying others at risk • TB, STI screening • Pregnancy testing, contraceptive counseling • Creating treatment plans 	DELAYING PROGRESSION <ul style="list-style-type: none"> • Initiating therapies that can delay onset, including vitamins and food • Treating co-morbidities that affect disease progression, especially TB • Improving patient awareness of disease progression, prognosis, transmission • Connecting patient with care team 	INITIATING ARV THERAPY <ul style="list-style-type: none"> • Initiating comprehensive ARV therapy, assessing drug readiness • Preparing patient for disease progression, treatment side effects • Managing secondary infections, associated illnesses 	ONGOING DISEASE MANAGEMENT <ul style="list-style-type: none"> • Managing effects of associated illnesses • Managing side effects • Determining supporting nutritional modifications • Preparing patient for end-of-life management • Primary care, health maintenance 	MANAGEMENT OF CLINICAL DETERIORATION <ul style="list-style-type: none"> • Identifying clinical and laboratory deterioration • Initiating second- and third-line drug therapies • Managing acute illnesses and opportunistic infection through aggressive outpatient management or hospitalization • Providing social support • Access to hospice care

(Health outcomes per unit of cost)

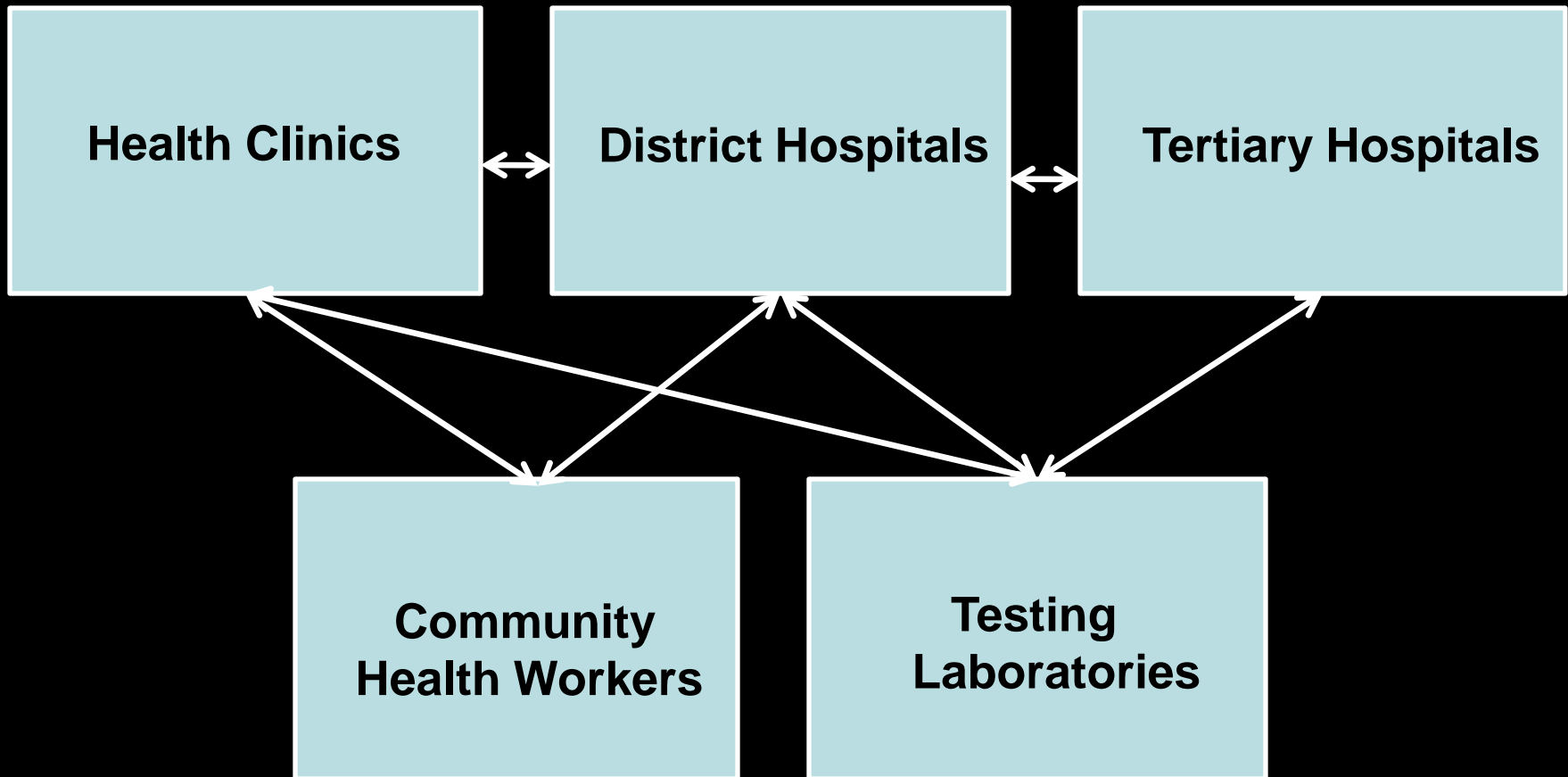
Care Delivery Value Chain

Implications for HIV/AIDS Care

- **Early diagnosis** helps in forestalling disease progression
- Intensive evaluation and treatment at 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
- Human Resource Development
- Insurance and Financing

Integrating “Vertical” and “Horizontal”

Care Delivery Value Chains

HIV/AIDS

Malaria

Perinatal

Tuberculosis

Shared Delivery Infrastructure

Health Clinics

District Hospitals

Tertiary Hospitals

Community
Health Workers

Testing
Laboratories



Shared Delivery Infrastructure

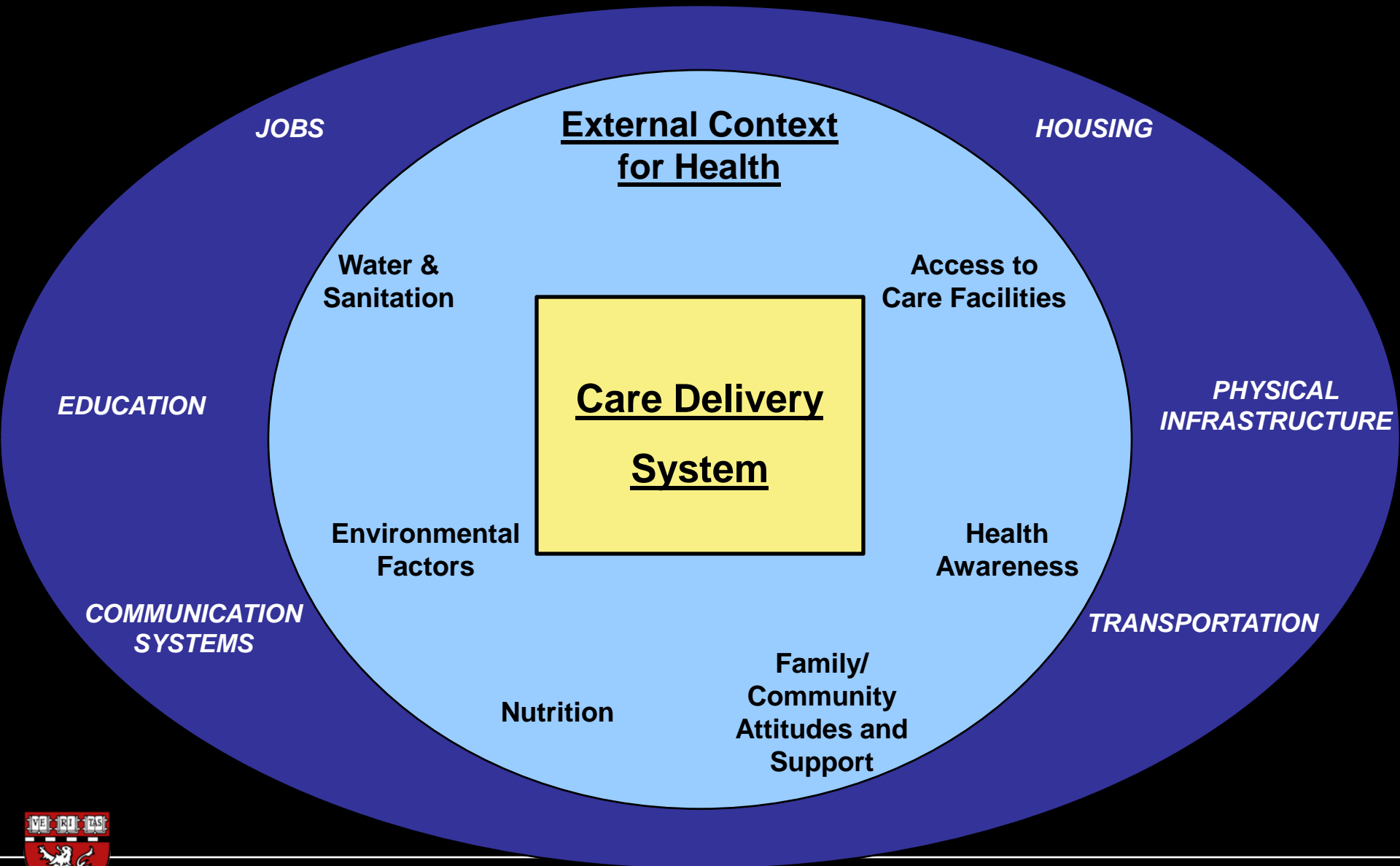
Implications for HIV/AIDS Care

- 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 not only improve compliance with ARV therapy but can **simultaneously address other conditions**



