

Promoting Green at Khoo Teck Puat Hospital

– Team Synergy

Session III : Health Promoting Hospitals: Development and Knowledge sharing of good practices
"Eco-Friendly Hospitals For A Sustainable World"

Gladys Wong
Chief Dietitian / Senior Manager
Khoo Teck Puat Hospital
Alexandra Health System
22 Feb 2016

Covering

- When did we start promoting green
- Why do we promote / support green, being a healthcare organisation
- Who do we promote green to
- What are the green areas
- How do we synergise to promote green

When did we start promoting green ?

Some background info about
Alexandra Health System

Alexandra Hospital Before Restructuring (2000)



Alexandra Hospital After Restructuring (2003)



Vision of A Healing Garden

- Shade from the tropical sun
- Sight, scent and sound of a healing garden
- Reduce heart rates and blood pressure



Mrs Rosalind Tan
Chief Gardener

Alexandra Hospital Before Restructuring (2000)



Hospital gardens proving a big draw

Alexandra opened its grounds, including a soccer field, a year ago; response has been overwhelming

TWICE a month, 18-year-old student Lai Bee Sin takes an hour-long bus ride from Choa Chu Kang to Alexandra Hospital.

It is not because he is ill or visiting patients there. He is just a footballer "in love" with the hospital's soccer field.

"It's in great condition, and I get to use it for free," he said happily.

Every week, youths like him come from all over the island to play on the hospital's field.

The hospital, nestled in Queenstown housing estate, opened its grounds to the public a year ago and response has been overwhelming.

On most days, residents can be seen taking a morning stroll through the hospital's sprawling gardens.

The mini-landscaped park with a fountain and exercise corner was refurbished last year.

Visiting residents are mostly retirees who sit and chat, or read the newspapers on the benches provided, a hospital spokesman said.

One nearby resident and self-professed "nature lover", who declined to be named, said that she walks through the garden several times a month just to "appreciate the scenery and the peaceful surroundings".

The 40-year-old housewife added: "There are not many nature spots in Singapore. I'm very glad that the hospital has opened up its

lovely grounds to the public."

There is no charge for using the 4,000-sq-m soccer field but bookings have to be made in advance.

Hospital operations executive Henry Seow said: "We don't keep track of the number of 'neighbours' popping in now and then, but the field is occupied almost every day."

"This is not surprising, since nowhere else on the island can you get a free field to play on!"

Bee Sin, who plays soccer with 20 friends on the hospital field, said: "Soccer fields at stadiums are not as easily accessible. And some are not of such good quality, either!"

Even staff from the Queenstown Neighbourhood Police Centre and Singapore General Hospital come to use the field.

With so many people using the field, parts of it have become bare and the hospital has just refurbished it for \$10,000.

Mr Seow said: "We're incurring maintenance costs, but we haven't decided whether to charge for the field yet."

Patients and visitors do not mind the open-door policy.

Housewife K.K. Giam, 51, who was visiting her sister at the hospital, said: "So long as the patients aren't bothered, and they get the peace and quiet they need, why not?"



An escape from the urban sprawl has been available since Alexandra Hospital opened its gardens and soccer field to public use. A morning stroll (left) through its lush grounds is something not to be missed, and for the unhurried there are benches to rest on near the fountain (right).



PICTURES: GEORGE GASCON



HEARTLAND HAPPENINGS

By ALICIA YEO

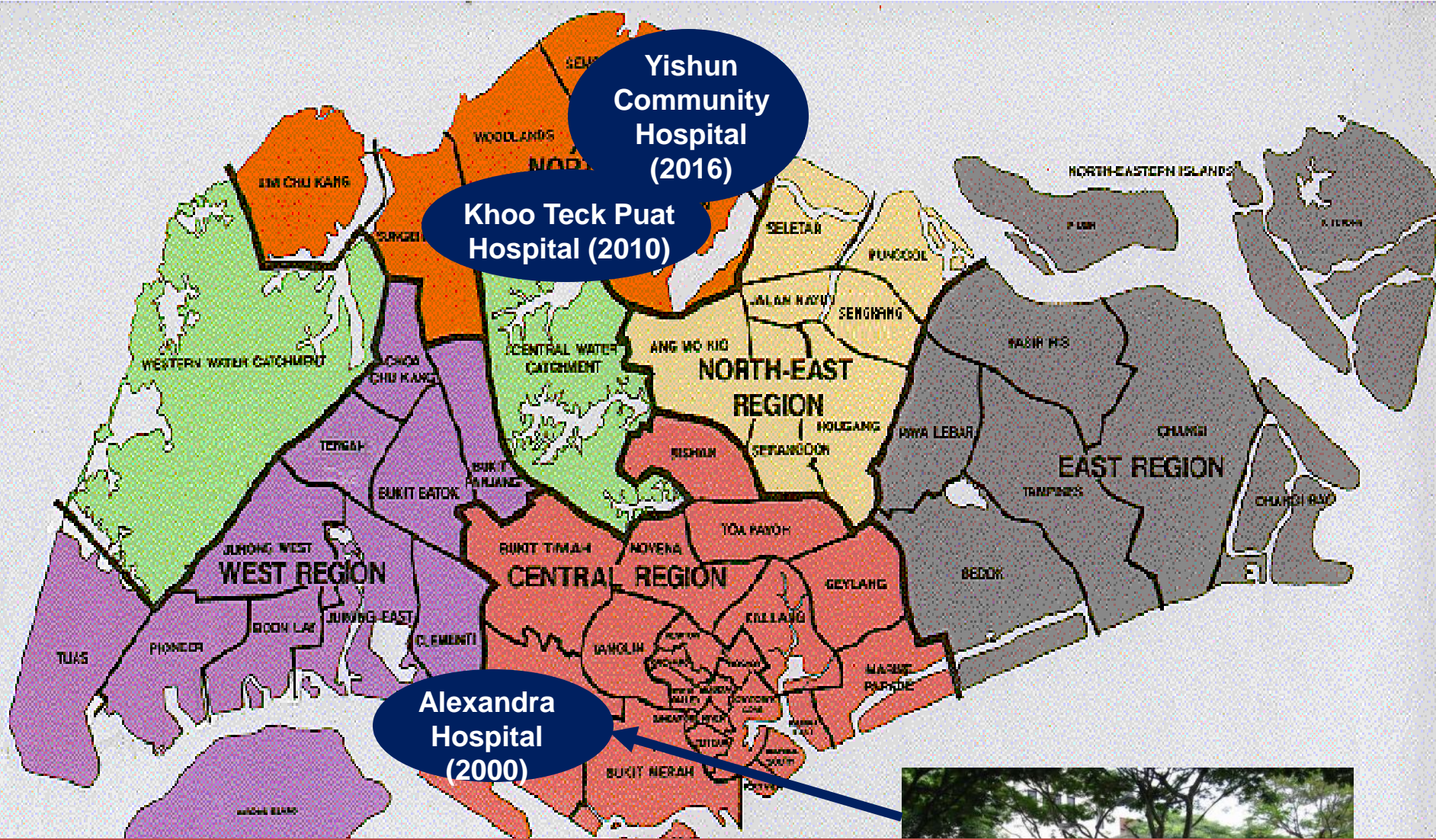


THE SINGAPORE
ENVIRONMENTAL
ACHIEVEMENT
AWARD 2002

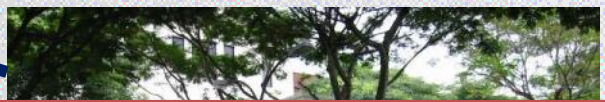
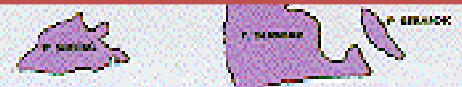
*President's Award
for the Environment*

Recognising Outstanding Contributions towards Singapore's Environment Sustainability

Watermark
AWARD

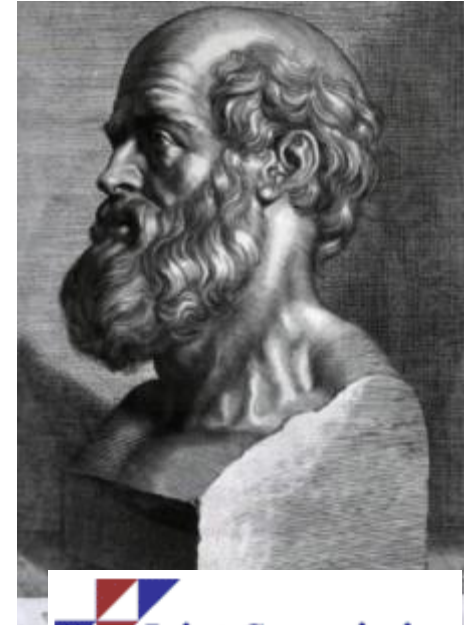


Alexandra Health System – 1st HPH Singapore Member 2009
HPB became HPH network coordinator 2011 → all restructured hospitals & some NHGPs became HPH members



“Primum non nocere”

- First, do no harm
- Hippocratic oath
 - To abstain from doing harm



Alexandra Hospital

Singapore

First Accredited: 22 July 2005

Re-accredited: 24 October 2008



Our Belief → Healing with Nature

- A Hospital for Our Patients
- Patients in a World of Nature

Learn from Best Practices

- Patient focused → Our challenge → What will patients see, feel, smell ... when they enter KTPH 5 years from 2010 ?
- Learn from everyone
- Whatever we “experimented” at Alexandra Hospital that’s good, we replicated or improved for Khoo Teck Puat Hospital

