HEALTH ECONOMICS AND HEALTH CARE SYSTEM IN HONG KONG
THE PERSONAL, SOCIAL AND HUMANITIES EDUCATION SECTION
OF THE EDUCATION BUREAU

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* I would like to thank Michael KY Fung for his invitation to begin this project, Bruce Chow, Dorothy Lam, Way So and Caroline Tsang for their kind suggestions. Disclaimer: The materials collected and designed are for educational purpose only. Their interpretations do not represent views from Department, Bureau and Government to which the cite materials are originated.
Economics of Health and Healthcare

Lively and Energetic
SARS outbreak that changed HK
Outline

Health, Healthcare, Health and Healthcare Systems
Evaluation of Healthcare System
An Economic View of Healthcare
  Microeconomics of Healthcare
  Macroeconomics of Healthcare
  Contribution of Healthcare Sector
Provision and Financing of Healthcare
Economics of Dual Track Healthcare System
Examples of Policy Impact Analysis
A Snapshot of Healthcare Finance & Regulation
Future Challenges
AN ILLUSTRATION OF HEALTH ECONOMICS
A Scenario

After shock: A movie that describes a life changing event happened in 23 seconds.
Healthcare, Risk, Choice, Value, Economics

• Consider a couple of kids left with an acute problem of pneumonia after extreme bad weather in a remote valley...
• Doses of medicine good for only one kid....
The Essence of Health Economics

The x and y axis measure the probability of a complete healing depending on how the medicine is used between the two patients.
The picture here illustrates the concepts of scarcity, efficiency, trade-off, rationing and equity as well as the conflicts created by social values.
Who decides who will live in an after shock scenario?
Healthcare, Risk, Choice, Value, Economics
Definition of Health

- WHO (1948): A state of complete physical, mental, social well-being and not merely the absence of disease or infirmity.
1) Physical (i.e. body)
2) Mental (i.e. mind)
3) Social (i.e. socio-relationship)
All three dimensions are interconnected.
Challenges to the Health Triangle

- Physical well-being: Obesity

- Mental well-being: Stress

- Social well-being: Family and peer relationships
Healthiness depends on one’s ability to adapt and self-manage under social, physical and emotional challenges.

Determinants of Health

- Lifestyles:
- Risk-taking behavior

- Environment: Pollution

- Biomedical: DNA
### Prevalence of Selected Lifestyle Practices and Health Status Among Persons Aged between 18 and 64, April 2012

<table>
<thead>
<tr>
<th>Lifestyle Practices and Health Status</th>
<th>Percentage</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Male</td>
</tr>
<tr>
<td>Daily smoking</td>
<td>18.7%</td>
</tr>
<tr>
<td>Daily alcohol drinking</td>
<td>3.2%</td>
</tr>
<tr>
<td>Inadequate physical activity</td>
<td>53%</td>
</tr>
<tr>
<td>(by WHO's recommendations)</td>
<td></td>
</tr>
<tr>
<td>Inadequate daily fruit and vegetable intake</td>
<td>87%</td>
</tr>
<tr>
<td>(less than 5 servings per day)</td>
<td></td>
</tr>
<tr>
<td>Overweight and obesity</td>
<td>47.2%</td>
</tr>
</tbody>
</table>

*Source: Health Facts of Hong Kong 2013/DH, HKSAR Government*
How to Measure Health: The Case of Hong Kong

- Health status based on lifestyle practices
- Self-reported health
  - Hong Kong
  - Global comparison
Self-reported Health in Hong Kong

Lower bar: Nov 2009 - Feb 2010

Sources:
Upper bar: Thematic Household Survey Report No. 50, C&SD, HKSAR Government
Lower bar: Thematic Household Survey Report No. 45, C&SD, HKSAR Government
Percentage of Adults Reporting to be in Good Health, 2011 (or Nearest Year)

<table>
<thead>
<tr>
<th>Country</th>
<th>Percentage of Population aged 15 and over</th>
</tr>
</thead>
<tbody>
<tr>
<td>United States</td>
<td>89.50%</td>
</tr>
<tr>
<td>Australia</td>
<td>85.40%</td>
</tr>
<tr>
<td>Sweden</td>
<td>79.90%</td>
</tr>
<tr>
<td>United Kingdom</td>
<td>77.50%</td>
</tr>
<tr>
<td>Germany</td>
<td>64.80%</td>
</tr>
<tr>
<td>Italy</td>
<td>64.70%</td>
</tr>
<tr>
<td>Japan</td>
<td>30%</td>
</tr>
<tr>
<td>OECD 34</td>
<td>69%</td>
</tr>
</tbody>
</table>

Source: Health at a Glance 2013, OECD Indicators
(Additional information: Japan in crisis)
Keys to Good Health

Health zone HKGov
Health System (WHO)

Source: http://www.who.int/features/qa/28/en/
Definition of Healthcare

• Goods and services that provide:
  - diagnosis
  - treatment and/or prevention of disease, illness, injury, and other physical and mental impairments.

