



The Challenges and Opportunities of AHSCs

King's College London
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Victor J Dzau, MD
James B Duke Professor of Medicine
Chancellor for Health Affairs, Duke University
President and CEO, Duke University Health System

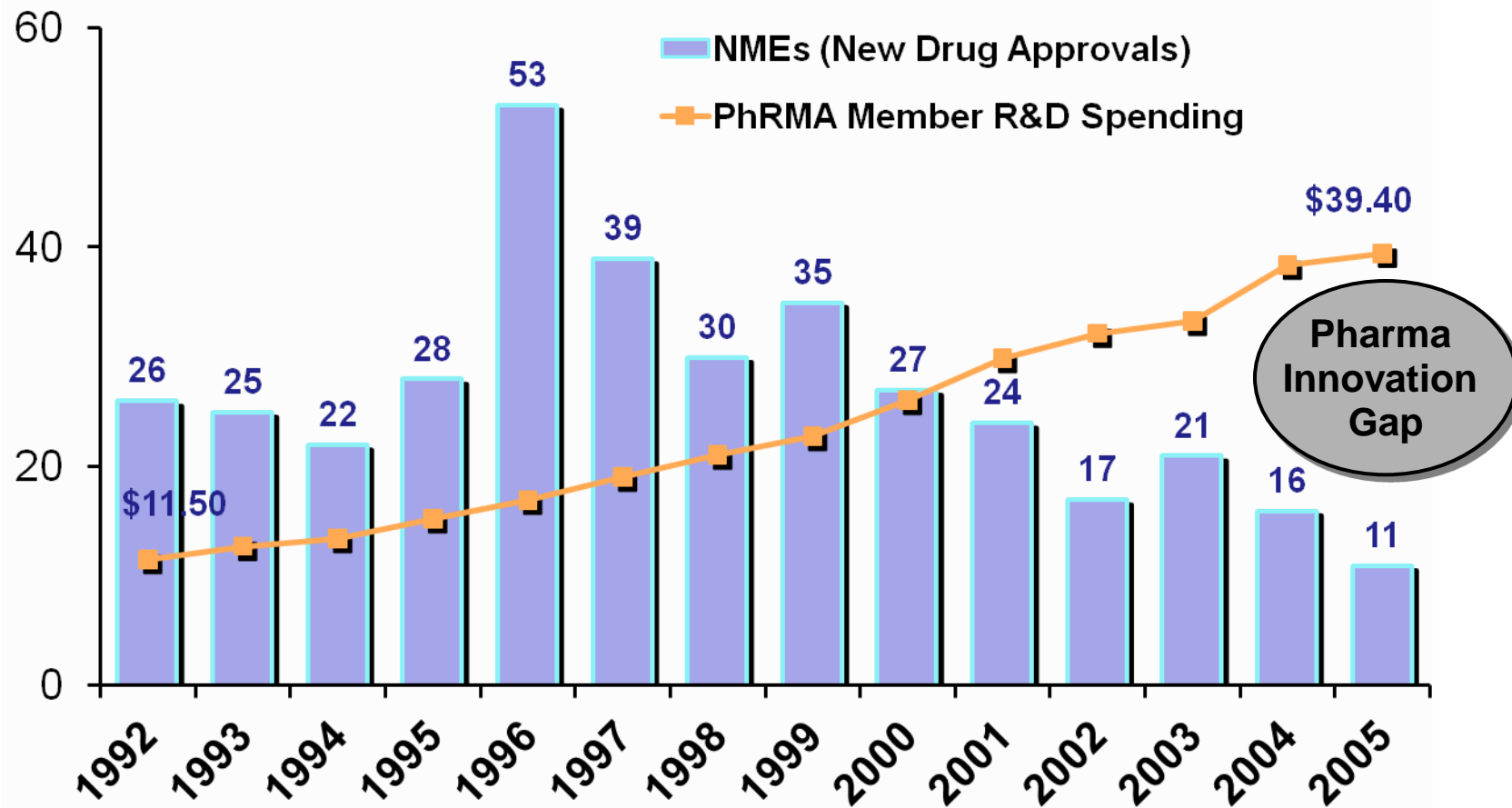
Healthcare & medicine needs transformation



- Health inequalities - local & global
- Rising cost of healthcare & poor access
- Emphasis on late stage disease
- Increasingly difficult to develop novel therapies



Innovation gap is widening



Spending is in \$ billions US; this rose to \$58.8 B in 2008.
Source: Burrill & Company

Fragmented Healthcare delivery system



- Primary care to secondary and tertiary care (multiple handoffs)
- Misaligned payment & reporting system
- Accountability of outcomes & health status
- Prevention & Public Health
- Electronic health record and information technology
- Competition of missions & priorities