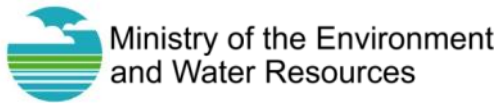
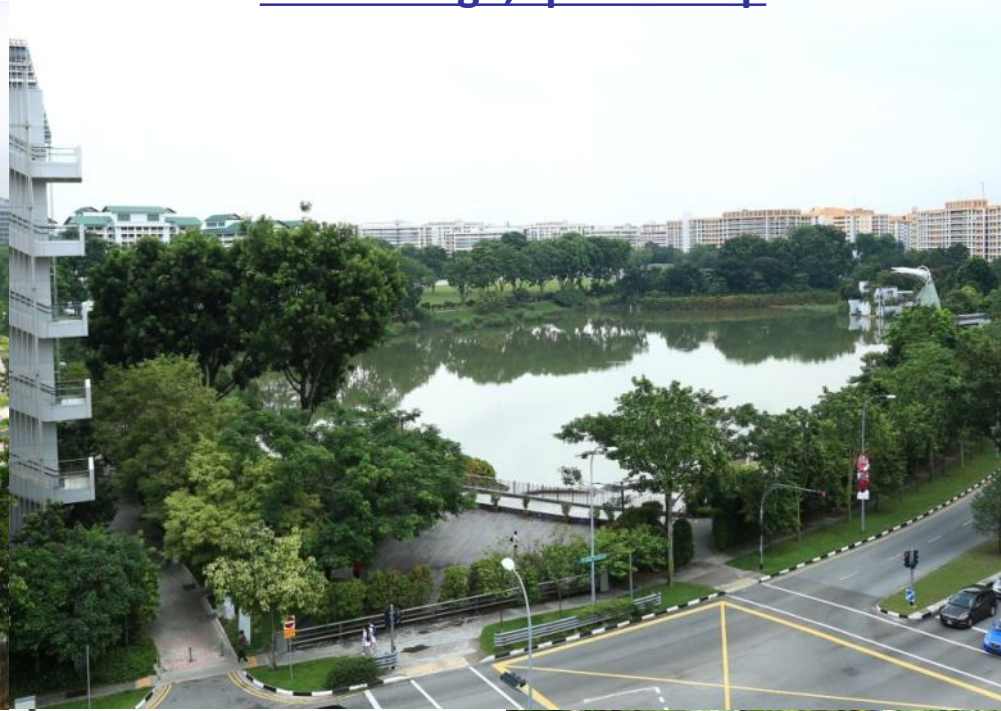
KTPH Plot of Land – Nov 2006



Yishun Pond (2010)



Yishun Pond Rejuvenated (with help from many external government agencies) (2015) - knowledge, sponsorship





Roof Top Edible Garden

Rooftop Farming – Edible Garden (with help from many passionate volunteer gardeners)



Healing Environment

- Hospital within a garden, garden within a hospital
- Tranquil, restful, healing environment
- Sight, scent and sound of nature
- Surrounding patients with nature



Trailblazing Hospital of The Future

Touching Lives, Pioneering Care, Making A Difference

- Dr James Low, Head, Geriatric Medicine

HEALTHCARE IN A
GREEN ENVIRONMENT



From patient's perspective



Green Environment
+
Green Building

Building Design Considerations (in discussion with various government agencies)



- Fully integrated with neighbourhood
- Ease of way finding
- Logical clustering of services
- Economy of scale / Diseconomy of scale
- Tropical design
- Healing environment
- Energy efficiency



Khoo Teck Puat Hospital Green Mark Platinum Award 2009



BCA GREEN MARK

Building & Construction Authority

Energy Efficient Building



- 30% more energy efficient than present hospitals
- Tropical building
- Natural ventilation
- Overhangs
- High ceilings
- Use of solar & wind power





Directory	
10	Bed 1001 - 1020
9	Bed 901 - 933
8	Bed 801 - 833
7	Bed 701 - 732
6	Bed 601 - 633
5	Bed 501 - 533
4	Bed 401 - 433
3	Offices
2	Medical Social Work Dept
1	Chapel, Seminar Rooms, Multi Purpose Hall



Nursing Homes

Temple



Learnt from Everyone



Shangri-La Hotel



Cheonggyecheon Restoration Project,
Korea



Singapore Botanic Gardens



Wards



Intensive Care Unit



Specialist Outpatient Clinics

Lobby





Basement 1

Level 1





Balcony Planting

PART **E**

Life!

THE STRAITS TIMES
SATURDAY, JULY 3 2010

A MEDICAL Shangri-La

The design of the new Khoo Teck Puat Hospital in Yishun is partly inspired by the gardens and a waterfall of the five-star hotel. It is not the only reason it won an award for being a green building. TAY SUAN CHIANG reports. **E8&9**

'Third party' rumours
Wear out singer Rene Liu. **E3**

Jay Talking
Don't jeer at the cheer. **E12**

Friendly monster
Skoca Yeti is great to drive. **E13**



Green operation

Did you know? The new Khoo Teck Puat Hospital has solar panels and channel tubes on its roof to harness the sun's energy, which is used to heat water for the hospital. ST PHOTOS: GONGHONG FOO

From using solar energy to rearing organic waste, the Khoo Teck Puat Hospital is big on being eco-friendly.

Did you know? The garden of the hotel is so lively, I copied them for the hospital.

Mr Lee Tang Li, chief executive of Khoo Teck Puat Hospital, is being inspired by the lush gardens of Shangri-La Hotel.

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Mr Lee Tang Li, chief executive of Khoo Teck Puat Hospital, is being inspired by the lush gardens of Shangri-La Hotel.

Keeping direct sunlight out

From facing page

The hospital is not only filled with greens but it is also eco-friendly.

Solar panels on its roof capture the sun's energy to heat up water for the hospital's use while louvers on the facade keep out direct sunlight and channel the breeze inside.

Such green features mean that KTHP will use only 40 per cent of the power used by similar-sized hospitals.

Last year, it won a Platinum Green Mark for Building Award, which is given out by the Building and Construction Authority to developers of buildings that are environment-friendly.

Patients and visitors should also be able to find their way easily around the hospital. There are three blocks, each designated for distinctive uses.

The six-storey block houses the main road houses specialist clinics. To its left is an eight-storey block where the private wards are. These wards have either single or four beds in them.

The third block is a 10-storey building that houses the subsidised wards, which have five or 10 beds in them.

Hospital rates start range from \$30 to \$200 a night.

The buildings are purposely kept low, so that "they do not block out like a sore thumb in the neighbourhood", says Mr Liak. This was one of the design criteria that he set.

Mr Ong says that "it is important to make it easy for patients to navigate around the hospital".

From the dropoff point, it is a 10m walk to the emergency department, 20m to the specialist outpatient clinics and 80m to the subsidised ward tower.

As hospitals are seldom places that people like going to, the architect said he had to make sure that a visit to such a place would be a comfortable one.

Apart from the lush gardens and waterfall, "the hospital is designed with many large, naturally ventilated open spaces to make it a more inviting environment", he says. "The interior design uses a palette of warm colours to create a cosy ambience."

Patients and their families have given the hospital their thumbs-up.

Says housewife May Lee, 40, who took her mother to the hospital for her monthly medical check-up: "This hospital doesn't have that typical hospital feel."

lysgc@sph.com.sg

Did you know? Louvered windows and fans in the general wards increase ventilation, hence removing the need for air-conditioning. ST PHOTOS: ALPHONSUS CHERN

Did you know? The private wards (above and left) are air-conditioned. However, if the patient prefers natural ventilation and opens the windows, the air-conditioning is cut off automatically. In addition, fans on the building's facade - as seen outside the window of the private ward on the left - help to block out the direct afternoon sun while channelling the cool breeze into the interiors.

Did you know? The private wards (above and left) are air-conditioned. However, if the patient prefers natural ventilation and opens the windows, the air-conditioning is cut off automatically. In addition, fans on the building's facade - as seen outside the window of the private ward on the left - help to block out the direct afternoon sun while channelling the cool breeze into the interiors.

Hospital without Fencing
= no borders
= Sharing culture
= increase public engagement &
ownership

A Community Garden for Residents



Awards



PRESIDENT'S
DESIGN AWARD
SINGAPORE
2011

- **Design of The Year**
DesignSingapore Council and Urban Redevelopment Authority



futureGOV

- **Healthcare Organisation of the Year**
FutureGov Magazine



Design
& Health
International Academy for Design and Health

- **International Health Project (over 40,000 m²)**
- **International Sustainable Design**
Design & Health International Academy Awards 2011



FUTURARC
FuturArc Green
Leadership
Award 2011

- **Institutional Architectural**
FuturArc Green Leadership Award 2011



- **Green Mark Platinum Award (2009)**
- **Universal Design Gold Award (2011)**
Building and Construction Authority



- **Building of the Year Award (2011)**
- **Design Award for Healthcare Facility (2011)**
Singapore Institute of Architects



- **Skyrise Greenery Award First Prize (2010)**
Singapore Institute of Architects & National Parks Board

Focused on different types of Green
rationales

Worked with various stakeholders
over many years

Promoting Green is not overnight.

= Progression over time

= Passionate Manpower

Promoting “Green” at KTPH

- Green Environment - greenery
 - ➔ promoted as Patient Healing
- Green Building (efficiency in usage of electricity / water)
 - ➔ promoted as Money Saving
- ??? Green Future
 - ➔ ??? Climate Change issues
 - ➔ ??? Promoted as Environmental Sustaining

Health Promoting Hospital

Why the Need to Promote Health / Health Education in Hospitals?

- Traditional role of Hospitals and Health Services:
 - Treat / cure disease
 - Support patients' health like alleviate pain and comfort them
- We need to do more :
 - Rising trend of chronic disease
 - Aging populations
 - **Waste and Climate change issues**

One-Day Health Advocacy Course

→ Empowering Staff

Healthy Living



Eat
Wisely

Exercise
Regularly

Being
Happy

STOP
Smoking

Personal
&
Public
Hygiene

Environmental Impact → go green

Why the Need to Promote Green in Hospitals?

