

A group of people, including several in white uniforms and helmets, are riding bicycles on a city street. The scene is outdoors with trees, streetlights, and buildings in the background. The text is overlaid on the image.

Tackling Climate Change in Tzuchi Hospital

Session II : Hospitals and Sustainable Practices

Eco-Friendly Hospitals for A Sustainable World, 22 February 2016

Ming-Nan Lin, MD, MPH

Vice Superintendent

Buddhist Dalin Tzuchi General Hospital, Taiwan

清淨在源頭

證嚴法師·著

用鼓掌的雙手做環保

回首20年前，到台中演講的證嚴法師行經一處已收攤的夜市，看見散落滿地紙箱與寶特瓶，在她心中留下了深刻印記。

當大眾專注聽講，深受感動鼓掌的當下，證嚴法師中斷了談話，藉著當下的機緣說「是不是用鼓掌的雙手來做回收？」由此，開展了慈濟的環保志業。

與地球共生息

證嚴法師 100 個疼惜地球的**思考**和**行動**





Taichung 2007



Taipei 2005



Hualien 1986



Dalin 2000



Yuli 1999



GuanShang 2000



Hospital Surroundings



Hualien Tzu Chi Hospital

2012/07/13



Dalin Tzu Chi Hospital



Taichung Tzu Chi Hospital

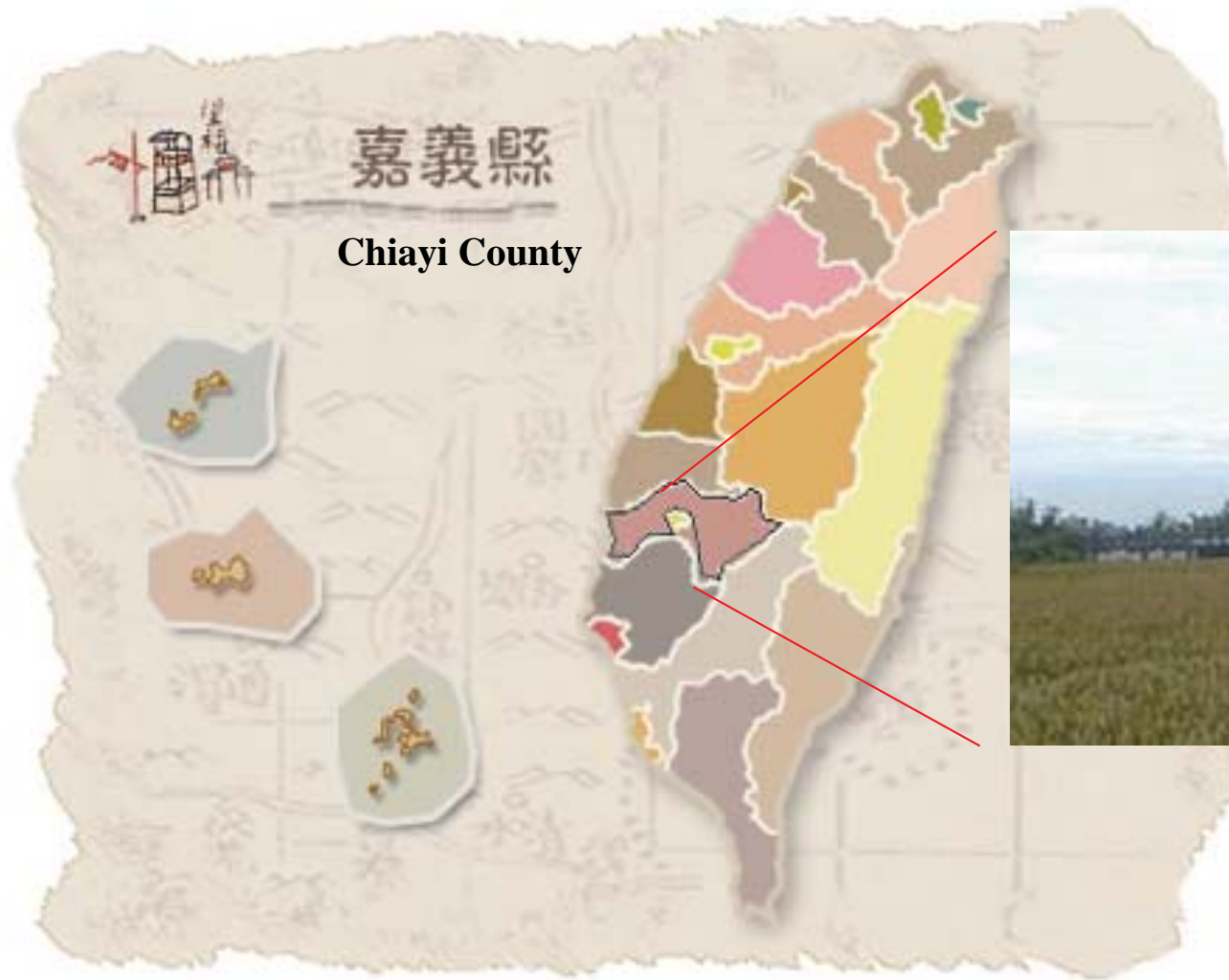


Taipei Tzu Chi Hospital

A nighttime photograph of the Taipei 101 skyscraper, illuminated with purple and red lights, standing prominently against a dark blue sky with scattered clouds. The surrounding city of Taipei is visible in the foreground and middle ground, with numerous other buildings lit up with warm yellow and white lights.

