



香港中文大學醫院  
**CUHK**  
Medical Centre

# The Integration Challenges

## 新機遇整合的挑戰

AIS Ageing Conference  
18 June 2017



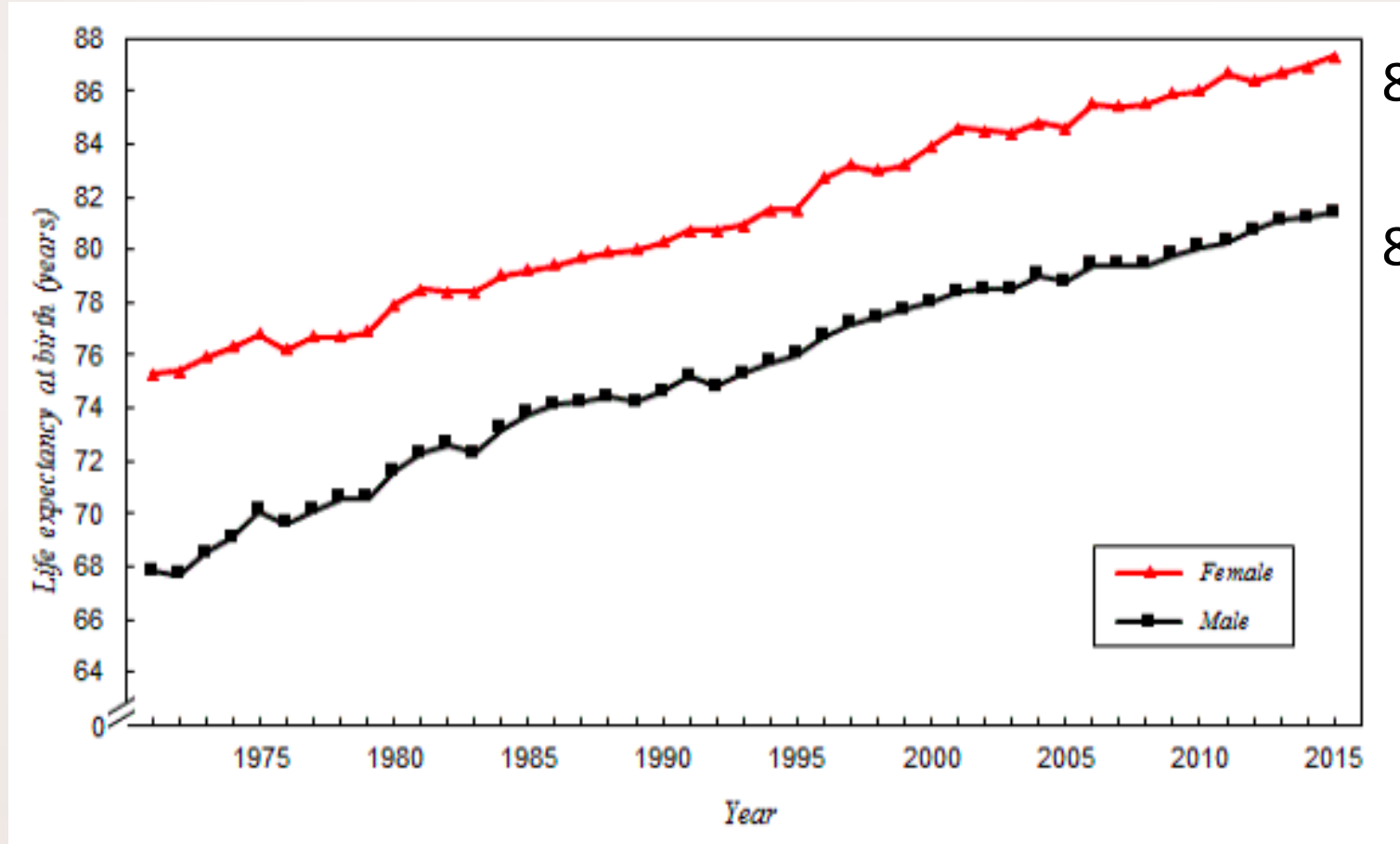
**Dr FUNG Hong**

Executive Director  
CUHK Medical Centre

Professor of Practice in Health Services Management  
JC School of Public Health and Primary Care  
The Chinese University of Hong Kong