Innovation Discontinuum: A fragmented system of silos, barriers



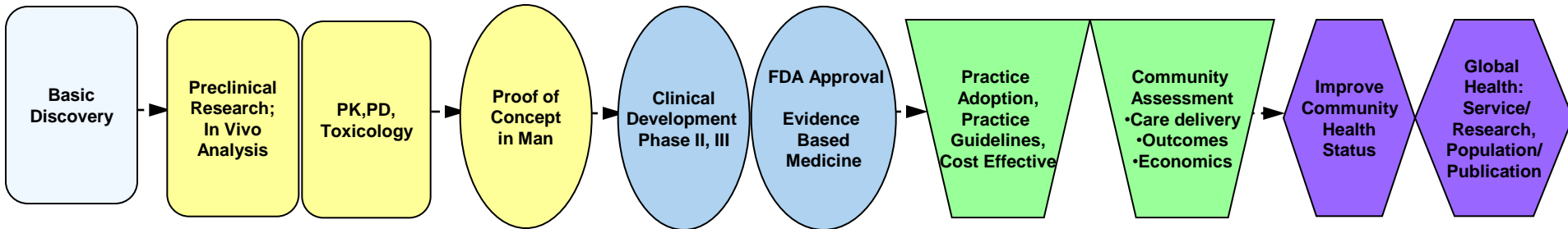
Discovery

Translation

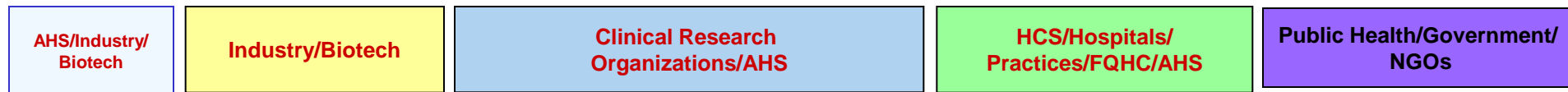
Clinical Research

*Translation
and Adoption*

*Global
Health*



Entities



Timeline



Example: milestones in ACE inhibition

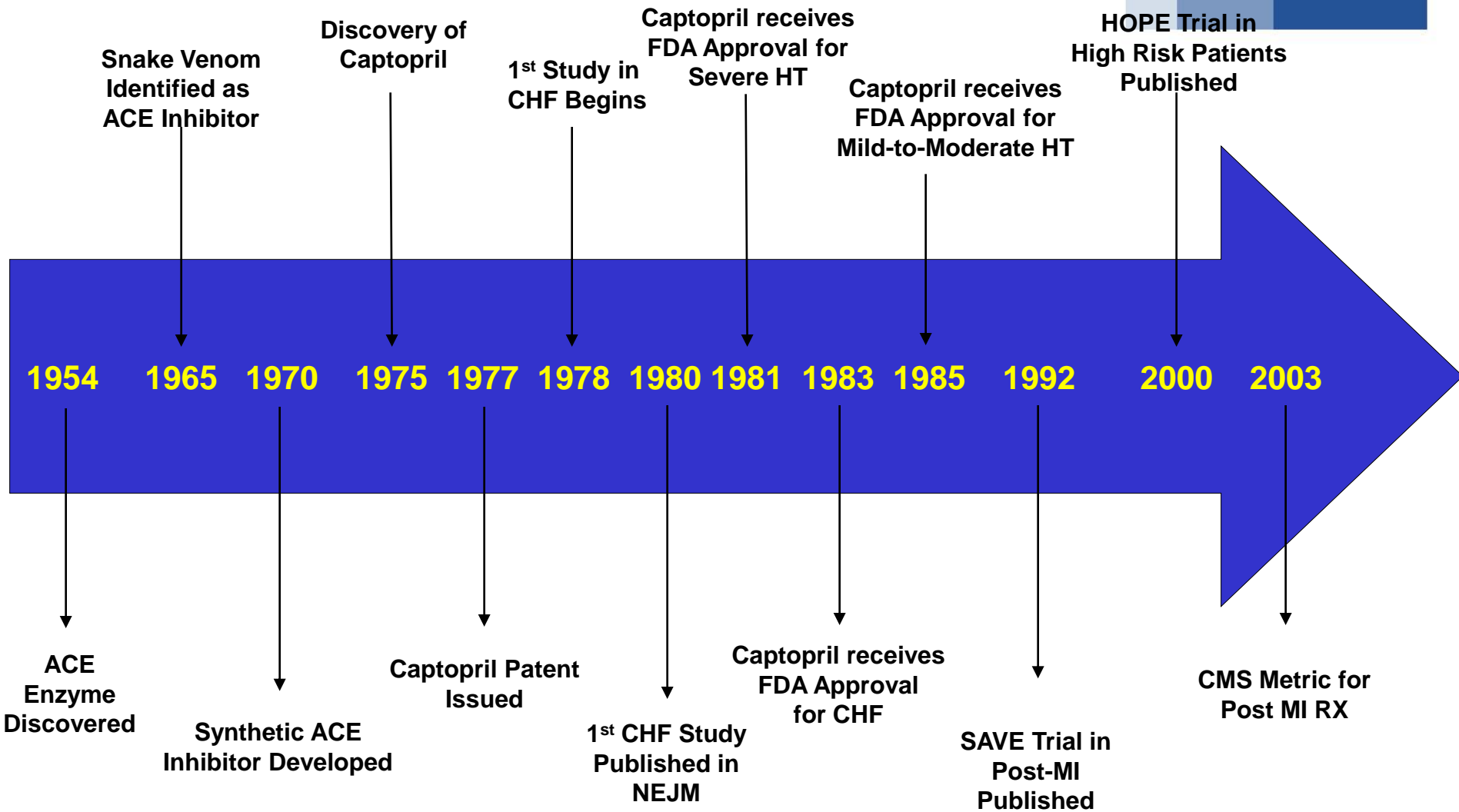
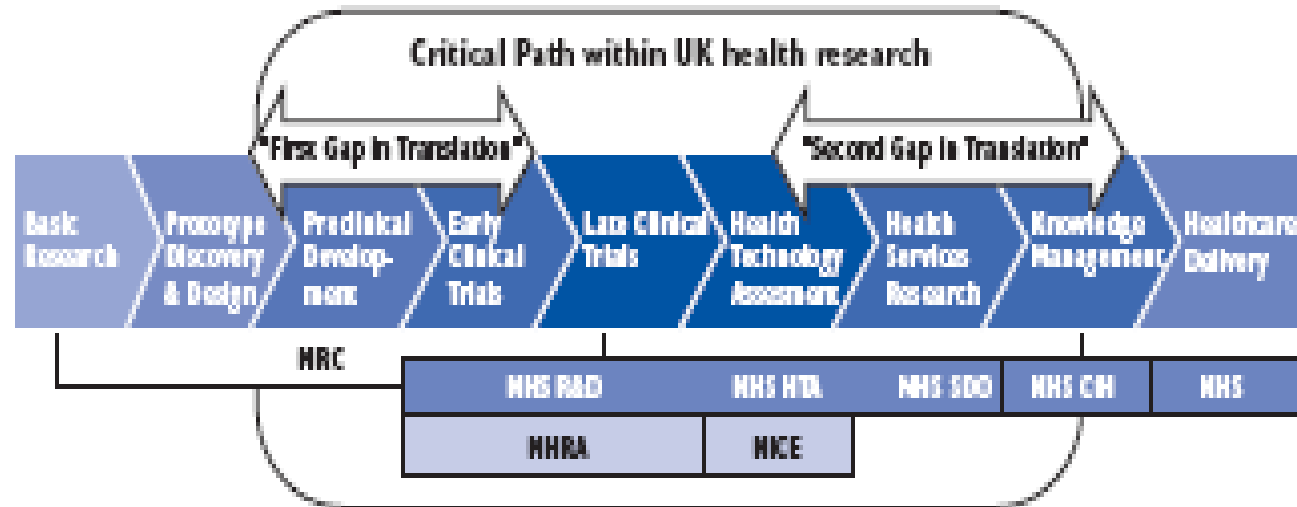




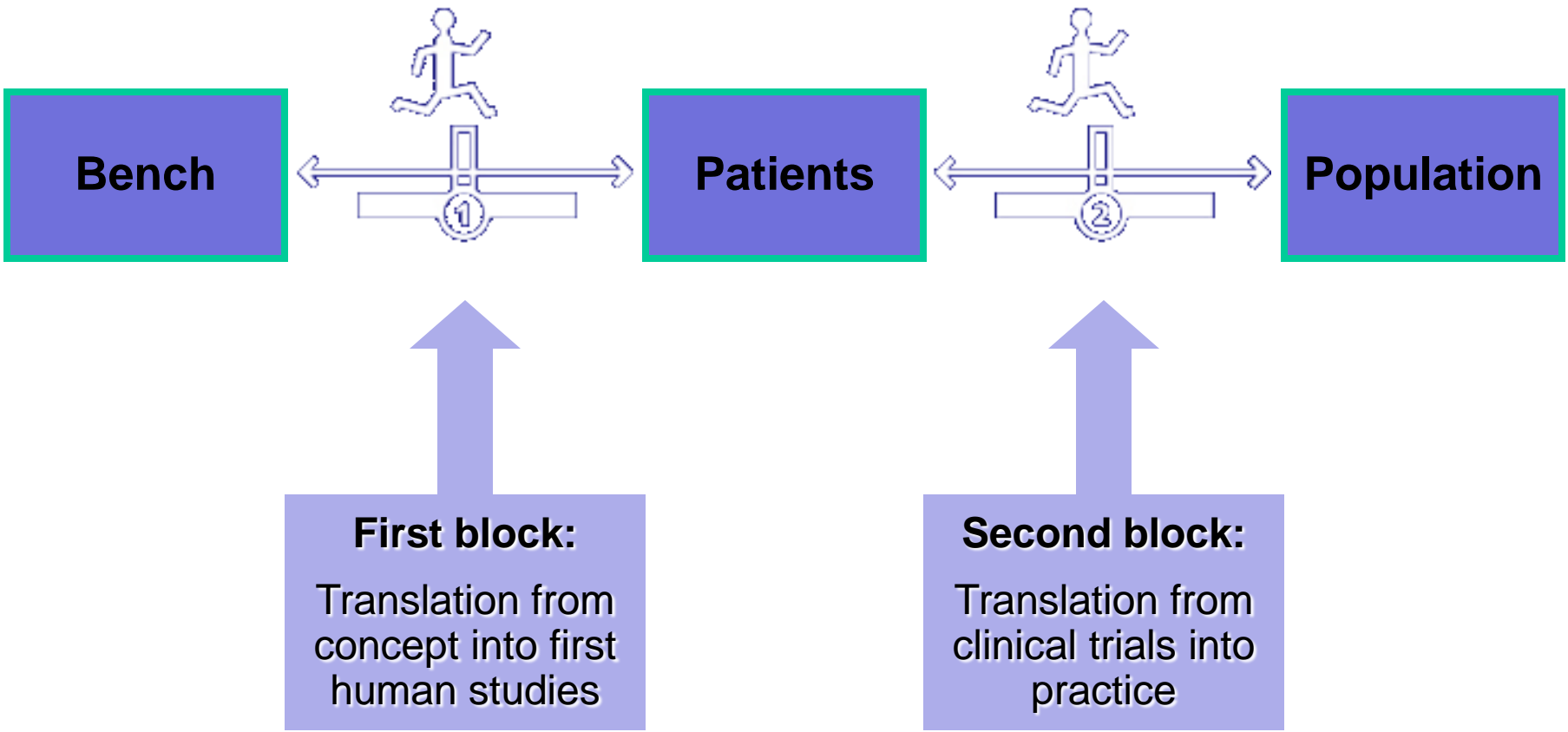
Chart 7.1: Pathway for Translation of Health Research into Healthcare Improvement



Blue boxes below parts of pathway correspond to specific responsibilities of public sector bodies supporting research. MRC: Medical Research Council. NHS R&D: National Health Service Research and Development. NHS HTA: NHS Health Technology Assessment programme. NHS SDO: Service and Delivery Organisation research programme. NHS CH: Connecting for Health. Light blue boxes below parts of pathway correspond to the specific responsibilities of statutory regulatory agencies. MHRA: Medicines and Healthcare products Regulatory Agency. NICE: National Institute for Health and Clinical Excellence.

A review of UK health research: Sir David Cooksey
(December 2006)

Traditional View of Translation: Two Blocks/Gaps





A vision for transformation: what must be done?