Taipei 101

Dalin 101 in Chaiyi, Taiwan



Hospital profile

◎ Staffs numbers

Physicians	Nurses	Medical Technicians	Administrators	TOTAL
202	778	360	322	1622

◎ Organization Scale

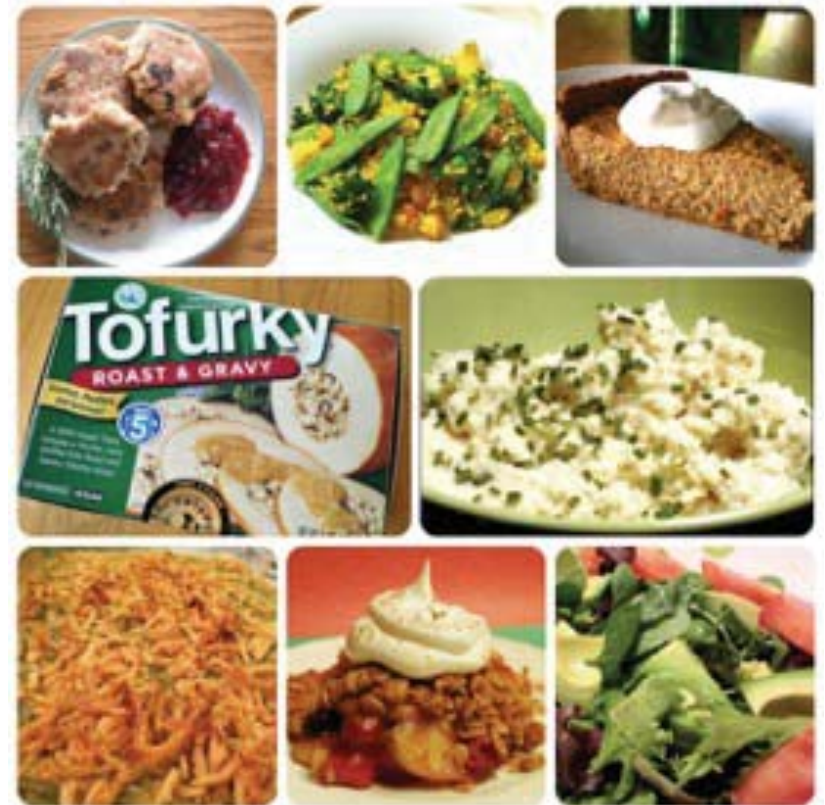
Classification	No. Wards	Classification	No. Wards
Acute General Wards	600	Intensive Care	54
Acute Psychiatric	50	Hemodialysis	40
Chronic Psychiatric	80	Emergency Observation	15
Respiratory Care	40	Operation Recovery	7
Hospice Palliative Care	23	Pre-delivery room	15
Infant Care	15	TOTAL	948

7

Hospital & Environment

GGHH Ten Goals

- Leadership
- Chemicals
- Waste
- Energy
- Water
- Transportation
- Food
- Pharmaceuticals
- Buildings
- Purchasing



Declaration



December 20, 2006



Systemic Implementation Six Prong Approach



Committee for Health Promoting Hospital

**Chair: Vice Superintendent
Dr. Ming-Nan Lin**

**Taskforce on Age-friendly hospital
Taskforce on Smoke-free hospital**

**Executive secretary :
Mr. Chun-Po Chen**

Patient

**Nursing Dpt.
Planning Dpt.
Informatics
Billing
Patient Safety
Quality Assur.
Clinical Dept.**

Staff

**Human Res.
Worker Safety
Benefit Com.
Dormitory Com.**

Community

**Community M.
Outpatient Dept.
Health Education
Public Relations
Social Workers
Volunteer Dept.
Cultural Affair**

Environment

**Engineer Dpt.
General Affair
Environ. Safety**



LEADERSHIP

Prioritize Environmental Health

GREEN HOSPITAL –Top Prize 3 years in a Row (2006-2008)





LEADERSHIP

Prioritize Environmental Health

Host and Participant National Conferences





Experiences Sharing in International Conferences

Year	Conferences	Topics	Presenters
2008	16th WHO HPH Conference	Health Promotion in the Environment (Waste Reduction, Power and Water Conservation)	Superintendent Chin-Lon Lin
2009	17th WHO HPH Conference	Smoke-free Hospital-Experience of Setting Change Approach (Healthy Stairway) in Buddhist DaLin TzuChi General Hospital in Taiwan	Office of General Affairs, Director Chun-Yen Hao
2010	18th WHO HPH Conference	Plastic Container Recycling in Hospitals	Superintendent Shou-shin Chien
2010	18th WHO HPH Conference HPH & Environment Symposium	Healthy Hospitals, Healthy Planet	CEO, Medical Mission The Buddhist Tzu Chi Foundation Chin-Lon Lin
2012	20th WHO HPH Conference Pre-conference on HPH & Environment	Sustainable Health Waste Management	Superintendent Shou-shin Chien
2013	Green Hospital Conference Asia 2013	Global Green and Healthy Hospitals-Country Experience: Green Hospital Experiences Sharing on Buddhist Dalin Tzuchi Hospital, Taiwan	Department of Family Medicine, Director Ming-Nan Lin