Integrating Delivery and Context

Broader Influences



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)



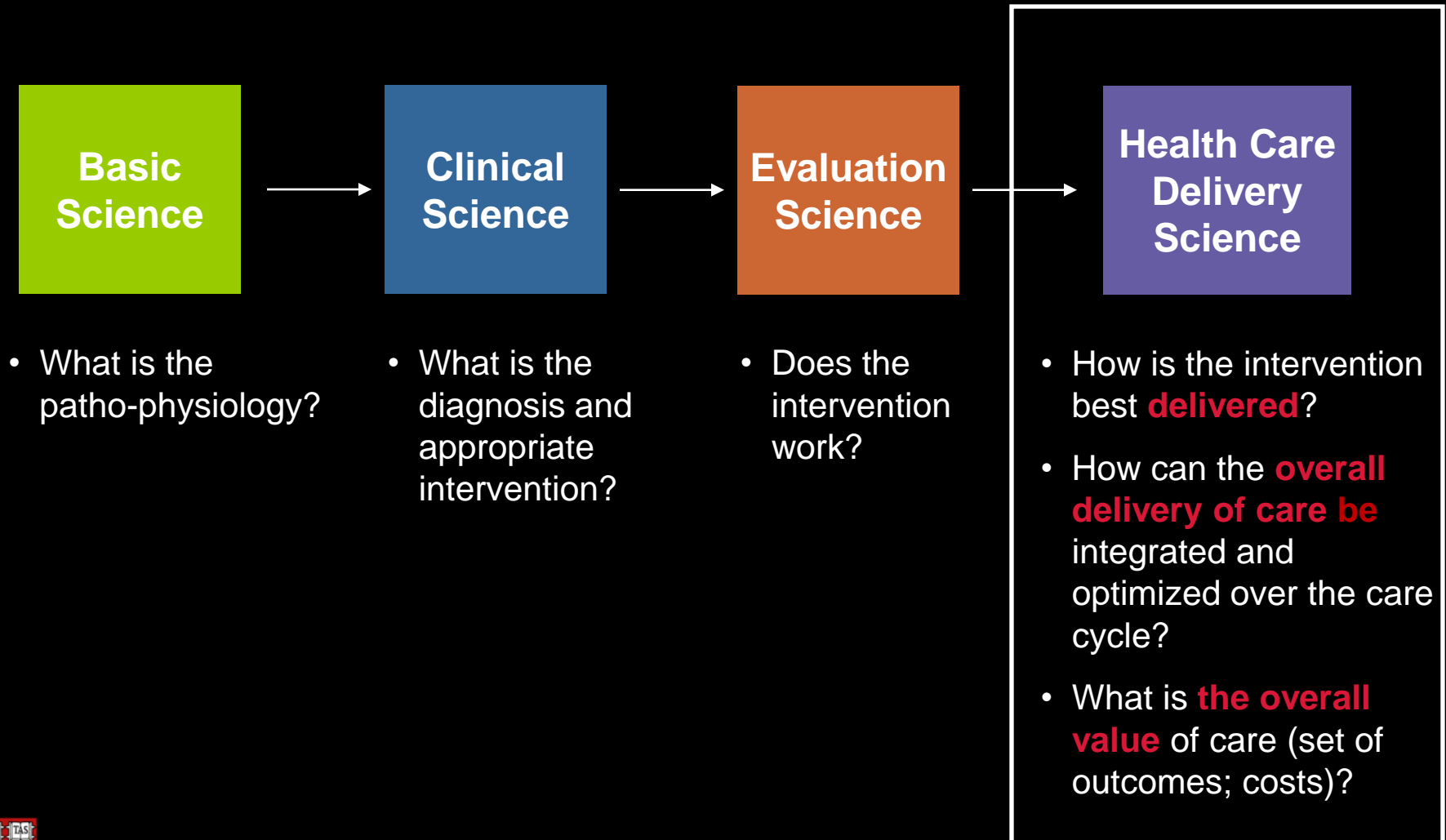
Is there a place for a new field in global health?