Healthcare System

- Public Health (i.e. education and prevention)
- Primary Care (First-point of contact)
- Secondary Care (i.e. specialists)
- Tertiary Care (i.e. specialized treatment)
EVALUATION OF A HEALTHCARE SYSTEM
Evaluation of a healthcare system

Access (Equity, Utilization)

Cost (Efficiency, Cost Containment)

Quality (Outcomes, Patient Satisfaction)
AN ECONOMIC VIEW OF HEALTHCARE
Areas to be Covered

B. Microeconomics

E. Macroeconomics

A. Health and Healthcare Systems

C. Demand for Healthcare

D. Supply of Healthcare

F. Financing and Regulation ↔ G. Evaluation
MICROECONOMICS OF HEALTHCARE
Health is an OUTCOME of multiple factors and a CAUSE of demand for healthcare.
Demand for Healthcare

Factors affecting the demand for healthcare:

- Medical prices
- Income
- Insurance coverage
- Demography
- Epidemiology
Demand for Healthcare

Factors affecting the demand for healthcare:

- Medical prices
- Income
- Insurance coverage
- Demography
- Epidemiology
Medical Prices

An increase in medical prices has a negative effect on the quantity demanded for healthcare – movement along the demand curve.
### Fee and charges for selected hospitals (as of Feb 2014)

<table>
<thead>
<tr>
<th>Hospital</th>
<th>In-patient Service</th>
<th></th>
<th></th>
<th>Out-patient</th>
<th>Specialist Out-patient</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Private Room</td>
<td>Semi-Private Room</td>
<td>Ward Beds</td>
<td></td>
<td></td>
</tr>
<tr>
<td><strong>Hong Kong Island</strong></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Hong Kong Sanatorium</td>
<td>3,360 – 3,560</td>
<td>1,990 – 2,430</td>
<td>930 – 1,430</td>
<td>300</td>
<td>N/A</td>
</tr>
<tr>
<td>St. Paul’s</td>
<td>2,280</td>
<td>1,200</td>
<td>672</td>
<td>150 – 280</td>
<td>N/A</td>
</tr>
<tr>
<td><strong>Kowloon</strong></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Hong Kong Baptist</td>
<td>2,950</td>
<td>1,380</td>
<td>580 – 700</td>
<td>210 – 310</td>
<td>310 – 370</td>
</tr>
<tr>
<td>Precious Blood</td>
<td>980 – 1,200</td>
<td>760</td>
<td>450 – 600</td>
<td>160 – 300</td>
<td>250 – 650</td>
</tr>
<tr>
<td><strong>New Territories</strong></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Tsuen Wan Adventist</td>
<td>1,600</td>
<td>1000</td>
<td>500 – 650</td>
<td>200 – 300</td>
<td>350 – 1,000</td>
</tr>
<tr>
<td>Union</td>
<td>2,800 – 3,900</td>
<td>900 – 1,100</td>
<td>480 – 720</td>
<td>200 – 700</td>
<td>N/A</td>
</tr>
<tr>
<td><strong>Hospitals under Hospital Authority</strong></td>
<td>5,610 – 5,640</td>
<td>3,740 – 3,760</td>
<td>68 – 100</td>
<td>45</td>
<td>60 – 100 + drug item</td>
</tr>
</tbody>
</table>

*Source: Bupa and Hospital Authority*
Medical Inflation

Nominal health expenditure growth

Health care price inflation

Economy-wide inflation

Excess health care inflation

Public: 0.8%;
Private: 1.6%;
Others: 1.2%

Real health expenditure growth

Population growth

Average: 0.7%

Real GDP per capita growth

Real spending per capita growth

Excess per capita volume growth

0.2%


Source: “My Health My Choice” FHB presentation in 2011 HA convention
Demand for Healthcare

Factors affecting the demand for healthcare:

- Medical prices
- Income
- Insurance coverage
- Demography
- Epidemiology
Monthly Household Income
(excluding foreign domestic helpers)

Increased income has a positive effect on demand for healthcare – shift in demand curve

Demand for Healthcare

Factors affecting the demand for healthcare:

- Medical prices
- Income
- Insurance coverage
- Demography
- Epidemiology
Percentage of Individuals Entitled to Medical Benefits by Age Groups
(provided by employers / companies and / or covered by medical insurance)

Increased insurance coverage has a positive effect on demand for healthcare – shift in demand curve
Demand for Healthcare

Factors affecting the demand for healthcare:

- Medical prices
- Income
- Insurance coverage
- Demography
- Epidemiology
Demography

Source: Hong Kong Population Projections, 2011-2041, C&SD, HKSAR Government
Aging population has a positive effect on demand for healthcare – shift in demand curve

