



# Academic Medicine on Outram Campus Who, What, Why and How

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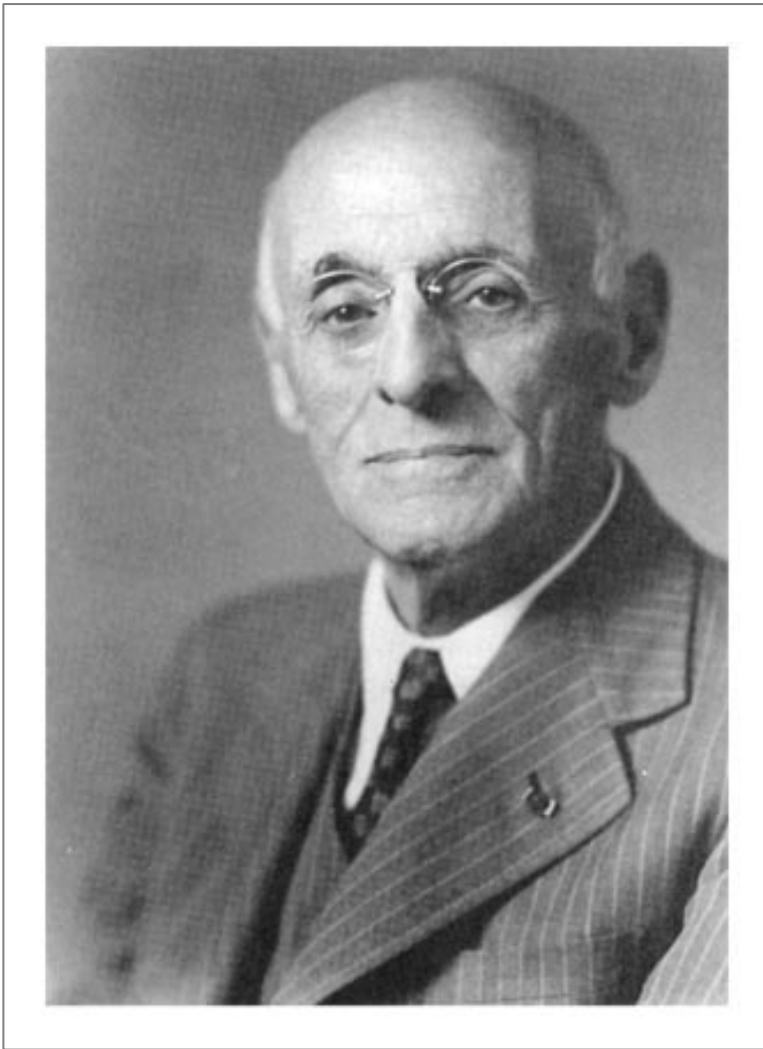
# Academic Medicine as the defining model for SingHealth



- What is Academic Medicine?
- Why is SingHealth embracing academic medicine?
- Going beyond rhetoric- who and how
- Collaboration with other stakeholders
- Conclusion

# What is Academic Medicine?

Abraham Flexner



“

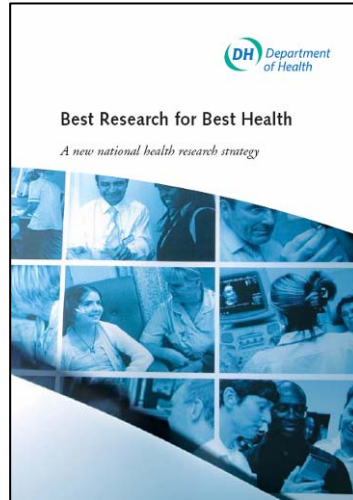
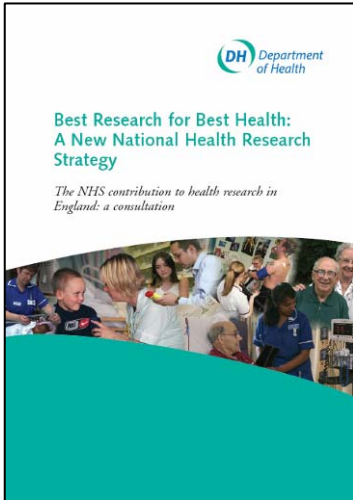
*...in addition to a scientific foundation for medical education,... thoughtful clinicians would pursue research stimulated by the questions that arose in the course of patient care and teach their students to do the same.*

*To Flexner, research was not an end in its own right; it was important because it led to better patient care and teaching.*

”

Source: Molly Cooke, M.D., David M. Irby, Ph.D., William Sullivan, Ph.D., and Kenneth M. Ludmerer, M.D., “American Medical Education 100 Years after the Flexner Report”, *New England Journal of Medicine*, Volume 355:1339-1344, Sep 28, 2006

# The UK Best Research for Best Health strategy papers (2005-2006) defined 5 attributes of AMCs



Source: Dept of Health, UK, "Best Research for Best Health: A New National Health Research Strategy: The NHS Contribution to Health Research in England: A Consultation", pp 30-31, July 2005

Dept of Health, UK, "Best Research for Best Health: A New National Health Research Strategy: The NHS Contribution to Health Research in England: A Consultation", p 26, January 2006

## Attributes of AMCs

- World class strengths across a broad range of clinical specialties or specific clinical specialty
- Leaders of scientific translation
- Early adopters of new insights in technologies and techniques for improving health and social care
- Environments where scientific endeavour can thrive
- Talent magnets, producing world-class outputs

**AMC are clinically excellent; environment self-reinforcing and perpetuating**

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# The current emphasis is on developing 2 academic centres: Outram Campus and Kent Ridge Campus



- MOH sees AMC's as receptacles to translate inventions from basic BMS research into clinical applications that advance care as well as a means to position and move up the value chain for SingaporeMedicine

CONFIDENTIAL

Turbocharging Singapore Medicine:  
Building top-tier AMC's



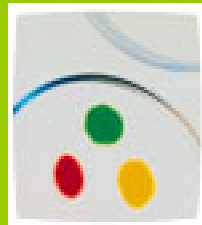
MINISTRY OF HEALTH  
SINGAPORE

5<sup>th</sup> December 2006



## SingHealth's Definition of AMC

“A vibrant **Eco-System of excellent Healthcare Services**,  
that keeps improving by reinventing itself with  
**new knowledge generated by Research**,  
led by succeeding generations of Healthcare Professionals  
who are **committed to learning, innovating** and  
pushing the frontiers of Medicine.”