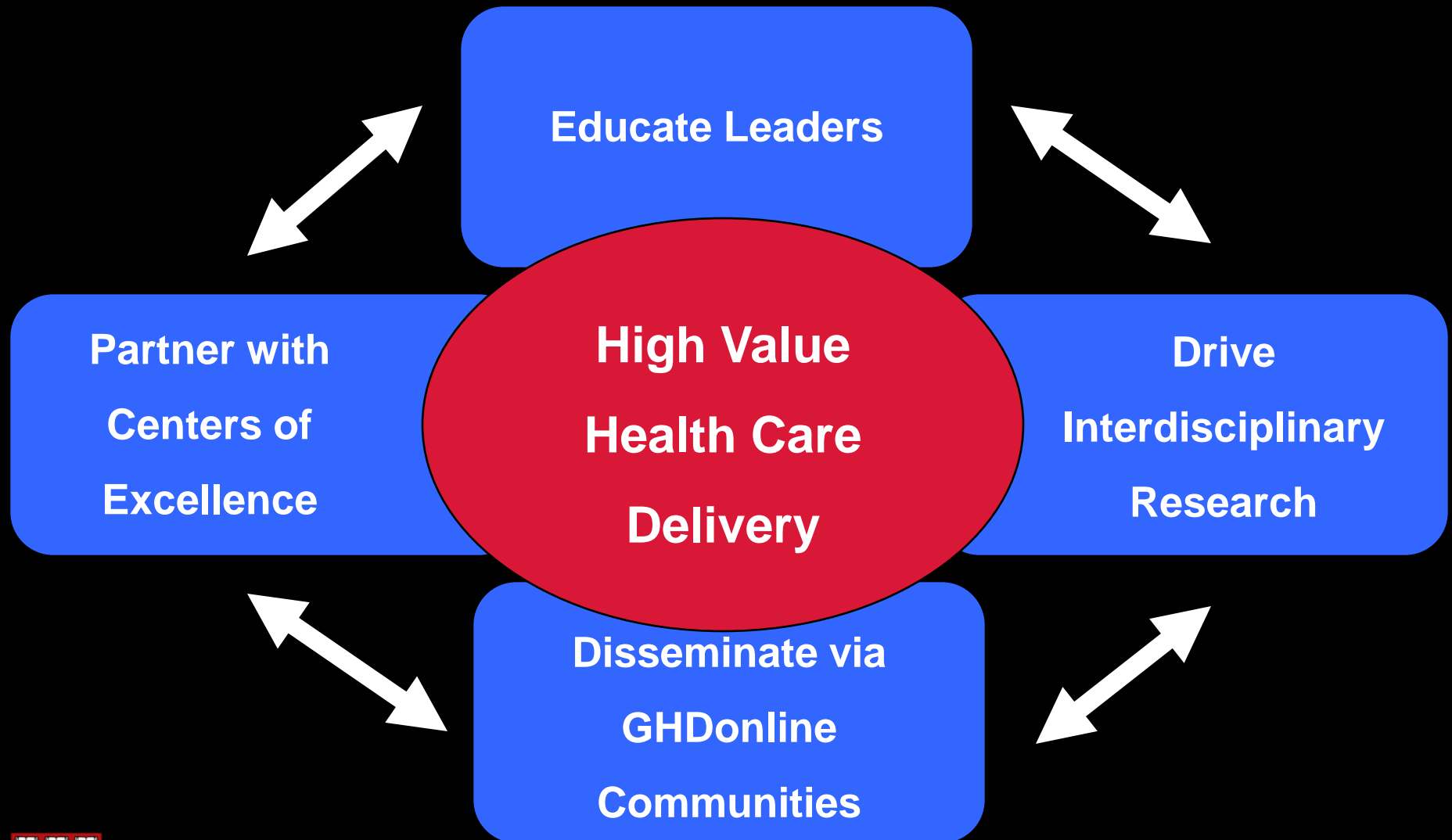
- What is the patho-physiology?
- What is the diagnosis and appropriate intervention?
- Does the intervention work?



Is there a place for a new field in global health?



Global Health Delivery Project



Need for an Interdisciplinary Approach



GHD Research: Positive Synergies

- WHO-led initiative for G8, Italy 2009
- 3 consortia: Academic, civil society & implementers



- Fourteen academic partners from Africa, Asia, Europe, and the U.S.