# Life Expectancy in Hong Kong



87.3 years

81.4 years



# Hong Kong women and men enjoy world's longest life expectancy due to low smoking rates, health experts claim

*Why do we live so long?*

Second place held by Japanese women and Icelandic and Swiss men

PUBLISHED : Thursday, 28 July, 2016, 12:53pm

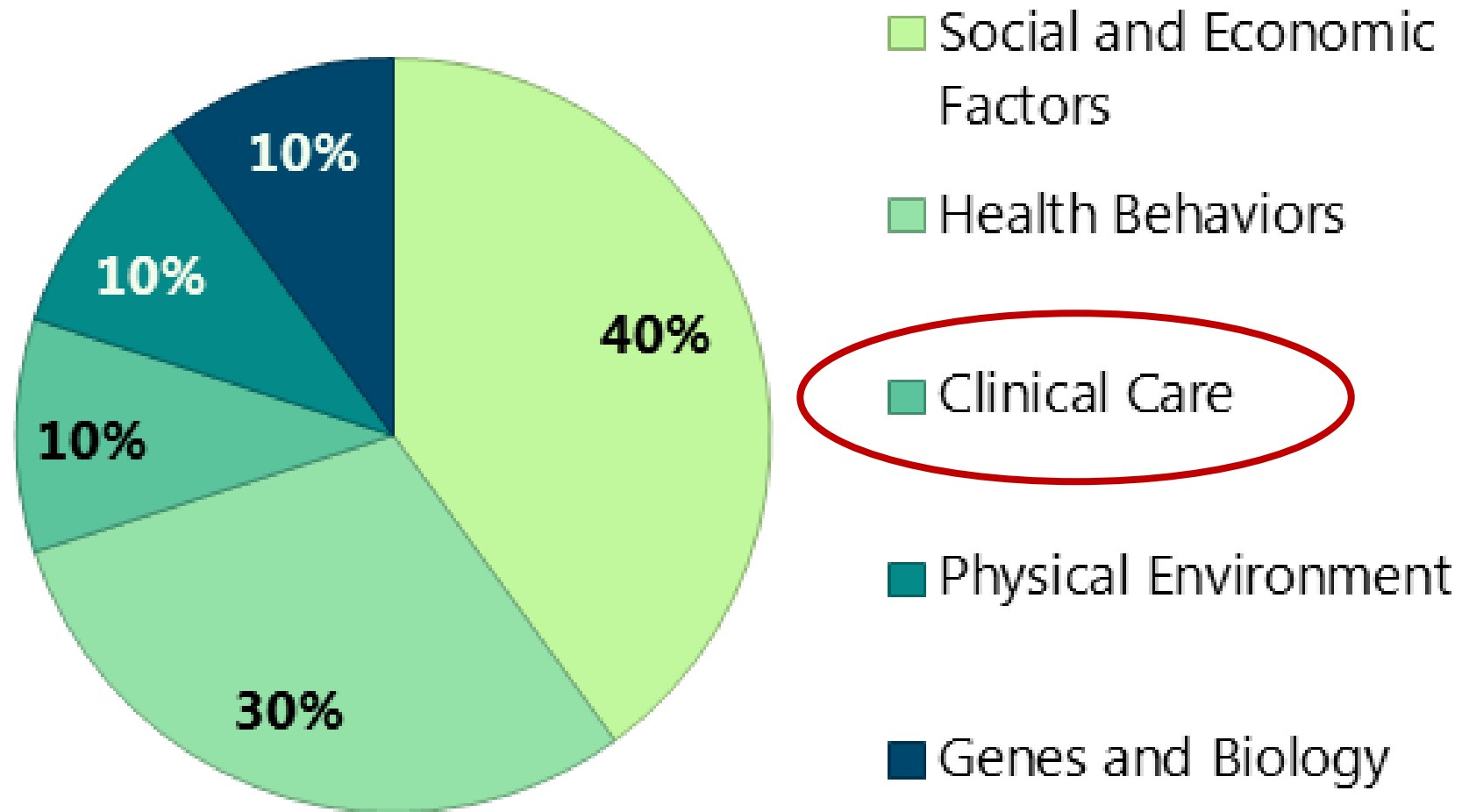
UPDATED : Sunday, 31 July, 2016, 4:08pm

COMMENTS: 14



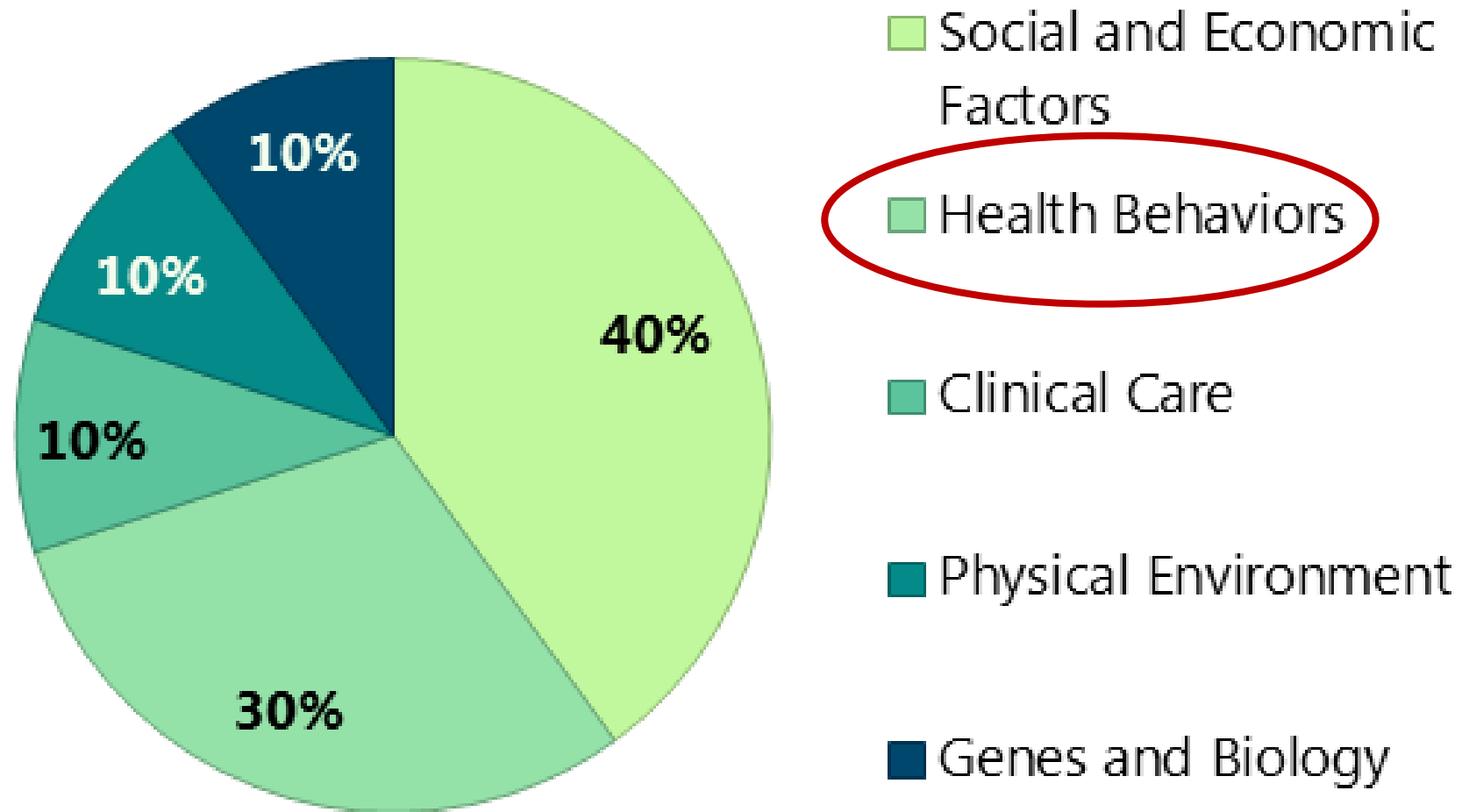


## Factors Influencing Health and Well-Being

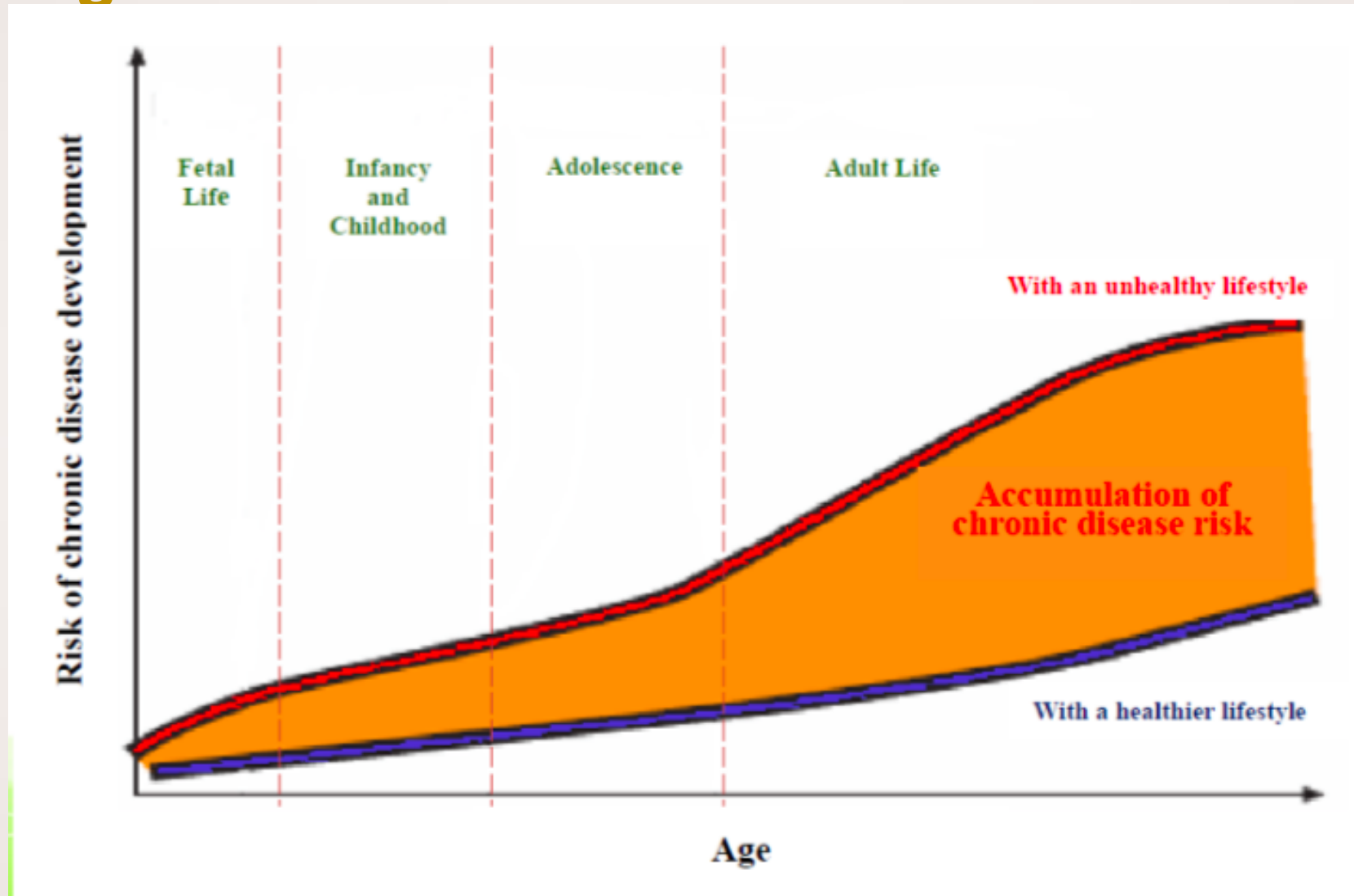




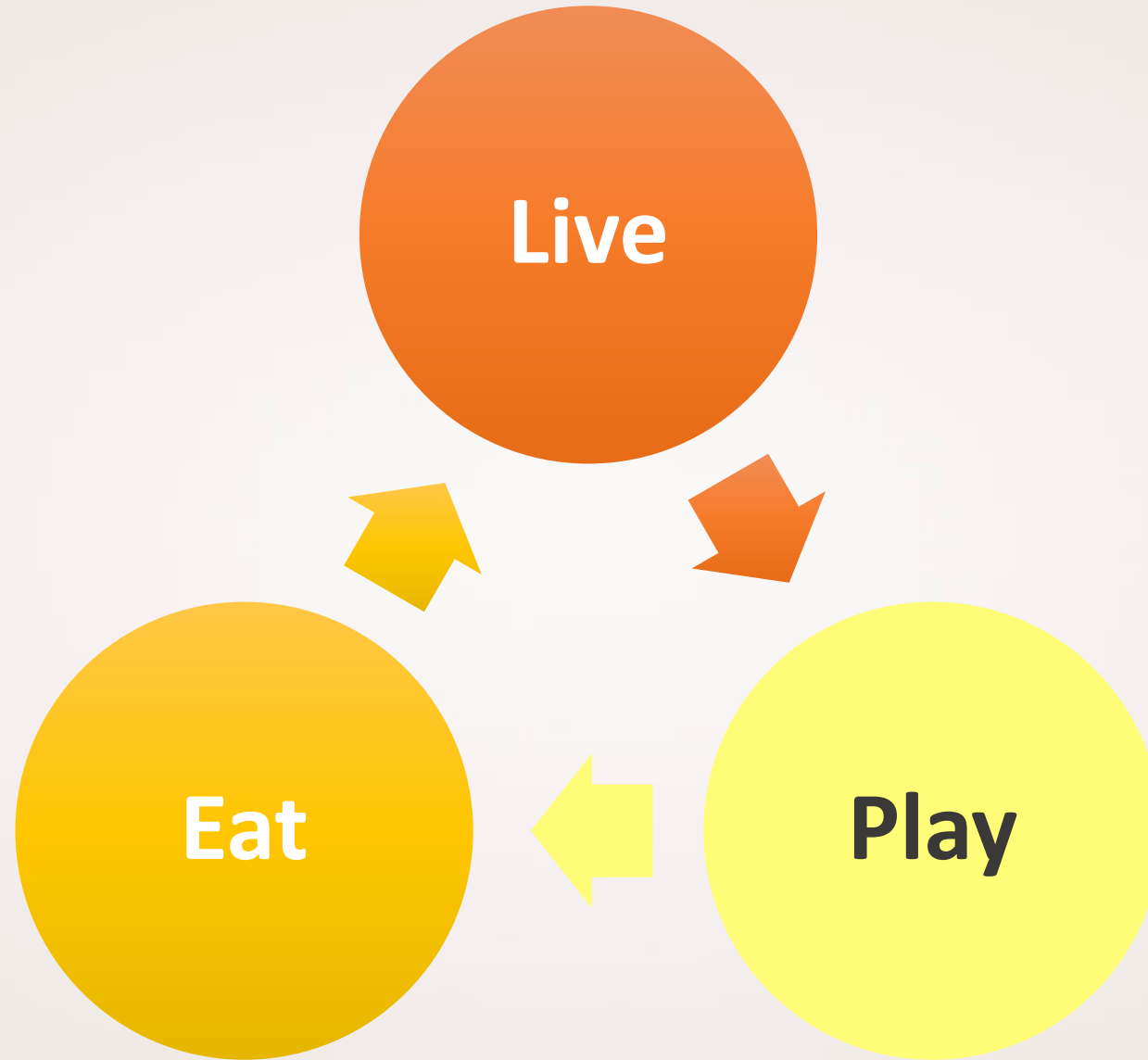
## Factors Influencing Health and Well-Being



# Accumulation of Chronic Disease Risk with Age



Source: World Health Organization, 2002.