# Academic practice is SingHealth's value proposition to staff



- Public sector salaries do not, can not and should not match private sector salaries
- Value proposition to staff must instead focus on
  - Remuneration as a high hygiene factor
  - Opportunities to do world-class, cutting edge research
  - Ability to shape and influence practices and values of the next generation of healthcare professionals
  - Deep sense of mission and job satisfaction
  - Minimal push factors such as poor leadership, bureaucracy

What Managers are Looking For (McKinsey & Company War for Talent Survey 2000)	
Interesting, Challenging Work	59%
Company is well-managed	48%
Work I feel passionate about	45%
Good relations with my boss	43%
I like the culture and values	39%
Recognised, rewarded for my individual contribution	39%



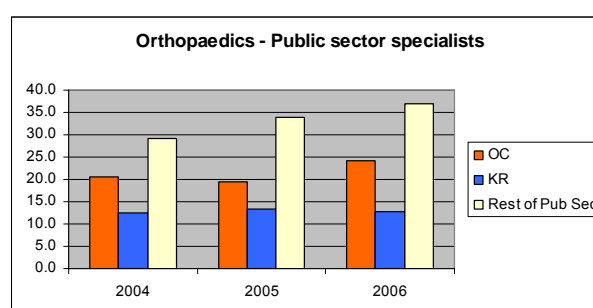
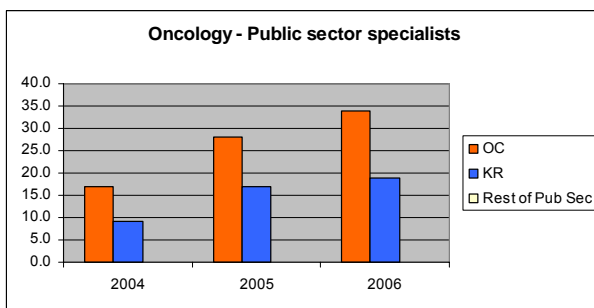
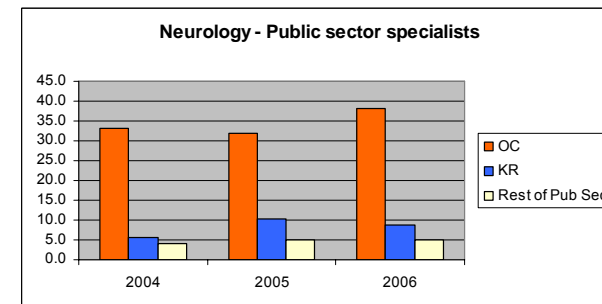
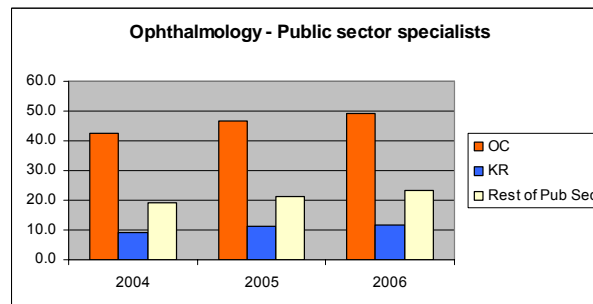
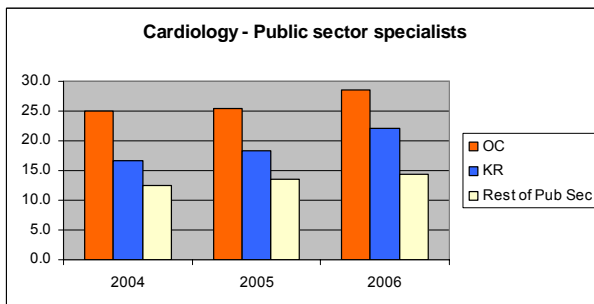
# Academic medicine to retain public sector specialists



**ILLUSTRATIVE**

% of registered specialist in the public sector

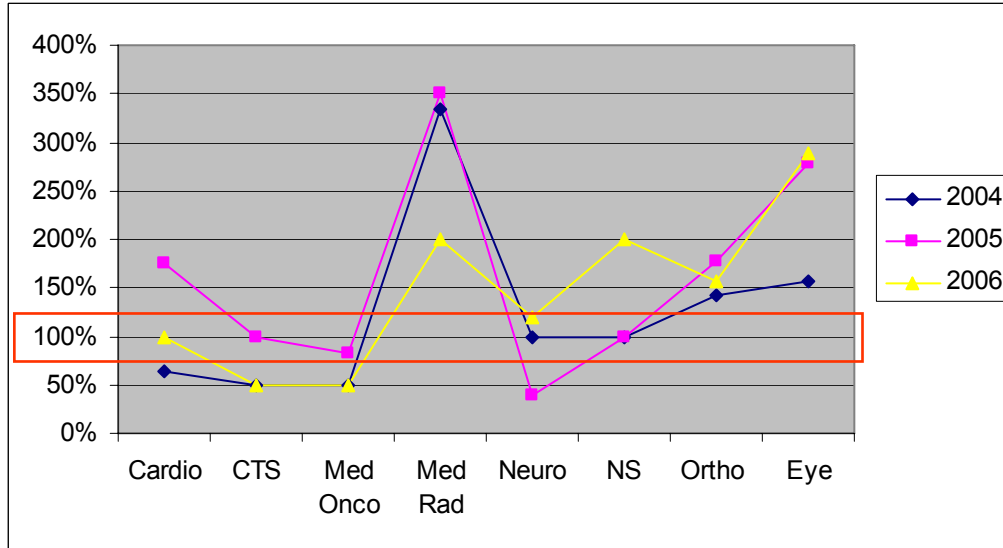
	Ophthalmology	Orthopaedics	Neurology	Cardiology	Oncology
2003	60.2%	64.1%	70.0%	56.9%	76.4%
2004	62.4%	64.0%	69.4%	53.9%	74.6%
2005	64.8%	63.9%	68.4%	53.6%	72.1%
<b>Growth rate</b>	<b>4.6%</b>	-0.2%	-1.6%	-3.3%	-4.3%



•Oncology includes medical oncologists and radiation oncologists

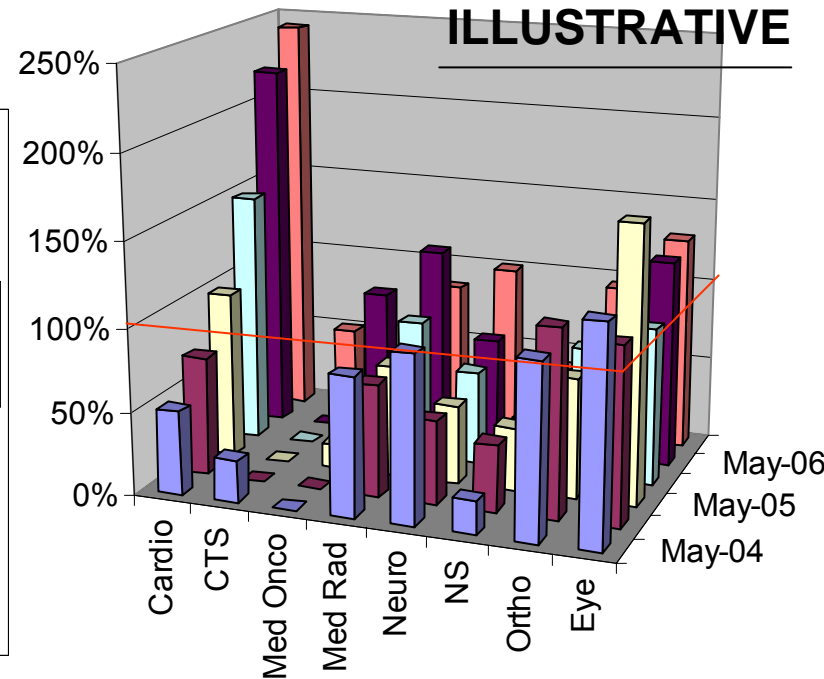
•Neurology includes neurosurgeons and assumes movement of neurology to Outram Campus following completion of neuro-navigation suite

# Academic medicine to strengthen the appeal and value proposition of certain specialties.



## Specialty Training Applications from 2004 to 2006 (No. of applicants over no. of positions expressed as percentage)

\*Med Onco and Eye refer to BST; the others AST



## MOPEX Applications (2004-6) (No. of applicants over no. of positions expressed as percentage)

MOPEX- Med Onco, Cardiothoracic surgery and Neurosurgery fewer applicants than positions

AST- Applications generally healthy except for Med Onco and Cardiothoracic Surgery.

