The Academic Health Center Concept

Association of Academic Health Centers International
Doha, Qatar
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Agenda

- What: Definition
- Why: Value proposition
- How: Organizational frameworks
- How: Critical success factors
- The Singapore experience
- Importance of Innovation

Definition of an Academic Health Center

"Consists of a degree-granting medical school, one or more other health professional schools or programs, and one or more owned or affiliated teaching hospitals, health systems, or other organized healthcare services."
Association of Academic Health Centers (AAHC)

Partnership/ integration of academic entity with clinical delivery system

Value Proposition of AHCs

- By bringing the academic and clinical missions together,

  we can have a greater impact in fostering population health initiatives and increasing the innovation pipeline, through:

  - **Translation**
    - Creating an environment for quicker translation of research to human health
  - **Education**
    - Training the workforce of the future
    - Teaching new competencies that impact population healthcare delivery
      - Driving greater transparency and accountability
  - **Care delivery coupled with Innovation**
    - Developing & assessing new models of care delivery
    - Determining the right interventions through Comparative Effectiveness Research
    - Use of large datasets and informatics to improve healthcare

AHCs can maximize population and community health

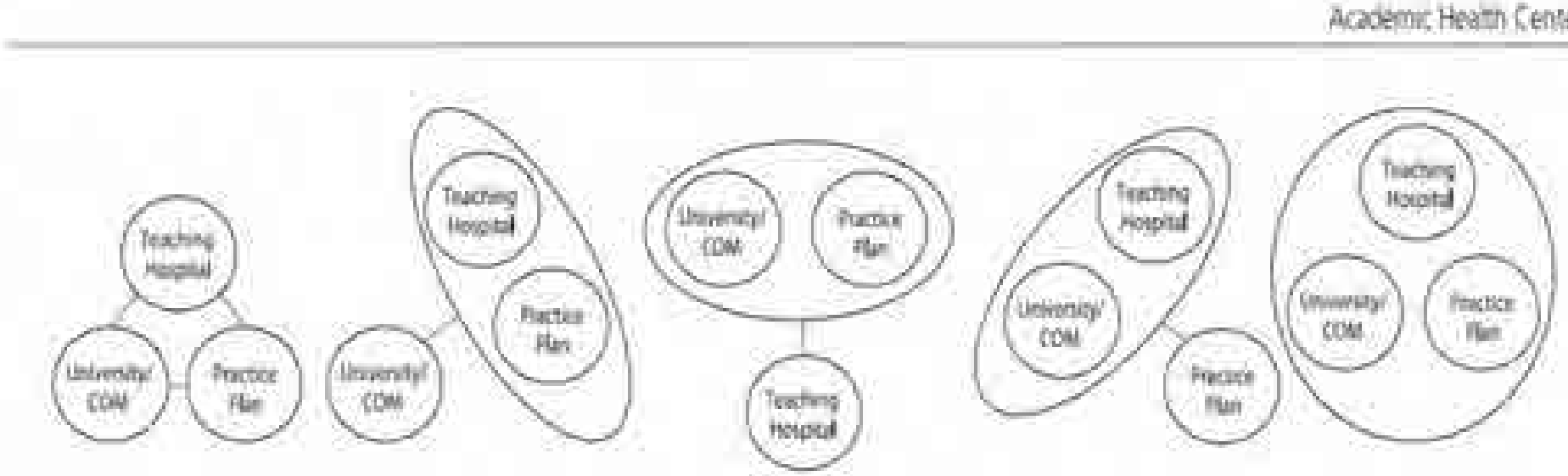
- Can bring specialized expertise in the university (epidemiology, informatics, GIS, biostatistics, social & behavioral sciences) to bear on population and community health issues.
- As healthcare provider to populations and communities, AHCs are in a position to improve service delivery to meet previously unmet needs.
- **AHCs can serve as integrators/convenor** across the discovery to care spectrum (academia, industry, public sector, regulatory agencies, NGOs) to address health

Partnership: Organizational Models of AHCs

- Fully Integrated Model
  - Academic, Clinical and Research missions are fully integrated
  - One governing board
- Split Model
  - Academic and Clinical/Health System operations are managed in a partnership
  - Entities/missions are aligned but not integrated
  - More than one governing board

Source: Wartman SA. The Academic Health Center: Evolving Organizational Models. Available at: (http://www.aahcdc.org/policy/reddot/AAHC_Evolving_Organizational_Models.pdf).