Live

# First Thing First



## PHYSICAL ACTIVITY SAVES LIVES AND PROTECTS HEALTH



**1 IN 10** premature deaths could be prevented by getting enough physical activity.

It could also prevent:



**1 IN 8**

cases of breast cancer



**1 IN 8**

cases of colorectal cancer



**1 IN 12**

cases of diabetes



**1 IN 15**

cases of heart disease

*“Physical activity is the closest thing we have to a wonder drug.”*  
**Dr. Tom Frieden, CDC Director**






# How much?



Twitter


# STEP IT UP!

Surgeon General's Call to Action to Promote Walking and Walkable Communities



## Mall Walking

A PROGRAM RESOURCE GUIDE




American Heart Association American Stroke Association. *Life is why™*

## The American Heart Association Recommendations for Physical Activity in Adults


For Overall Cardiovascular Health:

At least **30** minutes of moderate-intensity aerobic activity **At least 5** days per week for a total of **150** minutes



OR


At least **25** minutes of vigorous aerobic activity **At least 3** days per week for a total of **75** minutes



or a combination of the two



AND

Moderate to **HIGH INTENSITY** muscle-strengthening activity **At least 2** days per week for additional health benefits



For Lowering Blood Pressure and Cholesterol:

An average of **40** minutes of moderate- to vigorous-intensity aerobic activity **3-4** days per week

© 2016 Learn more at [heart.org/ActivityRecommendations](http://heart.org/ActivityRecommendations).

Live

# How about you?



Country	Steps/ Day
America	5,000
W Australia	9,700
Japan	7,200
UK	4,000
Hong Kong	?



# How active are the others in HK?

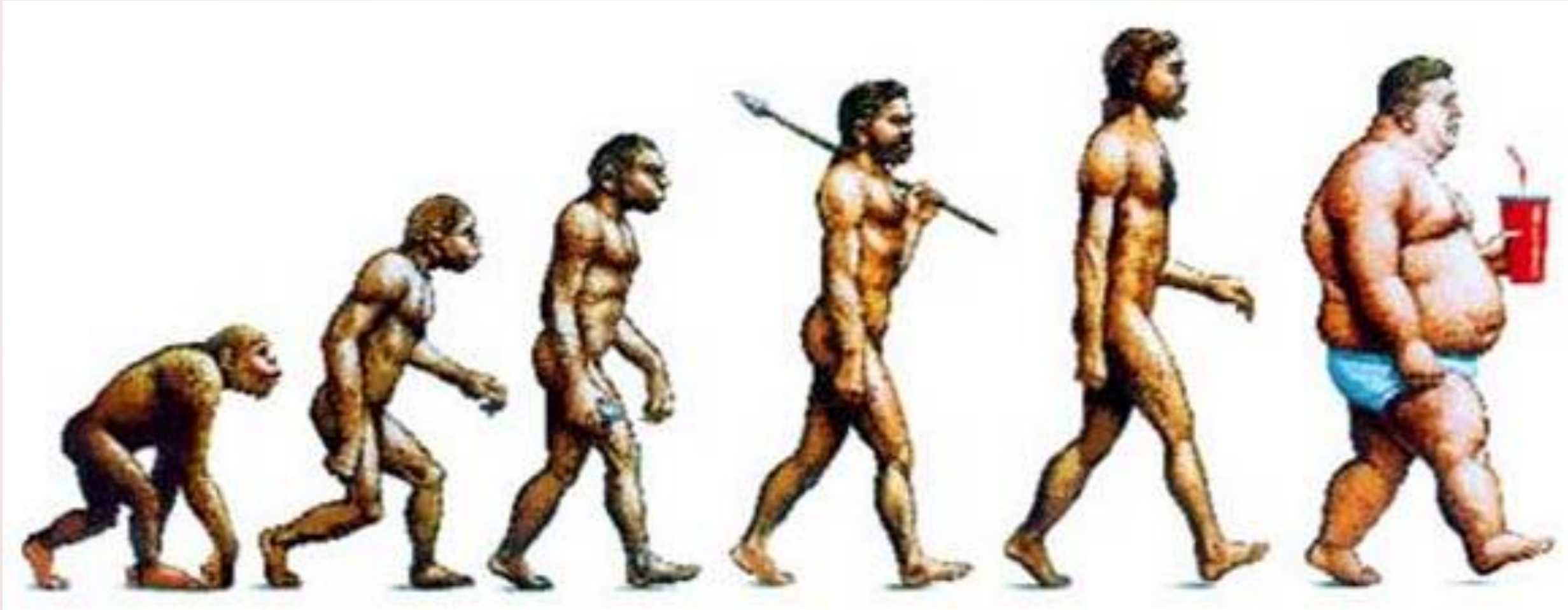


## < 60 min moderate to vigorous physical activities per day

- 13 – 19 years 90%
- 18 – 64 years 60%

兒童及青少年體力活動報告卡 Report Card on Physical Activity for Children and Youth		
地區 Region: <u>Hong Kong</u>	年齡 Age: <u>6 - 17</u>	
指標 Indicators	評級 Grades	
<b>整體體力活動水平 Overall Physical Activity Levels</b> 基準 Benchmark: • 能達到體力活動標準的兒童和青少年之百分比 (每天不少於六十分鐘中等強度至激烈體力活動) • 能達到體力活動標準的學前兒童之百分比 (每天不少於一百八十分鐘體力活動) • Percentage of children and youth who meet physical activity guidelines (at least 60 minutes of moderate-to-vigorous physical activities each day) • Percentage of preschool children who meet physical activity guidelines (at least 180 minutes of physical activities each day)	<b>D</b>	少於半數可以達標。 Less than 50% meet the predefined benchmark.
<b>組織性運動參與 Organized Sport Participation</b> 基準 Benchmark: • 能達到至少每週一次參與組織運動的兒童和青少年之百分比 • Percentage of children and youth who participate in organized sport for at least once a week	<b>C-</b>	四至五成青少年達標； 事实上略低於生達標。 40% to 50% of youths meet the predefined standard; slightly higher participation in boys than girls.
<b>動態遊戲 Active Play</b> 基準 Benchmark: • 能達到至少每週一次參與非組織性運動的兒童和青少年之百分比 • Percentage of children and youth who participate in non-organized sport for at least once a week	<b>INC</b> 未能評級	兒童和青少年的自由活動時間很少受到家長、學校和輔導關注。 Lack of data as parents, schools and coaches do not pay much attention to children and youths' non-organized sports.
<b>步行/踏單車往返學校 Active Transportation</b> 基準 Benchmark: • 能達到至少每週一次步行/踏單車往返學校的兒童和青少年之百分比 • Percentage of children and youth who travel to school on foot or by cycling at least once a week	<b>B</b>	約八成達標。 Around 80% could meet the predefined benchmark.
<b>靜態行為 Sedentary Behaviors</b> 基準 Benchmark: • 能達到每天少於兩小時使用電子屏幕產品標準的兒童和青少年之百分比 • Percentage of children and youth who meet screen time guideline of less than two hours a day	<b>C</b>	約半數可達此國際標準。 Around 50% meet the international standard.
<b>家庭支持 Family</b> 基準 Benchmark: • 支持子女體力活動的父母之百分比 • Percentage of parents who support their children to be physically active	<b>D</b>	約三成父母每週最少一至兩次子女一起參與體力活動。 Around 30% of parents participate in physical activities with children at least once a week.
<b>學校體育 School—Physical Exercise, Physical-Activities-Related Policy, and Programmes</b> 基準 Benchmark: • 能達到每週提供大部分學生不少於七十分鐘體育課的學校之百分比 • 執行與體力活動相關政策的學校之百分比 • 提供機會讓大部分學生進行體力活動 (不包括體育課) 的學校之百分比 • Percentage of schools where the majority of students are offered at least 70 minutes of PE lessons a week • Percentage of schools with active physical activities-related policies • Percentage of schools that offer physical activity opportunities (excluding PE lessons) to the majority of their students	<b>C</b>	近八成學校每週有提供體育課或體育課時比預設課時少兩成； 只有三成學校制定體力活動政策文件； 約半數學校有體育課，但實際參與人數未能評估。 Almost 80% of schools have PE lessons at PE classes per week, with the actual time of the lessons 20% shorter than scheduled. Only 30% of schools had a documented physical activity policy. Most schools have sports day or inter-school sports competition events, but the actual number of participants is unknown.
<b>社區及環境設施 Community and the Built Environment</b> 基準 Benchmark: • 感到環境安全之兒童或家長之百分比 • 使用社區運動設施的兒童或家長之百分比 • 對體育場及社區運動設施感到滿意的兒童或家長之百分比 • Percentage of children or parents feeling safe in the local community • Percentage of children or parents who have used sport facilities in their communities • Percentage of children or parents who are satisfied with parks and sport facilities in their communities	<b>B</b>	近八成父母認為社區環境安全； 大部分青少年對政府提供的社區運動設施滿意。 Almost 80% of the parents feel that the community is safe. A majority of youths are satisfied with the sport facilities in the local communities provided by the government.
<b>政府策略和資源投放 Government Strategies and Investments</b> 基準 Benchmark: • 有明確承諾提供兒童和青少年體力活動機會的證據 • 有分配資金和資源來推廣兒童和青少年體力活動 • Evidence of leadership and commitment in providing physical activity opportunities for all children and youth • Allocated funds and resources for the implementation of physical activity promotion strategies and initiatives for all children and youth	<b>INC</b> 未能評級	因缺少預設標準，暫時無法判定等級。 Unable to be measured due to lack of a preset benchmark.
評分級別 Levels of Grading		
A 81%-100%達標 81%-100% meeting predefined benchmark	B 61%-80%達標 61%-80% meeting predefined benchmark	C 41%-60%達標 41%-60% meeting predefined benchmark
D 21%-40%達標 21%-40% meeting predefined benchmark	E 0%-20%達標 0%-20% meeting predefined benchmark	INC 未能評級 Incomplete data