- Work places (including hospitals) have physical, chemical, biological & psychosocial risk factors
- as institutions with a large no of workers & service users → can reach a large section of the population (personnel, patients & relatives)
- as centres of modern medicine, research & education that accumulate much knowledge & experience → can influence professional practice in other centres & social groups
- as producers of large amounts of waste → can contribute to reduction of environmental pollution
- as large-scale consumers → can favour healthy products & environmental safety



Everyone is a Stakeholder





HPH is EVERYONE





Promoting Green



Green Committee

Green

Chin Yew Leong, Chair
Eileen Koh, Vice-Chair



Water
Management

Energy
Management

Waste
Management

Resources
Management

Clean
&
Green
Environment



Refuse. Reuse. Reduce. Recycle.

- **Refuse** disposables, water bottles & plastic bags.
- **Reuse** paper, takeaway boxes
- **Reduce** paper, electricity & water consumption.



Switch off when not in use. Air-con to be between 23-25°C. No screensavers.

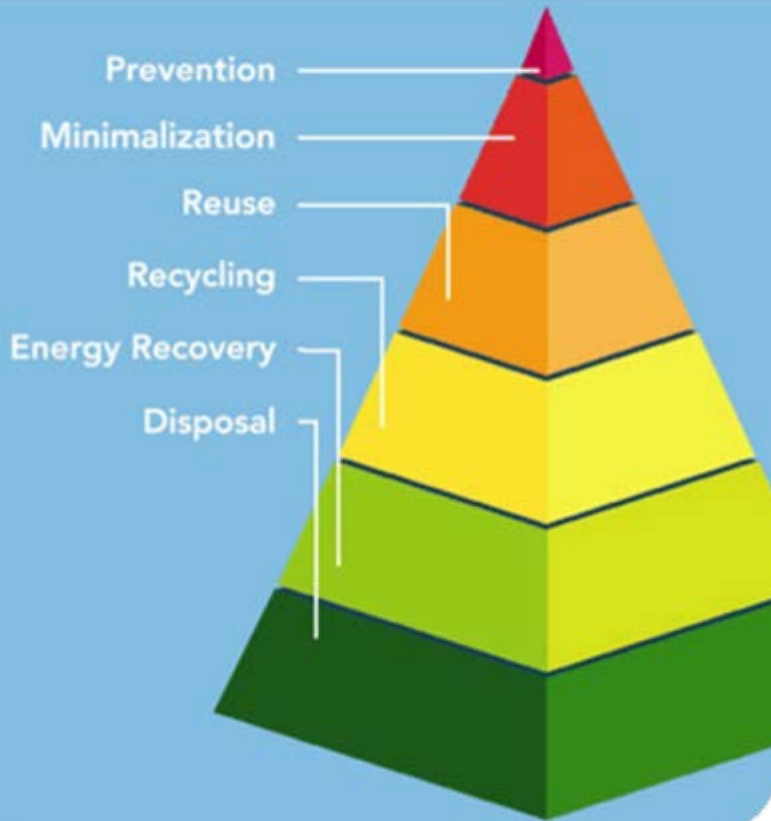
- **Recycle** paper, plastic, cans and batteries



Healing The
ENVIRONMENT

Past:

WASTE PYRAMID



OUR VISION:



Increasing R's



Green Strategies used by the Green Committee

**CHANGE
OR DIE**

**CHANGE
OR DIE**

**Relate
Repeat
Reframe**

**Change or Die:
The Three Keys to
Change at Work
and in Life**

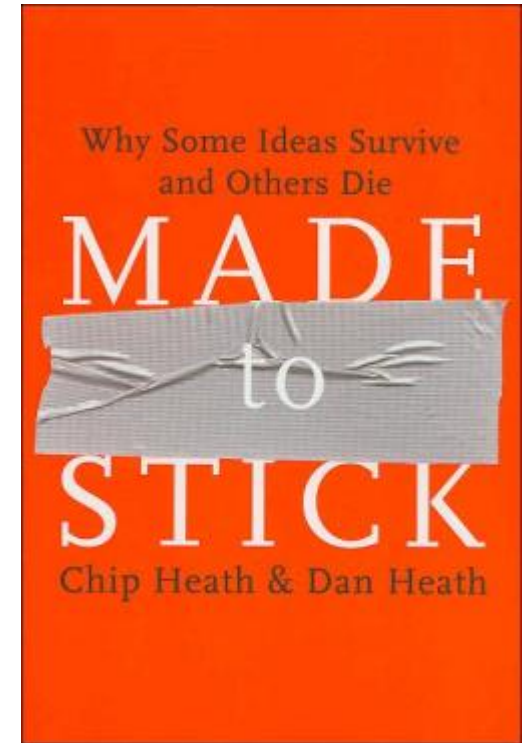
**by Alan
Deutschman**

Use of Visuals

Opportunistic Subliminal
Education

➔ Consistent Messaging

➔ Readiness to Change

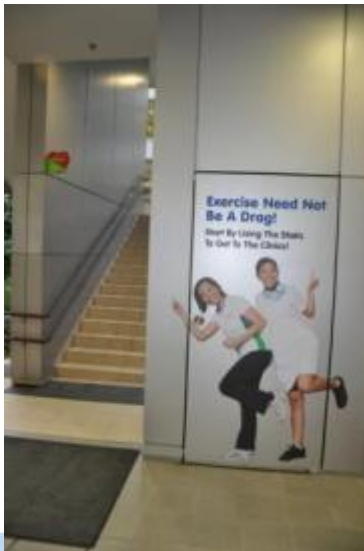




Love Your Heart, Give your Heart a Lift by Using the Stairs



**Use less Lifts →
use less energy**



**Motion sensor
Escalators**



TV Media in Café, Waiting Areas & Lifts



COMMON PROBLEMS

- Diarrhoea
- Fever / Pain
- Cold / Allergies / Runny Nose
- Cough
- Sore Throat
- Constipation
- Travel / Motion Sickness
- Hoarseness / Gastric Problems

Pharmacy

NOW SERVING		COUNTER
E361		05
F910		17
C020		03
E366		01
E363		07
E350		02
E364		08
E358		06

Missed Queue (Queue No. - Counter No.)

C019-06	C003-03
---------	---------

11:23:18 AM

Khoo Teck Puat Hospital. Queue r



Before/After One Enters Hospital



Description	Rationale
Location	KTPH's peripheral fence
Message	"This is a No Smoking Hospital"
Intent	To announce to public that the entire KTPH compound is a No-Smoking Zone



Description	Rationale
Location	KTPH's internal spaces
Message	"You are entering a No Smoking Hospital"
Intent	To announce to public that they are entering a No-Smoking Zone



Description	Rationale
Location	Smoking Hot Spots
Message	"No Smoking. You will be fined \$1000. < Number > of persons have been fined."
Intent	To warn that one can be fined if he/ she smokes

Around the Pond



Description	Rationale
Location	Around Yishun Pond
Message	“No Smoking” Buyline : We need fresh air
Intent	To appeal to members of the public not to smoke so that our patients and staff can exercise in a smoke-free environment




KTPH "Health Promoting" Cafeteria





KTPH "Green Promoting" Cafeteria

DRINKS 

Healthier Choice	Hot	Cold
Kopi O/ Teh O Kosong	\$0.70	\$1.20
Kopi O/ Teh O Siew Dai	\$0.80	\$1.20
Kopi/ Teh Siew Dai	\$0.80	\$1.20
Kopi 'C'/ Teh 'C' Siew Dai	\$0.80	\$1.20
Kopi 'C'/ Teh 'C' Kosong	\$0.80	\$1.20
Kopi/ Teh with Skimmed Milk	\$0.80	\$1.20
Milo/ Horlick Kosong	\$0.90	\$1.20
Iced Lemon Tea (Without Sugar)		\$1.20

Kopi O/ Teh O	\$1.00	\$1.70
Kopi/ Teh	\$1.00	\$1.80
Kopi 'C'/ Teh 'C'	\$1.00	\$1.80
Milo/ Horlick O	\$1.00	\$1.20
Milo/ Horlick	\$1.20	\$1.80
Chinese Tea	\$0.80	\$1.00

Iced Lemon Tea (Sweetened)	\$1.80
Iced Honey Lemon	\$1.80
Dragon Fruit Juice	\$1.80
Water Chest Nut	\$1.80
Lime Juice	\$1.80

Canned Drink	\$1.80
--------------	--------

Add \$0.30 for take-away

save
our earth

为
“盒”
不只省



还可以做环保

Bring your own container
to get **20¢***
rebate for take away food

* Disposable container is not allowed. Only applicable at Foodfare @ Khoo Teck Puat.

 **Foodfare**

Engage students to do Projects

Nudge Stickers placed in staff pantry – improvement done by students



Water Management



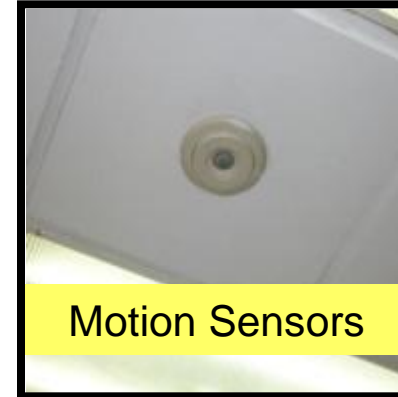
Energy Management



Earth Hour 2010



Incandescent bulbs
Vs
Energy Saving light tubes



Motion Sensors

- Energy Saving light tubes instead of Incandescent Bulbs (98% of power is converted to heat)
- Power consumption: 8W
- Lifespan: 8,000 Hours
- Generates electricity savings due to lower power consumption
- Locations: Staircases and corridors

Waste Management

Recycling Bins @ Strategic Locations



Paper Recycling Boxes in Offices



Food Waste Collection



Behavioural Change towards a Green Culture

- Shared bin: Staff will share bin (6 cubicles to 1 bin ratio) instead of having a bin in each cubicle
- Most waste generated in office is recyclable paper
→ shared bin encourages recycling by forcing staff to contemplate action rather than act automatically



Green infrastructure to enable green behaviour

- Motion sensors for light in less traffic areas eg. Toilets
- Set air-conditioning in most meeting rooms to 24 deg C to save energy
- Sensor water taps
- Poster/stickers on auto hand paper dispenser to encourage green practice (e.g. take one paper only)
- Setting default double-sided printing
- Setting default black and white printing
- Abundance of bicycle parking



No Styrofoam



CornWare, which can be popped into the microwave and is designed to decompose after 102 days, is brought in by local company OliveGreen.