- Extensive reform of healthcare financing
- Effective care delivery systems with quality & safe clinical outcomes
- Global coverage, affordability & access
- Prevention, health & wellness; personalized health
- Innovation that leads to transformative/disruptive technologies and approaches; appropriate business models
- Creating a seamless continuum from basic discoveries to translational human application

AHSC as driver of transformation



- Source of innovation, discoveries, and disruptive thinking
- Can identify unmet medical needs
- Not constrained by “targets” and “markets”; able to create own “value network”?
- Have patient population, biological materials, and database capabilities
- Can develop new models of care delivery
- Can effect patient outcomes & quality

Organizational misalignment of missions & priorities: Whose responsibility?



- Academic vs Clinical Mission
- Basic vs Clinical and Translational Research
- Clinical Care vs Health Services Research
- School of Medicine vs Health System
- Public vs Private Interests

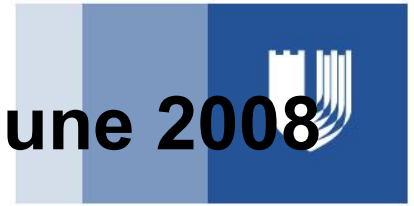
Academic Health Systems as a leader in transformation



Reorganization of biomedical research and health delivery systems into a **seamless continuum** from ***innovation to clinical delivery to community health.***

“Bench to Bedside to Population”

- *Integrated model of innovation-care continuum*
- *Shift in institutional research priorities*
- *Effective utilization of information + investment in IT*
- *Efficient care delivery*
- *Improved health outcomes*



Lord Darzi “High Quality Care For All” June 2008

- We intend to foster Academic Health Science Centres (AHSCs) to bring together a small number of health and academic partners to focus on world-class **research, teaching and patient care**. Their purpose is to **take new discoveries and promote their application** in the NHS and across the world.
- The best and most successful AHSCs will have the concentration of expertise and excellence that enables them to **compete internationally**.
- The potential of AHSCs to **deliver research excellence and improve patient care and professional education** is tremendous. **Clear governance** arrangements with academe, which ensure this works for both patients and the NHS, will be very important.

Definition of an Academic Health Center



- From the Association of Academic Health Centers (AAHC):
 - “Academic health centers are accredited, degree granting institutions of higher education and consist of an allopathic or osteopathic medical school, at least one other health professions school or program (such as allied health, dentistry, graduate studies, nursing, pharmacy, psychology, public health veterinary medicine) and one or more owned or affiliated teaching hospitals, health systems or other organized health care services.”

Definition of an Academic Health Sciences Center?



Put simply, they are healthcare entities whose missions are aligned:

- **Research**
- **Education**
- **Clinical Care**

Definition of an Academic Health Sciences Center?



Put simply, they are healthcare entities whose missions are aligned & that aspire to:

- **Research** ↔ ***Translation***
- **Education** ↔ ***Future Providers & Leaders***
- **Clinical Care** ↔ ***Improved Health & Eliminate Disparities***

What is the current US landscape?



- In 2005, the AAHC conducted a survey of member academic health centers.*
 - 78% of AHCs leaders had direct and sole authority over their hospital.
 - If they resided within a health system, 73% had direct control over the entire health system.
 - Only 14% had direct control over both the academic mission and the hospital/health system.
 - The study also noted that the structure of many AHCs underwent changes in response to managed care pressures.



What is the UK Landscape?

- NHS Trusts and Foundation Trusts
- Primary Care Trusts
- General Practitioners
- Universities
- Schools of Medicine, Public Health, Nursing & Allied Health
- Government
- Communities



How can transformation be achieved?

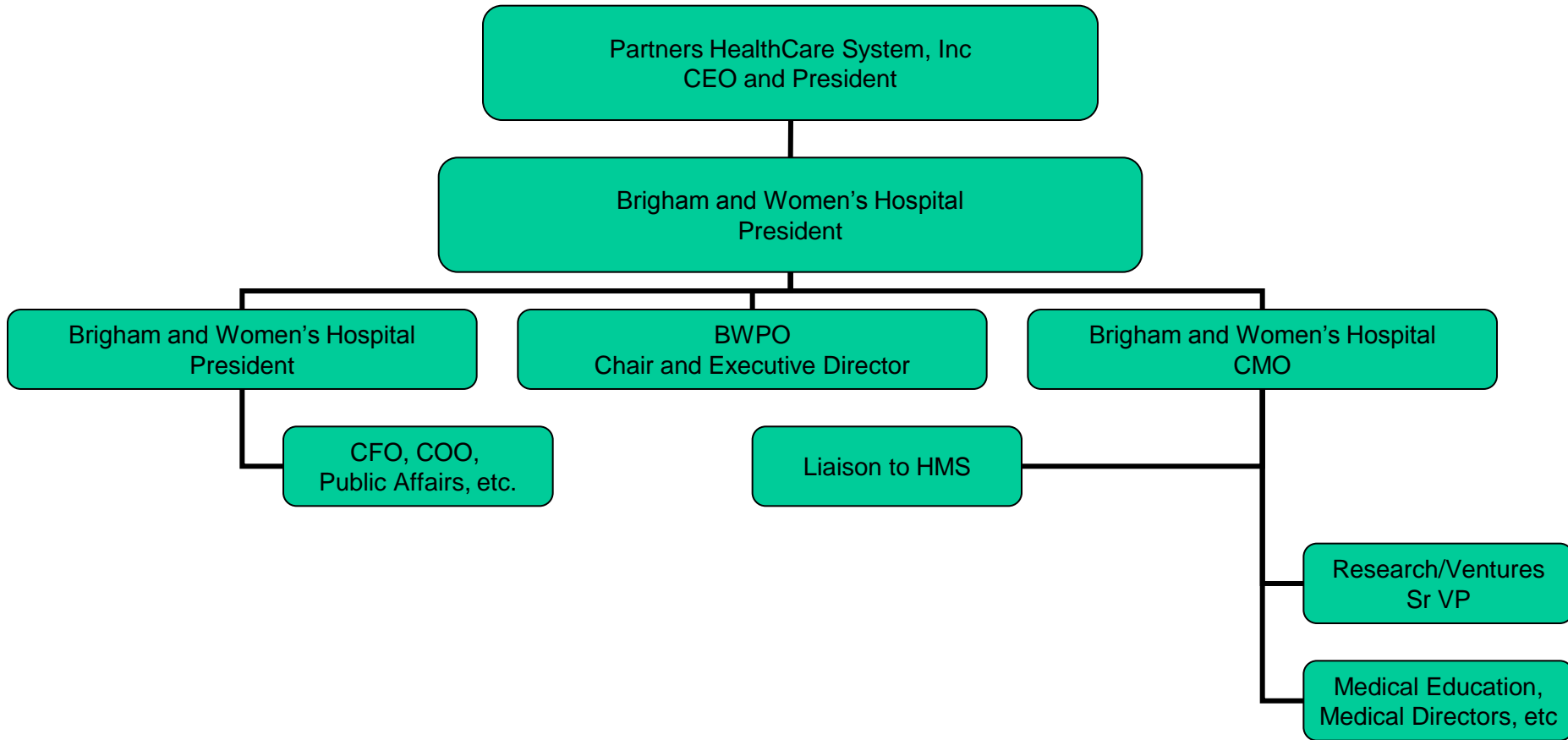
- New Organizational Models
- New Partnerships
- New Research Priorities
- Investments in Information Processing + Dissemination
- New Models of Care Delivery
- Global Health Research and Service Delivery

Governance & Culture



- Integrated vs Federated Models
- Single vs dual boards
- Centers/ CAG/ Service lines vs Departments
- Single vs matrix responsibilities for all 3 missions
- Incentives & Rewards
- Common Vision & Values
- Teamwork & Culture

Academic Hospital Model
(not integrated with medical school)
Partners Healthcare System:MGH & BWH





- DUHS Administration (Brown)
- Strategic Planning, Business Development and Marketing (O'Neill)
- Corporate Finance (Morris)
- Information Technology (Ahmad)
- Human Resources (Smith)
- Compliance (Shannon & Tyson)
- Legal (Gustafson)

**Chancellor for Health Affairs
President/CEO (Dzau)**

- Corporate and Venture Development (Taber)
- Development and Alumni Affairs (Morsberger)
- Government Relations (Vick)
- Community Relations (Black)
- Communications (Stokke)