Different Models of Integration



George Washington University

Harvard University/ Massachusetts General Hospital

Stanford University

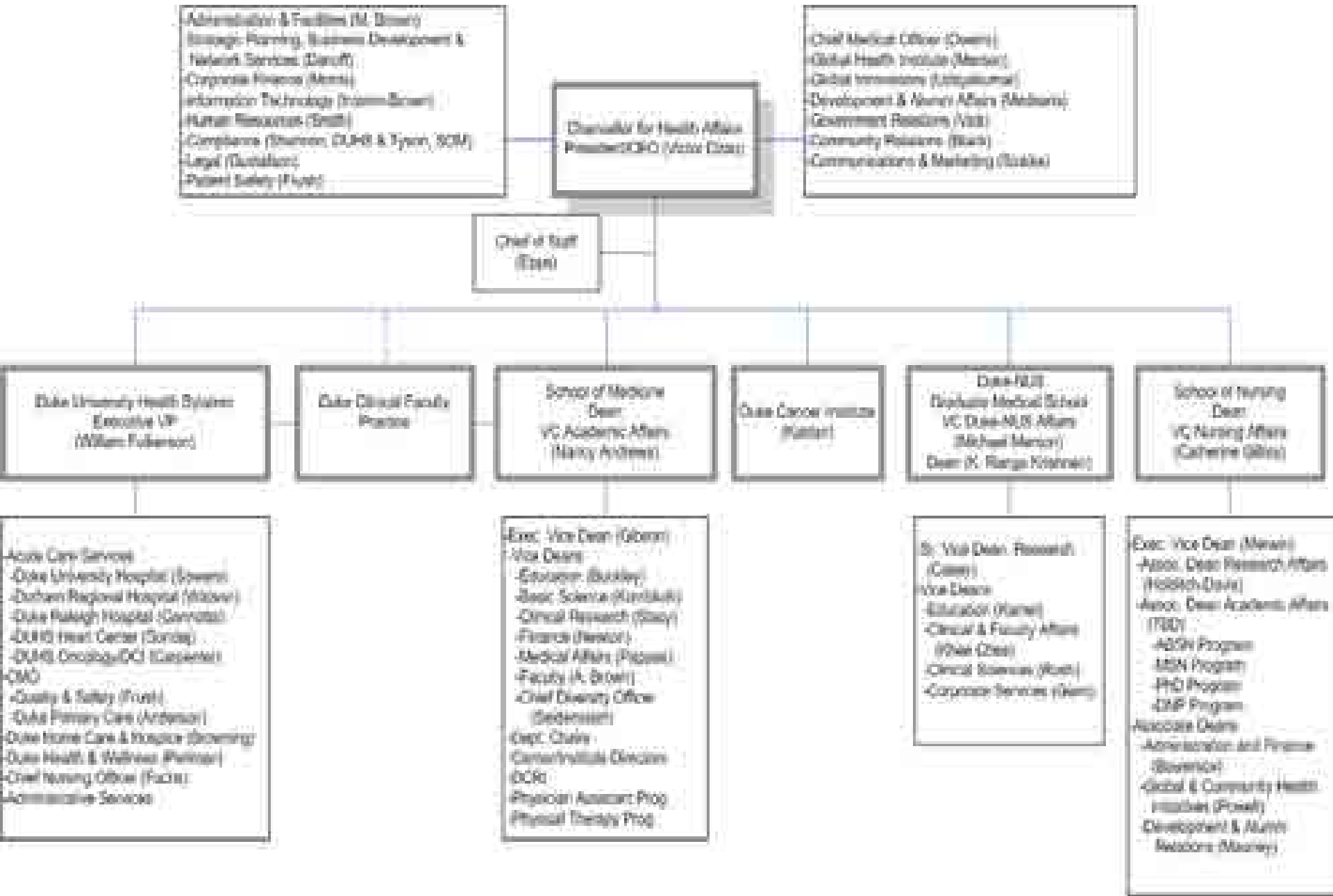
Duke University

University of Michigan

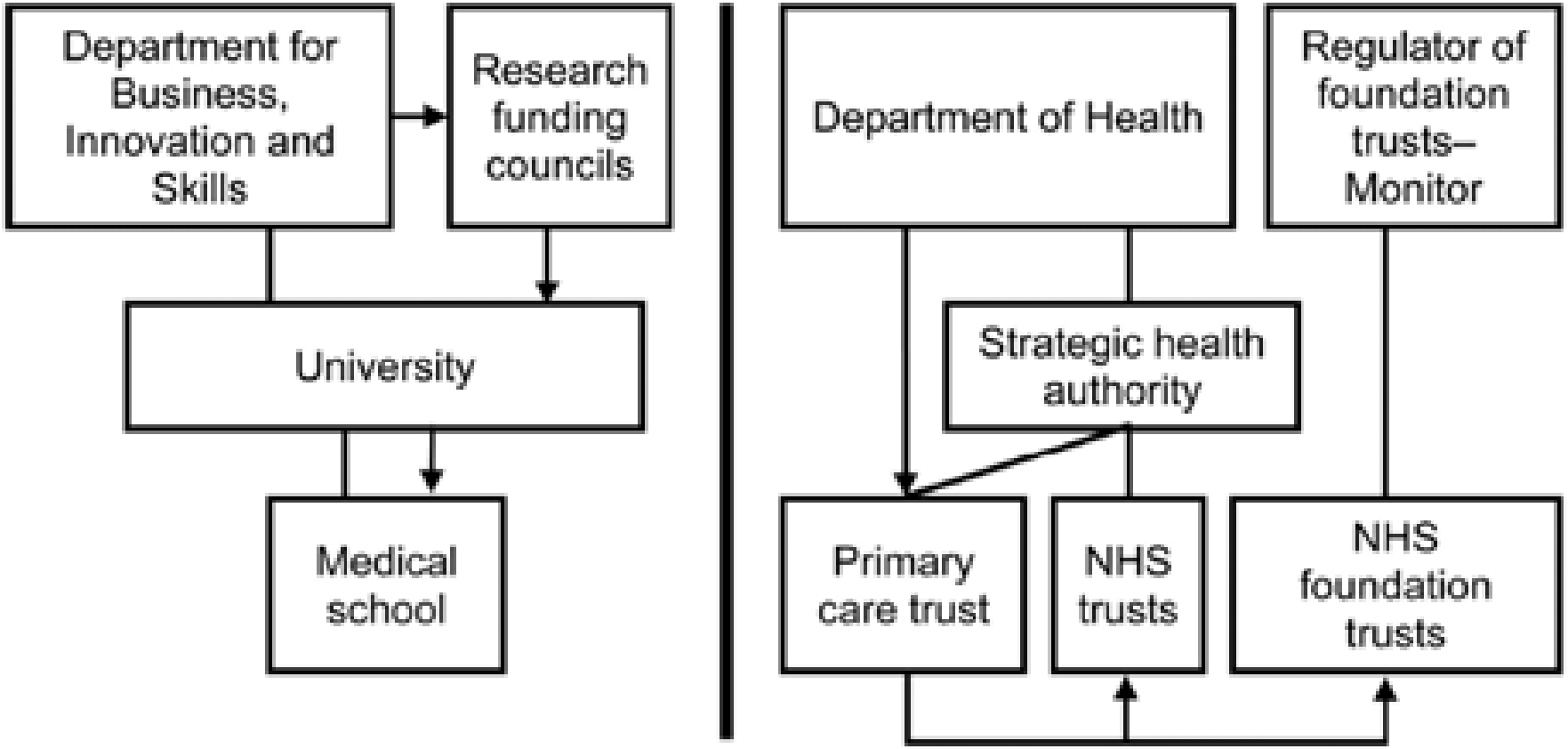
Integration

Source: Barrett DJ. The evolving organizational structure of academic health centers: the case of the University of Florida. *Academic medicine : journal of the Association of American Medical Colleges.* Sep 2008;83(9):804-808.