Encourage Staff Participation

- Decline disposable packaging, let's bring our own lunchbox and mug!
- Carpool
- Last person in the office to Power down before leaving



Resource Management



Paper instead of styrofoam cups



Reusable Melamine Cups rather than disposables



Messages to switch off engine while waiting

(Clean &) Green Environment



Germs Stopper




Self-Cleaning Initiative




No Smoking Rule

BASIC 10: Maintain Highest Standards of Hygiene



We will maintain the highest standards of hygiene for our patients as they have put their lives in our care. We will wash our hands consciously and between patient care so as to minimize infection. Our toilets will be kept dry and sparkling clean.



CYCLING OUR WAY TO HEALTH PROMOTION

KTPH Bicycle Post Competition

www.ktph.com.sg

In partnership with Temasek Design School and DesignSingapore, we are pleased to announce a design competition for bicycle posts around the new KTPH Tech Point Hospital in Yishun. We are seeking to tap on the creative expertise of the design community for this important element of our environment.

Judging Criteria

- Innovativeness in design
- Effectiveness in space usage
- Manufacturability
- Intuitiveness to users
- Ease of maintenance

Participants

This KTPH Bicycle Post competition is open to all designers - professionals or students.

Entries

Entries must be the original works of entrants and must not have been previously released commercially.

Winning Entry

1st Prize - Cash prize of S\$5,000 & a torisole bicycle - Dahon Matrix, worth S\$1,450
2nd Prize - S\$3,000
3rd Prize - S\$2,000

E-Submission

1. Registration form (Download from www.ktph.com.sg)
2. 4 JPEG images < 5MB (size)
3. 500 word write-up.

Send to: ktphbikepost@alexandrahealth.sg

There is no limit to the number of submissions but each submission has to be accompanied with a registration form.

Important Dates


Phase 1-Design

Open for Registration	9 Dec 2009
Deadline	15 Jan 2010
Shortlisting of 5 Finalists	18 - 22 Jan 2010

Phase 2-Prototyping

Decision by Judges	3 - 7 May 2010
Announcement of Winners	May 2010

More details on this competition can be found on our website, www.ktph.com.sg





Discovery Singapore Ride



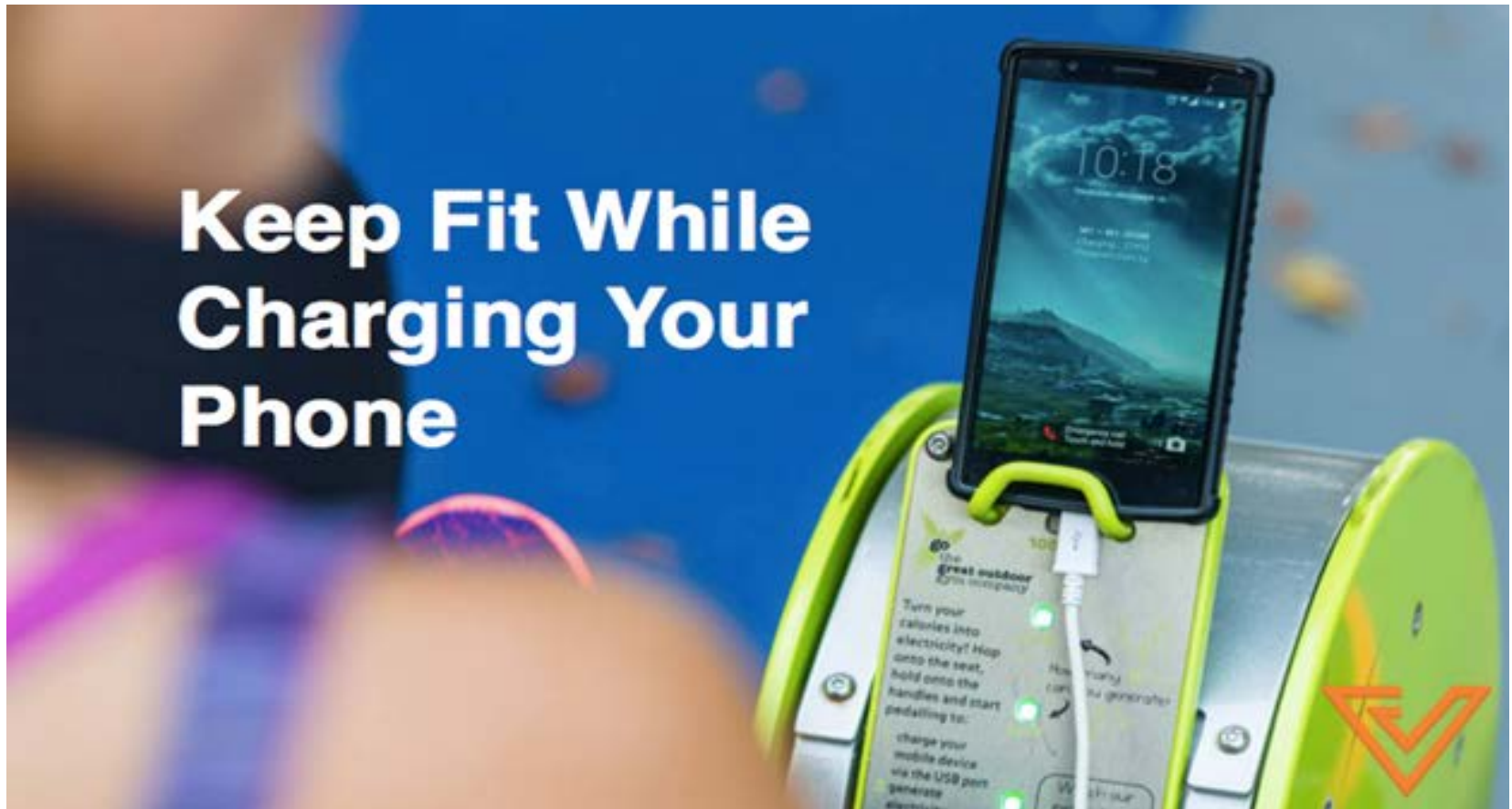
Learn from Others :

Currently in Singapore (Oct 2015)

- Block 234, Bukit Panjang Ring Road
- Playground consultancy firm Playpoint
- 40-60W, 2 mins \rightarrow charge 1% (>3h for full battery charge)
- Mechanism: Siva Atom
- Expensive set up \rightarrow seek sponsors



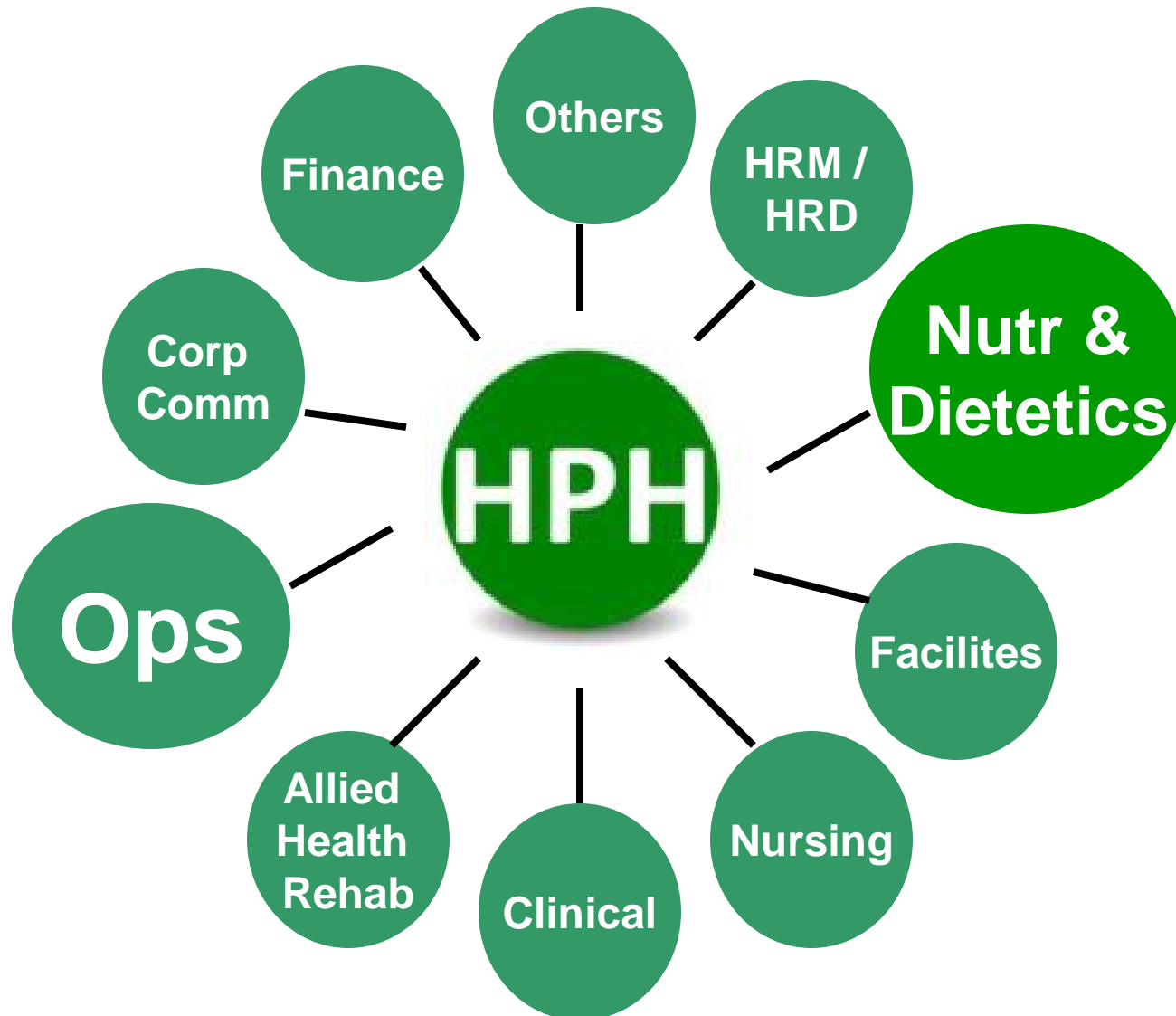
Exploring: Cycling to generate electricity