**Chief of Staff
Celeste Castillo Lee**

**Duke University Health System
Senior Vice President, Clinical Affairs
(William Fulkerson)**

Acute Care Services	Medical Affairs (Cuffe)	Ambulatory Care Services (Newman)
<ul style="list-style-type: none"> •Duke University Hospital •Durham Regional Hospital •Duke Raleigh Hospital •Clinical Centers and Service Lines •DUH Service Chiefs 	<ul style="list-style-type: none"> •Quality/Safety/Outcomes •Duke University Affiliated Physicians •Entity chief medical officers •GME 	<ul style="list-style-type: none"> •Duke Outpatient Clinics •Outreach & Community Programs •Duke Home Care and Hospice •Center for Living

**Schools of Medicine
Senior Vice Chancellor, Academic Affairs
(RS Williams)**

Duke School of Medicine Dean (Nancy Andrews)	Duke NUS GMS (Ranga Krishnan)	Academic Vice Chancellors
<ul style="list-style-type: none"> •Exec. Vice Dean (Gibson) •Vice/Assoc Deans <ul style="list-style-type: none"> •Education(UME, CME, MSTP, MSC, PHD) (Buckley) •Basic Sciences (Kornbluth) •Clinical Research (Oddone) •Faculty Development (Grant) •Finance & Administration(Newton) •Dept. Chairs •Center Directors •DCRI 	<ul style="list-style-type: none"> Vice/Assoc Deans Education Research Clinical & Faculty Affairs Finance & Administration Learning Technologies 	<ul style="list-style-type: none"> •Institute Genomic Sciences (Willard) •Translational and Clinical Research Institute (Califf) •Global Health Institute (Merson) •NC Research Campus –Kannapolis (Williams)

**Duke School of Nursing
Dean & Vice Chancellor, Nursing Affairs
(Catherine Gilliss)**

- Associate Deans
 - Research Affairs
 - Administration and Finance
 - Academic Affairs
 - ABSN Program
 - MSN Program
 - PhD Program
- Exec Dir., Development, Alumni & Community Affairs
- Dir., Office of Global and Community Health Initiatives

What is Duke Medicine's mission?



*“As a world-class academic & healthcare system, Duke Medicine strives to **transform medicine and health locally and globally** through **innovative scientific research**, rapid **translation** of **breakthrough discoveries**, **educating** future scientific and clinical leaders, advocating and practicing **evidence-based medicine** to **improve community health** and leading efforts to **eliminate health inequalities.**”*

What could AHSCs of the future look like?



1. Vertically integrated care delivery

- Tertiary/quaternary referral hospital(s)
- Community/general hospital(s)
- Multispecialty clinics
- A primary care network
 - including school-based clinics, clinics for underserved
- Support services
 - cardiac rehab, hospice, home health, etc.
- Community-based resources for health

2. Well-developed horizontal integration, too

- A **seamless continuum**: from scientific discoveries to translation to care delivery to global health

Duke Model of **Bench to Bedside to Population**: Interlocking, Signature Initiatives



Duke Translational Medicine Institute (DTMI)

- Duke Translational Research Institute (DTRI)
- Duke Clinical Research Institute (DCRI)
- Duke Center for Community Research (DCCR)

Global Health Institute (GHI)

- Research
- Education
- Service (Delivery)
- Policy

Seamless integration: Innovation-Care Continuum



Discovery → *Translation* → *Clinical Research* → *Translation and Adoption* → *Global Health*

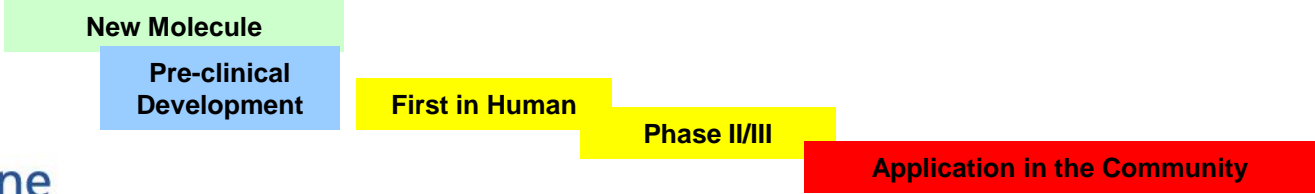
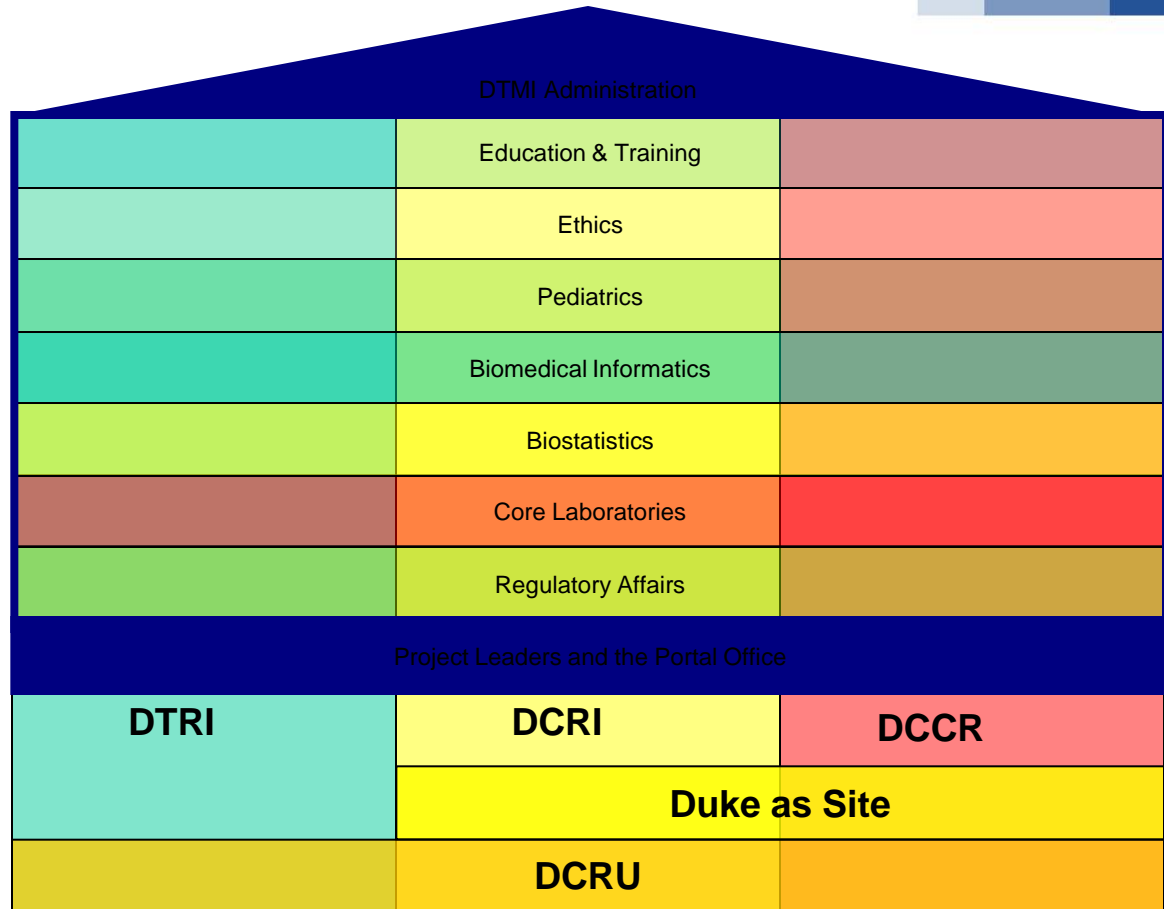
CURRENT	AHS, Industry, Biotech	Industry, Biotech	Clinical Research Organizations, AHS	HCS, Hospitals, Practices, FQHC, AHS	Government, NGOs
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Current Timeline: 10-25 years?