Duke Medicine

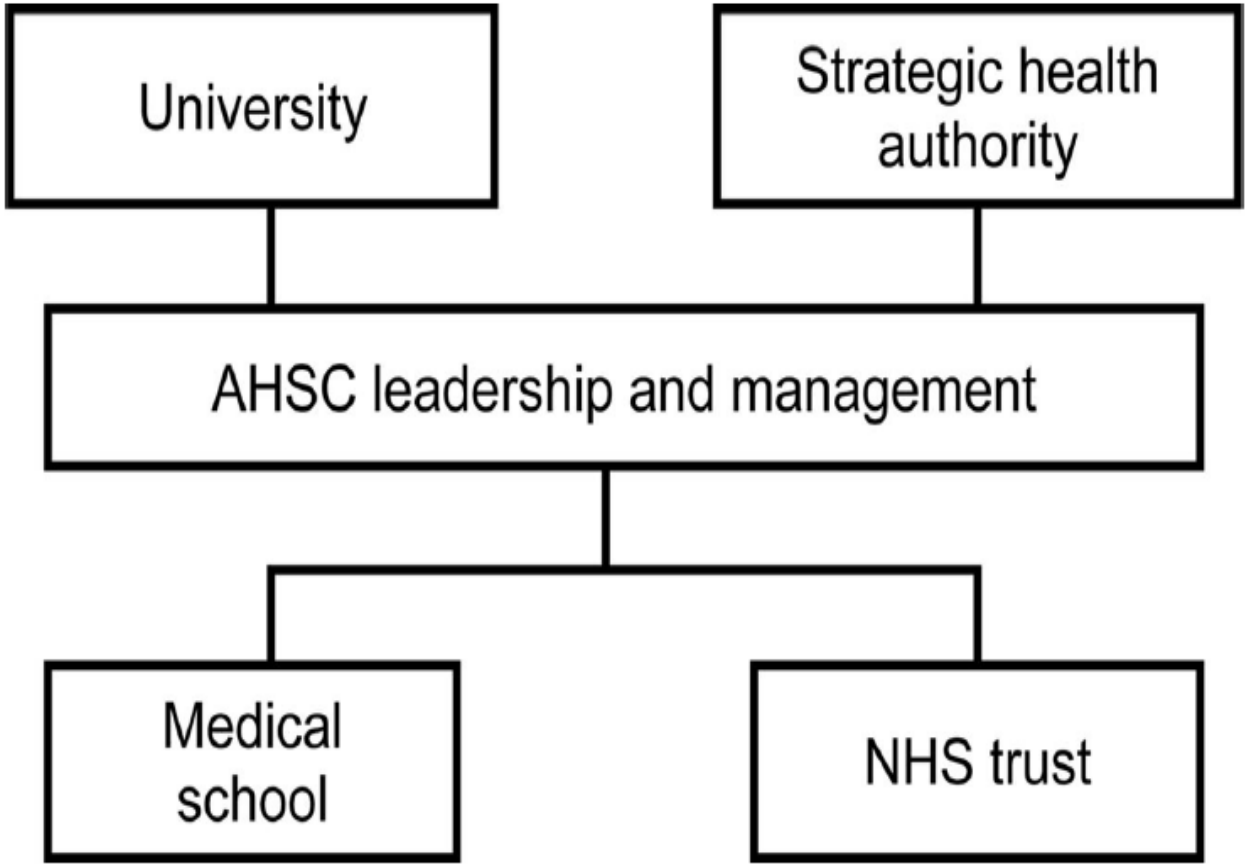


AHSC model in the UK (2009)



Ovseiko PV, Davies SM, Buchan AM. Organizational models of emerging academic health science centers in England. *Academic medicine : journal of the Association of American Medical Colleges.* Aug 2010;85(8):1282-1289.

The “Joint Leadership and Management” organizational model of Imperial College London Healthcare



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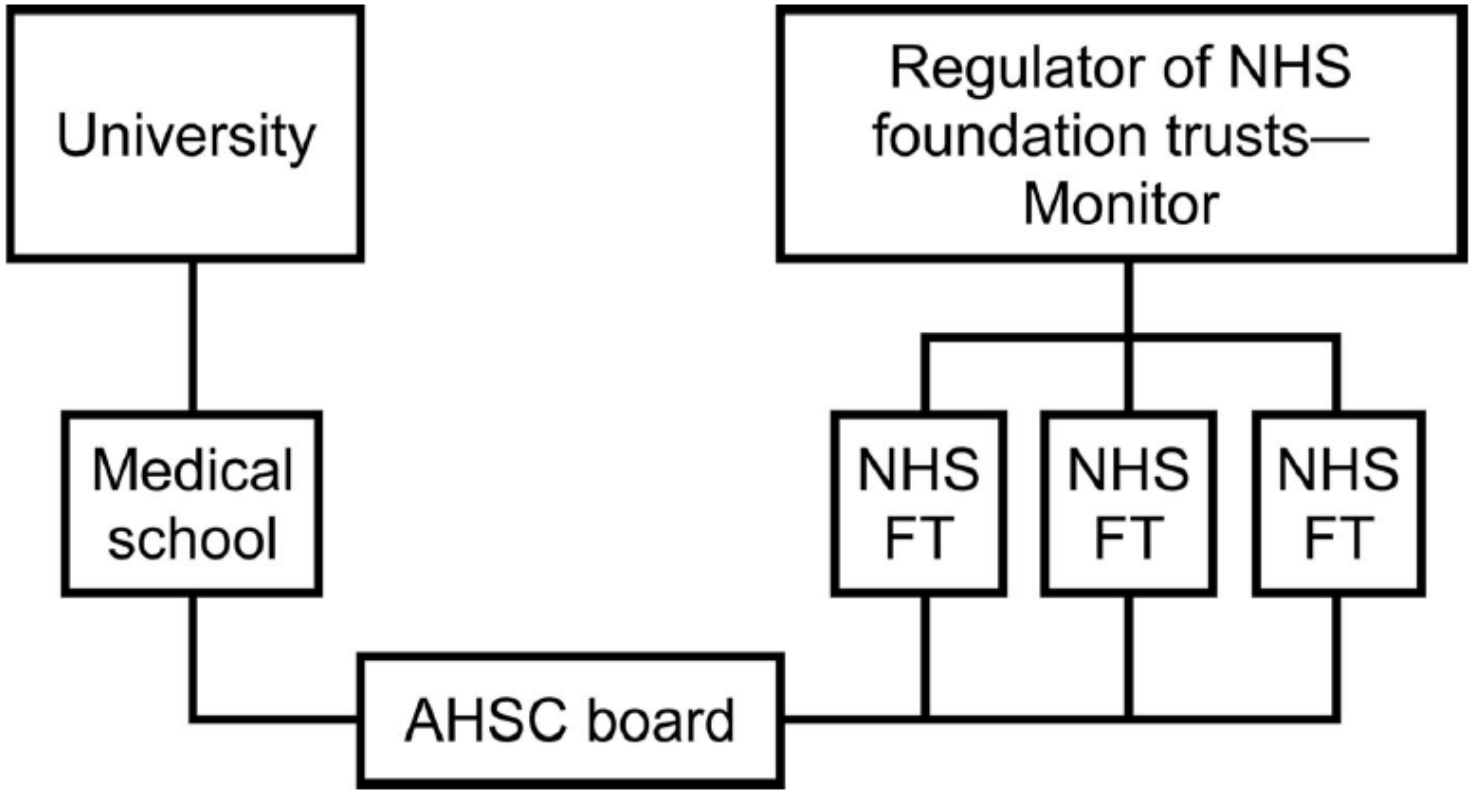
AHSC model in the UK:
The "Joint Partnership Board" organizational model of Cambridge University Health Partners



Ovseiko PV, Davies SM, Buchan AM. Organizational models of emerging academic health science centers in England. *Academic medicine : journal of the Association of American Medical Colleges.* Aug 2010;85(8):1282-1289.

Academic Health System in Qatar

Launched August, 2011

- Hamad Medical Corporation
- Weill Cornell Medical College in Qatar
- Sidra Medical& Research Center
- Primary Care Corporation
- University of Calgary- Qatar
- Qatar University
- College of North Atlantic- Qatar

AHC Governance: principles & best practices

- Partnership
- Commitment to alignment of missions
- Trust

- Decision rights & delegated authority
- Responsibilty & accountability
- Conflict resolution
- Gainsharing

- People and leadership

Source: Fisher et al. *Health Affairs* (2009)

Irrespective of which governance model or path to integration an AHC may choose, it is important to ensure functional alignment across the missions.

What's needed to be a successful AHC?