Academic Consortium

Harvard University

Agence Nationale de Recherche sur le Sida

Royal College of Surgeons in Ireland

Institute of Tropical Medicine, Antwerp

George Washington University

Kenyatta University

University of Yaoundé

Public Health Foundation of India

Dakar University Teaching Hospital

University of Western Cape

The AIDS Support Organization

Center for Global Development

Global Fund/World Bank

University of Pretoria

Heartfile, Pakistan



Global Health Delivery Studies



The Academic Model for the Prevention and Treatment of HIV/AIDS

The Academic Model for the Prevention and Treatment of HIV/AIDS

"In Home-Based Counseling and Testing (HCT), I think we may have just found a way to finally bring HIV to its knees in Kenya. Through HCT, we'll know the HIV status of every person in AMPATH's catchment area, and we'll see them before they're even patients. We see a lot of 'silent virus' now - it's such an uphill battle meeting them during such a late stage in their life and disease progression. But if we know their status before they're even sick, it also means we reach the husbands early while they're still alive. And if you don't let men and dad die, you don't have orphans. It's an ethical imperative to stop the cascade of tragedy left behind by the pandemic. Meeting 'upstream' with HCT will cost AMPATH far less to provide HIV care and achieve far greater outcomes. From there, if we can show it can be done with HIV, we can fundamentally change primary care at the village level in Kenya."

-Dr. Joe Mainlin, Field Director, IU-MU Partnership

In April 2006, Sylvester Kimaniyo, Program Manager of the Eldoret, Kenya-based Academic Model for the Prevention and Treatment of HIV/AIDS (AMPATH), and Joe Mainlin, Field Director of the Indiana University-Miami University Partnership (IU-MU Partnership), reflected upon the results of AMPATH's recent pilot of a new door-to-door HIV counseling and testing service for rural Kenyans. Under the pilot service, called Home-Based Counseling and Testing (HCT), a team of community-based health workers went door-to-door to heighten prevention efforts, identify HIV-positive residents, and make appropriate referrals for rural residents living in Kisumu Division, the catchment area for the pilot. These voluntary information sessions took place directly in residents' homes, and included confidential counseling and testing services for TB and HIV. In three months, the HCT team reached over 98% of the estimated 36,000 people living in Kisumu Division. Over 90% of the 20,000 at risk for HIV infection got voluntary testing for HIV.

Kimaniyo and Mainlin were excited about the future implications of the pilot's results for AMPATH and were planning to rollout HCT to AMPATH's catchment zone of 1.8 million people within two years. In particular, they were hopeful that AMPATH's success in HCT could be integrated into a broader primary care agenda by the Ministry of Health. But there were a number of issues to consider. As AMPATH's patient enrollment already approached 2,000 new patients per month, would it be able to control growth and quality during the rollout of HCT? AMPATH was Kenya's largest and fastest growing antiretroviral therapy provider; many considered AMPATH's

Peter Park, Arati Bharti, Joseph Rhatigan, and Jim Yong Kim prepared this case with the assistance of Richard Harnemann. The Brigham and Women's Hospital helped provide financial support for the production of this case. This case was developed solely as the basis for class discussion. It is not intended to serve as a source of primary data or as an illustration of effective or ineffective management. Copyright © 2008 by the President and Fellows of Harvard College.

Evaluating AMPATH's decision to expand the coverage and services offered by its HIV/AIDS treatment program

Avahan: India AIDS Initiative
Developing a strategic framework for scaling up the delivery of HIV prevention

Examining different HIV prevention programs, and determining the steps necessary to successfully bring effective HIV prevention efforts to scale



Health Care Delivery “Science” Course Offerings

Global Health Delivery

Summer 2009 – HSPH/HMS: Global Health Effectiveness Program

June 2009 - HSPH: Introduction to GHD (4th round)

Fall 2009 - HMS: GHD Seminar (5th round)

Fall 2009 - Sloan/HST: G-Lab GHD (2nd round)

January 2010 - HSPH: Introduction to GHD (5th round)

Fall 2010 - Harvard: Undergraduate Global Health Course (2nd round)

Advanced Economy Delivery

January 2009 – Value-Based Health Care Delivery (HBS Immersion Program)


January 2009 – Strategy For Health Care Delivery: Leadership Workshop

April 2009 –The Brigham Leadership Program (HBS Executive Education)

May 2009 – Kaiser Permanente Leadership Program (HBS Executive Education)

January 2010 – Value-Based Health Care Delivery (HBS Immersion)

January 2010- Strategy For Health Care Delivery: Leadership Workshop



“ To create and nurture a diverse community of the best people committed to leadership in alleviating human suffering caused by disease.”



HARVARD MEDICAL SCHOOL
MISSION STATEMENT