Source: Healthcare Financing and Insurance in Hong Kong, HA Convention Symposium, 2011, FHB presentation
Elderly tends to use more hospital healthcare

Demand for Healthcare

Factors affecting the demand for healthcare:

- Medical prices
- Income
- Insurance coverage
- Demography
- Epidemiology
Epidemiology (流行病學): Age-Standardised Death Rates by Leading Causes of Death, 2003 and 2013

<table>
<thead>
<tr>
<th>Cause of Death</th>
<th>2003</th>
<th>2013*</th>
<th>% change</th>
</tr>
</thead>
<tbody>
<tr>
<td>1. Cancer</td>
<td>125.8</td>
<td>104.0</td>
<td>-17.3</td>
</tr>
<tr>
<td>2. Pneumonia</td>
<td>37.6</td>
<td>38.6</td>
<td>2.7</td>
</tr>
<tr>
<td>3. Heart Diseases</td>
<td>53.7</td>
<td>38.4</td>
<td>-28.5</td>
</tr>
<tr>
<td>4. Stoke</td>
<td>34.8</td>
<td>21.3</td>
<td>-38.8</td>
</tr>
<tr>
<td>5. Chronic lung diseases</td>
<td>20.8</td>
<td>11.0</td>
<td>-47.1</td>
</tr>
<tr>
<td>6. External causes of morbidity and mortality</td>
<td>25.1</td>
<td>17.1</td>
<td>-31.9</td>
</tr>
<tr>
<td>7. Kidney Diseases</td>
<td>12.1</td>
<td>10.5</td>
<td>-13.2</td>
</tr>
<tr>
<td>8. Dementia</td>
<td>2.4</td>
<td>5.1</td>
<td>112.5</td>
</tr>
<tr>
<td>9. Septicaemia</td>
<td>5.9</td>
<td>5.6</td>
<td>-5.1</td>
</tr>
<tr>
<td>10. Diabetes mellitus</td>
<td>8.0</td>
<td>2.5</td>
<td>-68.8</td>
</tr>
<tr>
<td>All other causes</td>
<td>58.3</td>
<td>48.2</td>
<td>-17.3</td>
</tr>
<tr>
<td>All causes</td>
<td>384.5</td>
<td>302.2</td>
<td>-21.4</td>
</tr>
</tbody>
</table>

| Proportion of noncommunicable diseases             | 68.9%| 67.4% |
| * Provisional data                                 |      |       |

Source: Centre of Health Protection, Department of Health, HKSAR Government

- Increased illness episodes has a **positive** effect on demand for healthcare – shift in demand curve
Distribution of Top 10 Killers in Hong Kong (2003 and 2013)

Source: Author’s Calculation Based on Age-standardised Death Rates by Leading Causes of Death, 2001 – 2013, Department of Health, HKSAR Government
Percentage change in the proportions of diseases in the distributions of the top killers from 2003 to 2013:

1. Cancer, 5.2%
2. Pneumonia, 30.6%
3. Heart Diseases, 10.4%
4. Cerebrovascular diseases, 17.8%
5. Chronic lung diseases, 10.4%
6. External causes of morbidity and mortality, -13.3%
7. Kidney Diseases, -9.0%
8. Dementia, 17.0%
9. Septicaemia, 20.8%
10. Diabetes mellitus, -60.2%
The Rising Tide of the self-reported Cases of self-reported Diabetes and Hypertension in Hong Kong from 2001 to 2008

Supply of Healthcare

- Factors affecting supply:
  - Medical prices
  - Total number of registered healthcare professionals
  - Total number of health facilities (institutions and beds)
Medical Prices

An increase in medical prices has a positive effect on the quantity supplied for healthcare – movement along the supply curve

## Supply of Healthcare

<table>
<thead>
<tr>
<th>Countries/City</th>
<th>Doctor supply per 1000 population</th>
<th>Nurse supply per 1000 population</th>
<th>Bed supply per 1000 population</th>
</tr>
</thead>
<tbody>
<tr>
<td>The mainland of China</td>
<td>1.5</td>
<td>1.6</td>
<td>1.9</td>
</tr>
<tr>
<td>Hong Kong SAR (all beds)</td>
<td>1.6</td>
<td>1.7</td>
<td>1.8</td>
</tr>
<tr>
<td>Singapore</td>
<td>1.8</td>
<td>2.1</td>
<td>2.7</td>
</tr>
<tr>
<td>Taiwan</td>
<td>1.4</td>
<td>1.6</td>
<td>1.8</td>
</tr>
<tr>
<td>United Kingdom</td>
<td>2.1</td>
<td>2.5</td>
<td>2.8</td>
</tr>
<tr>
<td>Canada</td>
<td>2.3</td>
<td>2.4</td>
<td>-</td>
</tr>
<tr>
<td>United States</td>
<td>3</td>
<td>3.1</td>
<td>-</td>
</tr>
</tbody>
</table>

**Source:**
FHB website

Unless otherwise specified, all figures are from OECD.Stat website; accessed on 21.3.2014.