Eat



Eat

# Unhealthy Food



**Eat**

# How are we doing every day?

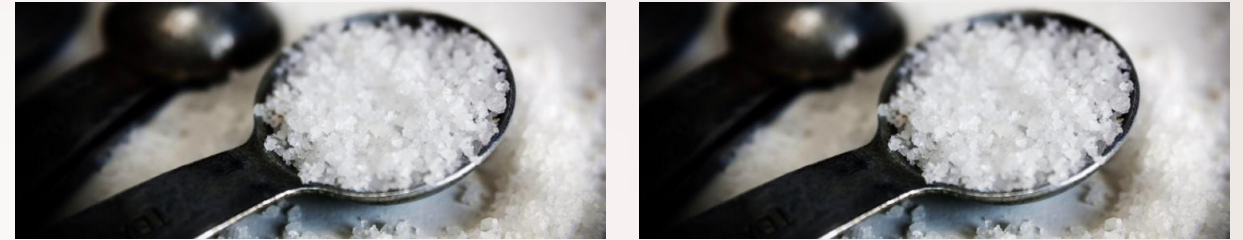


**WHO**

**Hong Kong**



Salt 5g



Salt 10g



Vegetables & Fruits 2+3

20% of people meeting  
WHO recommendation!

# Eat

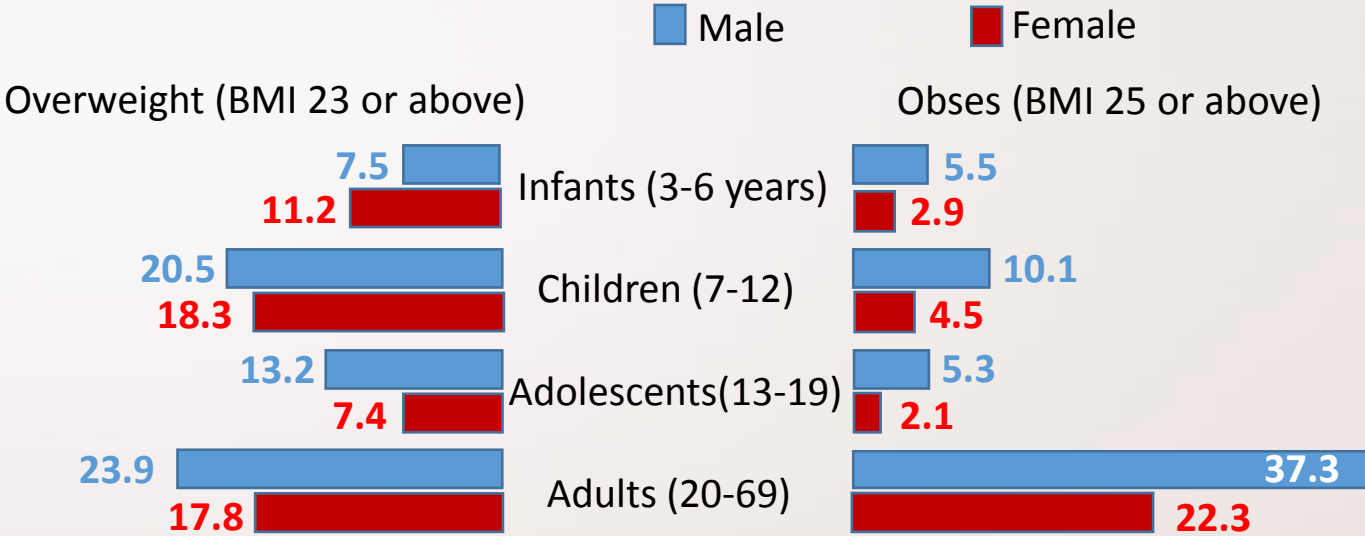
## Are we eating too much?



### Are Hongkongers in dire need of more physical activity ?

Statistics based on physical fitness test and survey involving more than 8,000 people (percentage).

Body Mass Index (BMI) is weight (in kilograms) divided by height (in metres) squared.



(SCMP)

Eat

# Hong Kong sets target to reduce sugar and salt content in food

Government to follow WHO guidelines for 30pc reduction in intake over 10 years

PUBLISHED : Saturday, 28 March, 2015, 12:31am

UPDATED : Saturday, 28 March, 2015, 4:41am





Eat



**Play**

# Two Dimensions



**Health**

**Hell**

Play

“The opposite of play is not work, it is depression.”

- Brian Sutton-Smith

(<http://www.nifplay.org>)

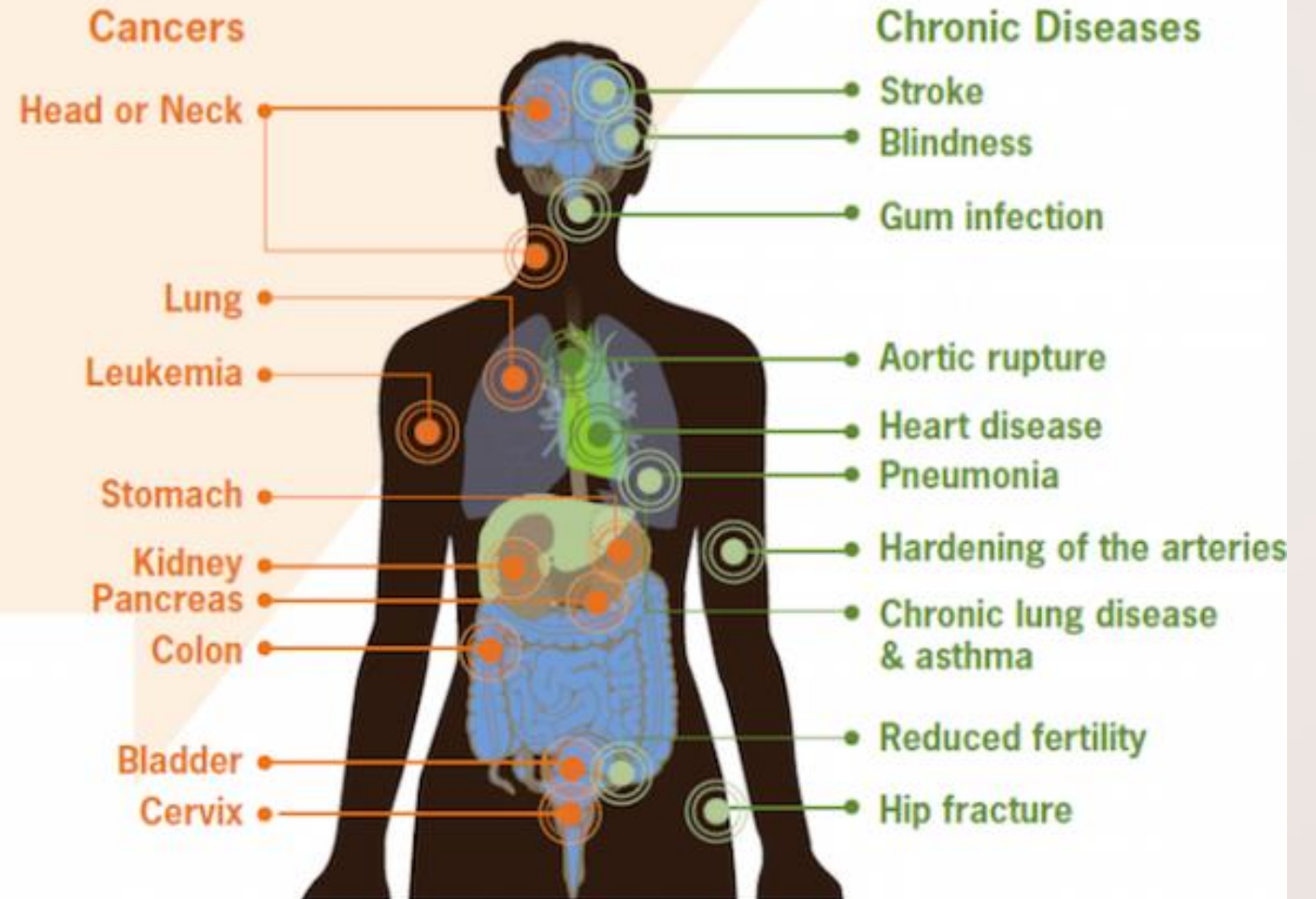


Play

*When it becomes an addiction ...*

# Risks from Smoking

Smoking can damage every part of the body



**Play**

***When it  
becomes an  
addiction ...***

# Is alcohol good or bad for health? Figures reveal Hong Kong as city of big drinkers

Health experts warn that those who drink before they are 15 are six times more likely to develop alcohol dependence or abuse later in life

PUBLISHED : Saturday, 21 January, 2017, 1:02pm

UPDATED : Saturday, 21 January, 2017, 1:02pm

COMMENT:

1



**Play**



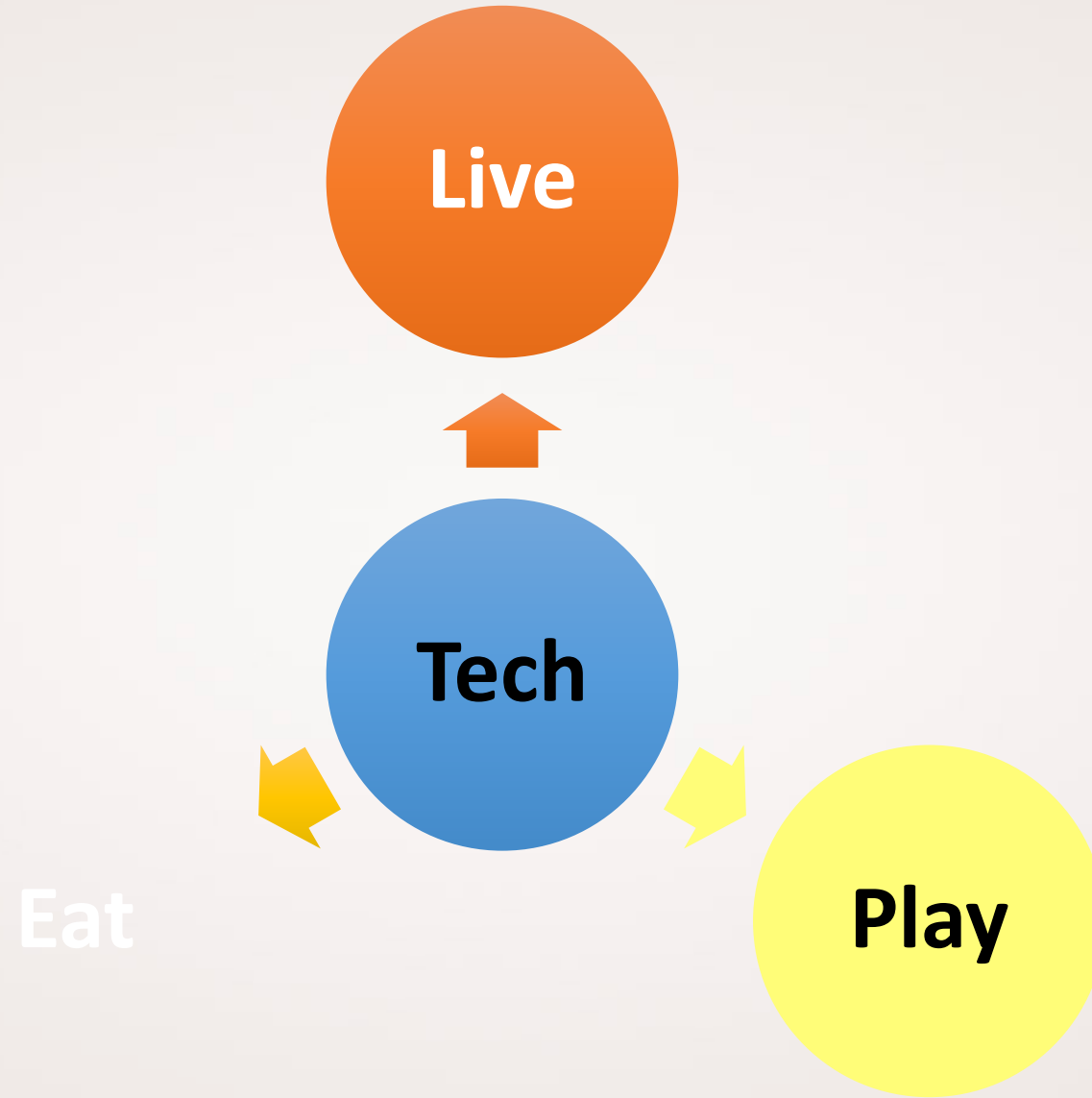
***When it  
becomes an  
addiction ...***





# How Can Technology Help Healthy Ageing









Tech

# Growth in Technology



- Large number of new technologies evolved
  - Different types of technology
  - Personal use, used by hospitals and clinics
  - Many have short life cycles

Tech

# Personal Use



# Tech

# Hospital Use



Vital Signs Monitoring

**RFID**  
vs.  
**Barcodes**

Equipment  
Checking



EHR Portals and Apps



Kiosks



Real Time Patient Tracking System

Patient  
Tracking  
System



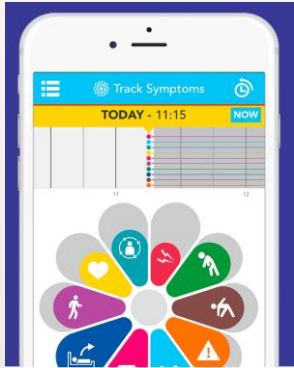
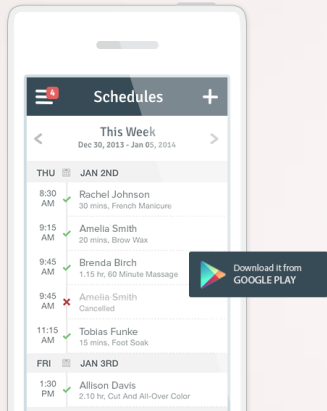
Tele-medicine

# Tech

# Mobile Apps



- *There are 165,000+ healthcare apps available in 2015!*



Appointment Management

Vital Signs Monitoring

Patient Education

Lifestyle Improvement



forbes.com/sites/bmoharrisbank/2013/... 5 Ways Technology ...

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CEO NETWORK 1/24/2013 @ 11:40AM | 73,423 views

# 5 Ways Technology Is Transforming Health Care

BMO Harris Bank

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# 5 Medical Technologies Revolutionizing Healthcare

Steven Kotler Contributor

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All Marketing Strategies Health Care Technology Policy Education For Patients Guest Post

## The 7 Biggest Innovations in Health Care Technology in 2014 [INFOGRAPHIC]

by Brian Honigman

Tweet 68 | Share 11 | +1 108 | Share 28 | ShareThis 4952

This year we've witnessed amazing innovations in technology with everything from wearable tech like Google Glass or Nike+ to the recent introduction of Coin, one card that stores all your credit cards, debit cards, personal accounts, business accounts and other cards typically filling your wallet. The healthcare industry was no exception to the rise in disruptive technology changing the way people are impacted. What are some of the most influential healthcare technologies you've seen appear this year?

### 2015 HEALTHCARE TECHNOLOGY UPDATE:

Demo the world's leading referral network

No fax. No phones. No hassle

NAME

EMAIL

TITLE

ORGANIZATION

I AM A...

GET STARTED FREE



**Tech**

## What people predicts ...



- IT that links people – patients and doctors
- IT that keeps people healthy
- 3-D printed biological materials
- Artificial intelligence
- Brain-computer interface, wearable technology like Google glass
- Robotics, hybrid operating rooms
- Point-of-care diagnostics, ingestible sensors
- Microchips modeling clinical trials



Tech

# How Technology Can Create Real Values to Aged Citizens?



- Value to Aged Citizens
  - Happier life
  - Better health
- Person-centered healthcare
  - Manage individual's life style
  - Reduce waiting time in care services
  - Deliver services according to patient's needs and choices
  - Provide Personalized or Precision Medicine

Tech

# Importance of Technology “Integration”



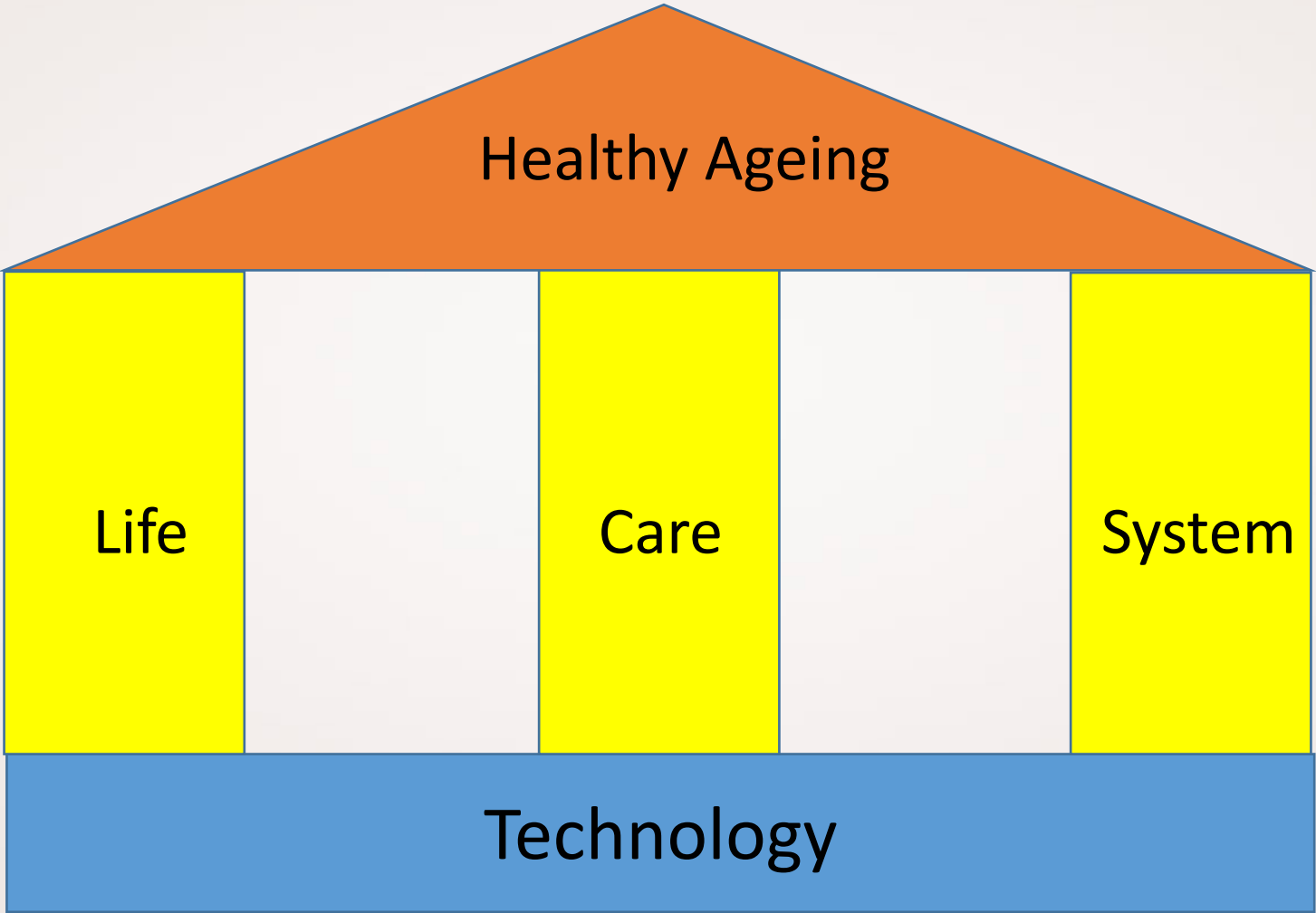
- Must serve a purpose which in turn can improve **Health** or enhance **Values in healthcare**