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  - Engaging Clinicians
  - Prioritization
  - Road Map Moving Forward
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# Small group discussions garnered much useful opinions and ideas

## BUILDING ACADEMIC MEDICINE

“Voices from the Trenches”

SingHealth Centre for Health Services Research

6 April 2007

As part of the efforts towards developing a world-class academic medical centre on Outram Campus, the SingHealth Centre for Health Services Research and SingHealth Planning and Performance Office conducted a series of small group discussions to solicit feedback from clinicians and administrators on the challenges we face in realizing the aspiration of an academic medical centre on Outram Campus.

Participants were specifically asked to reflect and dialogue on 3 themes:

- The changes to the delivery of care model on Outram Campus that an academic medicine context would bring about and the knock-on effects on other institutions within SingHealth, i.e. KKH, CGH and SingHealth Polyclinics
- The roles individuals can and should play in developing academic practice
- What SingHealth leadership can do to facilitate efforts to realize the academic medical centre

### MATERIALS AND METHODS

Institution Medical Board Chairs (Division Chairs in the case of SGH) were asked to nominate staff to attend the small group discussions. Those nominated were in turn encouraged to invite their peers to attend the discussion sessions. SingHealth Health Services Research and Quality Management dept staff were also asked to nominate SingHealth staff they had prior professional contact with.

Participants were provided with background materials comprising analysis by consulting groups McKinsey and 9g<sup>2</sup> prior to the sessions

and all sessions were conducted under Chatham House rules<sup>1</sup>.

Nominated participants who were unable to attend were invited to provide comments and feedback via one-to-one interviews or email.

### RESULTS

The views of a total of 59 participants representing a wide spectrum of SingHealth employees including clinicians (doctors, nurse, allied health professionals) and administrators from all SingHealth institutions (except SNEC) were included in this report.

The full report is available elsewhere and this brief serves to distil the key take-home messages from the small group discussions.

### General Comment:

**Clinical Excellence-** Many participants defined academic medicine as first and foremost the pursuit of clinical excellence. Some felt that research and education while important were really a means to achieve and perpetuate clinical excellence. They spoke passionately of the need to inculcate the mindset of improvement and putting the patient at the centre of research and inquiry.

**Clarity of Vision-** There was some confusion as to whether academic medicine was focused mainly on basic science research and that staff had to choose between academic medicine and ‘regular’ medicines. Some participants felt that the messaging was that academic medicine was for a select few who had decided on research as a career and the rest had no substantial role in the academic medical centre aspiration. Concern was also raised that the starting premise for academic medicine as an economic driver rather than as a

<sup>1</sup> Two documents were circulated to all participants prior to the small group discussion: McKinsey and Company, “Turbocharging Singaporean Medicine: Building Top-Tier A&E” and 9g<sup>2</sup> “Planning Tomorrow’s Academic Medical Centre: Hospital of the Future” (Presentation by Dr Michael Sachs dated 13 Feb 2007)

<sup>2</sup> Chatham House, “The Chatham House Rule” “When a meeting, or part thereof, is held under the Chatham House Rule, participants are free to use the information received, but neither the identity nor the affiliation of the speaker(s), nor that of any other participant, may be revealed.” <http://www.chathamhouse.org/uk/en/2011/03/20-march-2007>

- **Clinical Excellence-** “academic medicine as first and foremost the pursuit of clinical excellence”
- **Prospective Data Collection-** “every patient is a dot on someone’s graph”
- **Access to ‘Standard’ Treatments regardless of Ability to Pay**
- **Importance of Scientific Curiosity-** “the best clinicians are also the best researchers”
- **Manpower Shortage and Need for Freed Up Protected Time**
- **Emphasize academic practice at department and not individual level**
- **Incentivizing Research and Education**

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# Funding is limited and MOH has asked for prioritization of initial focus areas



## RECOMMENDATIONS FROM...

### BSRC

- Cardiology
- Oncology
- Ophthalmology
- Neurosciences
- Infectious diseases

### SingMed

- Cardiology
- Oncology
- Ophthalmology
- Neurosciences
- Orthopaedics

## FEW SPECIALTIES TO FOCUS FOR A START...

- **Cardiology**
- **Oncology**
- **Ophthalmology**
- **Neurosciences**
- **Musculo-skeletal**  
(Includes orthopaedics, plastics, rheumatology)



**The intent is to build common core infrastructure that supports academic medicine for all specialties and grow the other specialties organically**

Sources: "Biomedical Sciences Initiative Phase 2 (Year 2006 - 2010) – Strengthening Translational and Clinical Research in Singapore", *NRF Board Paper*, Oct 2007

"Turbocharging SingaporeMedicine", McKinsey SingMed Strategy, Feb 2007



# Who should lead the charge?

- Prioritization necessary in view of limited resources (finances, space, management band width)
- Need for common metrics to objectively appraise each potential AMC focused specialty for further development

## FORGING AHEAD- PRIORITIZING THE OUTRAM CAMPUS 'VERTICAL SLIVERS'

Prepared by SingHealth Centre for Health Services Research on behalf of the Outram Campus academic medicine study group

The role of Outram Campus, the largest concentration of medical expertise in Singapore, has grown beyond a straightforward public healthcare mission of providing good and affordable healthcare, and the mission today includes also developing academic medical practice with its emphasis on clinical excellence, cutting edge research and world-class education as well as supporting the national goal for Singapore to be a regional medical hub, drawing 1 million foreign patients by the year 2012. Despite the trinity of mandates, the public healthcare duty remains paramount, SingaporeMedicine and academic medicine ambitions must be subservient to the social compact of providing for our less financially privileged Singaporean brethren.

### What is an Academic Medical Centre?

*"A vibrant eco-system of excellent healthcare services, that keeps improving by reinventing itself with new knowledge generated by research, led by succeeding generations of healthcare professionals who are committed to learning, innovating and pushing the frontiers of Medicine"*

— Prof Tan Ser Kiatt, CEO SingHealth & CEO, SGH

With this preamble, it thus becomes necessary for the leadership of Outram Campus to adroitly maintain the current high standards of healthcare across the 35 medical specialties existing today to fulfil our social compact and prioritize what McKinsey and Company term 'vertical slivers' of excellence that will fuel the charge for SingaporeMedicine and academic practice.