- Common culture, vision, and mission
- Leadership
- Strong role models
- Critical mass of physician scientists and researchers
- Pipeline: Best students and trainees
- Access to diverse clinical and non-clinical disciplines
- Right incentives and accountability
  - Clinical and academic
- Right organizational structures, "environment"
  - "Linkers" and "integrators," e.g., across depts, institutes and centers

The role of academic health science systems in the transformation of medicine

Victor J Dzau, D Clay Ackerly, Pamela Sutton-Wallace, Michael H Merson, R Sanders Williams, K Ranga Krishnan, Robert C Taber, Robert M Califf

The challenges facing the health of communities around the world are unprecedented, and the data are all too familiar. For 5 billion people living in developing countries, environmental factors and inadequacies in hygiene, economic development, and health-care access are the main causes of shortened life expectancies. Improvements in health status, including reductions in infant mortality and declining incidence of infectious diseases, are being met by the new epidemics of obesity, diabetes mellitus, and cardiovascular disease.[1]

Developed countries are beset by disparities in access

In order to achieve transformation, two distinct translational blocks or gaps in the discovery-care continuum must be overcome.[2,3] The first is the gap between a scientific discovery and its clinical translation (ie, from bench to bedside); the second is the gap between expert acceptance of the application and its broad adoption in practice by local and global communities (ie, from bedside to population). AHSCs traditionally give their discoveries to industry at the first gap and to practising physicians at the second gap, thereby creating barriers and inefficiencies. We believe that AHSCs are

Lancet 2010; 375: 949–53
Published Online October 1, 2009
DOI:10.1016/S0140-6736(09)61082-5
See Online/Comment DOI:10.1016/S0140-6736(09)61534-4

Duke Medicine, Durham, NC, USA (Prof V J Dzau MD, D C Ackerly MD, P Sutton-Wallace MPH,

AHCs should lead the transformation of healthcare

Reorganizing biomedical research and health delivery systems into a **seamless continuum** from **discovery to clinical delivery to community health.** **Moving from Academic Health Center (AHC) to Academic Health Sciences System (AHSS).**

"Bench to Bedside to Population"

- *Vertical integration of care delivery with population health*
- *Integrated translational model of Discovery-Care Continuum*
- *Effective use of information for care & research : Learning Health System*
- *Emphasis on Innovation*
- *Community & Global Health*
- *Globalization of missions*

Duke Medicine: Vertical Integration of Care Delivery

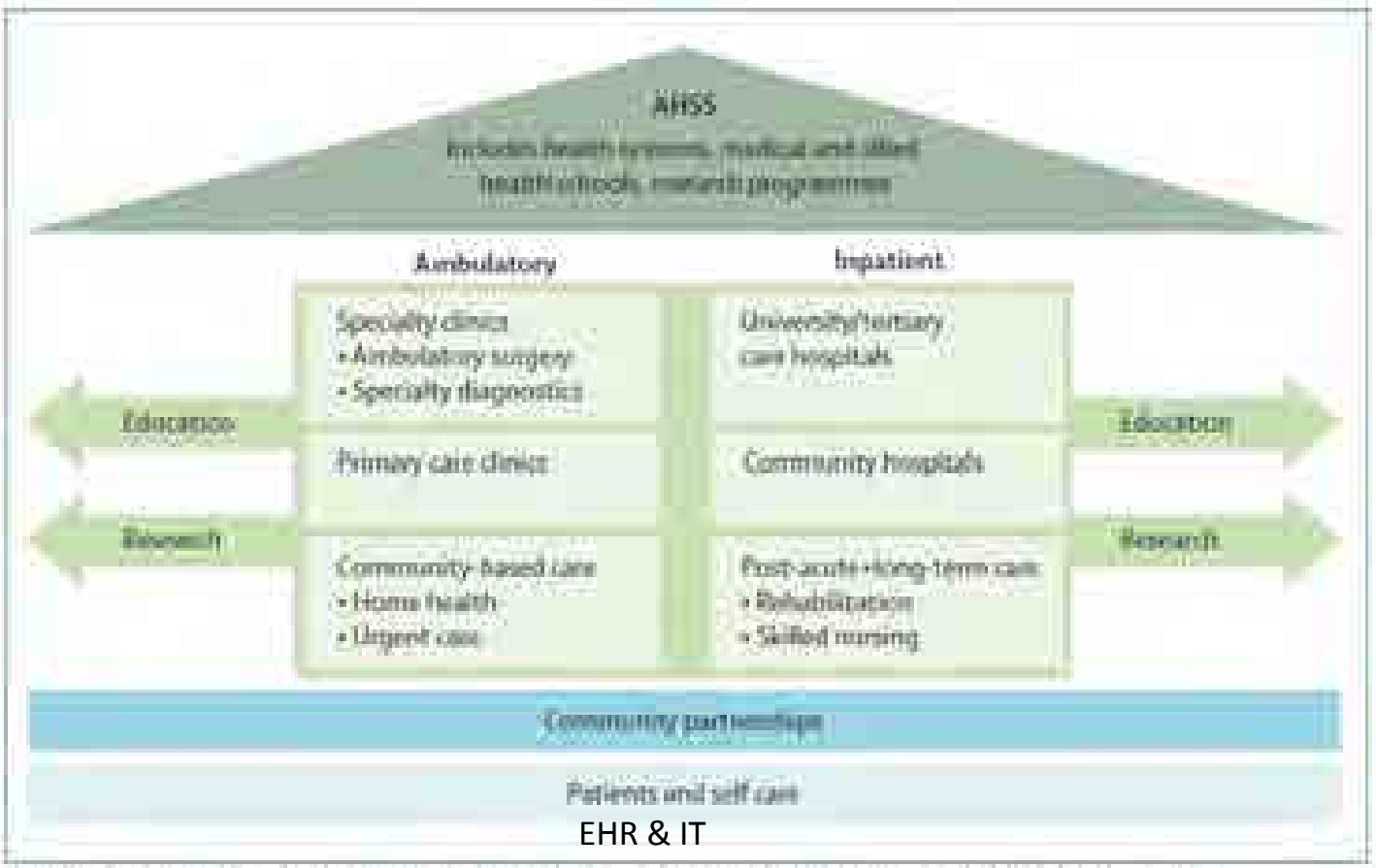


Figure 2: Academic health sciences system (AHSS) as a vertically integrated care-delivery system

Dzau et al, Lancet 2009.