16th WHO HPH Conference (2008) Hospital and Environment





LEADERSHIP

Prioritize Environmental Health

18th WHO HPH Conference (2010) *Plastic Container Recycling in Hospitals*





LEADERSHIP

Prioritize Environmental Health

18th WHO HPH Conference (2010) HPH & Environment Symposium

HPH & Environment Symposium

Parallel Sessions 4, Friday, 16th April, 14:00-15:30

Room 2.217

Dr. Shi-Ti CHIOU
Dr. Hanne TØRNESSEN

Agenda

- 1. Background and status for the working group : Shi-Ti Chiou (10 min)
- 2. HPH & Environment from the WHO perspective : Susan Wilton (15 min)
- 3. HPH & Environment from a HQO perspective : Gary Cohen (10 min)
- 4. Good examples on practice :
 - Tzu Chi Hospital - Chin Lon Lin (10 min)
 - Asanuma Hospital - Michael Wong (10 min)
 - Health and Environment Alliance - Pardo Mars (10 min)
- 5. Discussion - Terms of reference and activities for an HPH Task Force Application : Hanne Tørnese (20 min)

18th International Conference on Health Promoting Hospitals & Health Services






LEADERSHIP

Prioritize Environmental Health

18th WHO HPH Conference (2010) HPH & Environment Exhibition





LEADERSHIP

Prioritize Environmental Health

20th WHO HPH Conference (2012) Global Green and Healthy Hospitals



佛教大林慈濟綜合醫院 Buddhist Da Lin Tzu Chi General Hospital



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Prioritize Environmental Health

20th WHO HPH Conference (2012) *Sustainable Health Waste Management*





LEADERSHIP

Prioritize Environmental Health

Health Care Without Harm 2013 Green Hospital Conference Asia



佛教大林慈濟綜合醫院 Buddhist Da Lin Tzu Chi General Hospital



COP 21





2

WASTE

Reduce, Treat and Safely Dispose of Healthcare Waste

Refuse, Reduce, Repair, Reuse & Recycle

- Refrain from using disposable items such as **paper/ plastic plates, cups, bowls & chopsticks**
- Mandate the use of reusable items whenever feasible.

Classification of waste



2

WASTE

Reduce, Treat and Safely Dispose of Healthcare Waste

Refuse and Reduce

- **Patients use reusable plates, bowls**
- **Reusable chopsticks, 5 million pairs in 12 years, reduced 20,738 kg wastes**



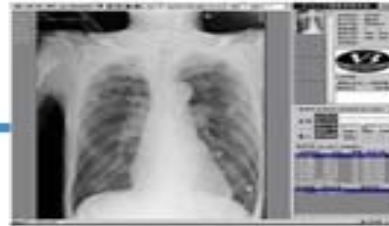
2

WASTE

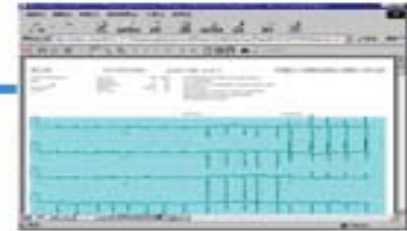
Reduce, Treat and Safely Dispose of Healthcare Waste

Waste Reduction Filmless & Paperless

Integrated System



Images



ECG Waveform

A screenshot of a lab data table. The table has multiple columns and rows, with a blue header. The data is organized in a grid format.

Lab Data

A screenshot of a medical history table. The table has multiple columns and rows, with a blue header. The data is organized in a grid format.