We set out to critically evaluate the five specialty recommendations of McKinsey and Company (ophthalmology, oncology, neurosciences, cardiology and orthopaedics) and our position is that we concur broadly with the McKinsey analysis. However, we also hold the view that academic medicine should flourish as an enabling ethos throughout the entire campus. We believe that our recommendations for these 'vertical slivers' and for the campus as a whole will yield rich returns for Singapore and Singaporeans in terms of better healthcare and economic value creation.

### Beacons in the Darkness: Guiding Prioritization of 'Vertical Slivers'

The selection of the 'vertical slivers' should be grounded in sound principles applied consistently. This section describes these principles and our analysis vis a vis the McKinsey recommendations.

**Meeting Current and Future Domestic Needs-** Singaporeans must benefit from the investment into these 'vertical slivers' and selection must first and foremost therefore cater to domestic needs. We analyzed burden of disease projections based on Singapore's demography and epidemiology and concluded that cardiovascular disease, cancer and neurological disease already the three leading causes of death in Singapore today, will continue to blight the health of Singaporeans. Musculo-skeletal disorders and ophthalmic maladies, while not usually life-threatening, impact profoundly on quality of life and we envisage that growing affluence and rising expectations of Singaporeans will result in continued demand for these two disciplines.

7 Based on the above considerations, we agree with McKinsey that **oncology, cardiology, ophthalmology, neurology and orthopaedics** could be our Tier 1 clinical areas of focus. In particular, oncology and cardiology align strongly with all the above criteria and could be two clinical areas that we can focus on initially.

Memo from Perm Sec MOH to SingHealth Board of Directors dated 13 Feb 2007

# We critically appraised the McKinsey recommendations using the following dimensions for analysis

## 1. Clinical Volume

Market share analyzed by

- a) Inpatient discharges/ Inpatient surgeries/ SOC attendances/ Day surgeries
- b) Volume of procedures/ specific DRG

## 2. Research

Analyzed by

- a) Publications
- b) Journal Impact Factor
- c) Clinical Trials

## 3. Domestic and International Demand

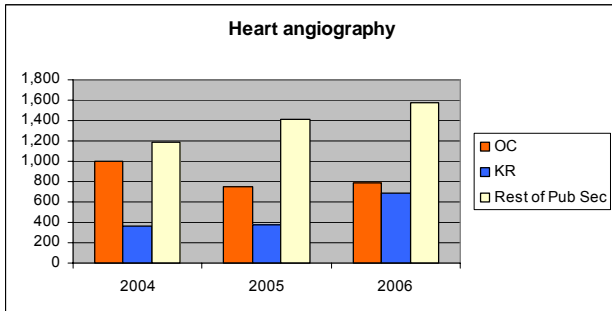
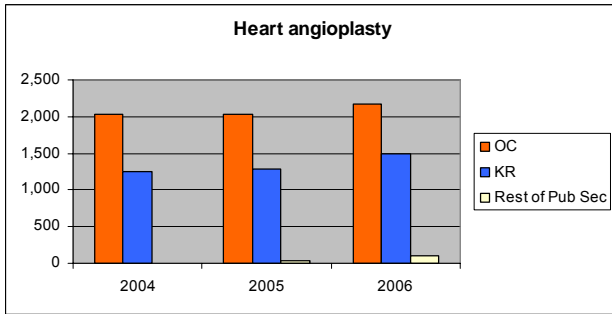
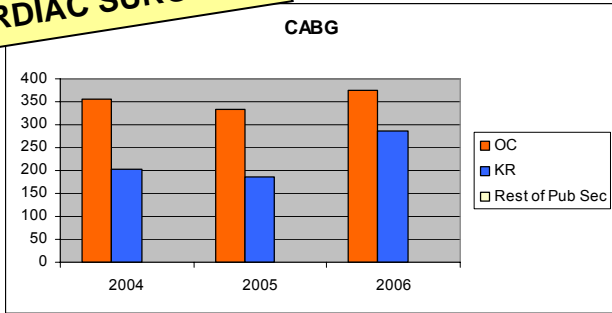
## 4. Manpower

## 5. Education

## 6. Technology

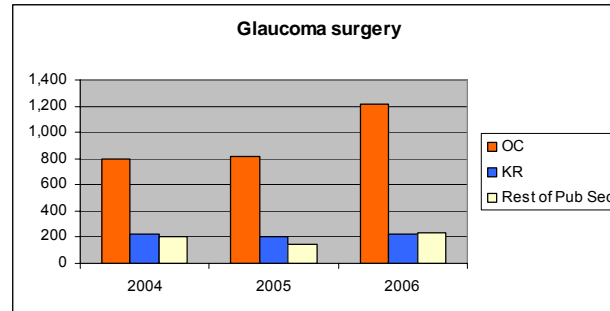
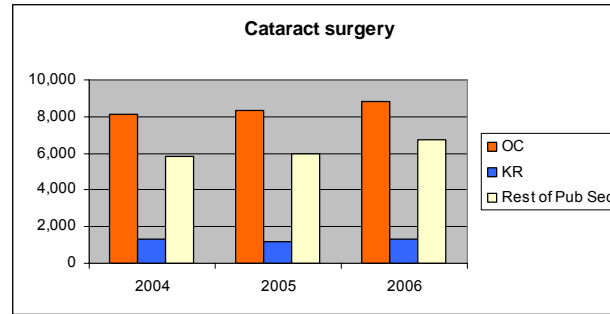
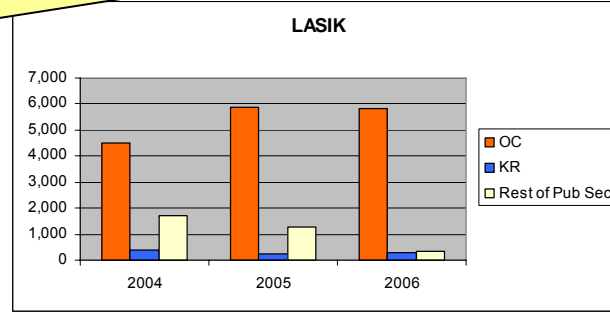
# CLINICAL VOLUME

## CARDIOLOGY AND CARDIAC SURGERY



NHC sees 80,000 outpatients yearly, performs 2,000 angioplasties annually. It carried out its 15,000 cardiac surgery in 2002. – From NHC website\*