Value of AHSS to Translation

- Bring together academic & health partners
- Scientific and clinical expertise
  - Discovery scientists
  - Clinical scientists
  - Translational scientists
  - Clinicians
- Can identify unmet medical needs
- Have patient population, biological materials, and database capabilities
- Access to cutting-edge technologies, informatics and statistics
- Ability to conduct sophisticated human studies

Duke Medicine : Horizontal Integration Across Discovery to Care Continuum

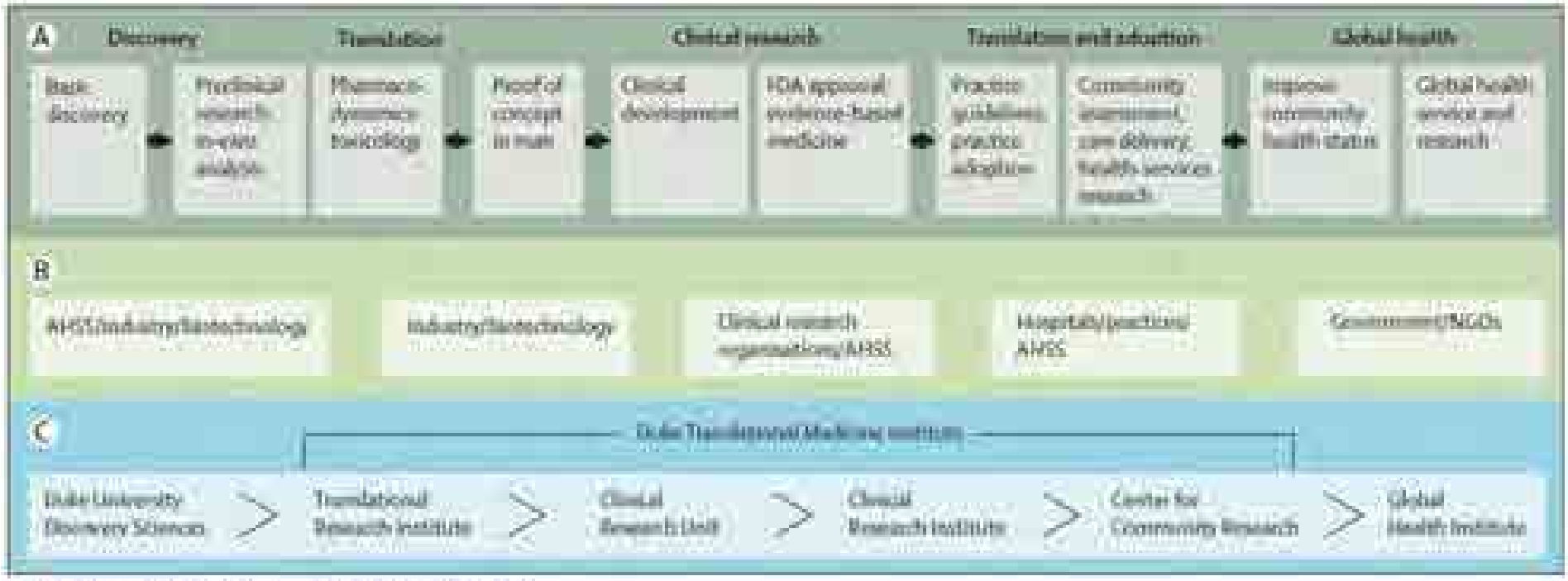
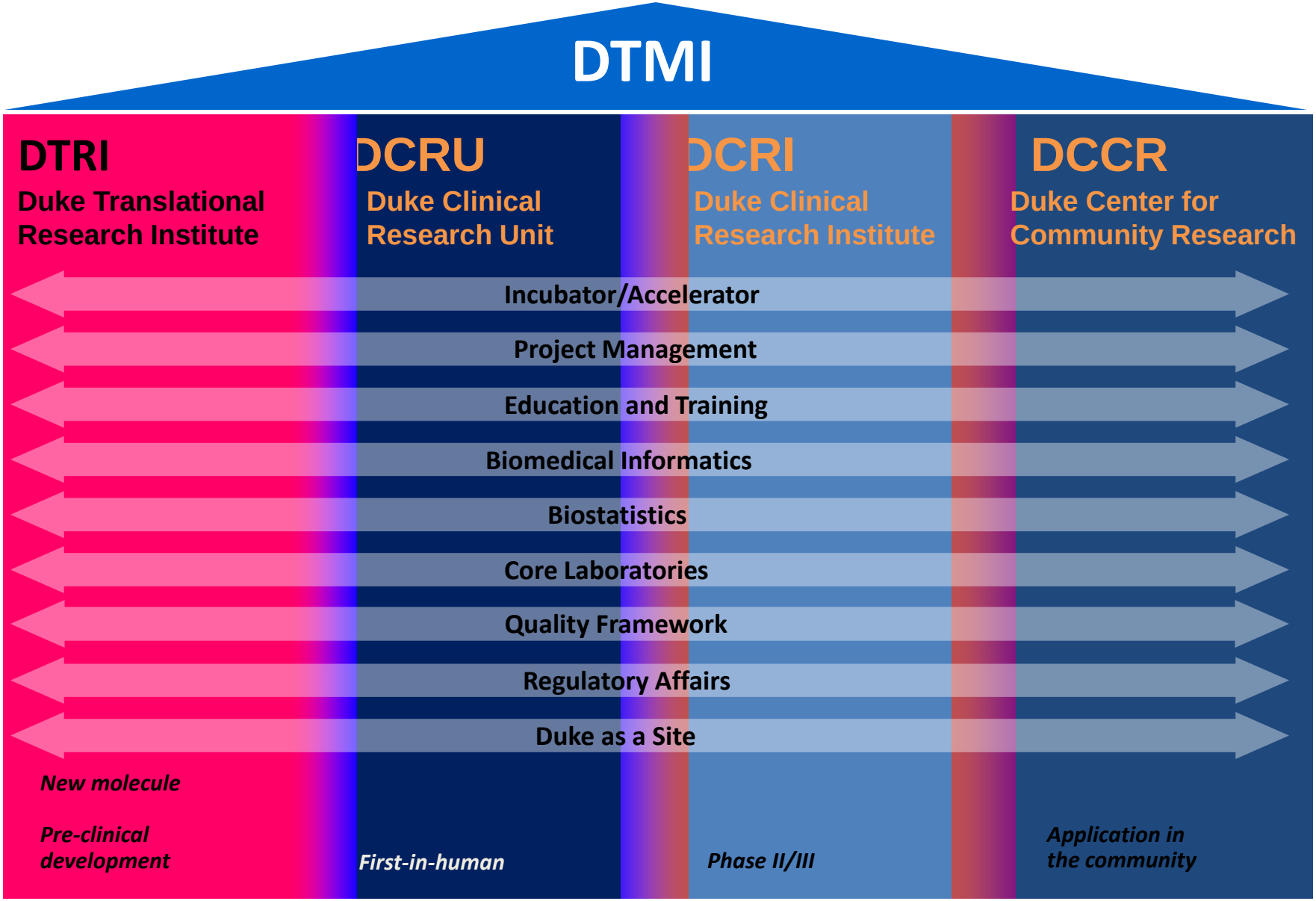


Figure 1: Academic health science systems as integrators

(A) The discovery–care continuum, including discovery science, preclinical and clinical research, adoption in practice, and global uptake. (B) current fragmented organisational structure of the clinical research enterprise. (C) Duke Medicine model: a continuous, intercommunicated discovery–care model. FDA=US Food and Drug Administration. AHSS=Academic health science systems. NGOs=non-governmental organisations.