Medical History, medication, orders



Patient Monitor

All data can be accessed through single line, single monitor



E-Hospital

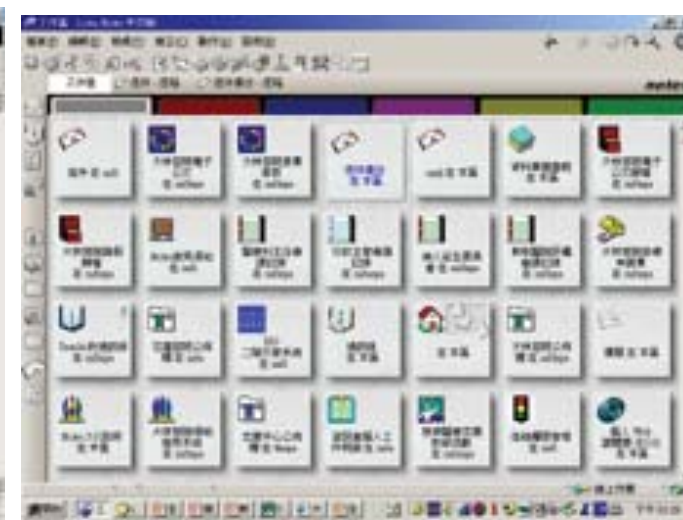
HIS system



Attendance



Notes system



E-Learning system



Health education website



2

WASTE

Reduce, Treat and Safely Dispose of Healthcare Waste

Waste Recycling



- General : 1.59 Kg/bed/day
- Infective: 0.77 Kg/bed/day

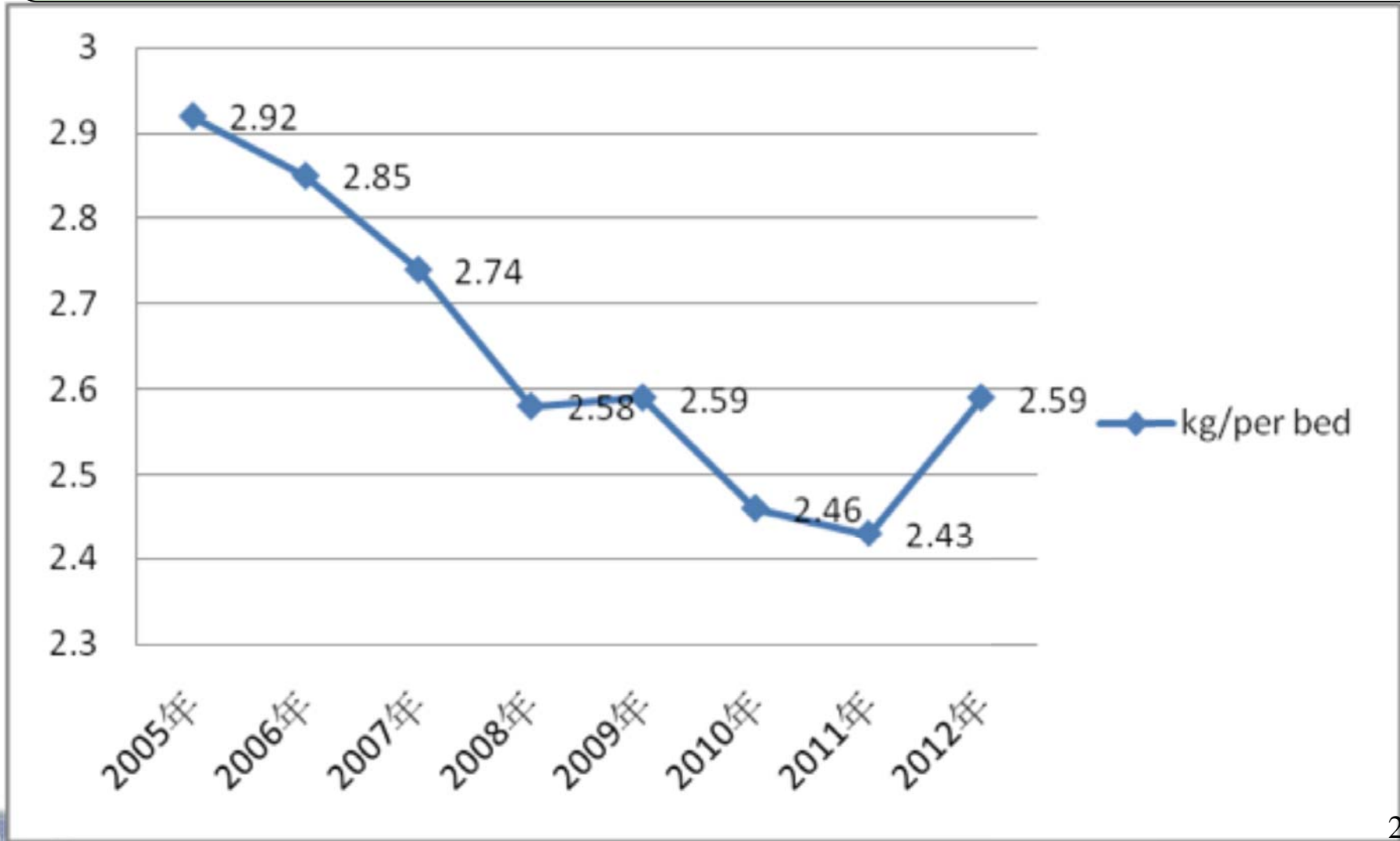


2

WASTE

Reduce, Treat and Safely Dispose of Healthcare Waste

Waste per hospital bed per day

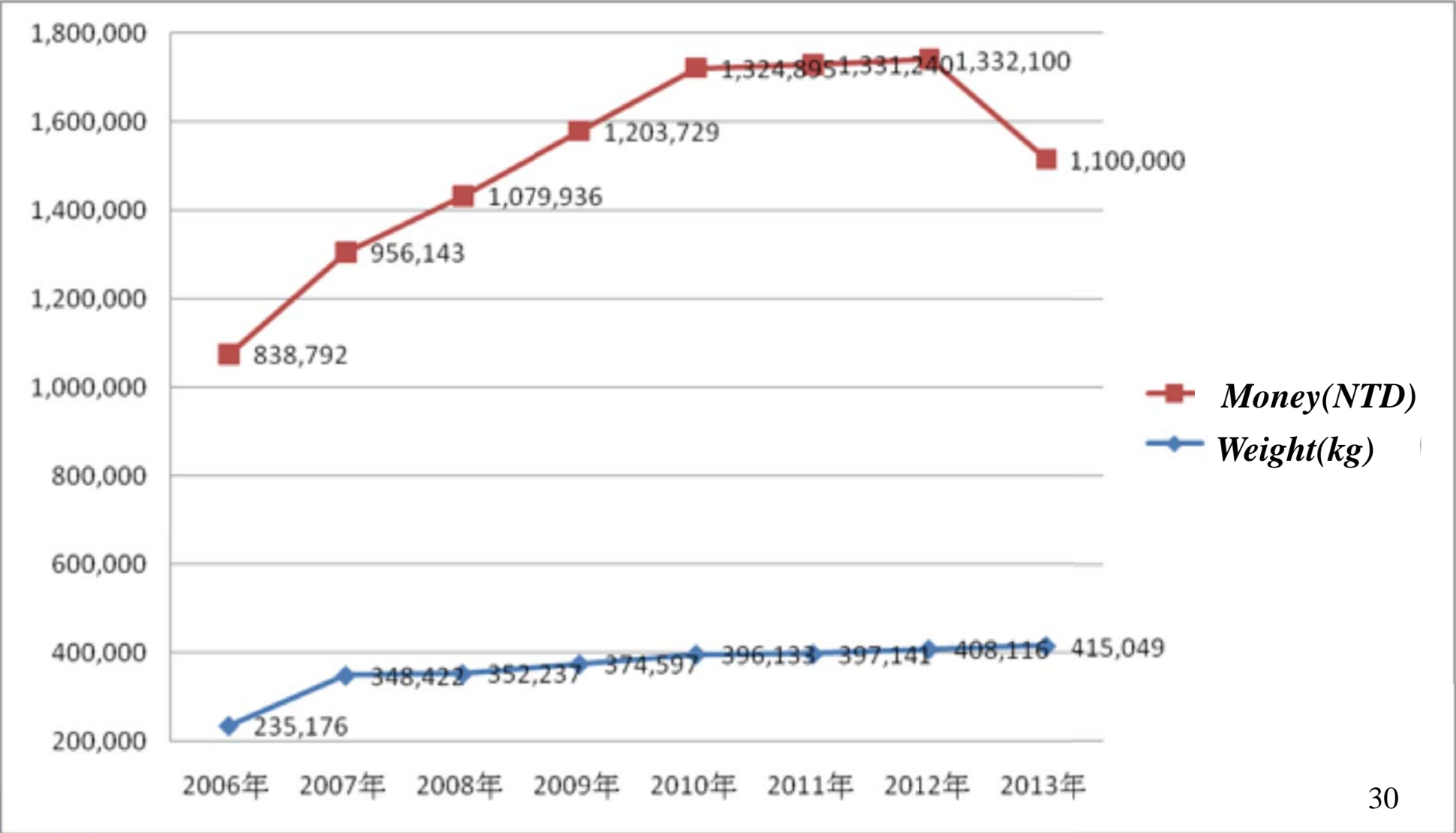


2

WASTE

Reduce, Treat and Safely Dispose of Healthcare Waste

The Weight of Recycled Material



Water heating systems

- Producing hot water by absorbing surrounding heat, saving **6,018,147kWh of electricity**.
 - By monitoring the operative time of the extractor machine, using electric-saving lighting equipment, supplying the heatwater, and improving the automatic sensor lighting in the public toilets.
- Altogether it reduces **3,971,977kg** of carbon dioxide annually.

Heat pump system



Central Energy Resource Monitor



Solar panel and road lamps

- **49.5 W photovoltaic system**
- Received clean renewable energy and reduced electricity use during peak times.
- Save **NTD 239,200** and equivalent to reduce carbon dioxide emissions up to **72,770 kg** per year.



- **Water permeable bricks**
- **Rainwater reclamation system**
- **Recycled water system**
 - Recycle used water while conserving precious natural resources.
- The amount of water recycled per year was **30%** of the total water used in the hospital, which is equivalent to **88,800 tons** and saves **NTD 1,237,775** a year.