HPH is EVERYONE



HPH is EVERYONE





Health Advocacy Course → Empowering Staff



Healthy Living

Eat
Wisely

Exercise
Regularly

Being
Happy

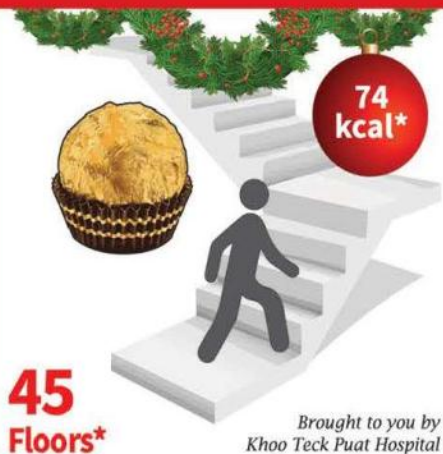
STOP
Smoking

Personal
&
Public
Hygiene

Environmental Impact → go green

Festive Climbing Stairs Stickers

1 Chocolate Truffle



1 Slice of Fruit Cake



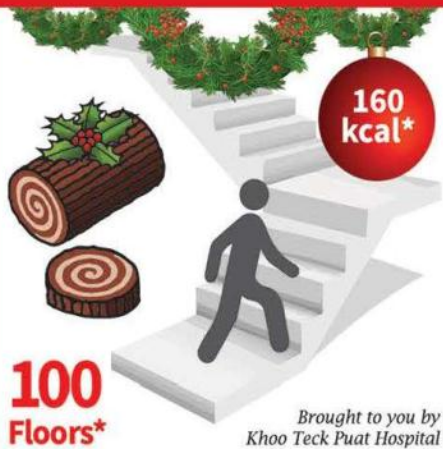
1 Chocolate Wafer



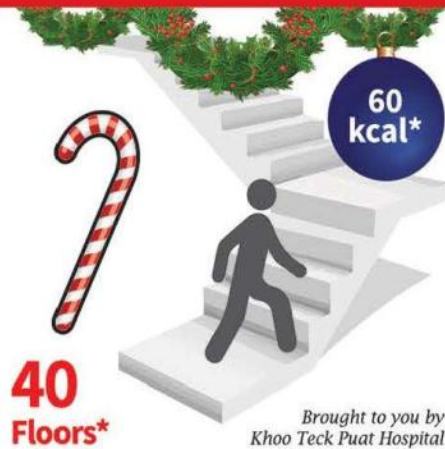
1 Glass of Champagne



1 Slice of Log Cake



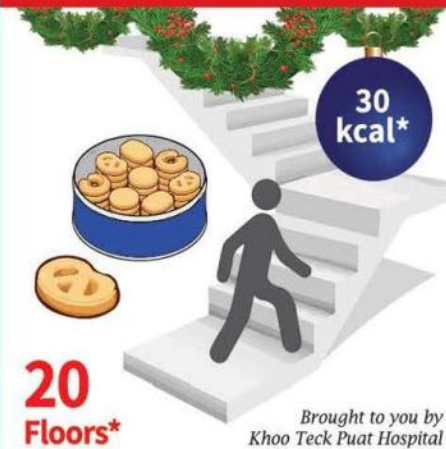
1 Candy Cane



1 Gingerbread Man Cookie



1 Butter Cookie



Eat wisely and be active. Wishing you a happy & healthy Christmas!

Brought to you by the health promoting hospital, Khoo Teck Puat Hospital (KTPH). KTPH is managed by Alexandra Health System, a healthcare cluster in the north, offering multi-disciplinary care for some 700,000 residents.

Alexandra Health System

Khoo Teck Puat Hospital • Yishun Community Hospital • Woodlands Integrated Health Campus
• Admiralty Medical Centre • Sembawang Primary Care Centre

Printed by Prestige Label Pte Ltd

*1 floor equals to 16 steps or 2 flights of stairs in a HDB block. Calories are estimates based on average serving size.



* 1 floor = 16 steps or 2 flights of stairs in a HDB block

Eat wisely and be active. Wishing you a happy & healthy Chinese New Year!

[More info here](#)

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Alexandra Health System

Khoo Teck Puat Hospital • Yishun Community Hospital • Admiralty Medical Centre • Woodlands Integrated Healthcare Campus



Heart rate, oxygen uptake, and energy cost of ascending and descending the stairs

KONG CHUAN TEH and ABDUL RASHID AZIZ

Sports Medicine and Research Center, Singapore Sports Council, National Stadium, Kallang, SINGAPORE

ABSTRACT

TEH, K. C. and A. R. AZIZ. Heart rate, oxygen uptake, and energy cost of ascending and descending the stairs. *Med. Sci. Sports Exerc.*, Vol. 34, No. 4, pp. 695–699, 2002. **Purpose:** This study describes the heart rate and oxygen uptake responses during, and the intensity and caloric cost of, ascending and descending a public-access staircase. **Methods:** Subjects were initially assessed for their maximum oxygen uptake and heart rate on a treadmill in the laboratory. For field measurements, subjects ascended ($N = 103$) and descended ($N = 49$) 11 stories of 180 steps, each step of 15 cm in height, for a total vertical displacement of 27.0 m. **Results:** The mean oxygen uptake and heart rate during the last 30 s of ascending were $33.5 \pm 4.8 \text{ mL} \cdot \text{kg}^{-1} \cdot \text{min}^{-1}$ and $159 \pm 15 \text{ beats} \cdot \text{min}^{-1}$, respectively. During the descent, oxygen uptake and heart rate during the last 30 s of the climb were $17.0 \pm 3.8 \text{ mL} \cdot \text{kg}^{-1} \cdot \text{min}^{-1}$ and $107 \pm 18 \text{ beats} \cdot \text{min}^{-1}$, respectively. The estimated gross energy expended during ascending and descending were 19.7 and 9.0 kcal, or equivalent to an intensity of 9.6 and 4.9 metabolic equivalents (METs), respectively (or 10.2 and 5.2 kcal min^{-1} , respectively). The caloric cost of stepping up and down a step was calculated to be 0.11 and 0.05 kcal, respectively. **Conclusion:** Stair-climbing exercise using a local public-access staircase met the minimum requirements for cardiorespiratory benefits and can therefore be considered a viable exercise for most people and suitable for promotion of physical activity. **Key Words:** STAIR CLIMBING, METABOLIC EQUIVALENT, CALORIC COST

SUMMARY

The intensity of ascending and descending a typical 11-story public housing flat in Singapore is 9.6 and 4.8 METs, respectively. The caloric cost of stepping up and down a step is 0.16 kcal. The present study showed that stair-climbing activity elicits oxygen and heart rate responses that meet the minimum intensity requirements set by ASCM for cardiorespiratory and health gains. Because of the easy accessibility of public staircases, the investigators recommend that it should be promoted aggressively as a suitable and viable exercise activity to the people in Singapore and other communities living in high-rise buildings.

Prediction of Change in Cardiorespiratory Fitness by the Stair-Climb Test After Ten Weeks of Aerobic Training

Tan HYF¹, Aziz AR¹, Chia YHM² and Teh KC¹

¹ Sports Medicine and Research Centre, Singapore Sports Council, Singapore ²Physical Education and Sports Science Academic Group, National Institute of Education, Nanyang Technological University, Singapore

The Stair-Climb Test (SCT) was developed in our laboratory for use in healthy men and women aged 20 - 65 years (17). Subsequently, using a different group of subjects, the predictive ability of the SCT was validated against the oxygen uptake obtained in the laboratory (17). A follow-up study was also carried out to evaluate the reliability of the SCT (16). In a country where 86% of the people live in high-rise flats (13), it is appropriate to encourage the use of stairs for exercise. A national survey in 2001 reported that only 38% of the population exercised one or more times a week, citing lack of time as a major limiting factor (15). The SCT was developed with the aim to counter this reason for inactivity so that the population could be encouraged to use the stairs for exercise, as stairs are readily available to the majority of the people. A good way to promote stair climbing would be to introduce a stair-climb test so that individuals could assess their cardiorespiratory fitness by performing a few simple procedures.

Eat Wisely
And Be
Active.



Wishing You
A Happy &
Healthy
Christmas!



Brought to you by the health promoting hospital, Khoo Teck Puat Hospital (KTPH).

KTPH is managed by Alexandra Health System, a healthcare cluster in the north,

offering multi-disciplinary care for some 700,000 residents.

*1 floor equals to 16¹/₂ steps or 2 flights of stairs in a HDB block. Calories are estimates based on average serving size.

Alexandra Health System

Khoo Teck Puat Hospital • Yishun Community Hospital • Woodlands Integrated Health Campus • Admiralty Medical Centre • Sembawang Primary Care Centre

Wishing you a happy & healthy
Chinese New Year!