## OPHTHALMOLOGY



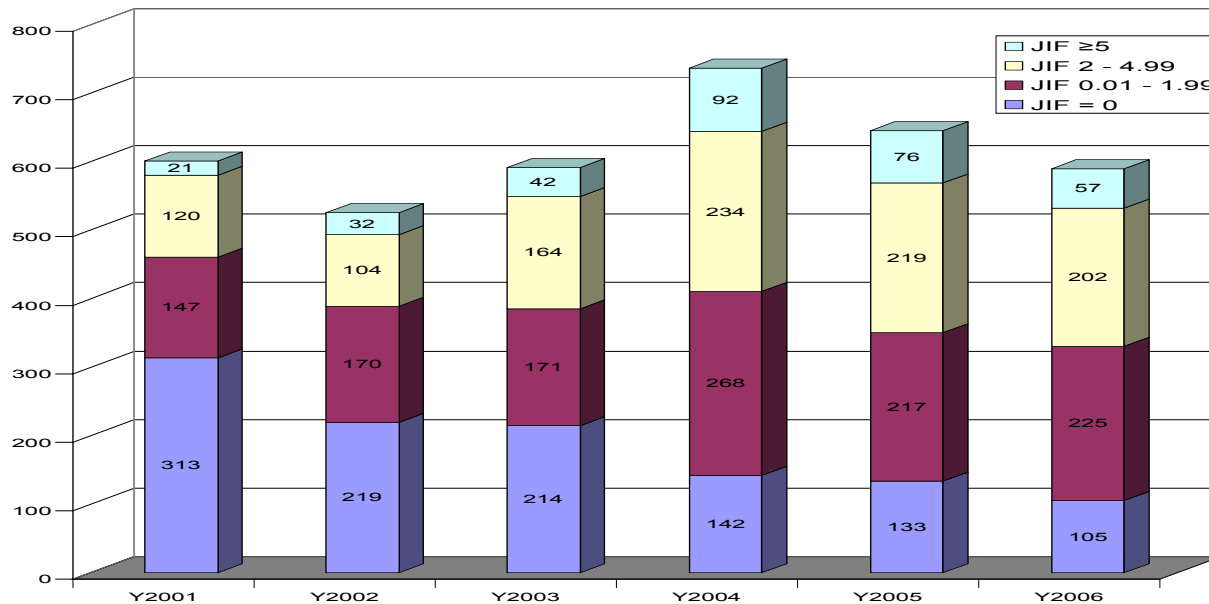
“...annual workload of 14,000 major eye surgeries and 13,000 laser procedures” - SNEC website

\*CGH and TTSH carry out a substantial number of coronary angiographies also

## ILLUSTRATIVE

- Number of research publications rose from 2001 to 2004 and then fell
  - SARS-related publications hardly affected volume (17 out of 736 in 2004)
  - SARS-related publications slightly boosted JIF (average JIF of 5.07, cumulative JIF of 86.3 compared to average 2004 JIF of 2.41)

Average JIF in 2004 without SARs: 2.35



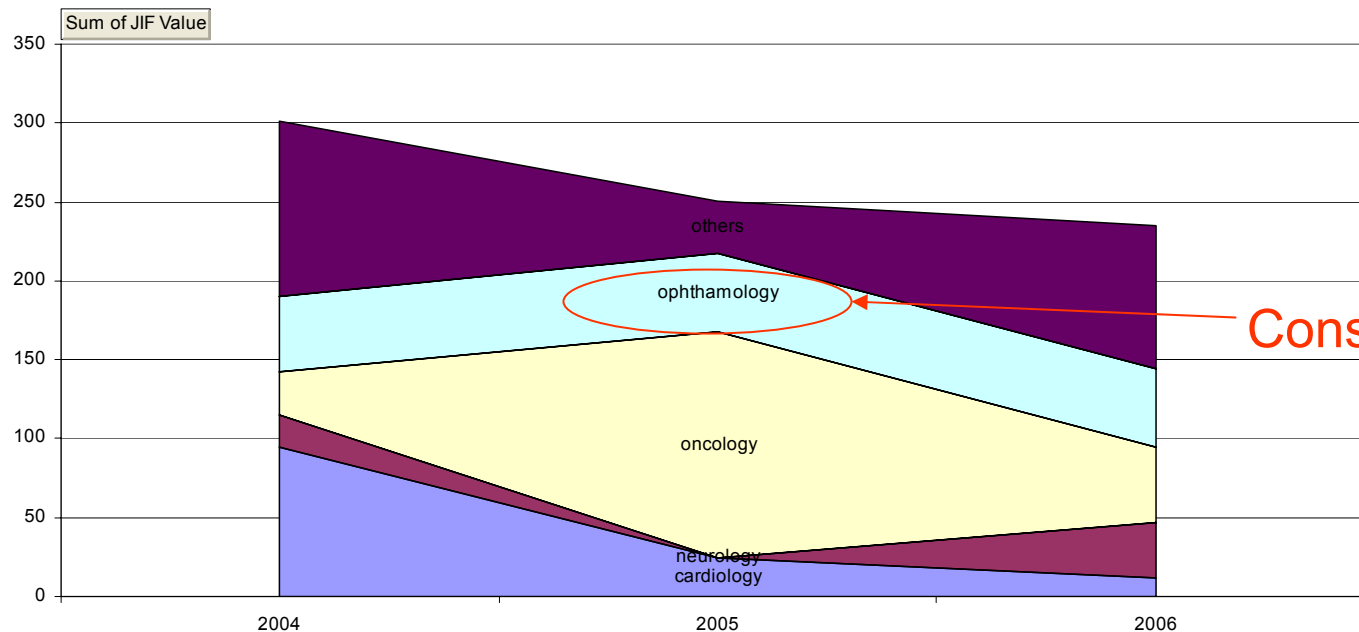
- Average JIF rose from 2001 to 2006 levelling off at ~2.4

	Y2001	Y2002	Y2003	Y2004	Y2005	Y2006
Grand total no. of publications	601	525	591	736	645	589
Cumulative JIF value	701	763	1053	1777	1591	1428
Average JIF value	1.17	1.45	1.78	2.41	2.47	2.42

# Specialties contributing to high impact journals (JIF>10)

**ILLUSTRATIVE**

- Cumulative JIF in ophthalmology held steady from 2004 to 2006
- Cumulative JIF in cardiology dropped
- Cumulative JIF in oncology peaked in 2005 and then returned to 2004 levels in 2006
- Reverse seen for neurology: dip in 2005 and then returned to 2004 levels in 2006



Consistent performer

- Of the 50 Singapore-led clinical trials registered with [www.clinicaltrials.gov](http://www.clinicaltrials.gov), almost half were in ophthalmology, 1/3 in oncology

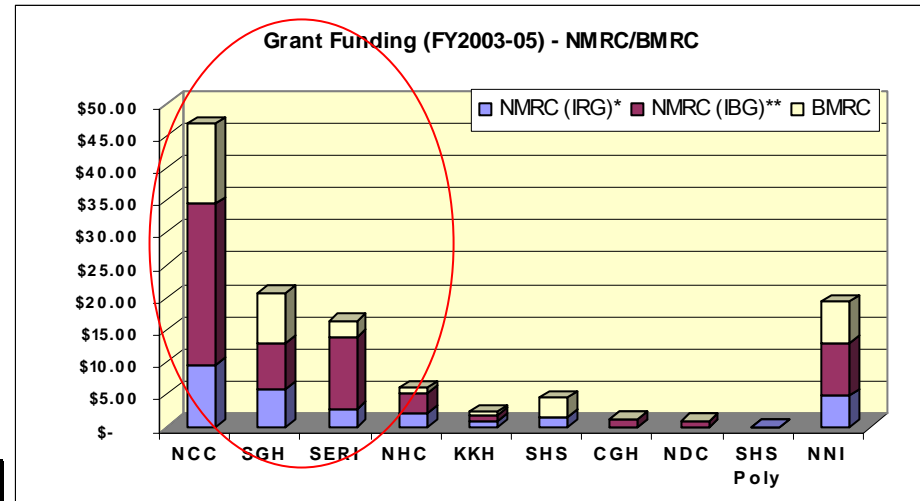
# SingHealth Research Resources

ILLUSTRATIVE



- Among SingHealth institutions, Outram campus (SGH, NCC, SERI, NHC) leads in lab floor area, research manpower and funding
  - Year by year data not available for analysis