The mainland of China figures from National Bureau of Statistics of China website; accessed on 19.3.2014.

Hong Kong SAR figures
- 2002-2006 from Hong Kong Annual Digest of Statistics 2007

Singapore figures

## Registered Healthcare Professionals (End 2013)

<table>
<thead>
<tr>
<th>Type of Professional</th>
<th>Total</th>
<th>Healthcare professionals to population*</th>
</tr>
</thead>
<tbody>
<tr>
<td>Doctors</td>
<td>13 203</td>
<td>1 : 547</td>
</tr>
<tr>
<td>Chinese medicine practitioners</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Registered Chinese medicine practitioners</td>
<td>6 743</td>
<td>1 : 1 071</td>
</tr>
<tr>
<td>Chinese medicine practitioners with limited registration</td>
<td>61</td>
<td>—</td>
</tr>
<tr>
<td>Listed Chinese medicine practitioners</td>
<td>2 715</td>
<td>1 : 2 659</td>
</tr>
<tr>
<td>Dentists</td>
<td>2 310</td>
<td>1 : 3 125</td>
</tr>
<tr>
<td>Dental hygienists</td>
<td>367</td>
<td>1 : 19 672</td>
</tr>
<tr>
<td>Nurses</td>
<td>45 846</td>
<td>1 : 157</td>
</tr>
<tr>
<td>Midwives</td>
<td>4 597</td>
<td>1 : 1 571</td>
</tr>
<tr>
<td>Pharmacists</td>
<td>2 285</td>
<td>1 : 3 160</td>
</tr>
<tr>
<td>Medical laboratory technologists</td>
<td>3 123</td>
<td>1 : 2 312</td>
</tr>
<tr>
<td>Occupational therapists</td>
<td>1 580</td>
<td>1 : 4 569</td>
</tr>
<tr>
<td>Physiotherapists</td>
<td>2 523</td>
<td>1 : 2 862</td>
</tr>
<tr>
<td>Optometrists</td>
<td>2 111</td>
<td>1 : 3 420</td>
</tr>
<tr>
<td>Radiographers</td>
<td>1 984</td>
<td>1 : 3 639</td>
</tr>
<tr>
<td>Chiropractors</td>
<td>180</td>
<td>1 : 40 109</td>
</tr>
</tbody>
</table>

*Source: Health Facts of Hong Kong (2014 Edition)*
<table>
<thead>
<tr>
<th>Health Facilities (End 2013)</th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>Number of Hospitals under Hospital Authority</td>
<td>42</td>
</tr>
<tr>
<td>Number of Private Hospitals</td>
<td>11</td>
</tr>
<tr>
<td>Number of Nursing Homes</td>
<td>53</td>
</tr>
<tr>
<td>Number of Hospitals under Correctional Institutions</td>
<td>21</td>
</tr>
<tr>
<td>Number of Hospital Beds in Hospitals in Hospital Authority</td>
<td>27,400</td>
</tr>
<tr>
<td>Number of Hospital Beds in Private Hospitals</td>
<td>3,882</td>
</tr>
<tr>
<td>Number of Hospital Beds in Nursing Homes</td>
<td>4,617</td>
</tr>
<tr>
<td>Number of Hospital Beds in Correctional Institutions</td>
<td>821</td>
</tr>
</tbody>
</table>

Source: *Health Facts of Hong Kong (2014 Edition)*
MACROECONOMICS OF HEALTH AND HEALTHCARE
Total Healthcare Expenditure: Hong Kong and OECD Countries

Total Health Expenditure as a % of GDP

USA (17.7%)
Life expectancy (2010)
M - 76 F - 81

Australia
France
Germany
Japan
New Zealand
Sweden
UK
USA
HK

(HK$29.3b)
(HK$ 93.4 b)
Hong Kong (5.1%)
Life expectancy (2010)
M - 80 F - 86

Sources:
1. Hong Kong’s Domestic Health Accounts, Food and Health Bureau, Hong Kong
2. OECD
CONTRIBUTION OF HEALTHCARE SECTOR
Approaches to Measuring the Contribution to GDP

Two approaches

- Static: Value-added approach
- Dynamic: Multiplier effect approach
Value-added Approach

Market price = Value of a cup of coffee
= $10

Cost of direct inputs from the coffee shop to a cup of coffee
= $4

Cost of intermediate inputs
= $2

• The contribution of a cup of coffee to GDP
  = market price – cost of intermediate inputs
  = $10 - $2 = $8
Limitation of Value-added Approach

Suppose coffee drinks are subsidized by the Government, the subsidized price for drink is reduced to $1 for each cup of coffee. And the cost of a cup of coffee is $6.