# Technology Integration





**Tech**

# **Integrate with Life**



- Need to fit into one's Mode of Living and Lifestyle Behaviour
- Wide range of understanding, acceptance and ability to master new technologies
- Increasing trend of people engagement and empowerment

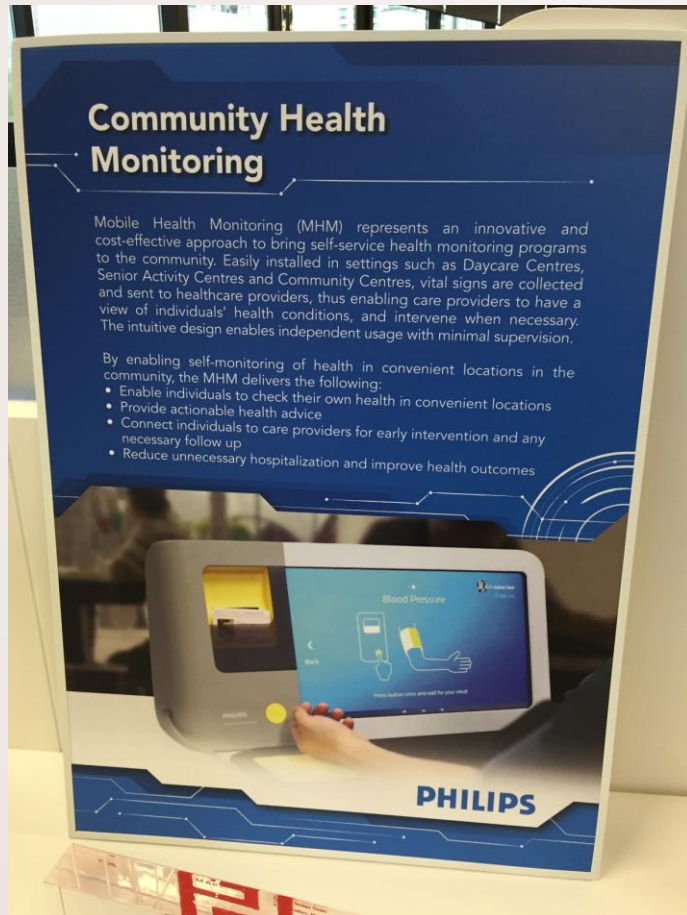
Tech

# Knee Buddy App (SingHealth)



Tech

# Mobile Health Monitor (Hospital to Home)





Tech

# Acesobee in HK





## Join Patient Innovation community

A platform created for patients and those who care about them to share and access useful solutions to cope with their diseases.



### SEARCH

See solutions from others with similar challenges as yours and give your feedback!



### POST

Do you have a solution? Great! Post it on Patient Innovation and help improving lives.



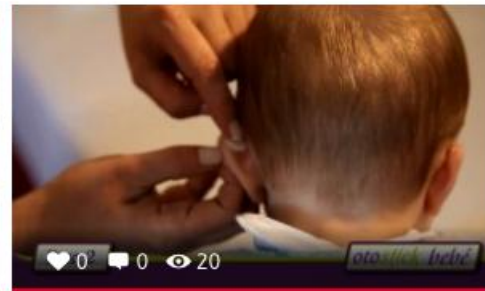
### FORUM

Every great solution starts with a simple idea. Discuss how to turn your and others ideas into solutions.

## Latest Solutions



Father and son create system to help disabled patients to communicate



Mother invents ear correctors for her daughter

EARS



Patient develops solution to ride his bike

BRACHIAL PLEXUS INJURY    PHYSICAL DISABILITY

# Tech



## Observatory of Public Sector Innovation



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## Patient Innovation Lab

[Description](#) [Results](#) [Development](#) [Lessons Learned](#)



The Patient Innovation Lab is an online ecosystem, nonprofit and of free access, where patients, caregivers, and collaborators have a place for innovation and invention. This digital worldwide network enables individuals with health-related problems to find all the resources needed in the creation of innovative solutions to improve their and others' quality of life. With the sharing of solutions and with the democratization of the technology, the Patient Innovation Lab's mission is also to empower patients and caregivers to become entrepreneurs. The users were now also sharing ideas they had and asking for help bringing them to life and, some, even to the market. The need to develop an online ecosystem where patients and caregivers would be able to co create and share ideas led to an improvement "The Patient Innovation Lab", a place where everyone can take action by giving shape to their ideas to cope with a disease.

If you are a public official, please sign in [here](#) to see the contact details of the innovator.

**Organisation:** Patient Innovation

**Country:** Portugal

**Level of government:** Central



# Patient Innovation



- Tim Omer
  - Part of a global community of Type 1 diabetics
  - Hacking and building their own medical devices and apps
- Hackabetes Artificial Pancreas Project (Tim Omer)
  - Bring down cost of diabetes care
  - Build tools that improve on what is currently available from healthcare providers



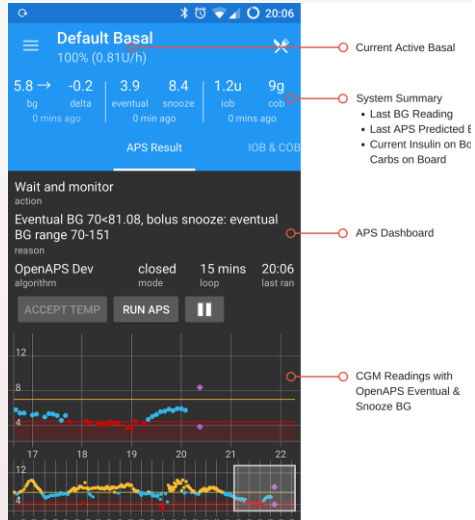
## Building a DIY Artificial Pancreas

Published on April 3, 2015

Timothy Omer | Follow  
Senior IT Professional, Citizen Health Hacker, Type 1 Diabetic Rebel

7 2 1

*I am going to build a fully wireless, closed loop DIY Artificial Pancreas System to partly automate the management of my Diabetes.*



## Tim Omer: Android app for diabetes



Tim Omer: 'Some doctors struggle with the concept of people managing their own decisions.'  
Photograph: Angela Moore, courtesy of the Science Museum.