Dzau et al, Lancet 2009.


DTMI
DTRI
Duke Translational Research Institute
DCRU
Duke Clinical Research Unit
DCRI
Duke Clinical Research Institute
DCCR
Duke Center for Community Research
Incubator/Accelerator
Project Management
Education and Training
Biomedical Informatics
Biostatistics
Core Laboratories
Quality Framework
Regulatory Affairs
Duke as a Site
New molecule
Pre-clinical development
First-in-human
Phase II/III
Application in the community

Translational “Accelerator”

– Academic & Commercial Components

– “Internal Research & Development Machine”
  - One stop shop
  - Access to infrastructure & academic resources
  - Proactive project management
  - Comprehensive toolbox (model systems, genomics, chemistry, molecular imaging etc)
  - Outsource & Partnership

– Maximize value of discovery/technology- Investment Fund

– T1-T4: molecular discovery to digital technology

AHSS: 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 Medicine: Matrix Organization

- Duke Translational Medicine Institute
- IGSP - Genomic Personalized Medicine
- Human Vaccine Institute
- Duke Cancer Institute
- Duke Institute of Brain Sciences
- Duke Global Health Institute
- Duke Institute of Health Innovations
- Centers of Excellence (Heart, Cancer, Musculoskeletal, Neuroscience & Children's)

AHSS & Globalization

- Addressing global needs
  - Health Inequalities, Emerging Infections, Global Burden of Chronic Diseases
  - Service with Learning & Research, Healthcare Management
- Globalization of missions
  - *Clinical care*
    - Global franchising of clinical services
  - *Research*
    - CRO work
    - First-in-human POC
    - Overseas translational partners
  - *Education*
  - Consulting

Global Collaborations Across the Discovery to Care Spectrum

Duke-NUS Graduate Medical School (Singapore)

DGHI initiatives; IPIHD (Worldwide)

Medanta Duke Research Institute (India), SingHealth IMU (Singapore)

Tata Medical Center (India)

SCRI (Singapore), BCRI (Brazil)

National Medical Holding, Nazarbayev University (Kazakhstan)

Clinical Research Education and Training (CREATe)

China International COE for Chronic Disease Prevention(China)

PUHSC-Duke Cardiology Training Center (China-US)

Dzau et al, *Lancet* 2010

The steps to building an Academic Health Center: Lessons from Singapore

Duke-NUS Graduate Medical school (2005-11)

2000

Singapore launches Biomedical Science Initiative

2005

Partnership agreement signed between Duke University and NUS

2007

Pioneer class of Duke-NUS M.D. students start school

2008

3 Duke-NUS researchers garnered nation's highest research awards

2009

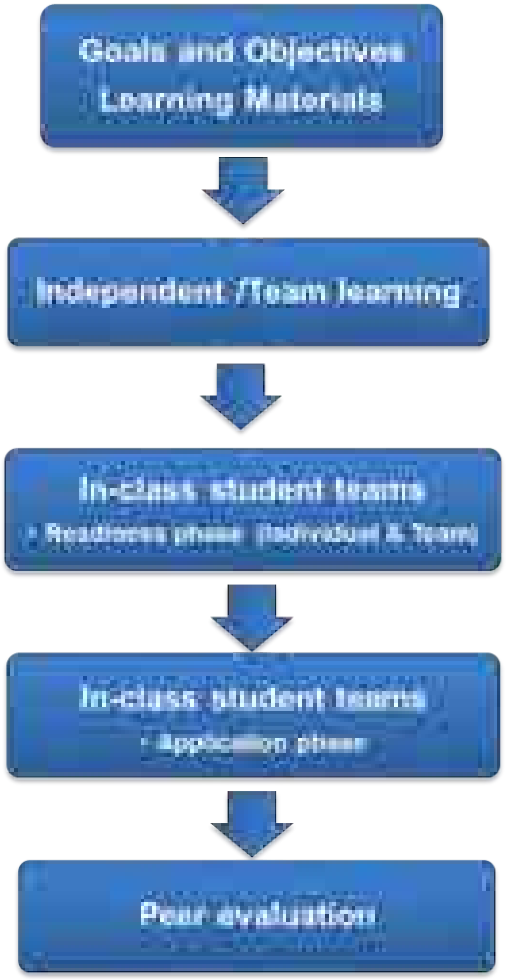
Official Opening of Duke-NUS building

2011

Pioneer class of Duke-NUS students graduate

Transforming Medicine, Improving Lives

Developing Innovative Learning
Team LEAD (Learn, Engage, Apply, Develop)