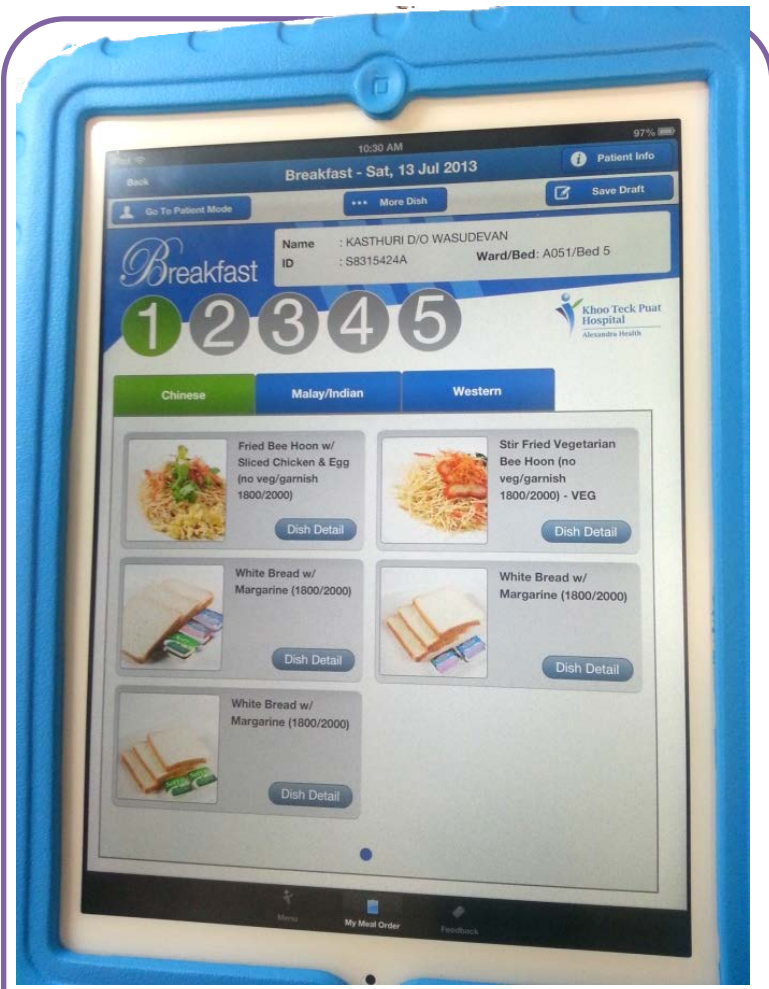
Eat wisely and be active



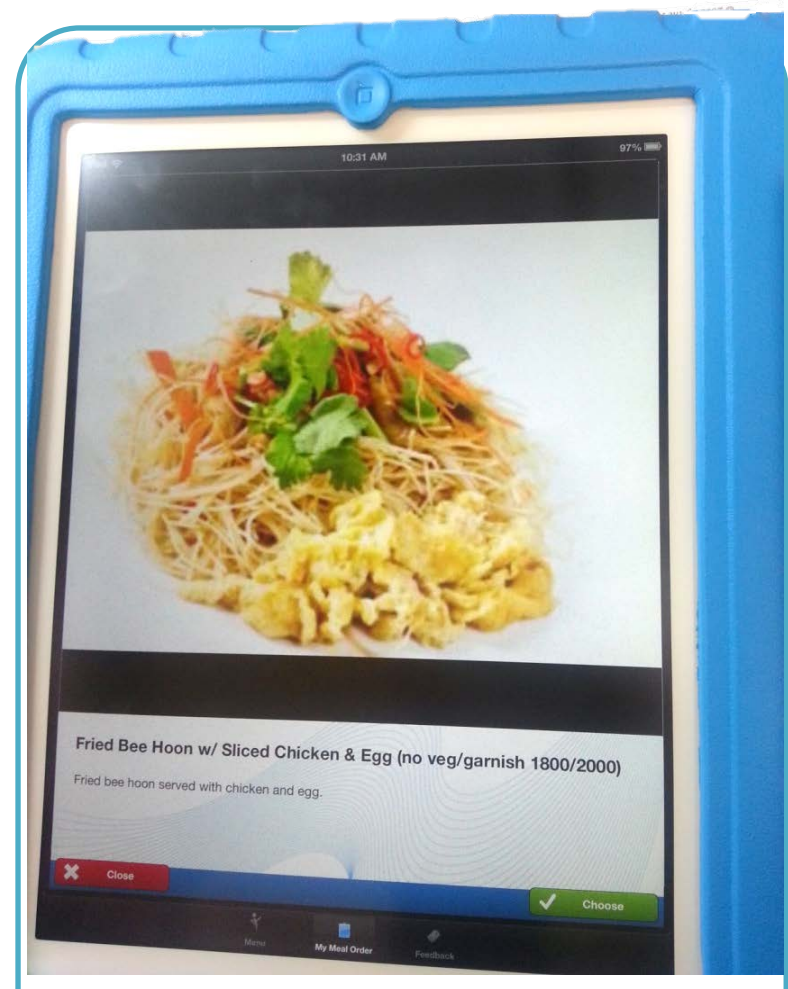
* 1 floor = 16 steps or 2 flights of stairs in a HDB block

Brought to you by the Nutrition & Dietetics Department

EMOS: What Patient Sees



Menu items suitable for pt's dietary restrictions



Picture of dish + short description

Electronic Medical Records

Time Savings from EMOS

- Approx **7 hr / day** is saved
 - manual handling of paper menu order
 - Collection of order forms
 - Printing menus
 - Although savings of 5min per patient per day (total of 50h/day) needed for nurses to physically stick stickers & copy from IMR...
- Time savings mostly applicable for food services
 - manpower

Paper Cost Savings from EMOS

Paper		EMOS
Menus = \$9.91	Total printing cost \$12.63	Meal slips = \$12.96
Faxes \$1.44		
Therapeutic labels \$1.08		
Meal summaries \$0.20		
Stickers \$70.80		
Total cost = \$83.43		Total cost = \$12.96

**Savings of
S\$70.47 / day
= S\$25721 / yr**

Switch off
computer power
socket

Cost Calculation of computers electricity consumption

Monthly cost:

$$\frac{\text{Power Rating (Watts)} \times \text{Hours used} \times \text{No. of days} \times \text{Electricity tariff}}{1000}$$

- Lenovo Power (kWh): 65

Total no. of computers in KTPH → 3000

Cost saving = 3000 X (\$0.1952+\$0.1216) = \$950.40/ month

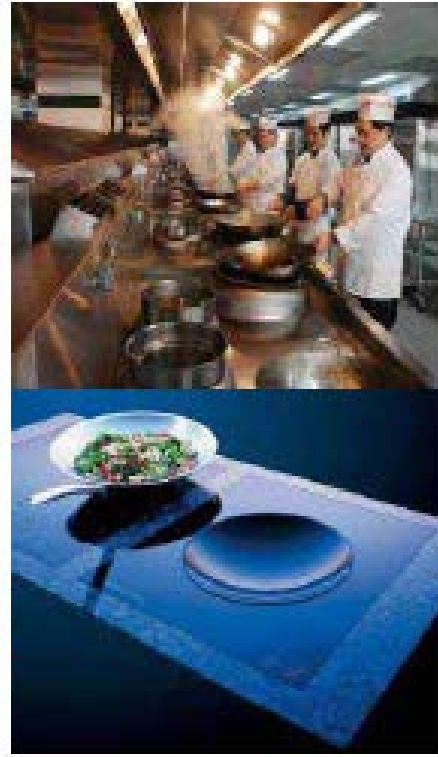
- On sleep mode: 5% X 65 = 3.25 kWh

	Weekdays	Weekends
Hours not in office	6pm – 8 am = 14h	24h
Monthly cost	$(3.25 \times 14 \times 22 \times \$0.195) / 1000 = \$0.1952$	$(3.25 \times 24 \times 8 \times \$0.195) / 1000 = \$0.1216$

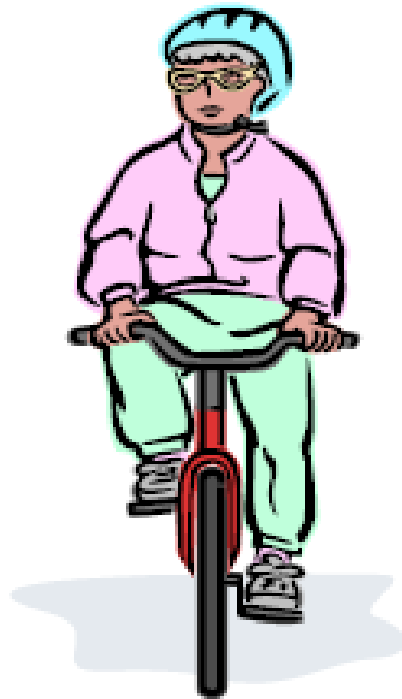
Promote Vegetarianism ?



Carbon Footprint of Meal Service?



Size of Carbon Footprint?



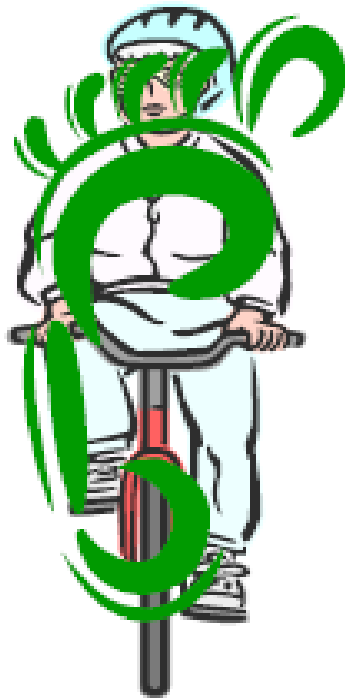
Meat eater riding a bike

VS



Vegetarian driving a SUV

Size of Carbon Footprint



Meat eater riding a bike

VS



Vegetarian driving a SUV

Climate Change Diet

- Buy fresh, locally-produced foods...
- Eat fewer processed foods...
- Reduce the amount of meat and animal and dairy products we eat...
- Eat foods lower down the food chain – grains, fruits and vegetables that are cheaper to grow, use less energy and less land space...
- Buy foods in season...