**Tech**

# Integrate with Care

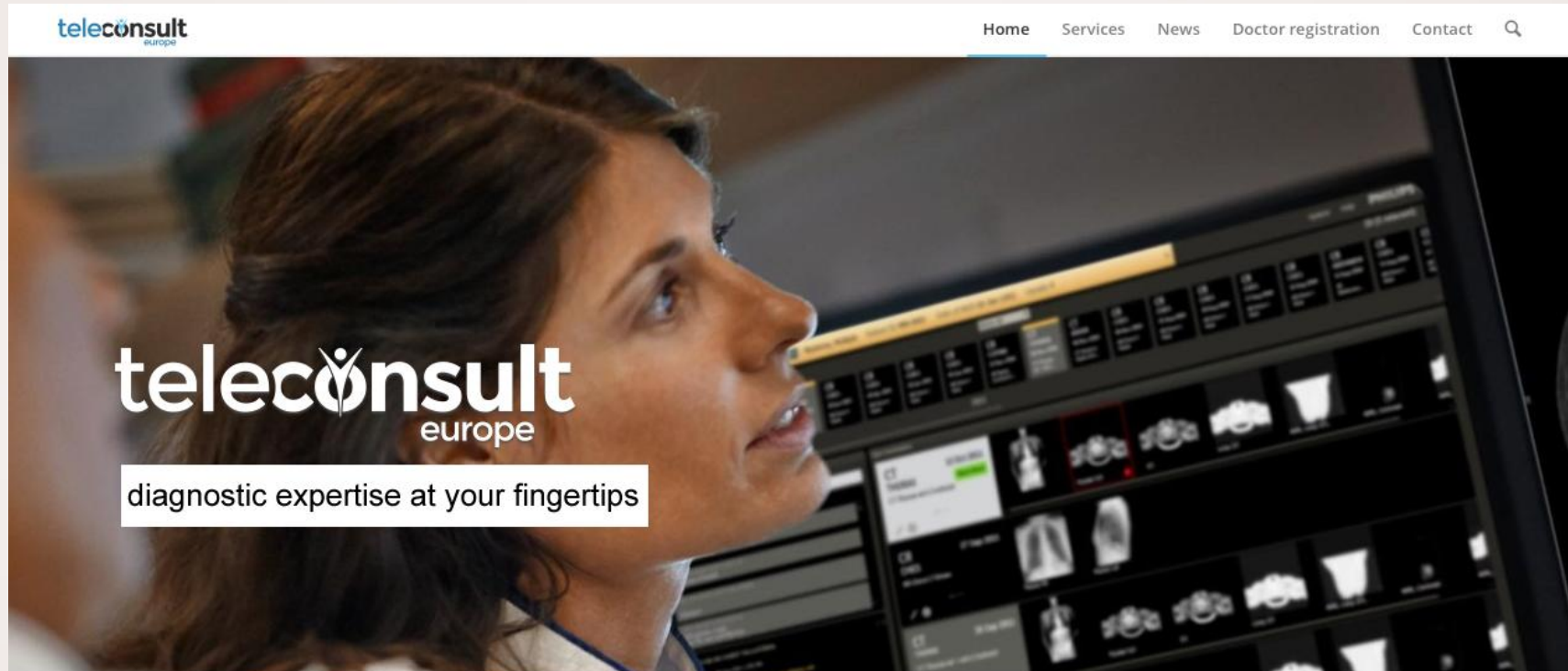


- Need to fit into the Mode of Care and Care Processes



Tech

# Teleconsult Europe Cooperation



## TELERADIOLOGY

Designing and delivering teleradiology services which meet your specific requirements is our forte. Our Board Certified radiologists offer preliminary, final and subspecialty reports 24/7/365. Turnaround times are set to match your needs. Our technical support center provides state of the art PACS/RIS and communication technology, which securely integrates with your current Information Systems.

## TELEPATHOLOGY

Teleconsult pathologists offer services ranging from remote reporting of cyto- and histological cases, to lab design and quality assurance programs. We support the most basic lab set ups with second opinions and on-line consultations, and connect more advanced labs to our web based telepathology platform for routine reporting of diverse cases.

## CLINICAL TRIALS

TeleConsult provides Expert Reader capacity for a variety of therapeutic indications, involving a wide variety of imaging modalities and many different reading methodologies. This list of quantitative assessments includes, but is certainly not limited to the following criteria: RECIST 1.0/1., Cheson/Lugano, RANO/McDonald, Choi, PCWG2

# Tech



♥ **babylon**

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## Hand-picked doctors, supported by cutting edge technology

[Get started](#)

Regulated by Care Quality Commission

In partnership **NHS**

**theguardian** "babylon fits with the idea that millennials now expect all their services to be streamlined"

**Bupa** "has the potential to change the way people access care"

**WIRED** "babylon puts an AI doctor in your pocket"

<https://www.babylonhealth.com/how-it-works>

Tech



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- > Specialist health services
- > Personal care and wellbeing
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**Our Home Hospital service enables you to receive hospital-level care in the comfort and privacy of your own home.**

Our team consists of experienced medical practitioners, nurse practitioners and nurses who work together to provided high-level acute care, normally provided in a hospital or Emergency Department. Our Home



## WARD OF THE FUTURE

### RADIO FREQUENCY IDENTIFICATION (RFID) TRACKER

Tracks patient location, thus minimising need for manual tracking and monitoring.



### VENDOR MANAGED INVENTORY

Enables suppliers to monitor and top up the level of consumables and medication within the ward. This reduces manpower required for such tasks.



### IN-PATIENT RECOVERY ROBOTICS

Assists therapist in conducting rehabilitation exercises with patients recovering from stroke and other neurological disorders.



### ROBOTIC ASSISTED BEDS

Transforms into a reclining wheelchair. This reduces strain on healthcare staff when transporting patients.



### CEILING HOIST

Enables healthcare workers to lift a patient with minimal effort, and protects them against strain or injury.



### AUTONOMOUS TRANSPORTER

Delivers medication, documents and blood samples independently throughout the hospital.



### CLEAN FIX ROBOT

Cleans corridors and hallways autonomously, and reduces manpower for manual cleaning activities.





## IBM Watson Health

Our mission is to empower leaders, advocates and influencers in health through support that helps them achieve remarkable outcomes, accelerate discovery, make essential connections and gain confidence on their path to solving the world's biggest health challenges.



### Choose your focus

Learn how IBM Watson Health can help you.

Whether advancing toward a big-picture vision or delivering meaningful experiences to a single individual, our mission is to improve lives and enable hope. We arm health heroes with the technology and expertise they need to power thriving organizations, support vibrant communities and solve health challenges for people everywhere.



Optimize performance



Engage consumers



Enable effective care



Manage population health

# Tech

## Integrate with System



- Need to fit into the Mode of Business / Business Models

**AIA Vitality** **Limited offer**

New members can enjoy  
**up to 100% cashback\***  
on purchasing selected fitness devices

- A Fitbit, Garmin or Polar purchased through aivitality.com.hk with 25% off, or
- The world's best selling smartwatch\*

\* Terms and conditions apply.  
\* Reference: International Data Corporation (IDC) Worldwide Quarterly Wearable Device Tracker (Press Release), 21 Jul 2016

S Health 同步

「AIA Vitality 健康程式」現在已與S Health 同步！

借助連接到此應用程式，您可以隨時追蹤您的體能和健康數據。

**AIA Vitality**  
健康程式

+

略過 連接到S Health

您還可在S Health應用程式內，新增可顯示您積分的「AIA Vitality 健康程式」記錄Tile。

S Health 查看更多

紫外線 測量

跑步 開始

心跳偵測 測量

咖啡因 本日 +

**AIA Vitality**  
30800  
積分  
1分鐘前

管理項目

TREND.HK  
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# Tech





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## Welcome to My Health Record

My Health Record is a secure online summary of your health information. You can control what goes into it, and who is allowed to access it. You can choose to share your health information with your doctors, hospitals and other healthcare providers.

**Other questions you might have:**

- Find out about the [benefits of having a record](#)
- Visit our [frequently asked questions](#)
- Learn more about [privacy and security](#)
- [Find out what's new](#)
- View the [latest My Health Record statistics](#)

 [Register or access a My Health Record](#)







"Clayton Christensen has done it again, writing yet another book full of valuable insights . . .  
*The Innovator's Prescription* might just mark the beginning of a new era in health care."  
—MICHAEL BLOOMBERG, Mayor, New York City

# The Innovator's Prescription

*A Disruptive Solution for Health Care*



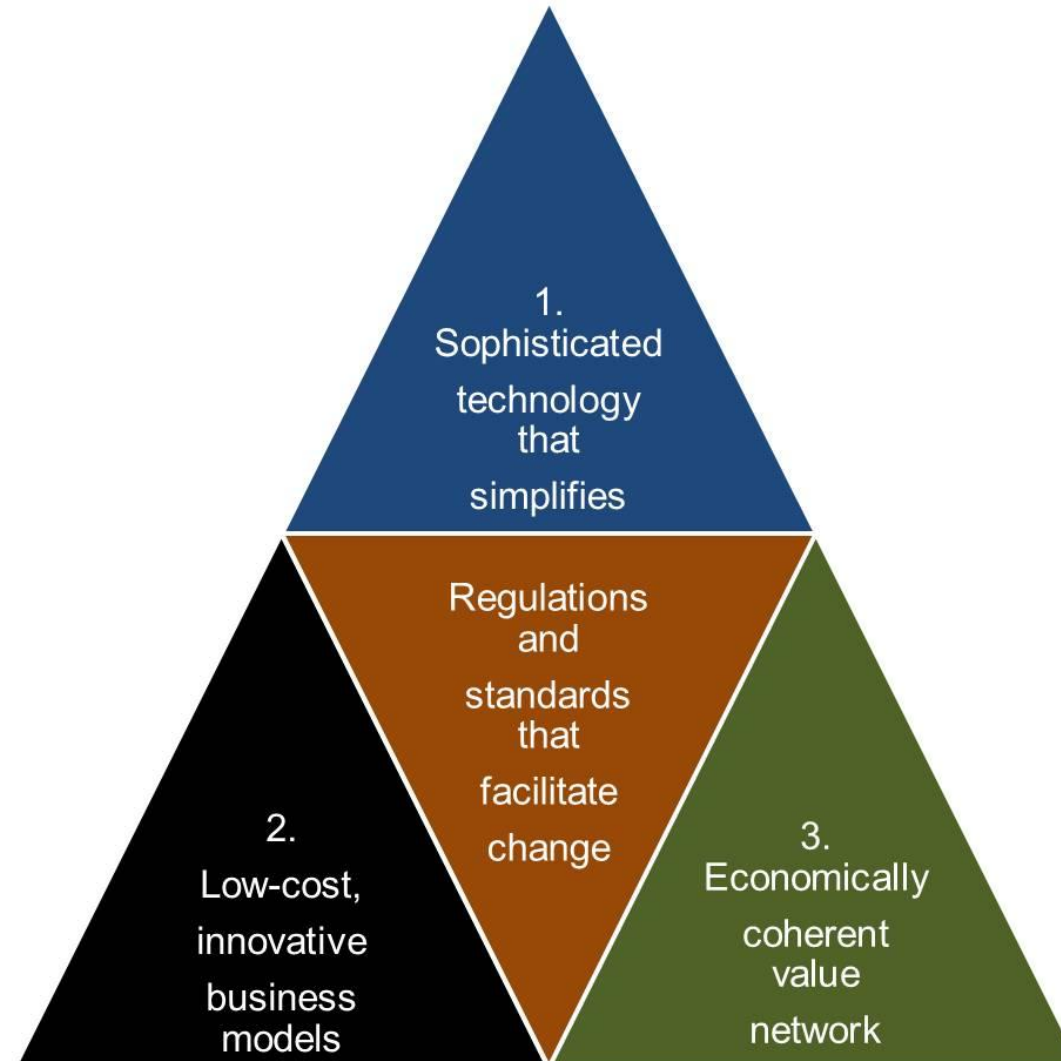
**Clayton M. Christensen**

BESTSELLING AUTHOR OF *THE INNOVATOR'S DILEMMA*  
Jerome H. Grossman, M.D. & Jason Hwang, M.D.