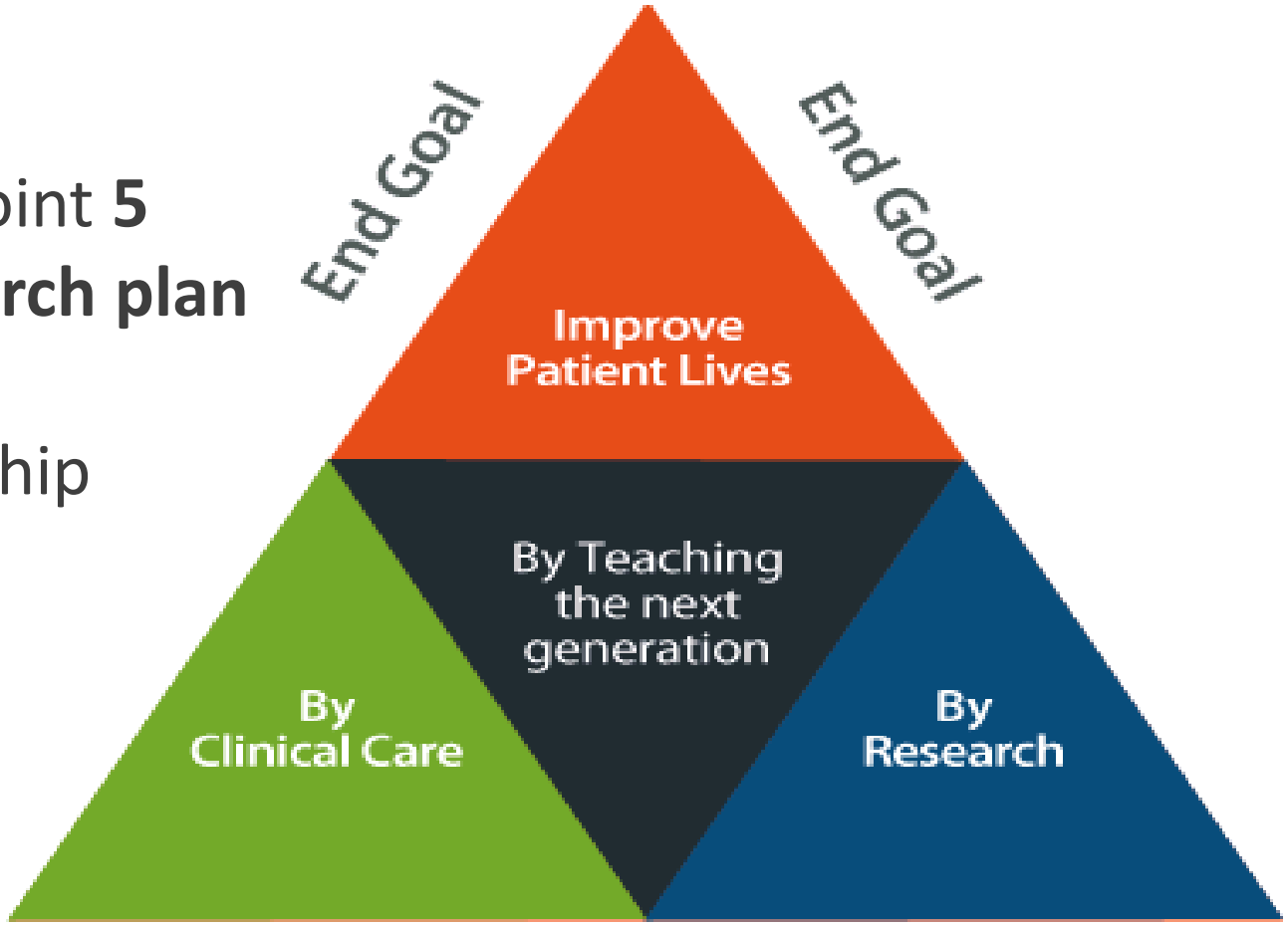


Partners in Academic Medicine

SingHealth

DUKE NUS GRADUATE MEDICAL SCHOOL SINGAPORE

Development of a joint **5 year strategic research plan** for Duke-NUS and SingHealth Partnership



Planting The Seeds - The Academic Healthcare Cluster

DUKE NUS GRADUATE MEDICAL SCHOOL

Affiliate medical school in SGH Campus

SGH Campus

Largest concentration of tertiary care expertise: SGH & National Specialty Centres

KKH Campus

Leader in Women's and Children's Healthcare

42 specialties

across the SingHealth Group

SingHealth Polyclinics

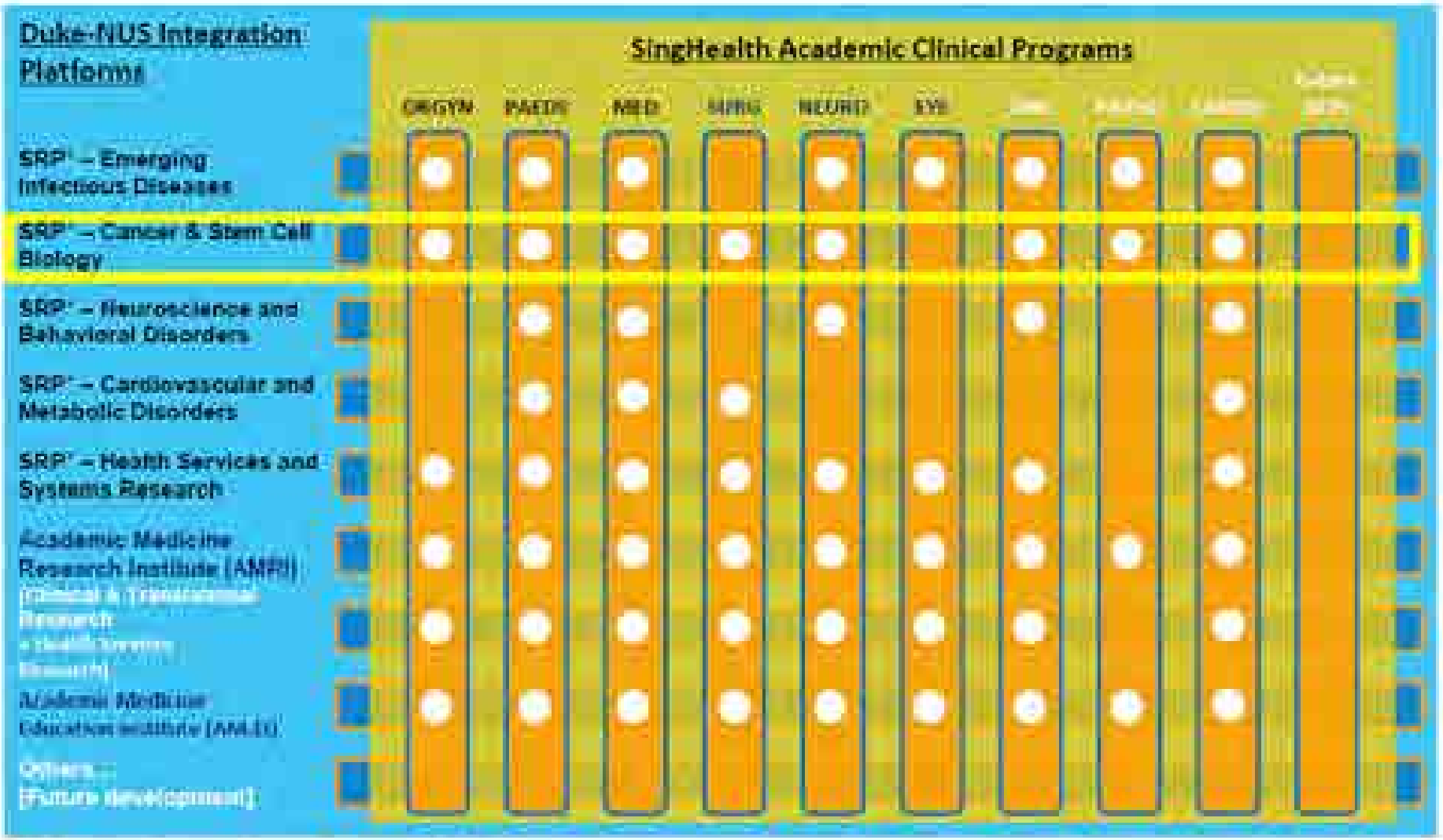
Primary Care

New

Bright Vision Hospital

Sengkang Hospital

AM Matrix: Achieving More Together



*'SRP' stands for Signature Research Programs at Duke-NUS

Academic Clinical Programs (ACPs)

1st wave ACPs (August 2011)
2nd wave ACPs (March 2012)
ACPs targeted for implementation

Academic Medicine Research Institute

Duke-NUS SingHealth

Target
80 clinician scientists by 2015

Residency Training: ACGME

Phase One Programs

1. Emergency Medicine
2. General Surgery
3. Internal Medicine
4. Pediatrics
5. Pathology
6. Transitional Year

Phase Two Programs

1. Anaesthesiology
2. Diagnostic Radiology
3. Family Medicine
4. Obstetrics & Gynecology
5. Ophthalmology
6. Orthopaedics
7. Otorhinolaryngology
8. Surgery-in-General (Surgical Specialties)
   - Cardiothoracic
   - Hand Surgery
   - Neurosurgery
   - Plastic, Reconstructive & Aesthetic Surgery
   - Urology

Residents

63 + 195 + 212 (470)

Faculty

374 + 423 (797)