Since there is a lack of market price, then one does not know the value of the cup of coffee...

By treating $6 as “market price”, the contribution per cup of coffee to GDP will be $4 using the value-added approach.
Case 1. Treatment with high value-added to intermediate inputs
Case 2. Treatment with low value-added to intermediate inputs
Static: Value-added Approach

• The approach
  • Likely estimates correctly the contribution of private healthcare sector to GDP because market price may reflect the value of healthcare services.
  • Likely underestimates the contribution of public healthcare sector to GDP because of the lack of market price that truly reflects the value of the services rendered.*

* Private rooms in public sector in Hong Kong are charged at prices similar that in the private sector. It implies the market value of publicly provided private services may be comparable with that in the private services. Ref. But some services may have to be sold at prices lower than unit costs because of weak demand.
An approximation of the value-added of public healthcare to GDP

a) Private In-patient expenditure: 11,407 million;*

b) Assume 60% of the above expenditure is direct inputs cost and profit = 6,844 million;

c) Supply of private hospital based care: About 1.4 million bed-days per year =
   (365 days × 3882 beds in the private sector²)

Value-added of private in-patient care is HK$4,888 (= 6,844/1.4 ) per bed days.

Use this approximation:

Public sector supply of bed days is about 10 million bed-days per year
   (=27,400** × 365). Assume the same value-added per bed days and full public
   capacity is reached, the value-added of public hospital care alone is about
   48,880 million, which is 2.1% of GDP (=48,880/2,245,747***);

Hence, the value-added of public healthcare (including outpatient care) would
   exceed 2.5% of GDP.

** Hong Kong Health Fact 2014
*** 2014 HK GDP (@ 2012 dollar)
Dynamic: Multiplier Effect Approach

The contribution of the healthcare sector to the GDP depends on:
- Healthcare
- Health capital
- Life expectancy
- Productivity
- GDP
Concept of Health Capital

• Gary S. Becker developed the concept of human capital later became the concept of health capital in 1972, developed by his PhD student Michael Grossman, that is a key economic concept of “health”.

• Similar to physical capital that produces interests, health capital produces a flow of health services which enhances productivity and enjoyment of consumption.

• A larger stock of health capital also produces a longer life expectancy.

Gray S. Becker (1930-2014), a Professor of Sociologist and Economics at Chicago and a 1992 Nobel Prize winner.

Professor Michael Grossman (1942-) at City University of NY has directed the Health Economics Program at the National Bureau of Economic Research (NBER) since 1972. Grossman was an early contributor to New Home Economics.
Aggregate Production Function

• Aggregate Income (GDP) is produced by two major classifications of input: *Labor* and *Capital* inputs.

• Health and healthcare both have an effect on these two inputs.

Ref. Population Health and Economic Growth
Aggregate Labor Force

- Income (GDP)
- Productivity of labor Force
- Health Capital
- Healthcare

The diagram illustrates the interconnections between income, productivity of labor force, health capital, and healthcare, highlighting their role in the Aggregate Labor Force.
Savings and Investment

Income (GDP)

Planned Savings (i.e. capital investment)

Health Capital

Life expectancy

Larger health capital also produces longer longevity and life expectancy.
Total Health Expenditure Across Countries

Source: OECD health statistics and Domestic Health Account
GDP per capita, Population and Life expectancy

Source: Gapminder
PROVISION AND FINANCING OF HEALTHCARE
Dual Medical Economy

- Dual medical economy is common in post-colonial economies, in which health services are provided and funded by the government through taxation income.

Dual Track Healthcare Systems

In terms of funding and provision of services, the proportion of public vs. private involvement can differ across countries.
Hong Kong Healthcare System

“…runs on a dual-track basis encompassing the public and the private sectors. Public healthcare is the cornerstone of our healthcare system, acting as the safety net for the whole community, while the private healthcare sector provides personalised choices and more accessible services to those who are willing and may afford to pay for private healthcare services.”


Dr Ko Wing-man, Secretary for Food & Health
Dual Track Healthcare System in Hong Kong: Market Shares

Public Sector (51% of THE)

- Inpatient (bed-days): 90%
- Inpatient admission: 80%
- Overall outpatient incl. Traditional Chinese Medicine (TCM): 30%

Private Sector (49% of THE)

- Private Hospitals
  - Inpatient (bed-days): 10%
  - Inpatient admission: 20%
- Private Clinics
  - Overall outpatient incl. TCM: 70%

Number of bed-days supplied per year: The number of beds x 365 days per year.