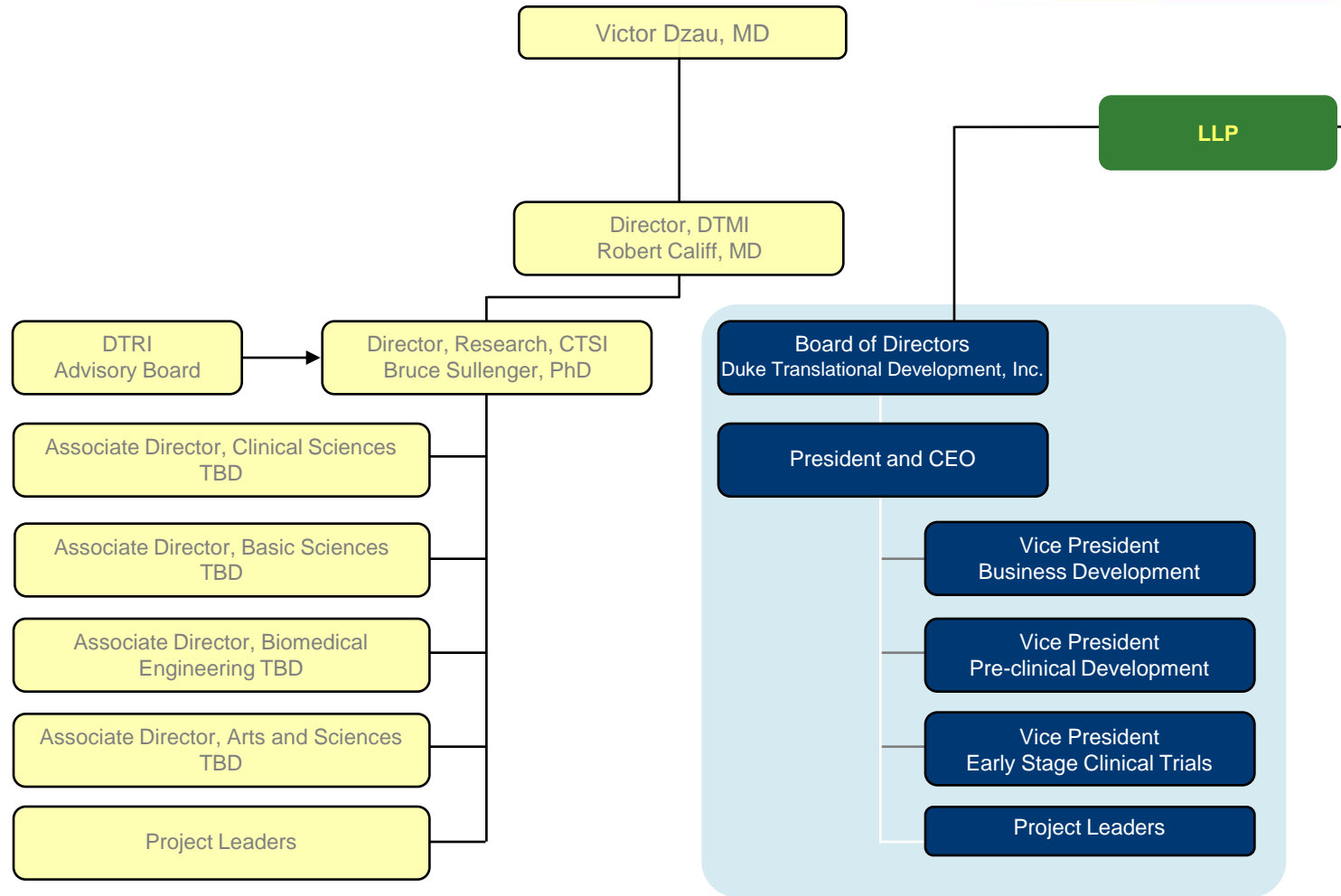
Duke Medicine (DUHS, SOM, SON)					
DUKE	Basic & Clinical Science	Duke Translational Research Institute	Duke Clinical Research Institute	Duke Center for Community Research	Global Health Institute

New Timeline: 7-10 years?

DTMI: Structure



Duke Translational Research Institute (DTRI)



DTRI: Toolbox



- **In-house capabilities**

- Model systems
- Chemistry
- Molecular imaging
- Cell processing & banking
- Vaccine production
- Institute for Genome Science and Policy (IGSP)
- Pratt School of Engineering
- Duke Clinical Research Institute (DCRI)
- Center for Entrepreneurship and Research Commercialization (CERC)

- **Outsourced to preferred providers ('partners')**

- Pharmacology & metabolism
- Toxicology (esp. large animals)
- Formulation
- Manufacturing
- Prototyping

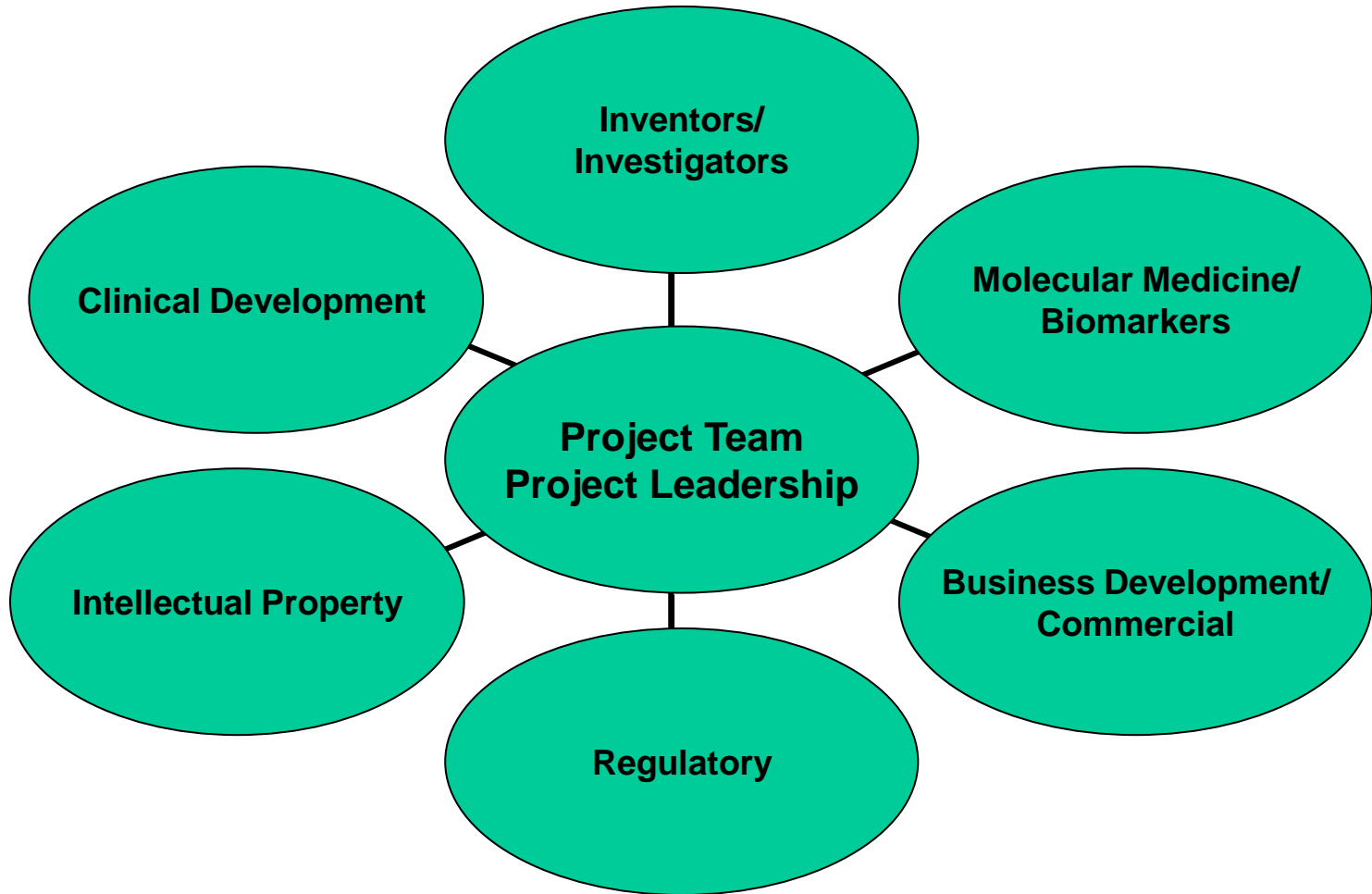
- **Key Decisions**

- Buy vs. outsource

- **Partnerships**

- RTP
- Kannapolis (NCRC)