II. Research Lab - Total Floor Area Sqm (2006)		
Instn	No. of Research Labs	Total Floor area sqm
SGH	36	3,286.53
NCC	19	1,476.16
SERI	11	2,308.00
NHC	5	280.00
KKH	3	70.00
CGH	2	219.85
NDC	0	0.00
SHS	4	605.01
NNI	12	2,100.00
SHPOLY	0	0.00
<b>TOTAL</b>	<b>92</b>	<b>10,345.55</b>



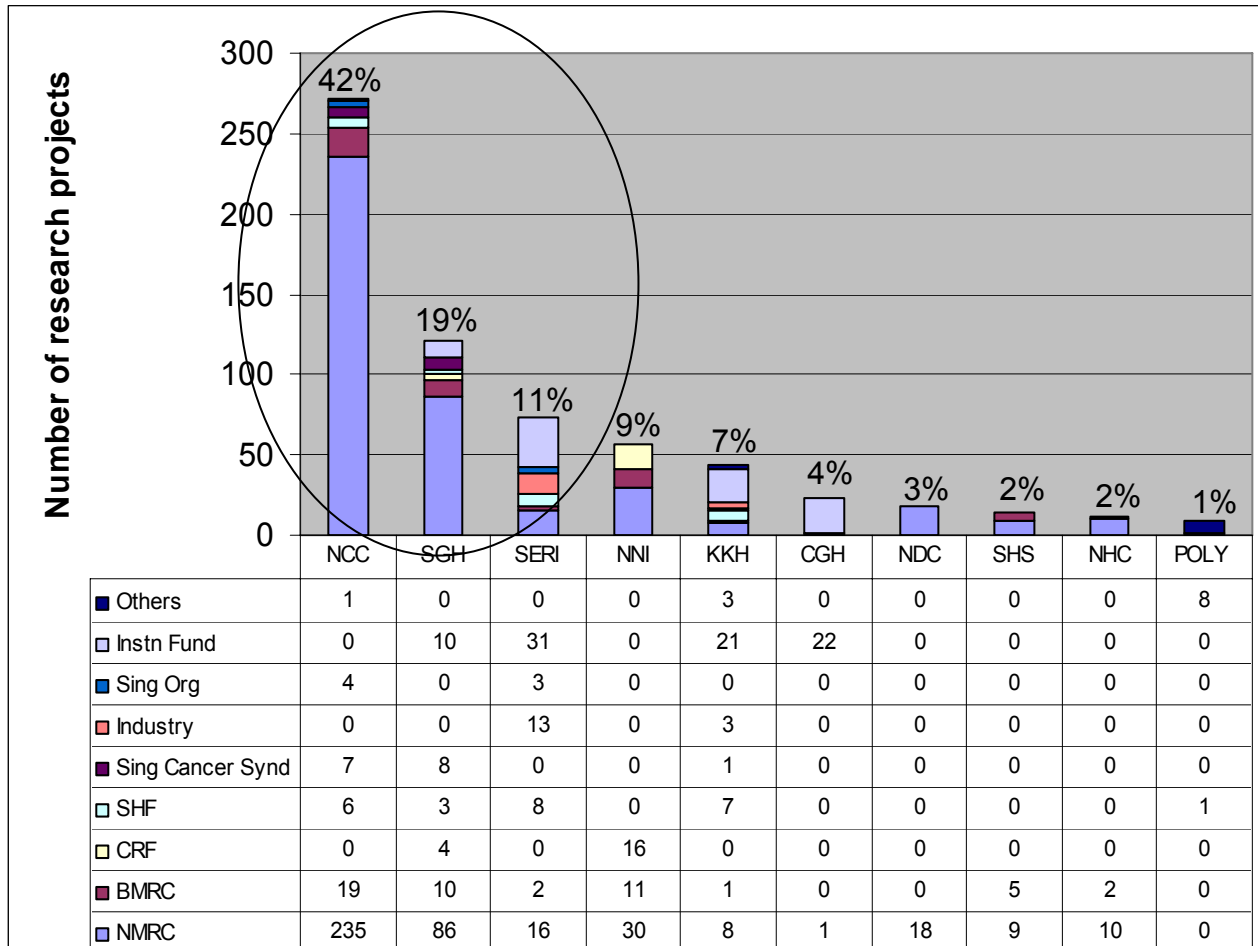
Research Headcounts by FTE (FY2004)						
Institution	Researchers				Technical Staff (+ support staff)	TOTAL
	Degree			Non-Degree		
	PhD	Master	Bachelor			
NCC	29.5	20.9	57.9	6.3	31.5	146.1
SGH	10	11	8	0	93.5	122.5
SERI	9.25	8	5	1	30	53.25
NHC	8	6	11.3	9	2	36.3
KKH	1	0	4	4	4	13
SHS	3	7.4	2	0	16.8	29.2
CGH	1	0	1	0	8	10
NDC	0	2.46	0.81	0	3	6.27
SHS POLY	0	0	0	0	1	1
NNI	20	1	1.5	0	55	77.5
<b>Sub-Total</b>	<b>81.75</b>	<b>56.76</b>	<b>91.51</b>	<b>20.3</b>	<b>244.8</b>	<b>495.12</b>
<b>TOTAL</b>	<b>81.75</b>		<b>413.37</b>			<b>495.12</b>



# Singhealth Research Output (as of March 2006)



72% of SingHealth research projects are also conducted on Outram campus (NCC, SGH, SERI)



**ILLUSTRATIVE**

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## **Specific recommendations have been made to the Outram Campus AMC Working Group chaired by PS Health**

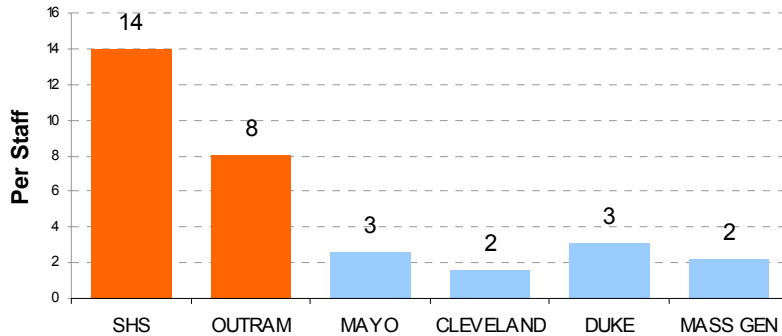
- Increase clinician staffing in all professional groups
- Nurturing Beyond the Chosen Five
- Supporting clinical research at all levels
- Supporting infrastructure
- Structuring the governance model for the campus (SingHealth, Duke-NUS GMS)