# ELEMENTS OF DISRUPTIVE INNOVATION



# CUHKMC Vision, Mission and Values



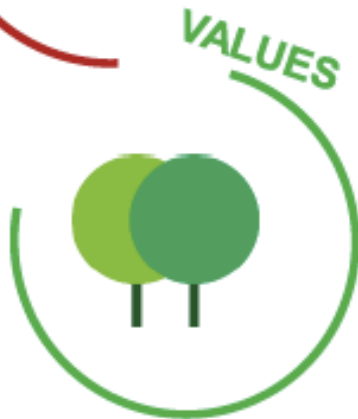
VISION

- **Respected** for quality patient-centered services
- **Reputable** for new models in coordinated care
- **Recognized** for transparent and affordable pricing
- **Renowned** for clinical excellence



MISSION

**Pioneering Solutions in Healthcare**

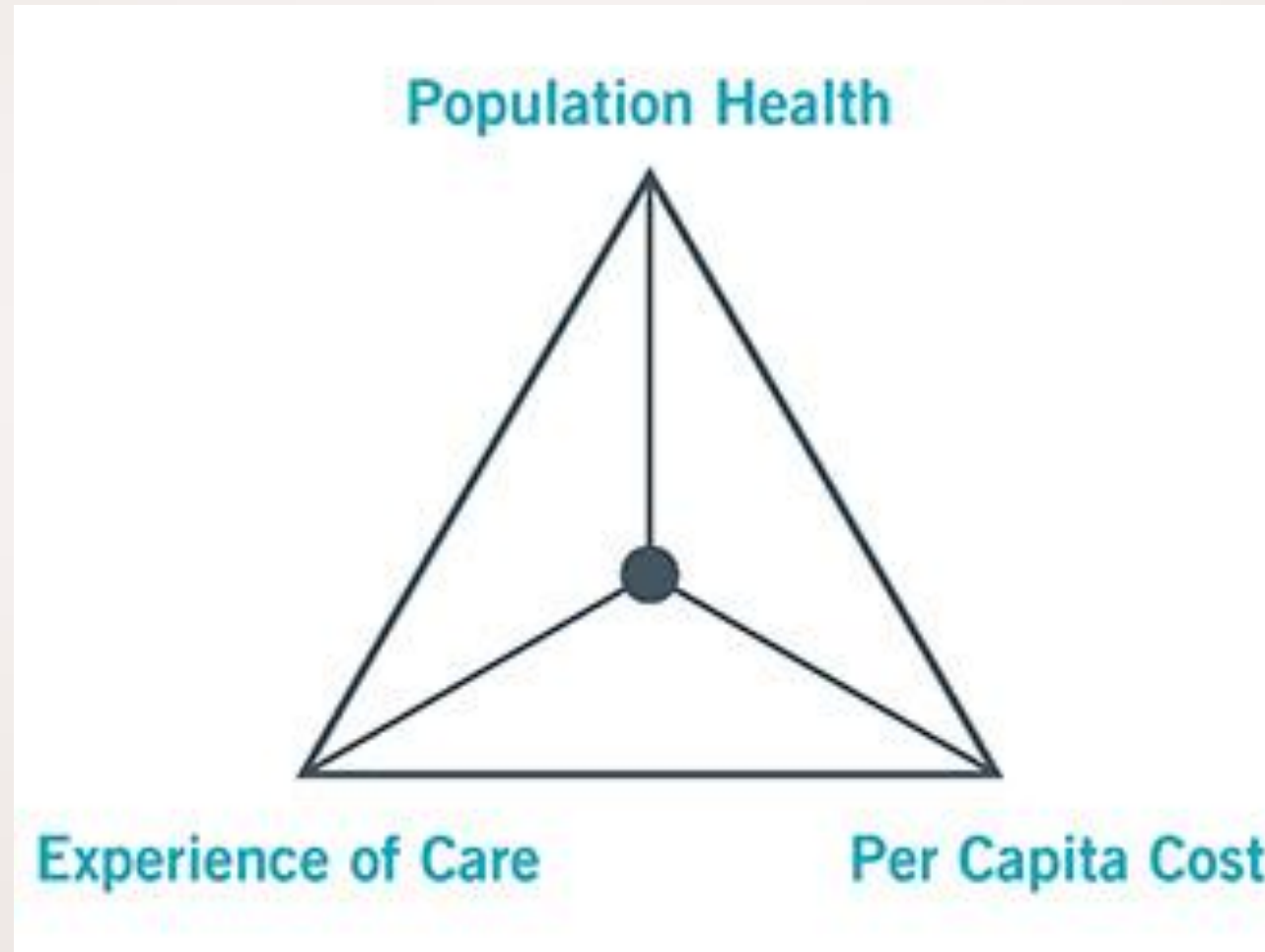


VALUES

- **Patient First**
- **Team-care**
- **Compassionate**
- **Open**
- **Holistic**
- **Trustworthy**

# Transforming Healthcare: Embracing the Triple Aim

(Institute of Healthcare Improvement)





# Smart Hospital

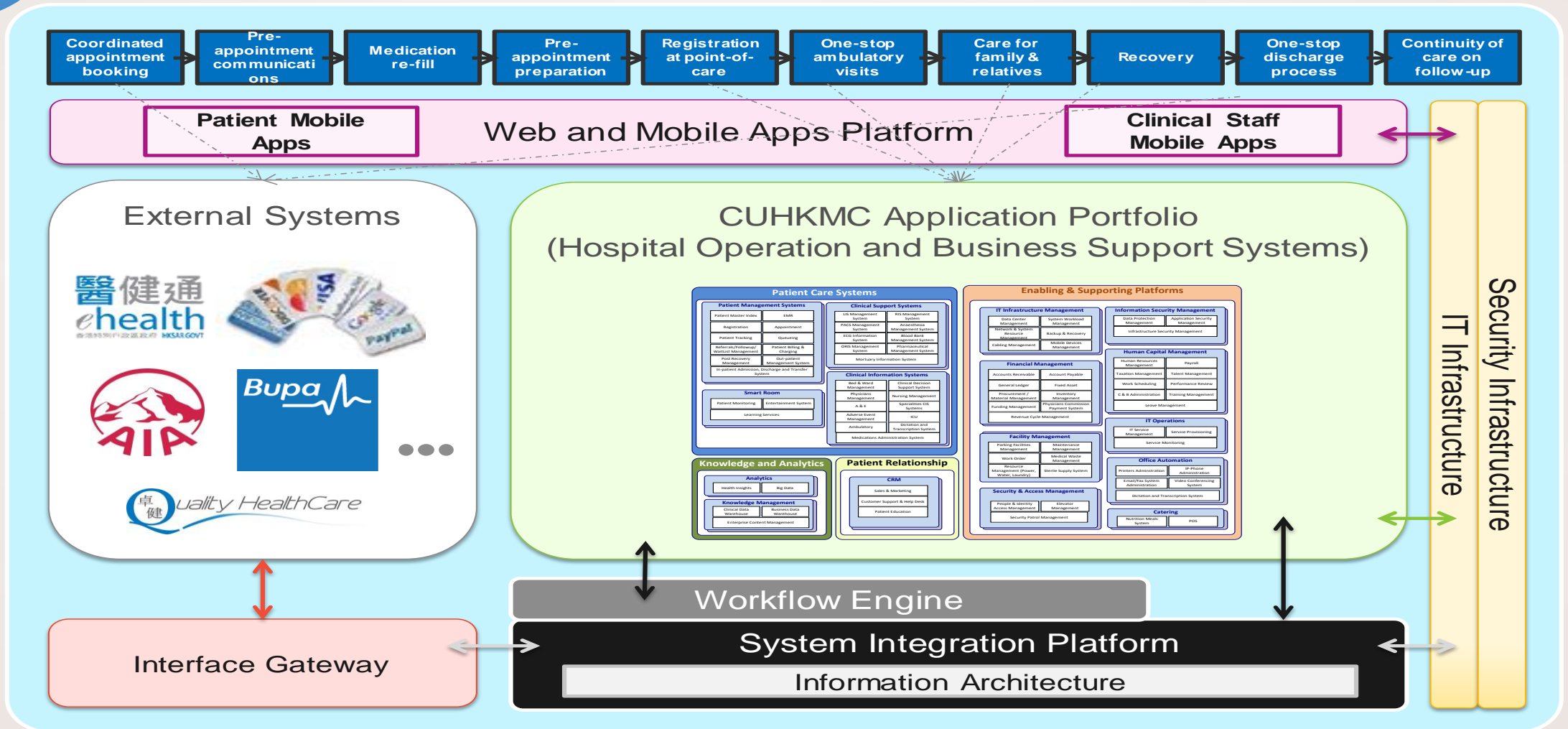
- Extensive adoption of ICT technology to
  - Improve efficiency in both clinical and business operations;
  - Enhance quality of patient care services
  - Support provision of patient-centred care through applications services that enrich patient experiences and promote patient health



Total Construction Floor Area (CFA): **101,000** m<sup>2</sup>  
**619** Beds  
**163** m<sup>2</sup>/ Bed

Tech

# Technology Integration



Tech

# The ABC Platform



Academic



Business

Clinical





# The Future

From Lancet (Feb 21, 2017) on future life expectancy of 35 industrialized countries:

**“There is a more than 50% probability that by 2030, national female life expectancy will break the 90 year barrier, a level that was deemed unattainable by some at the turn of the 21<sup>st</sup> century.”**



**THANK YOU**