Phase 3

+ 14 Programs *

1. Cardiology
2. Gastroenterology
3. Renal Medicine
4. Respiratory Medicine
5. Endocrinology
6. Geriatric Medicine
7. Infectious Diseases
8. Medical Oncology
9. Haematology
10. Rheumatology
11. Neurology
12. Advance Internal Medicine
13. Nuclear Medicine
14. Rehabilitative Medicine

** 10 progs to undergo ACGME-I Accreditation*

AHSS must lead through Innovation

Innovation presents a promising avenue to meet collective health challenges

- Status quo or incremental changes will not be adequate to meet growing health challenges, locally or globally
- Transformative innovation is needed to drive fundamental changes
  - New models of care
  - Novel training and workforce development programs
  - Disruptive technologies
- Organizations that embrace and support innovation will be best positioned to lead

AHSS Must Foster Innovation

- Innovation must be actively cultivated by focusing on three steps:
  - Step 1: Teach it
  - Step 2: Support it
  - Step 3: Implement it
- Innovation needs to be elevated to a committed endeavor and become part of an organization's culture; especially in AHSS

Duke Institute for Health Innovation • DIHI

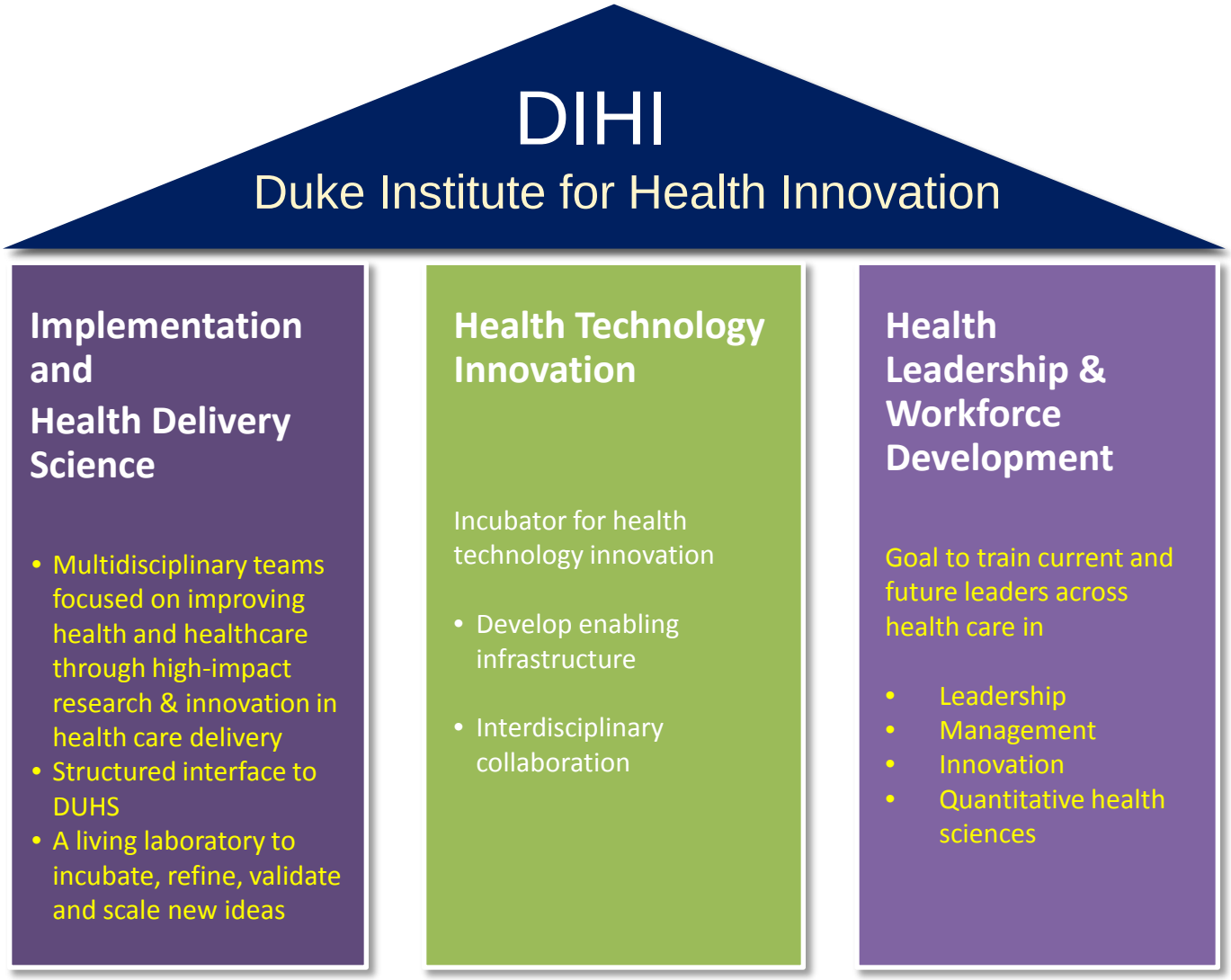
Promoting transformative innovation in health

Duke Institute for Health Innovation

Mission:

To promote transformative innovation in health and healthcare through high-impact research, leadership development and workforce training and cultivation of a community of entrepreneurship

DIHI : 3 pillars of innovation



Implementation & Health Delivery Science: Vision

- Bring together multidisciplinary faculty and staff across Duke University and Duke Medicine focused on improving health and healthcare through high impact research and Innovation in healthcare delivery

- Provide a structured and coordinated platform to interface with DUHS and enable a living laboratory to incubate, refine, validate and scale new ideas and concepts

Health Technology Innovation: Vision

- Incubator for health technology innovation within Duke University.
  - The center will develop enabling infrastructure and interdisciplinary collaboration to promote more rapid impact of the world class research being performed across Duke.

- Catalyst for technology innovation
  - By mapping out barriers and gaps to innovation, identifying content expertise in intellectual property and provide seed funding for development of ideas and concepts.

- BIO-I initiative

Patient Engagement Technologies Growing Focus of Medical Research

Health Gaming and Virtual Reality

Individual and team-based interactions offer radical approaches for education, behavior modification and engagement.

Mobile Heath

Apps, sensors and distributed access offer new opportunities to reconfigure care, create efficiencies and intervene earlier in the disease process.

Big Data and Predictive Analytical Tools

Variety, velocity and volume of data (along with the right tools to extract meaningful insights) focus and personalize services.

Health Leadership Development: Vision

- There is a growing demand for trained leaders with real-world experience and innovative approaches to healthcare leadership

- Goal to train current and future leaders across health care in four themes
  - Leadership
  - Management
  - Innovation
  - Quantitative health sciences

Conclusion

- AHCs integrate care delivery, research, and education: Discovery to Care Continuum
- Regardless of governance model, partnership & trust are key to success
- From the example in Singapore, it takes time and commitment from multiple partners to be successful in forming and running an AHC
- AHCs must lead through innovation
- To transform the health of the population, you need a comprehensive network and an effective system.
- AHC should become AHSS

Thank you.