Dual Track Healthcare System in Hong Kong: Provision and Financing

**Funding sources**
- Government general revenue
- User fees

**Purchasers**
- DH and CHP
  - Chest Clinics
  - Child Assessment Centres
  - Clinical Genetic Service Centres
  - Dental Clinics with General Public Sessions
  - Clinics provide Dermatological Services
  - Medicine
  - Elderly Health Centres
  - Integrated Treatment Centre (Special Preventive Programme)
  - Maternal and Child Health Centres (MCHCs)
  - Methadone Clinics
  - Red Ribbon Centre
  - School Dental Clinics (Female)
  - Clinics provide Social Hygiene Service (Male)
  - Student Health Service Centres and Special Assessment Centres
  - Travel Health Centres
  - Woman Health Centres and MCHCs with Woman Health Service Sessions

- HA
  - 42 hospitals & institutions (2012: 27,153 beds)
  - 73 GOPCs
  - 48 SOPCs
  - 17 Chinese Medicine Clinics

**Providers**
- Private providers
  - 11 Private hospitals (2012: 4,033 beds)
  - 7,000+ Private doctors/clinics
  - 6,700+ Private Chinese medical practitioners
  - Other private healthcare providers

**System**
- Public
- Private

**Sources:** Census and Statistics Department and Hospital Authority, HKSAR
Public and Private Share of Total Health Expenditure, 1989/90 – 2010/11

As of 2010-2011: Public Share: 51%, Private Share: 49%

Source: Hong Kong’s Domestic Health Accounts, FHB website
Percentage Share of Expenditure by Policy Area Group

- Social Welfare, 18.5
- Education, 21.8
- Health, 17.0
- Support, 14.5
- Security, 11.2
- Infrastructure turn, 6.0
- Environment and Food, 4.2
- Community and External Affairs, 3.4
- Economic, 3.3
- Housing, 0.1

Source: The 2014-15 Budget, HKSAR Government
Mix of Private Health Expenditure, 1989/90-2010/11

Source: Hong Kong’s Domestic Health Accounts, FHB website
Break...
DUAL-TRACK HEALTHCARE SYSTEM
Choice of Healthcare Service

• Consider an individual who feels the need to seek for healthcare advices.
• The first point of healthcare is known as Primary Care.
• Public or Private GP?

Out-of-pocket medical cost?
Cost of wait time?
Travel cost?
Subjective severity?
Patient Choice and Pathways in Healthcare

- **Private outpatient care**
  - GPs
  - Specialists

- **Private Hospital**
  - Hospital
  - Inpatient specialist care

- **Public Outpatient Care**
  - GPs, specialists

- **Public Hospital**
  - Inpatient specialist care

- **Tertiary Care**
  - Coronary bypass surgery, etc.

- **Patient information flow**
SUPPLY AND DEMAND FOR HEALTHCARE
Relevant Terms and Concepts

Supply
- Minimum price accepted
- Annual capacity

Demand
- Willingness to pay
- Affordability

Price
- Market price
- Administrative price / Subsidized price
- Effective price

Quantity
- Equilibrium quantity
- Excess quantity demanded
- Rationed quantity
Effective Price

People will visit private sector (rather than public sector) for healthcare if

\[ \text{Effective price}_{public} \geq \text{Market price}_{private} \]

Effective Price\(_{public} \)

- Administrative Price (Gov’t subsidized price) + Cost of Wait Time (Shadow Price of Time x Cost of Wait Time)

- Shadow price of time: Opportunity cost spent per unit of time (e.g. every hour) on an activity.
Excess Quantity Demanded

- Excess demand - a situation in which the quantity demanded for a commodity is greater than the quantity supplied at the transaction price.

- It is the consequence of a “low” administrative price.

- Medical professional judgment to decide which patient should receive healthcare first

=> Rationing of service
Hypothetical Case

1. Market share: public clinics = 30%, private clinics = 70%

2. Total number of attendance served in the whole market = 16.7 million

3. Number of attendance served in public clinics = 5 million

4. Number of attendance served in the private clinics = 11.7 million
Public Outpatient Healthcare

Features to note:
- Inelastic supply
- Elastic demand
- Administrative price < Unrealized market price
- Excess demand
- Rationing
- Deadweight loss
Private Outpatient Healthcare

Features to note:
- Elastic demand
- Supply:
  - Elastic supply below capacity
  - Inelastic supply above capacity
- Market-clearing price
- Equilibrium quantity
Dual-Track Outpatient Healthcare

Public Sector

- Supply
- Unrealized market price
- Public capacity = 5.5m
- Excess Demand

Private Sector

- Supply
- Market price ($350)
- Equilibrium (11.7m)

$/attendance vs. Attendances

Admin. price

Demand

Capacity = 5.5m

Unrealized market price

Equilibrium (11.7m)
INPATIENT HEALTHCARE
Hypothetical Case

1. Market share: public = 90%, private = 10%
2. Total number of beds in public hospitals = 100
3. Total number of beds in private hospitals = 25
4. Total capacity of bed-days in public hospitals = 36500 (assume fully utilised)
5. Total capacity of bed-days in private hospitals = 25 x 365 = 9125
6. Private hospitals: 80% of capacity of beds used
7. Total bed-days served in the market = 36500 + (9125 * 80%) = 37,230
Public Inpatient Healthcare