# Workload norms will need re-evaluation; increase in manpower across all clinician-types necessary



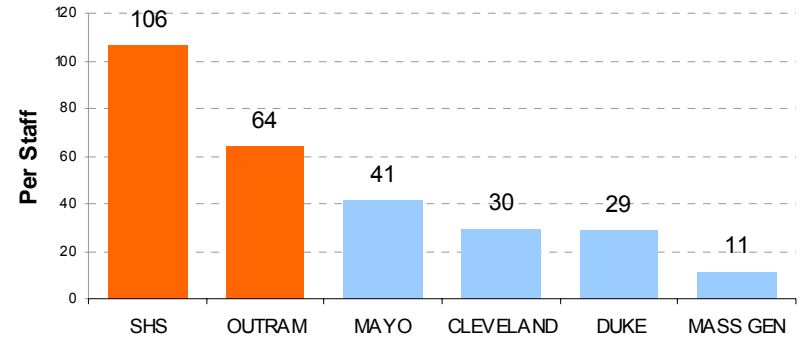
## total

Inpatient Discharges Per Staff



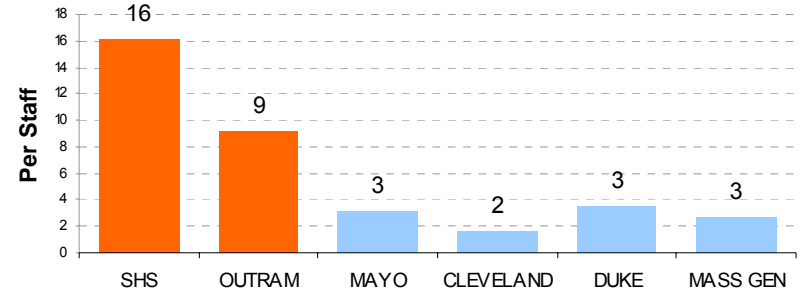
## medical

Inpatient Discharges Per Medical Staff



## nursing + others

Inpatient Discharge Per Nurse + Other



# Change in approach from ‘chosen few’ to first wave and opportunities for all



## COMPREHENSIVE BRCs

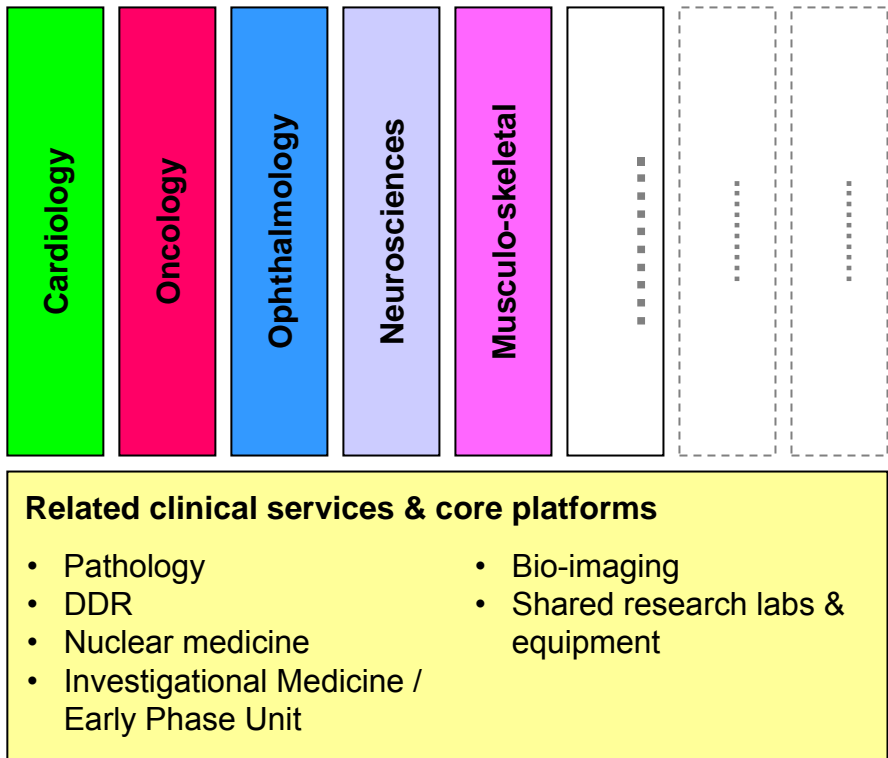
NHS Organisation	Academic Partner
Cambridge University Hospitals NHS Foundation Trust	University of Cambridge
Guy's & St Thomas' NHS Foundation Trust	King's College London
Hammersmith Hospitals NHS Trust & St Mary's Hospital NHS Trust	Imperial College London
Oxford Radcliffe Hospitals NHS Trust	University of Oxford
University College London Hospitals NHS Foundation Trust	University College London

## SPECIALIST BRCs

NHS Organisation	Academic Partner	Specialisation
Great Ormond Street Hospital for Children NHS Trust	UCL Institute of Child Health	Paediatric / Child Health
Moorfields Eye Hospital NHS Foundation Trust	UCL Institute of Ophthalmology	Ophthalmology
Newcastle Upon Tyne Hospitals NHS Trust	Newcastle University	Ageing
Royal Liverpool & Broadgreen University Hospitals NHS Trust	University of Liverpool	Microbial Diseases
Royal Marsden NHS Foundation Trust	Institute of Cancer Research	Cancer
South London and Maudsley NHS Trust	KCL Institute of Psychiatry	Mental Health

**Outram Campus can be viewed as having a single “Comprehensive BRC” and multiple “Specialised BRCs”, with multiple academic partners co-located on campus**