4

WATER

Reduce Hospital Water Consumption and Supply Potable Water

Water permeable bricks around the hospital



34

Water Conservation

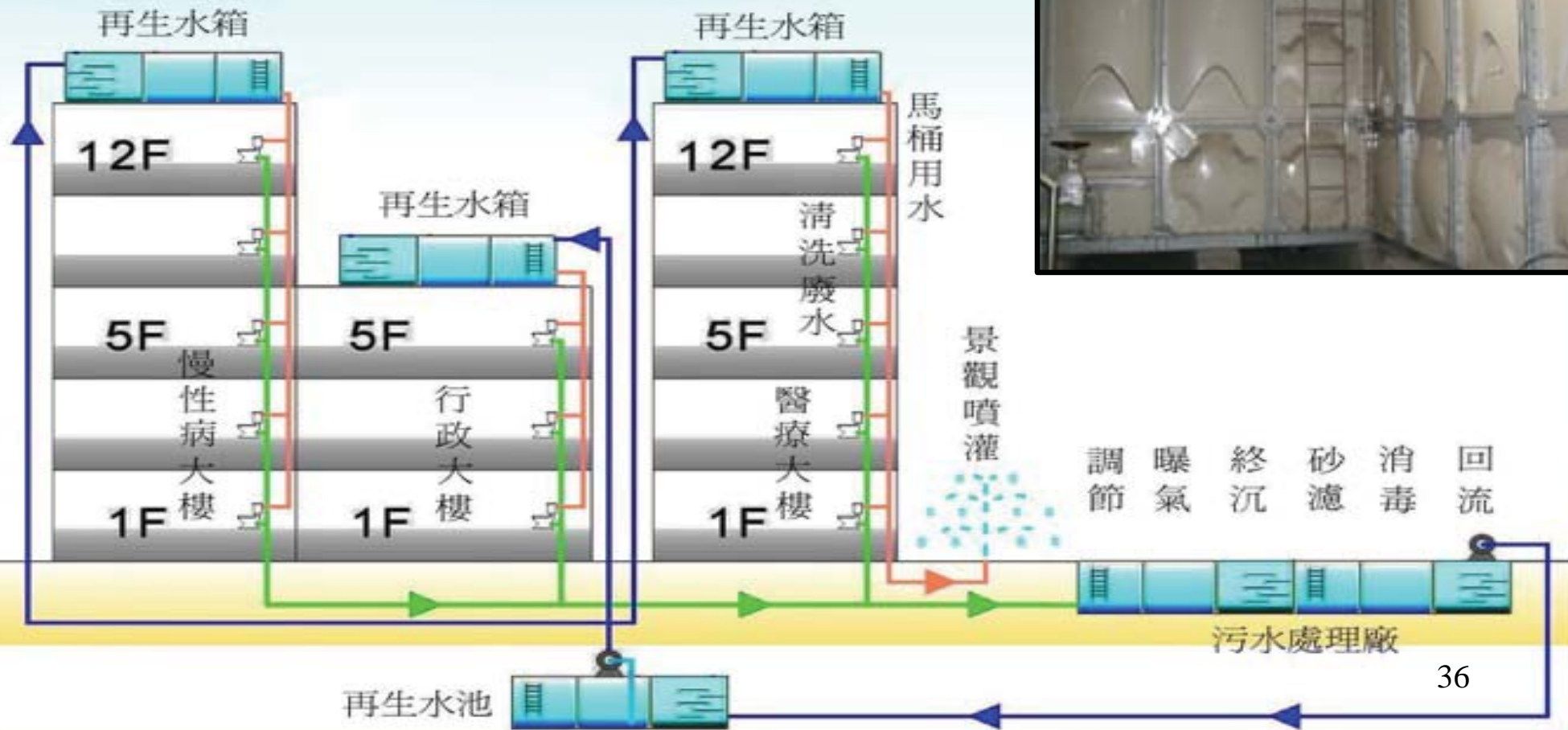
electronic sensor water taps



dual flush toilets with reduced
water pressure



Water recycling system



4

WATER

Reduce Hospital Water Consumption and Supply Potable Water

Recycled Man-made Wetland

Ecological

Natural

Educational



37

Public Transportation

- Provided free shuttle buses every 15 min from hospital to Dalin train station, highway entrance, and downtown.
- 16 bus routes travel to Yunlin, Chiayi, Nantou and Tainan City.
- Reduce 1,261,935 kg carbon produced by public transportation per year.



5

TRANSPORTATION

Improve Transportation Strategies for Patients and Staff

Bicycles are free for use



Dormitory

- Provide dormitory for staffs to reduce the CO₂ by travelling.
- The occupancy rate more than 92%.



Health Stairways

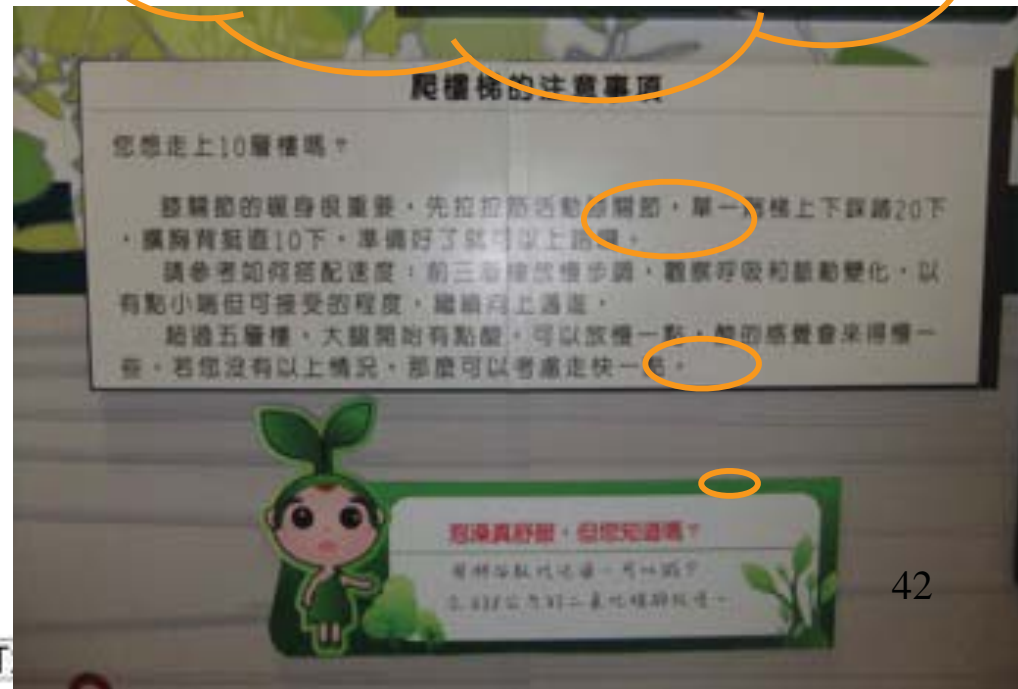
- Decorated with health, environmental protection information and ecological photos.

Do you know?

Cutting down an hour of TV watching can save 0.966 kg CO₂

Do you know?

Showering can help reduce 0.438 kg CO₂ compared with taking a bath.



5

TRANSPORTATION

Improve Transportation Strategies for Patients and Staff

Health Stairways



Online Meeting & Telemedicine Services

- Dapu Medical Station is 2 hr away from Dalin, the online meeting and consultant could reduce the carbon footprints by transportation.



Dapu Medical Station



Dalin Tzu Chi Hospital

Plant-based Diets

- **Healthy and nutritious**
- **Plant-based diet since the opening of the hospital**
- **Patients, families and community**
- **Good educational experience**





Meat & salty food,
do not eat
do not eat
One bowl of veg
a meal
One bowl of veg
a meal
Keep you healthy
Keep you healthy



6

FOOD

Purchase and Serve Sustainably Grown, Healthy Food



Da-Ai Farm-Reduce Food Mileage

On empty land around the hospital, we grow vegetable, rice.