DTRI: Integrated Teams

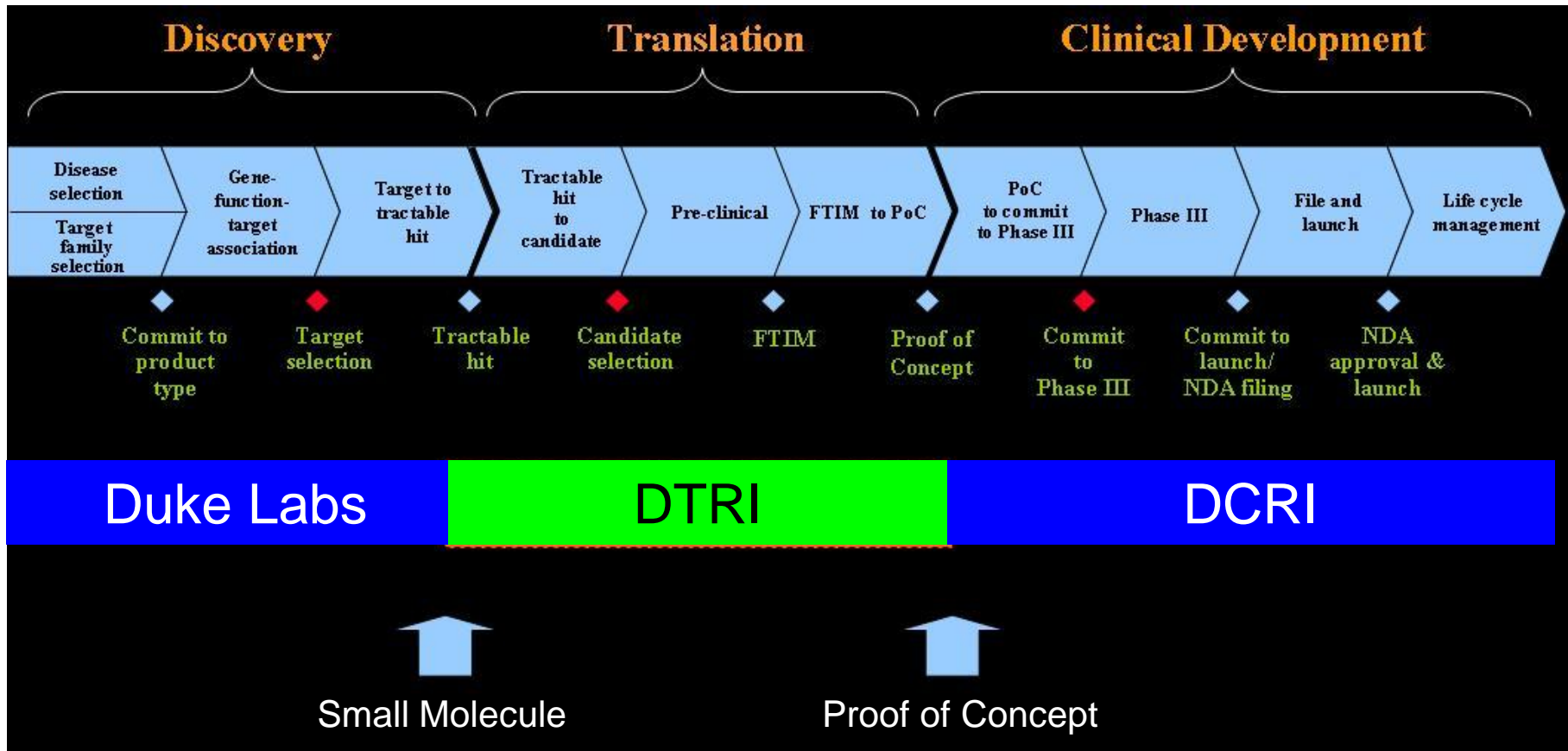


Pilot Projects



- **Pilot projects to support promising T1 translation**
- **\$ 1 million RFA for pilot projects released Summer 2007, 2008.**
- **Requirements:**
 - Promising early stage
 - Towards Proof of Concept in Humans
 - Effective use of resources & facilities
 - Potential for project management
 - Business Plans (NIH or Commercial)

DTRI is a bridge in the process





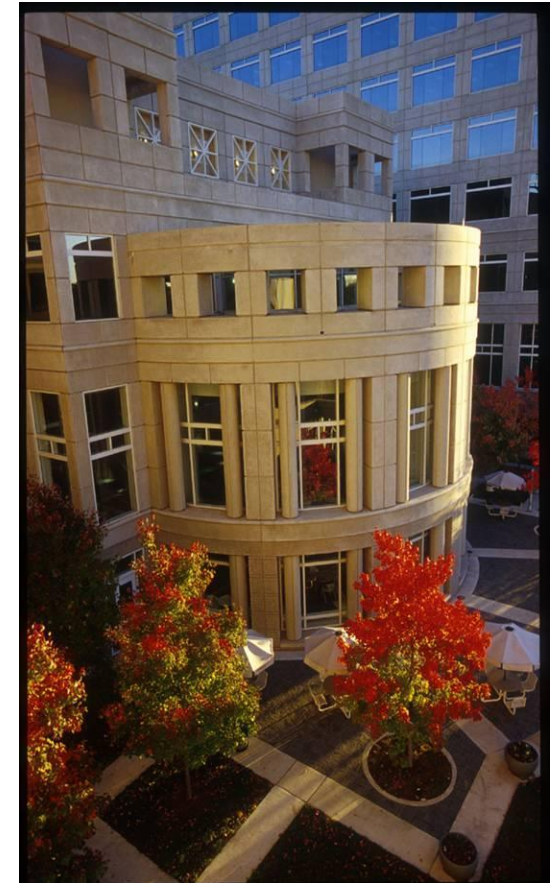
DTRI: Summary

- DTRI is fundamentally an accelerator
- DTRI provides investigators w/ an extensive toolbox
 - “One-stop shop”
- Provides resources (skills/facilities/guidance/support) to help faculty develop ideas from the basic laboratory into the clinical realm
- DTRI helps manage what is a very complex process
- DTRI faculty are also conducting research on improving this translational process



What is DCRI?

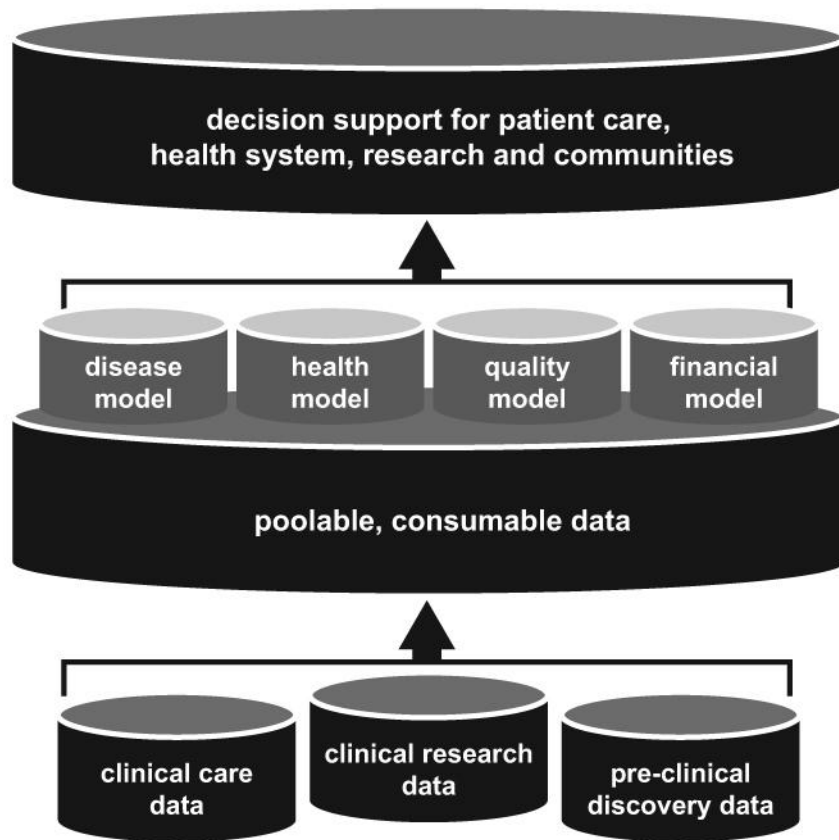
- The DCRI is the largest academic clinical research organization (ARO) in the world
- A global coordinating center for multi-center clinical trials that integrates medical expertise of Duke Medicine with operational capabilities of full-service CRO
 - >500K patients enrolled in studies
 - ~5,000 peer-reviewed publications
 - Revenues of over \$100M in FY2006
 - >950 employees



A roadmap to the future: Optimizing clinical research, and drug & technology evaluation



- Integrated multidisciplinary disease programs
- Genotyping – Phenotyping (Physiological/functional genomics & disease subclassification)
- Functional, molecular & genetic imaging
- Clinical discovery ‘cores’
DCRU, Imaging Facility
- Research patient database & registry
- DNA, cell & tissue repositories
- Translational (‘bridging’) researchers



Duke Center for Community Research (DCCR)



- Engagement of community in research design
- Community/Research interface
 - Establish treatment algorithms and standards of care
 - Bidirectional communication
- Unified, research-friendly electronic health record system
 - Developed by McKesson and DHTS
 - Common Data Repository (CDR)
 - Decision Support Repository (DSR)
- Follow community health trends and clinical outcomes
- Rapid-turnaround intervention studies