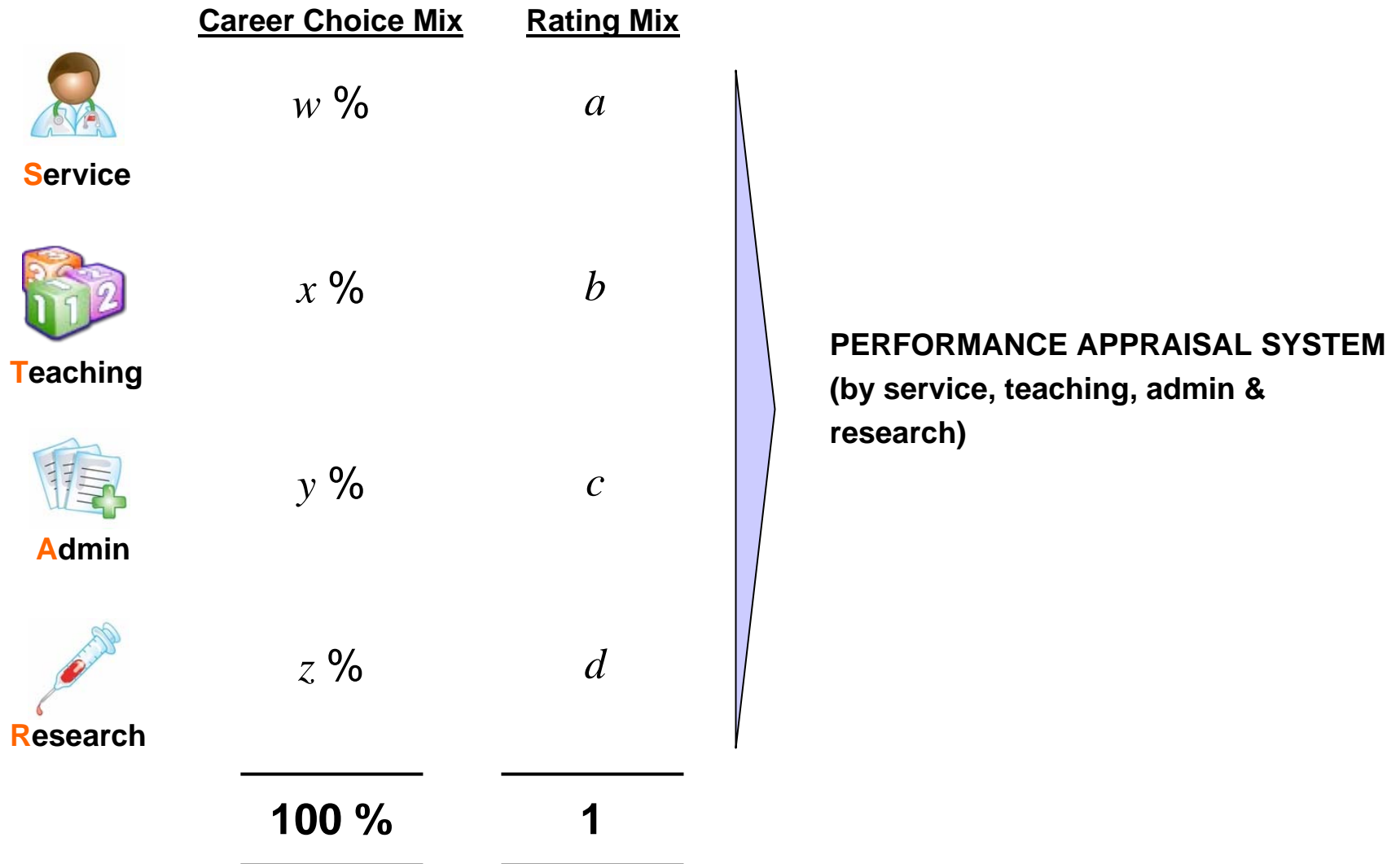
# Build core research capabilities with opportunities for all specialties



- **Excellence in the five specialties cannot be achieved without the rest pursuing academic medicine as well**
  - E.g., Pathology and Radiology are critical diagnostic services that impact clinical decisions in our areas of focus. It is essential that these services advance concurrently to achieve the desired results
- **Hence, all related services must be lifted upwards by the same tide that carries the 6 specialties as well**
- **Plan is to have open design architecture that allows for flexibility to meet changes in science and disease trends; core platforms allows optimal use of resources**



# Create choices and encourage mix of commitments; targets at department/ service line and not individual level



## Build the base- Encourage research at all levels

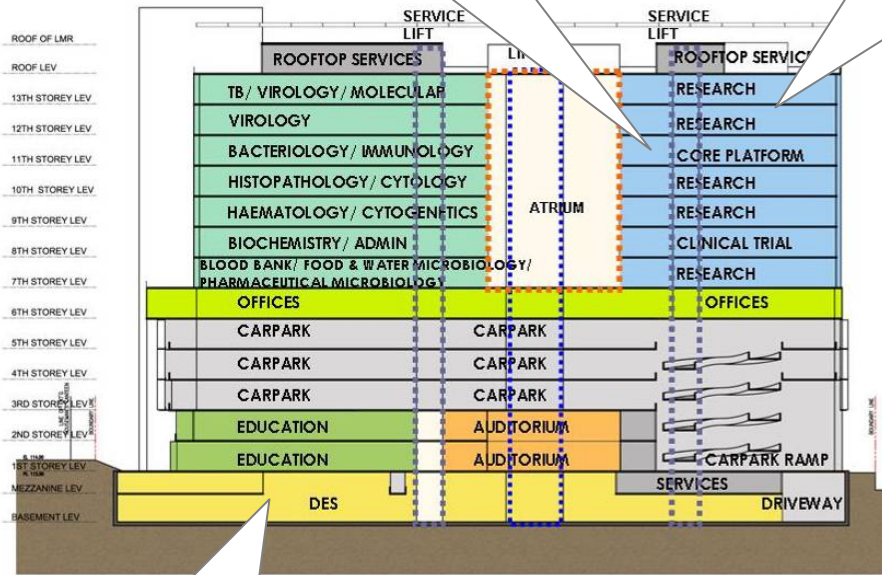
### **Strengthen existing clinical research support resource capacity to make research easy, in particular for clinicians who are interested but new to Translational & Clinical Research**

- Dedicated staff (initial: 15 FTEs) to help with: study design, data collection, data analysis, presentation preparation and manuscript writing
  - Statisticians
  - Epidemiologists
  - Medical writers / Editors
  - Panel of experienced clinician researchers as resource persons
  - Clinical research support staff
- Databases and disease registries so that “every patient is a dot on the graph”

# Expand infrastructure for research and education

Provides **one-stop access to core platforms** for researchers on this campus, including those of GMS

Provides **crucial infrastructure for mentor scientists, clinician scientists (CSs) clinician investigators (CIs), and PhDs** on this campus



**Atrium and common space to foster teamwork and collaboration**



Creates the **only AAALAC-accredited, academic, large and small animal research centre** in Singapore

Pathology	22,400 m <sup>2</sup>	\$106.7M
Education	5,600 m <sup>2</sup>	
Research	19,800 m <sup>2</sup>	<b>\$99.7M</b>
Auditorium	1,400 m <sup>2</sup>	
Medical Offices	5,500 m <sup>2</sup>	\$24.6M
<b>TOTAL</b>	<b>54,700 m<sup>2</sup></b>	<b>\$231M</b>

← **Funding required**

\*

\* Amt before recent construction cost escalation

# Nurture existing close relationship with Duke-NUS GMS

## Shared Facilities and services

- Principle of “no needless duplication”
- Share and use: e.g., DES, rodent facility, etc.
- Sale of corporate services on cost recovery basis: e.g., IT, HR

## Joint management meetings

- Fortnightly meeting between management of SingHealth and Duke-NUS GMS

## Joint Leadership & Recruitment

- Joint Recruitment with GMS
- Cross interview candidates for leadership appointments

## Cross-board and faculty appointments

- Chairman of SingHealth Board and GCEO sits on Duke-NUS GMS Governing Board



# Academic Medicine as the defining model for SingHealth

- What is Academic Medicine?
- Why is SingHealth embracing academic medicine?
- Going beyond rhetoric- who and how
- Collaboration with other stakeholders
- Conclusion

# Singapore is too small for SingHealth and NHG or Kent Ridge and Outram campuses to fight each other over



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# The future is promising but the road ahead is fraught with challenges

- SingHealth as a collective must work together- aligned interests, aligned vision
- We must play our part and expect our partners (MOH, NHG, NUS, Duke-NUS GMS, NMRC, BMRC etc) to play theirs
- Cooperation rather than competition within Singapore



**“A rising tide will lift all ships”**