As a rehabilitation program for our patients



Food Mileage

Low

- **Local**
- **Fresh**
- **Plant-based**





Green Building Design

- **Sunshine in the hospital-** Daylight utilization in the lobby



Green Building Design

- Daylight illuminates the hospital's interior through transparent ceilings and corridors between buildings, decreases electricity use during daytime.
- Cuts down electricity use cost and creates a healthy indoor environment

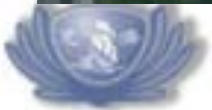


7

BUILDINGS

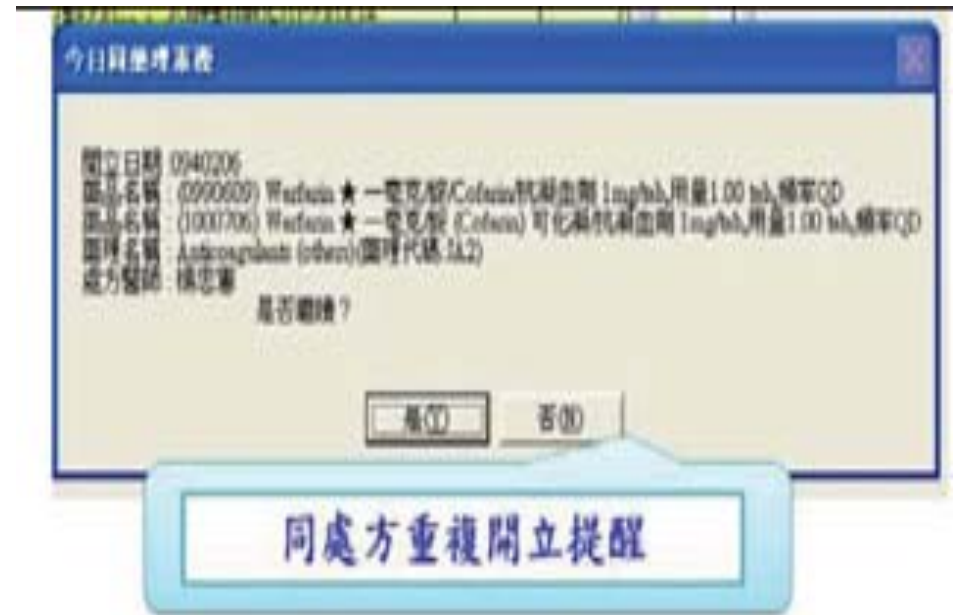
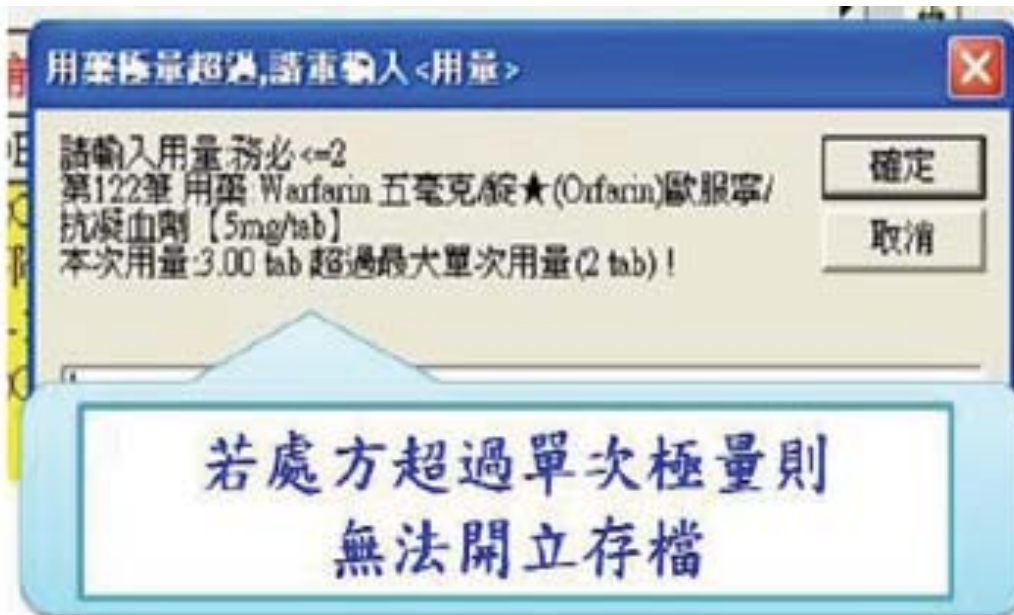
Support Green and Healthy Hospital Design and Construction

The Garden within the Hospital *The Hospital within the Garden*



Medication Safety

- **Reminder system** for physicians to avoid **repeat-prescription and over-prescription.**



Medication Safety Education

- Medication safety lectures, consultation and provide medication recycling services.
- 34 health education sessions for medication safety in hospital, communities, schools and 2,980 participants.



Green Purchasing Policies

- Implement a sustainable purchasing agenda that considers the environmental impact of all aspects of purchasing and spend **NTD 3,220,754** in green purchasing (2010-2012).

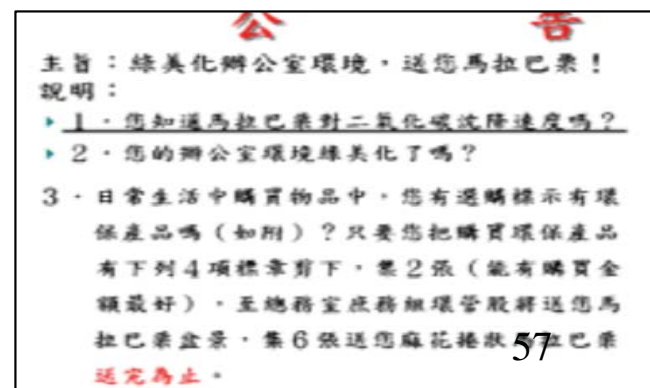
環 保 承 諾 書

為了環保觀念的落實，
讓我們一起...