Features to note:
- Inelastic supply
- Elastic demand
- Administrative price < Unrealized market price
- Excess demand
- Rationing
- Deadweight loss
Private Inpatient Healthcare

Features to note:
- Elastic demand
- Supply:
  - Elastic supply below capacity
  - Inelastic supply above capacity
- Market-clearing price
- Equilibrium quantity
Annual bed days at full capacity = the total number of beds available in hospitals × 360
In 2012-13, the total no. of beds is 27,153 in HA hospitals (HA annual report 2014).
Challenges to the Dual-Track healthcare system

- Changing demography – aging population
- Changing Epidemiology – rise of non-communicable diseases (e.g. hypertension, diabetes (DM))
- New technologies are often more expensive
- Medical inflation and financial sustainability
POLICY IMPACT ANALYSIS

This section employs the supply and demand model to assess the impact of a selection of health policies.
2014 Policy Address HK

71. ... To ease the elderly’s demand for public out-patient services and to enhance their awareness of the importance of primary care, we propose to further double the annual (healthcare) voucher amount to $2,000 within this year, while incorporating the pilot scheme into the regular assistance programme.

173. The Government will continue to enhance the quality of public healthcare services, including construction of new hospitals and expansion and redevelopment of existing hospitals. Strategic studies on the planned acute general hospital in the Kai Tak Development are underway.

175. Due to an ageing population and lifestyle changes, the incidence rate of colorectal cancer has continued to increase. It became the most common cancer in Hong Kong in 2011. Therefore, the Government will subsidise colorectal cancer screening for higher risk groups.
Government Policies

1. Capacity Management
   - Building new hospitals and increase manpower

2. Demand Management
   - Public health measurements: diseases control and prevention
   - Public-Private Partnership: elderly healthcare vouchers

3. Financing
   - Government regulated supplementary private health insurance (HPS)
Elderly Healthcare Voucher

Ideally, with the voucher system, some of the public outpatients would shift to the private sector, thereby lessening the burden in the public sector and possibly raising the price charged in the private sector.
Increase in public hospital capacity will decrease the excess demand and therefore reduce the waiting time for public hospital beds. It may also reduce the demand for private hospital healthcare and hence the market price.
Early disease prevention will reduce hospitalizations.
A SNAPSHOT OF HEALTHCARE FINANCE & REGULATION ISSUES
Dual Track Healthcare Systems

HK model ≈ “UK model” + “US model”

Financing: access and affordability
- public vs private insurance

Output: quality and risk
- regulation
Healthcare Finance - Universal Coverage

Key Concepts:
- Risk Pooling
- Coverage
  - Population (width)
  - Services (depth)
  - Cost sharing (breadth)

Health system financing
Three Dimensions to Consider when Moving Towards Universal Coverage

Consultation Document (1985-2014)
Past Healthcare Finance Reform Suggestions

- Increase the role of private health insurance;
- Increasing public user fees; differentiating user fees;
- Social health insurance,
- Establishing a personal medical saving account (MSA);
- Mandatory private health insurance + MSA;
- Societal Medical Saving Account, and
- Government provided & regulated health insurance;

…..
Tools for balancing public and private healthcare

- Strengthening public medical safety net
- Encouraging Public-Private Partnership
- e-Health information sharing system
- Strengthening the role of primary healthcare
- Review of regulation of private healthcare
- Review of manpower planning and strategies for professional development

- **Voluntary health insurance scheme**-*All Individual Hospital Insurance Products Must Comply with Minimum Requirements.* Insurers selling individual Hospital Insurance must offer a “**Standard Plan**”.
Policy Address 2015

1. Pursue the construction of an acute general hospital in Kai Tak Development Area.
2. Provide additional hospital beds, increase operating theatre sessions and quota for endoscopy (内窥检查) examination.
3. Increase the quota for patients with episodic illness, expand the coverage of the Drug Formulary and enhance healthcare services for elderly patients.
4. Implement the Voluntary Health Insurance Scheme by legislation having regard to the outcome of the public consultation.
5. Plan and develop a testing centre for Chinese medicine for setting reference standards for the safety, quality and testing methods of Chinese medicine.
12 Requirements for Standard Plans – promote transparency and certainty of Insurance protection

1. guaranteed acceptance with premium loading capped (up to 200%); guaranteed renewal without re-underwriting;
2. portable insurance policy (without re-underwriting) when changing insurer;
3. coverage of pre-existing conditions subject to standard waiting period;
4. benefit coverage must not exclude any medical conditions requiring hospital admissions; must include prescribed advanced diagnostic imaging tests (with cost sharing); must meet prescribe levels (i.e. sufficient); no “limited benefit limit”;
5. In principle, no cost-sharing (deductible or co-insurance);
6. Standardized policy terms and conditions; transparent information on age-banded premium