Durham County as a Model



- Community based research—CFM, SON
 - Key construct is **participation** of residents in planning and interpretation of research
- Electronic health record—DUHS
- Strategic planning based on measurement—DHS, Center for Geospatial Mapping, HSR
- Community relations—Community Affairs
- Communication
- **Keeping the focus on the health of the people of Durham County**



Demonstration Projects

- **Pilot projects to see if teams of community groups, clinicians, and researchers can improve health**
- **\$ 1 million for planning RFA for pilot projects released Summer 2008.**
- **Requirements:**
 - **Input, support, and commitment from community**
 - **Well-integrated design for prevention/care**
 - **Budget that demonstrates effective use of resources**
 - **Evaluation plan that establishes measurable markers**

New models of healthcare delivery



- Develop truly integrated care delivery from medical center to community
- “High Tech & High Touch” care delivered in state-of-the-art facilities through specialized centers of excellence
- Community care with novel models of care provider teams (physician assistants, nurse practitioners, registered nurses, plus laypersons; technology-enabled care management and self-management)
- Use of innovative IT for clinical information capture, connectivity, remote monitoring and decision support

Outcomes-based clinical care



- Quality & Safety
- Clinical Outcomes Metrics
- Performance Measurements
- Patient Satisfaction
- Staff/Physician Satisfaction
- Community Relations
- Community Health Statistics

An integrated approach to health and prevention



- **Prospective Health**
 - **Personalized Medicine**
 - **Integrative Medicine**
 - *Biomarkers*
 - *Genomics, metabolomics, proteomics*
 - *Risk assessment*
 - *Information technology*
- ***Driven by Innovation***

Future: Accountable Care Organizations



- Responsible for the health of community
- Able to redistribute resources for early detection, tx, f/up, patient self-management
- With infrastructure for partnering w/ communities to reduce disparities



Education & training

IOM : Learning Healthcare System

- Physician scientists
- Translational scientists
- Prepare trainees for future medicine
- Multidisciplinary team training- physicians, nurses, NP, PA, pharmacists, social workers etc
- New methodologies- simulation, problem solving
- Leadership & management
- Global Health
- Innovation

Leadership & Management



Management Meets Medicine in a New Pathway for Residents at Duke University

DURHAM, N.C. – Duke Medicine has launched a first-of-its-kind management pathway for residents from any of Duke’s residency programs who have also completed a graduate management degree. The program, The Duke Medicine Management and Leadership Pathway for Residents (MLP-R), is designed to provide doctors with the practical operational skills and experiences – touching all three missions of an academic health system, i.e., clinical care, research, and education – necessary for a career as a physician executive, and to serve as a launching pad for the next generation of leaders in healthcare.

Institute of Health Innovation, Strategy, Leadership & Policy



Formulae for Success

- Culture, identity & brand
- Common goals and vision
- Decision making & governance
- Alignment of missions
- Integrated business plan with common bottom line
- Leadership
- Communication



Role of the Academic Health System in Global Health

- Conduct innovative research and develop new research technologies
 - Coordinating multi-disciplinary experts
- Create new care delivery models
 - Translate models from one population to another if appropriate
- Train future leaders in a variety of disciplines who understand the problems, their context, and their impact on the larger global society

Examples: Division of Social Medicine at BWH with Paul Farmer, Duke Global Health Institute

Local to Global Health



- Translation to global application
- Bidirectional learning & collaboration
- A multidisciplinary approach



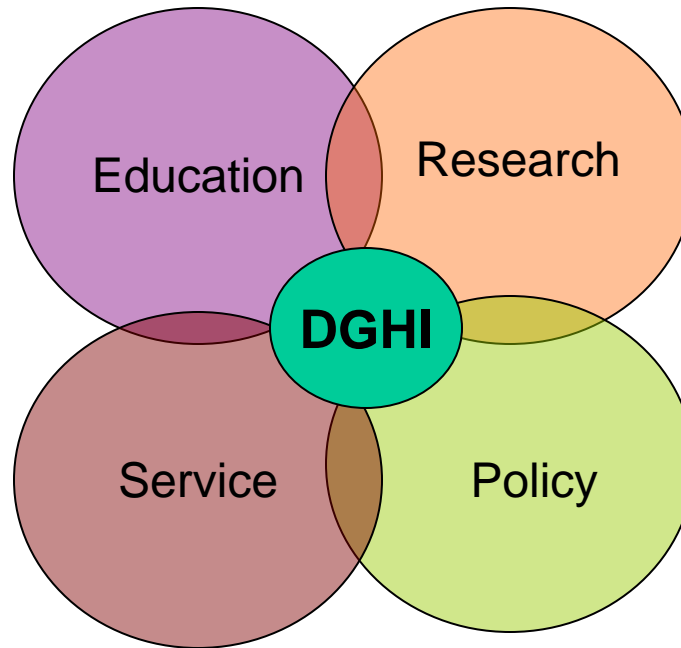
Duke Global Health Institute (DGHI)

- DGHI is a University-wide signature initiative to address ***health inequalities*** from a multidisciplinary perspective (e.g., environment, engineering, law, policy, medicine, etc).
- Built on four pillars:
 - Research
 - Education (for undergrads, graduate students, medical students, housestaff)
 - Service (delivery)
 - Policy

Duke Global Health Institute (DGHI) in action



- Undergraduate Focus Cluster
- GH Certificate
- M.Sc. In GH
- Doctoral Program
- Postdoctoral Program
- GH Residency Program



- Domestic and int'l fieldwork opportunities
- Int'l sites for research, education
- GH P.L.U.S. program (surplus medical equipment)

- Signature Research Initiatives
 - Obesity and CVD
 - Global Aging
 - Global Environmental Health
 - Gender, Poverty, Health
 - Emerging Infectious Diseases
 - Health Systems

- Center for Health Policy
- Monitoring & Evaluation Unit
- Policy Unit to support decision-making related to GH

Duke Global Health Institute: Operational Programs



Country	Program Area
Tanzania	HIV/AIDS and tuberculosis
Uganda	Neurosurgical training
Kenya	Secondary school for girls
Malawi	Orphans and vulnerable children
Ghana	Maternal and Child Health
South Africa	HIV/AIDS
India	Micro financing and HIV prevention
China	Duke/PKU Certificate in Global Health
Vietnam	Emerging infections surveillance
Cambodia	Orphans and vulnerable children
Singapore	Emerging Infections
Honduras	Pediatric care
Haiti	Cervical cancer
Costa Rica	Freshman Focus educational program
Russia	HIV infection in injecting drug users

CHAVI: Building research infrastructure in Zambia, Tanzania, South Africa, Malawi, and Gambia



How are AHSC engaging the globe: How is Duke getting engaged?



1. **Addressing Global Health disparities**

- Ex. DGHI's service pillar
- Ex. DukeEngage (undergrad service learning program)

2. **Globalization of AHSS Missions**

- **Research**
- **Education**
- **Clinical Care**

3. Global Franchising of Clinical Services

4. Consulting



Global Medicine: Beyond Addressing Health Inequalities

- AHSs must consider their future in a global context
- Barriers between countries are coming down:
 - Information technology (spread of new ideas);
 - Common standards (??decreased perceived quality differences?);
 - Rapid travel & transmission (increased spread of diseases- SARS);
- A single global healthcare marketplace is developing.
- Great Universities and Academic Health Centers **MUST** develop an international presence to be leaders in the global medicine