節約用電	人離燈熄	電腦也息
節約用水	點滴做起	循環使用
節約用紙	有效使用	copy三思
珍惜糧食	健康飲食	少速多素
少搭電梯	健康步道	步步健康
多喝開水	少買飲料	省錢又不胖
購物袋	環保杯具	院外現蹤跡
我的行頭	一輛單車	一個MP3

Green Purchasing Policies

- Announcements of Symbols representing Environmental Protection, Water Conservation, Energy Saving and Green Building Materials.
- Encourage staff to buy electrical appliances with these symbols.



Hospital-wide in-service education

- All employees
- Patients and families
- Community centers
- Recycling stations
 - Lecture
 - Poster
 - Workshop
 - Small group discussion
 - Demo



*Education Exhibits***Green Castle****Hand-made recycled paper****Leftovers become organic fertilizer****Waste oil become soap**

Good Ideas from Nurses

The bib for wheelchair

好点子!
地位：方便使用
地位：方便使用
地位：方便使用

特色
方便輪椅上的老人使用，防止衣物滑落，保持整潔。使用時只需將圍兜套在老人身上，即可固定，操作簡便。圍兜採用柔軟材質，不會對老人造成不適。

製作
1. 準備所需材料：圍兜、鬆緊帶、剪刀、熨斗。
2. 將圍兜對折，在開口處縫上鬆緊帶。
3. 將圍兜套在老人身上，調整鬆緊帶，確保圍兜固定且舒適。

老人有尊嚴
隨著年齡增長，老人行動能力逐漸減弱，需要借助輪椅。為了方便老人使用輪椅，護理人員設計了這款圍兜。圍兜不僅可以防止衣物滑落，還能保護老人的隱私，讓老人在行動時更有尊嚴。

The cushion for wheelchair

好点子!
地位：方便使用
地位：方便使用
地位：方便使用

特色
防止老人長時間坐輪椅導致腿部麻木、疼痛。墊子採用柔軟、透氣材質，能減輕老人坐輪椅的不適感。墊子易於清洗，方便護理人員使用。

製作
1. 準備所需材料：柔軟透氣的布料、填充物、縫紉機。
2. 將布料裁剪成合適大小，縫製成墊子。
3. 將填充物放入墊子中，縫好開口，完成製作。

DIY ice packs

好点子!
地位：方便使用
地位：方便使用
地位：方便使用

特色
傷口腫脹疼痛，想要冰敷卻找不到合適的工具？這款創意冰寶，製作簡單，使用方便。冰寶採用柔軟材質，能緊貼膝關節，提供舒適的冰敷效果。冰寶易於攜帶，方便護理人員隨時使用。

製作
1. 準備所需材料：柔軟透氣的布料、填充物、縫紉機。
2. 將布料裁剪成合適大小，縫製成冰寶。
3. 將填充物放入冰寶中，縫好開口，完成製作。

Learning by Doing

How leftovers become organic fertilizer?

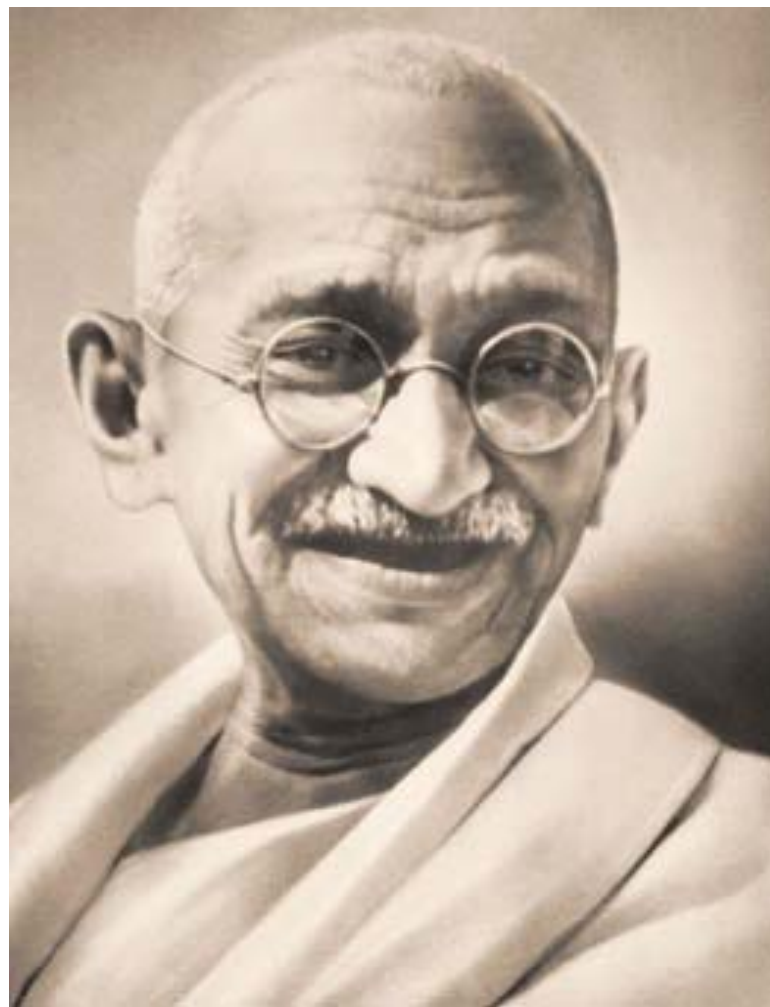
Hand-made card by recycling paper



DIY soaps



Be the Change You Want to See in the World



-----Mahatma Gandhi



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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