“Health Professionals Taking Action on Climate Change”,
BMJ 2008;336:733-734 (5 April), doi:10.1136/bmj.39538.509456.80
(published 2 April 2008)

Health Benefits Improve Your Diet
Health Benefits Reduce Heart Disease
Health Benefits Limit Cancer Risk
Health Benefits Fight Diabetes
Health Benefits Live Longer
Health Benefits Curb Obesity
Health Benefits Reduce Fossil Fuel Dependence
Health Benefits Reduce Carbon Footprint
Health Benefits Minimize Water Usage
Health Benefits Reduce Fossil Fuel
Health Benefits Reduce Fossil Fuel



Kitchen Equipment

- energy saving
 - Fast oven with insulated walls
 - Induction cookers
- Water saving
- Review recipes
- Monitor thawing schedules



Need more time to buy with management



**CHANGE
OR DIE**

**CHANGE
OR DIE**

**Relate
Repeat
Reframe**

**Change or Die:
The Three Keys to
Change at Work
and in Life**

**by Alan
Deutschman**

Eat Food, Not Too Much, Mainly Plants



Ron Findley's Ted.com

https://www.ted.com/talks/ron_finley_a_guerilla_gardener_in_south_central_la
https://www.youtube.com/watch?v=EzZzZ_qpZ4w

- “grow your own food = printing your own money”
- “to change the community, you have to change to composition of the soil”
- “gardening is the most therapeutic and defiant act you can do, especially in the city”
- “feel free to take my garden food, that’s why it’s on the streets, so you can take back your health”
- “if kids grow kale, they eat kale, if they grow tomatoes, they eat tomatoes.... If they are not shown how food affects their mind and body, they will blindly eat whatever you put in front of them”
- “ “I want to plant a whole lot of garnish, so people can share the food in the same block”
- “joy, pride, honour in growing your own food”

Why Rooftop Farming @ KTPH ?

- Eat more plants for better health
- Redefine space to edible gardens
- Passionate volunteer gardeners / staff
- gardening → harvesting → cooking → preservation

There is little scientific evidence to suggest that fresh vegetables can help sick people in their recovery, though Dr. Connolly-Schoonen and her colleagues say that their antioxidant properties might do so. But at the very least, she says, serving fresh food has psychological benefits and sets a good example for patients for when they go home.

The New York Times | <http://nyti.ms/UbFuLC>

Stony Brook University Hospital,

Without comments, this slide is incomplete.

Earth-to-Table Programme @ KTPH Foodservices for Culinary students



The
COOKBOOK
Project

Live Cooking Demo to KTPH Staff

All About 'TOFU'



Agedashi Tofu



Szechuan Hot & Sour Soup

Presented by: *Assisted by:*



Chef Samuel



Chef Sandy



Tofu in Wafu Sauce

Date: 25th June 2015

Time: 6pm to 7pm

Venue: FoodWorks, Basement 1



Food Waste Management

**Singaporeans Eat Too Much !!!
Anywhere !!!
Anytime !!!
Anything !!!**

**Which meal
is bigger ?**

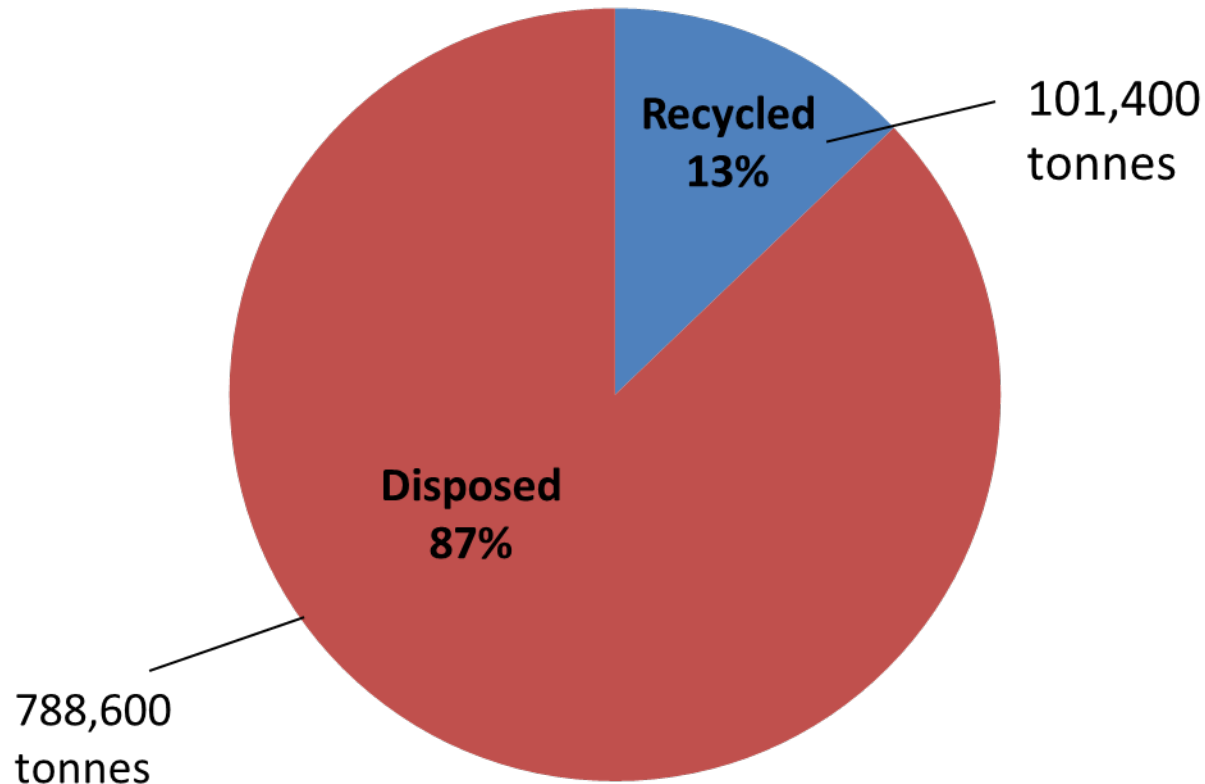


All the portions are the same.
It's just the plate size that is different.

Use a smaller plate to trick your
appetite and prevent over-eating.

 **Khoo Teck Puat
Hospital**
Alexandra Health

Food waste in Singapore (2014)



Source: Waste Statistics and Recycling Rate for 2014 (NEA)
<http://www.nea.gov.sg/energy-waste/waste-management/waste-statistics-and-overall-recycling>

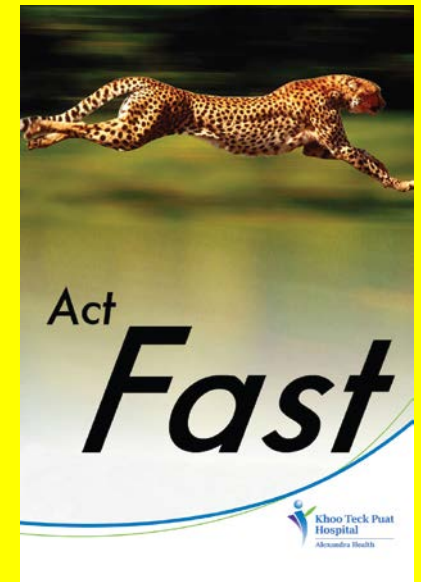
I'm a (Full time) Dietitian

Sharing / Learning Culture

Finding The New Breakthrough

- Learn from everyone → collaboration
- Follow no one → innovation
- Look for pattern → benchmarking
- Work like hell → team work

Supportive Senior Management



AHS Group CEO – Liak Teng Lit



Appointments - Environment



Deputy Chairman, National Environment Agency (2014 to-date)



Member, National Parks Board (2000 - 2004)



Councillor, South West Community Development Council (2001 - 2014)
Chairman, Environment & Health Functional Committee (2011 - 2014)
Vice-Chairman, One Million Plants @ Southwest (2008 - 2011)



Member, Singapore Tourism Board (2004 - 2007)



Chairman/Deputy Chairman, Water Network (2009 - 2013)
Member, Water Network (2004 - 2009)
Ministry of the Environment & Water Resources

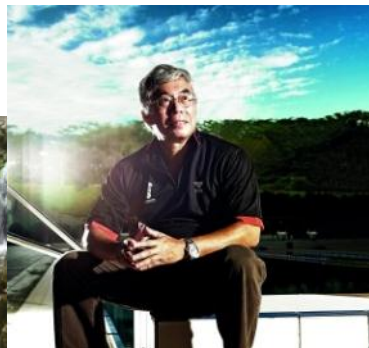


Engage People with Specific Passions - Conservation of Indigenous Species

- Sanctuary for indigenous plants
- Sanctuary for butterflies, birds and fishes
- Improving quality of soil
- Maximising productive use of land
- “Natural” pest control



Mr Lee Chiu San



Dr Tan Hwa Luck



Dr Ho Hwa Chew



Ms Ivy Singh



Mr Tay Kheng Soon



Ministers' Involvement

How is KTPH responding ?