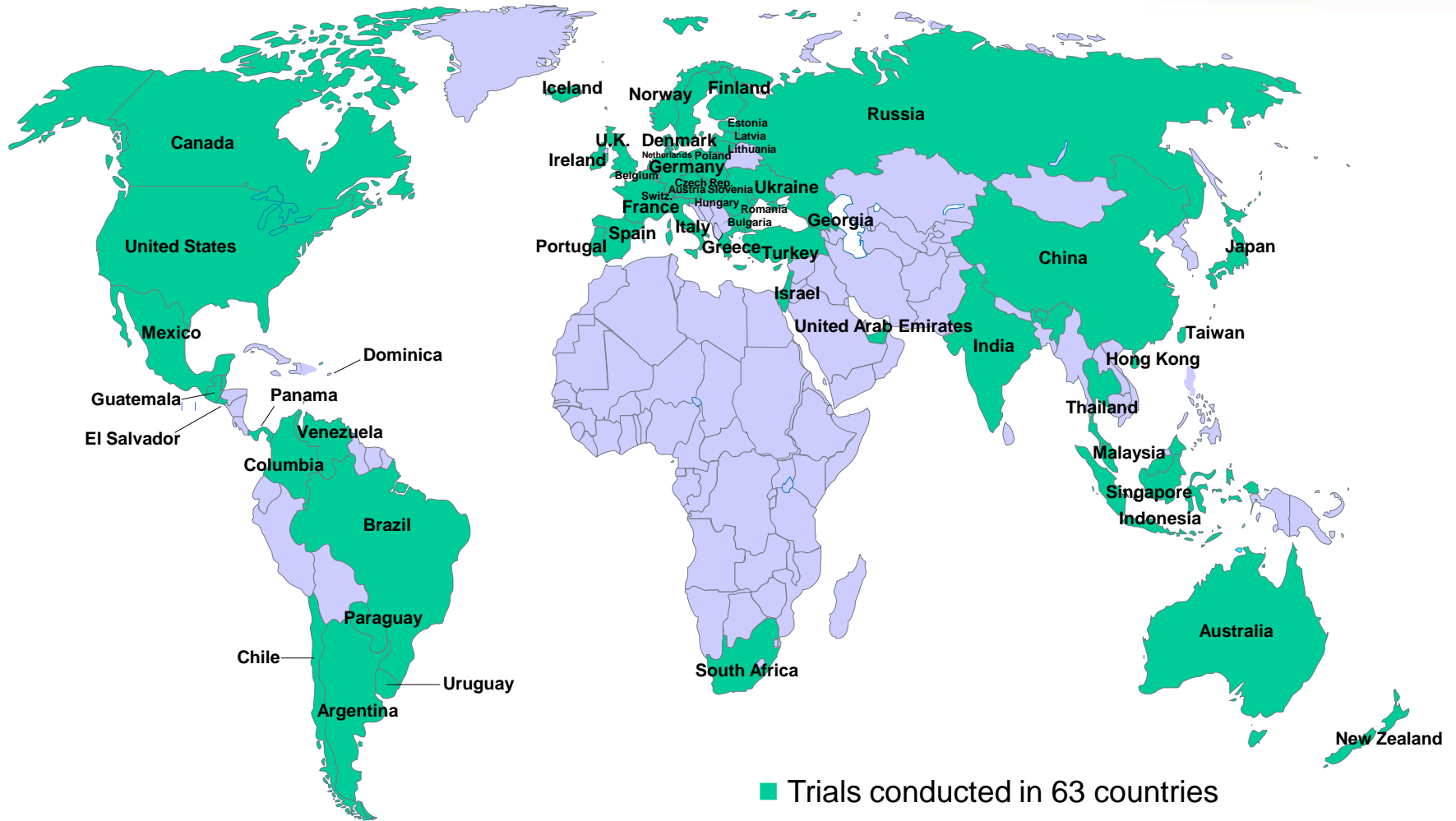


Duke's global footprint: Duke Global Medicine

- **DGHI**
- Singapore
 - Duke-NUS GMS
 - SCRI
 - Duke Med Global
- India
 - Medi-City
 - Care Group
- China
 - Duke-PKUHSC partnership
- Dubai
 - Health & Wellness



DCRI's global reach



Duke-NUS GMS: An example of Public Private Partnership (PPP)



- **History of Duke-NUS GMS**
 - Beginnings traced to 2000
 - Singapore launched its ambitious Biomedical Sciences Initiative (\$10B) designed to make the country the biomedical hub of Asia and attract both research and health sector manufacturing capabilities.
 - **But Singapore needed a school to train a new generation of physician-scientists.**
- **Vision for the GMS**
 - Duke-quality medical school in Asia, drawing students from the region and globally
 - Train physician scientists for Singapore; develop high quality faculty
 - Establish world-wide leadership in biomedical research and medical education

Duke Medicine Asia



- Singapore: Duke-NUS GMS, AMC, SCRI
- China: Peking University
- India
 - *Medical Education*
 - *Clinical & Translational Research*
 - *Health Sector Management*
 - *Disease Programs*
 - *Global Health*

Going Global: Risks and Early Lessons Learned



Develop Public-Private Partnerships

- Conduct a Gap Analysis on the “Innovation-Care Continuum”
 - Explore the needs of the partner communities
 - Determine whether those needs are your strengths
 - Leverage strengths of partners (government, university, hospital, industry) while filling gaps with your strengths.
 - Develop long term strategic partners

*Dzau VJ: “Innovation in Healthcare in Emerging Nations”
World Economic Forum, Davos, Switzerland; Jan 2008.*

New Models in Global Healthcare Delivery

Victor J Dzau

Healthcare Industry Meeting

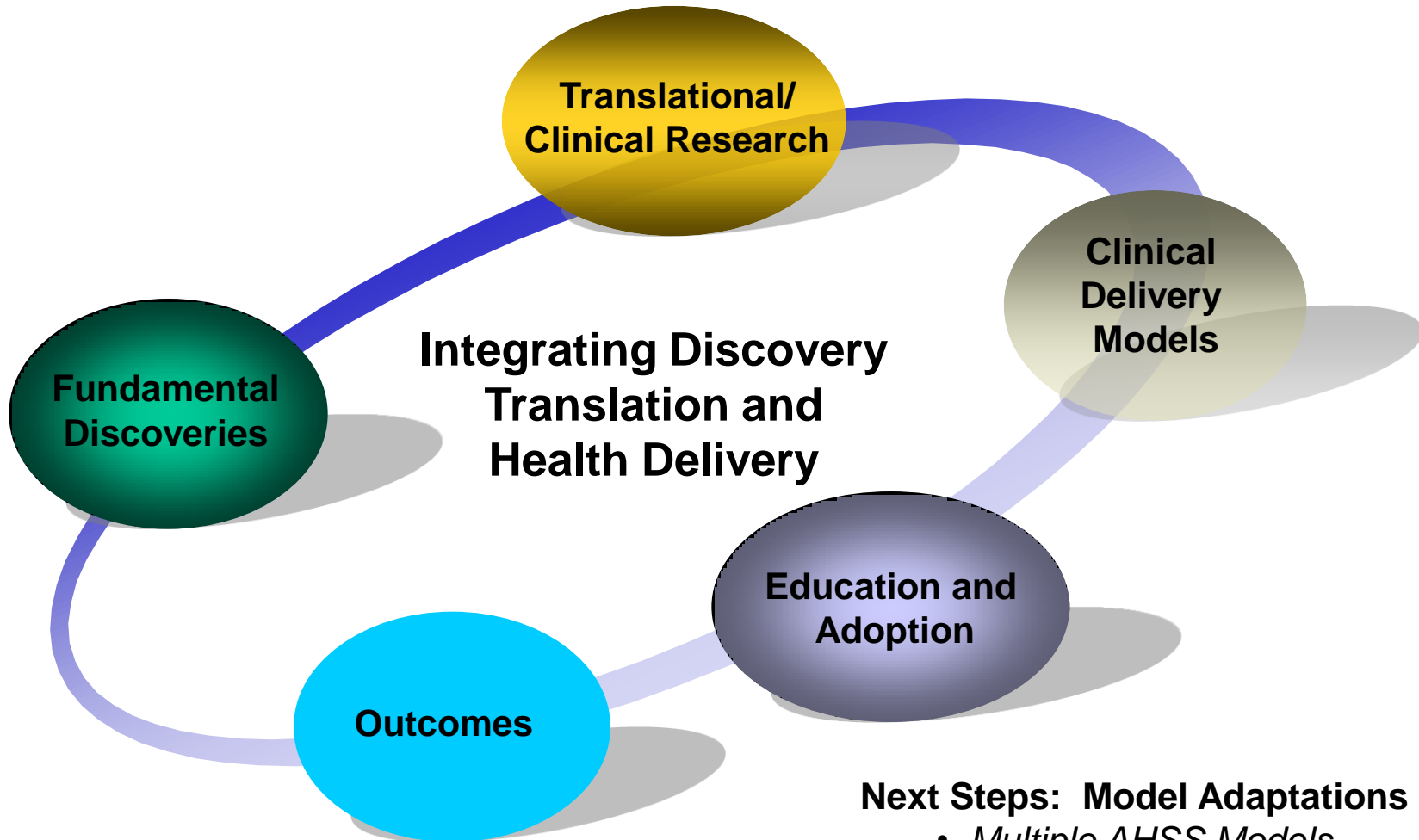
Thursday 29 January 2:15-3:30 PM

Centralsport Hotel

Davos, Switzerland

What will future “ideal” AHSS look like?

Bench to Bedside to Population Seamless Innovation-Care Continuum



Next Steps: Model Adaptations

- *Multiple AHSS Models*
- *National AHSS Collaboration*
- *Public-Private Partnerships*