Table 2: Key Features of Private Health Insurance Products, HPS Standard plan and selected countries

<table>
<thead>
<tr>
<th>Feature</th>
<th>Australia</th>
<th>Ireland</th>
<th>Netherlands</th>
<th>Switzerland</th>
<th>US</th>
<th>HK HPS (proposed)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Guaranteed acceptance</td>
<td>✓</td>
<td>✓</td>
<td>✓</td>
<td>✓</td>
<td>✓</td>
<td>✓ (up to a maximum age)</td>
</tr>
<tr>
<td>Guaranteed renewal</td>
<td>✓</td>
<td>✓</td>
<td>✓</td>
<td>✓</td>
<td>✓</td>
<td>✓</td>
</tr>
<tr>
<td>Must cover pre-existing conditions?</td>
<td>✓</td>
<td>✓</td>
<td>✓</td>
<td>✓</td>
<td>✓</td>
<td>✓ (except during waiting periods)</td>
</tr>
<tr>
<td>Minimum benefit coverage</td>
<td>✓</td>
<td>✓</td>
<td>✓</td>
<td>✓</td>
<td>✓</td>
<td>✓ (except for Group &amp; some grandfathered plans)</td>
</tr>
<tr>
<td>Restrictions on cost-sharing</td>
<td>✓</td>
<td>✓</td>
<td>✓</td>
<td>✓</td>
<td>✓</td>
<td>✓</td>
</tr>
<tr>
<td>Standardised terms</td>
<td>✓</td>
<td>✓</td>
<td>✓</td>
<td>✓</td>
<td>✓</td>
<td>✓</td>
</tr>
<tr>
<td>Premium Structure</td>
<td>Community Rating</td>
<td>Community Rating</td>
<td>Community Rating</td>
<td>Community Rating</td>
<td>Age-banded (with restriction)</td>
<td>Age-banded</td>
</tr>
<tr>
<td>Premium loadings</td>
<td>Late entry loading (Up to 70% - rare)</td>
<td>None</td>
<td>None</td>
<td>None</td>
<td>Tobacco use, (up to 50%) Non-participation in group wellness program. (Up to 50%)</td>
<td>Loading factors up to 200%</td>
</tr>
<tr>
<td>Specific Provisions to enhance Portability</td>
<td>✓</td>
<td>✓</td>
<td>✓</td>
<td>✓</td>
<td>✓</td>
<td>✓</td>
</tr>
</tbody>
</table>
Insurance economic concepts

1. Asymmetric information
2. Adverse selection - supply side or demand side
   • Supply side: insurance companies selects who to insure.
   • Demand side: high-risk individuals choose to enrol in a plan.
3. Moral hazard – a change in behavior of consumers after being insured
4. Risk sharing/pooling

Two key variables:
• premium
  - a result of the choice of deductible, coinsurance and copayment;
• coverage
19 regulatory aspects of private health facilities and hospitals

**A Corporate Governance -**

- **(A1)** Appointment of Person-in-charge;
- **(A2)** Establishment of Medical Advisory Committee;
- **(A3)** Complaints Management System;
- **(A4)** Establishment of an Information System Connectable with the Electronic Health Record Sharing System (“eHRSS”); and
- **(A5)** Maintenance of Hospital Accreditation Status.

**B Standard of Facilities -**

- **(B6)** Premises Management
- **(B7)** Physical Conditions
- **(B8)** Infection Control.

**C Clinical Quality -**

- **(C9)** Service Delivery and Care Process
- **(C10)** Resuscitation and Contingency
- **(C11)** Standards Specific to Procedures Performed
- **(C12)** Credentialing of Visiting Doctors

**D Price Transparency -**

- **(D15)** Provision of Fee Schedule
- **(D16)** Provision of Quotation
- **(D17)** Provision of Recognized Service Packages
- **(D18)** Disclosure of Historical Bill Sizes Statistics

**E Sanctions -**

A fine ($25,000 – $5 million) due to unlawful operation or non-compliance of other provisions of the legislation on hospitals or other regulated PHFs.

FUTURE CHALLENGES
Population growth and Aging Population – Government Projection of Recurrent Subvention to Hospital Authority

Government Projection of Spending on Health

Future Challenges

“Based on current projections, our 2041/42 recurrent financial resource requirement will be an estimated HK$169 billion – 3.8 times more than in 2013/14. Some 18,000 new beds, 6,200 extra doctors, 24,000 more nurses and 7,700 new allied health professionals are among the more important of the many additional resources that will be necessary to maintain a level of service that is comparable with that of today.”

Speech by LEUNG Pak-yin, Chief Executive of Hospital Authority in HA convention 2014.
The End

Q&A