(from Fiona Armstrong, Exec Director's slide)

- Advocacy
- Divestment
- Collaborating with other actors – environment groups, researchers, funders
- Policy development
- Campaigning for change
- Changing practices in healthcare



CLIMATE^{AND}
HEALTH
ALLIANCE

Progression of Promoting Green

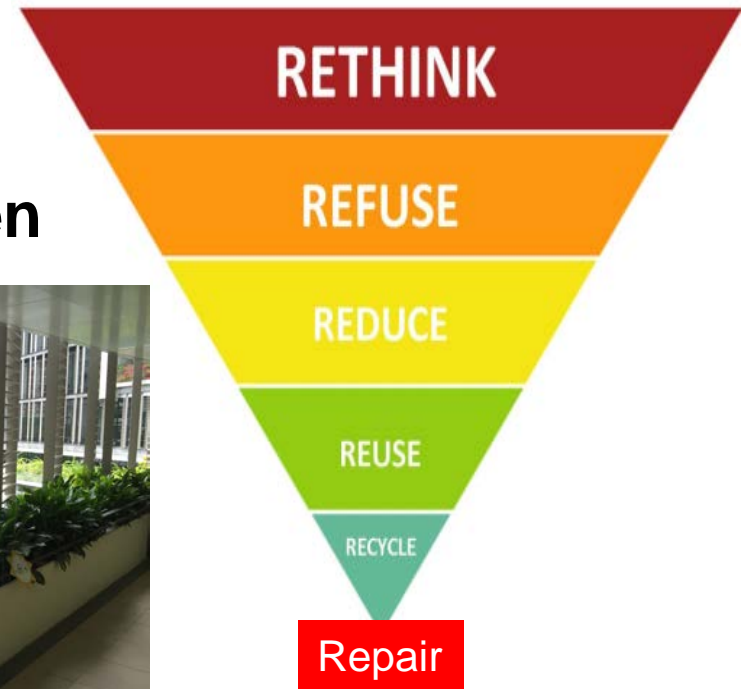
Nature Green



Waste Management Green

OUR GREEN VISION

Building Green



Green Committee - Multidisciplinary

- Operations, management, engineers, Material management, logistics, facilities, nursing, gardener
- **→ team synergy → build on one another's strengths**



Covering

- When did we start promoting green
- Why do we promote / support green, being a healthcare organisation
 - Patient focus
- Who do we promote green to
 - Patients, Staff, Public
- What are the green areas
 - Green Environment, Green building , Green Future (123456 + 78)
- How do we synergise to promote green
 - AHS' DNA & Culture
 - Top down leadership, Bottom up passion, Like- minded external partners, students
 - Operation Team & Green Committee - Visual reminders, Campaigns, PDCA continuous improvement, collect data
 - Food related areas



More To Come!!

Yishun Community Hospital (End 2015)

- 428 beds



Kampung Admiralty (2017)

Creating a vibrant community

ALL-IN-ONE VILLAGE

This integrated development next to Admiralty MRT combines housing, health-care and care facilities, and shops amid lush greenery in a bid to be a 'modern kampung'

Studio apartments

- Two blocks with about 100 units, up for sale in the July Build-To-Order exercise
- New features: induction stoves, "resilient flooring" with a parquet design and retractable racks for easier drying of laundry

GREEN FEATURES

Pneumatic waste conveyance system

- Household trash will zoom through vacuum pipes underground into a sealed container which will be collected by trucks

Bioswales

- Rainwater will be filtered through these sloping stretches of plants and soil on the ground floor

Solar panels

- The apartment blocks will be topped with solar panels to power common lighting, for instance

Community park

- Features fruit trees such as rambutan and kaffir lime
- Includes a three-generational playground for both young and old

Community farm

Residents can grow vegetables, herbs and ornamental plants

Eldercare and childcare centre

- Located side by side to promote bonding between generations
- The eldercare centre has space for about 100 seniors, and the childcare centre will offer 200 places

Admiralty Medical Centre

- Spans two levels with an area of 8,500 sq m
- Offers outpatient consultation, day surgery, rehabilitation and diagnosis

Hawker centre

- Will have 50 cooked food stalls and about 900 seats

Community plaza and shops

- An airy space for community activities, from National Day dinners to cultural performances
- Grassroots organisations will provide feedback on what the 20 shops and two or three food and beverage outlets should offer

Supermarket

- After feedback from residents that supermarkets in the area were too small, the new one will cover 1,000 sq m

Basement carpark and bicycle parking

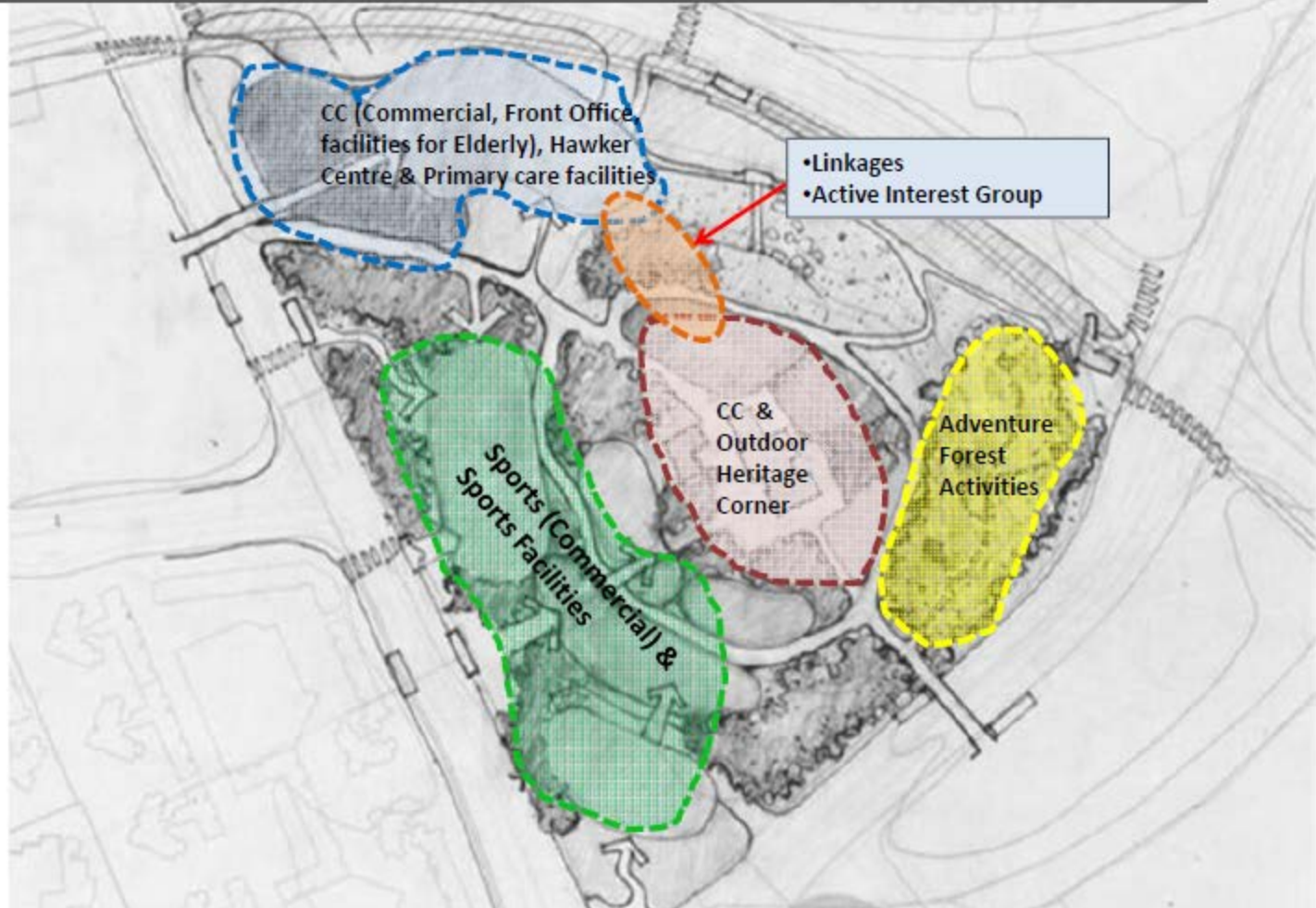
- Two basement floors will house the carpark and a mechanical bicycle parking system which can store 500 bicycles

Source: HDB

The whole is more important than the parts

Sembawang Regional Primary Care Centre (SRPCC) (2018)

INDICATIVE ADJACENCY OF FACILITIES



Woodlands Integrated Healthcare Campus (2020)



Sharing / Learning Culture

Finding The New Breakthrough

- Learn from everyone → collaboration
- Follow no one → innovation
- Look for pattern → benchmarking
- Work like hell → team work



The International Network
of Health Promoting Hospitals
& Health Services

**TASK
FORCE**

HPH & ENVIRONMENT
THE INTERNATIONAL NETWORK OF HEALTH PROMOTING HOSPITAL & HEALTH SERVICES

Promoting Green - Team Synergy



佛教慈濟醫療財團法人大林慈濟醫院
Dalin Tzu Chi Hospital, Buddhist Tzu Chi Medical Foundation



CLIMATE AND
HEALTH
ALLIANCE

Acknowledgements

Contributors of this Presentation



Ms Yen Tan
Chief Operating Officer



Ms Gladys Wong
Chief Dietitian



Ms Elieen Koh
Green Vice-Comm / Operations Exec

Thank You
Gladys Wong
Chief Dietitian



International Network for Health Promoting Hospitals & Health Services

The Task Force on Health Promoting Hospitals and Environment

Asia-Pacific Regional Symposium 2016

Eco-Friendly Hospitals For a Sustainable World

22-23 February 2016 | Griffith University | Brisbane | Queensland | Australia



Program BOOKLET

AN INTERNATIONAL KNOWLEDGE AND PRACTICE-SHARING REGIONAL SYMPOSIUM ON

"ECO-FRIENDLY HOSPITALS FOR A SUSTAINABLE WORLD"
MONDAY, 22nd Feb 2016

Griffith University, Nathan Campus

Hosted by The Task Force on Health Promoting Hospitals and Environment
of International Health Promoting Hospitals and Health Services Network
and co-hosted by Griffith University

Venue: Griffith University Nathan Campus, Building N18 (Central Theatre), Theatre II

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<http://www.ktph.com.sg>

Touching Lives, Pioneering Care, Making a Difference

