

Singapore Disease Management Conference 2008



# The Way Forward

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Tan Tock Seng  
HOSPITAL



A member of National Healthcare Group  
Adding years of healthy life



# Outline

- Literature review
- What we hope to achieve
- Conceptualisation of website
- The birth of E-nutrition
- Success stories
- Plans for the future



# Literature review

- Patients are accessing medical content on the Internet with increasing frequency
- Internet is gateway to limitless health information

Diaz et al. *J Gen Intern Med*; **17**: 180-185, 2002

Silberg et al. *JAMA*; **277**: 1244-45, 1997

Bower H. *BMJ*; **313**: 381, 1996



# Literature Review

- Self management education coupled with internet access, technology training and web-based care management resulted in significant improvements in HbA1c over 12 mths when compared with usual care.

McMahon et al. *Diabetes Care*; **28(7)**: 1624-29, 2005



# Literature Review

- Internet behavioural counselling with weight loss intervention program significantly improved weight loss in overweight/obese adults at risk of diabetes.

Tate et al. *JAMA* 2003; **289(14)**: 1833-36



# What We Hope To Achieve

- Personalised website system
- Evidence-based nutrition advice
- Secure website, ensuring patient confidentiality
- Having a face-to-face initial consultation, ensuring familiarity in subsequent online follow-ups
- Track progress at own convenience
- Continuity of care through follow-ups online



# Vision

*“We hope that despite being busy, members can continue to work towards their goals, since they can track their progress at their own convenience. This will also reduce the need of re-scheduling appointments and decrease waiting times at outpatient clinics. We also hope to promote this service to our overseas patients so that we can continue to communicate with them, improving our continuum of care.”*

# Website Development





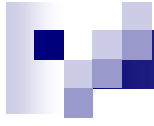
# Needs Assessment

- Focus Group
- Online surveys
- Outcome and responses:
  - Convenience of online consultations
  - Credible nutrition information
  - Healthy diet recipes, recipes for different illnesses
  - General healthy eating and disease-specific nutrition information



# What We Had In Mind

- Requires Dr referral or latest health screening report
- Initial face-to-face assessment
- Username and password login
  - Secure, confidential online nutrition consultations
- Evidence-based nutrition information
- Ease of navigation



# HOW DOES NUTRITION WORK?



# Initial Face-to-Face Consultation with Dietitian



- 2 on-site follow-ups
- Unlimited access to E-nutrition content

# Patient Logs In



[www.ttsh.com.sg/e-nutrition](http://www.ttsh.com.sg/e-nutrition)

*\*Specially designed secured and confidential web programme\**

# Update Dietitian

w.ttsh.com.sg/new/enutrition/patient/patient\_health\_profile.php

INTERNATIONAL

**NUTRITION AND DIETETICS**  
» E-NUTRITION

Home | My Health Profile | Highlights | A to Z Healthy Eating | FAQs | Logout  
What I Have Been Eating | What's Cooking? | Contact | Back to TTSH website

E-Nutrition Home > My Health Profile Summary > My Health Profile

**My Health Profile**

Please fill in relevant information

Date : 08-May 2008

Weight (kg) :

Height (m) :

Total Cholesterol :

LDL :

HDL :

Triglycerides :

Home blood glucose monitoring : [Select Blood Glucose]

HbA1c (%) :

Urea/Creatinine :

Sodium/Potassium :

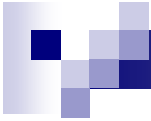
Visceral Body Fat (%) :

Body Fat (%) :

Muscle Mass (%) :

Others :

- Lab results, anthropometrics
- Dietary changes
- Allows for frequent e-mail contact with dietitian



# A to Z of Healthy Eating

**Tan Tock Seng Hospital - Microsoft Internet Explorer**

File Edit View Favorites Tools Help

Address [https://www.ttsh.com.sg/new/enutrition/eNutrition\\_atozhealthyeating.php](https://www.ttsh.com.sg/new/enutrition/eNutrition_atozhealthyeating.php)

**NUTRITION AND DIETETICS**  
[>> E-NUTRITION](#)

Home | My Health Profile | Highlights | **A to Z Healthy Eating** | FAQs | Logout  
What I Have Been Eating | What's Cooking? | Contact | Back to TTSH website

E-Nutrition Home > A to Z Healthy Eating

## A to Z Healthy Eating

:A :B :C :D :E :F :G :H :I :J :K :L :M :N :O :P :Q :R :S :T :U :V :W :X :Y :Z

### An Experience with Artificial Sweeteners

A sugar substitute or artificial sweetener is a food additive aimed at substituting the sweetness effect of sugar or corn syrup or honey with a less caloric effect. There are many classes of artificially derived sweeteners with the most common being aspartame, saccharin, sucralose and acesulfame potassium. There are also naturally existing sugar substitutes like sorbitol and xylitol. The food and beverage industry is increasingly expanding their range of products made with artificial sweeteners. Do check out this article for more details.

[MORE >>](#)  
[<< BACK TO TOP](#)

### Bone Health





Do you know when your peak bone mass is reached? Do you know calcium intake is not the only risk factor for osteoporosis? This month's article will explore issues affecting bone health, provide a list of high calcium foods, as well as provide expert advice from a physiotherapist on exercising to strengthen our bones.

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### Carbs Matter

We know that carbohydrates are the staple of most of our diets, especially in Singapore. Regardless of what we have read or heard about carbohydrates, they are an integral and important part of a healthy diet. This article aims to provide you readers a better understanding on why carbohydrates matter to us. A pictorial illustration some commonly eaten local snacks with their corresponding caloric and carbohydrate content have also been created for your benefit.

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# Modified Recipes

**NUTRITION AND DIETETICS**  
>> E-NUTRITION

E-Nutrition Home > What's Cooking?

**What's Cooking?**

**Festivities**

- Chinese New Year Recipes
- Deeparaya Recipes
- X'mas Recipes

**Healthy Eating Recipes**

- Apple Yoghurt Salad
- Banana Oatmeal Nutty Smoothie
- Cranberry and Cottage Cheese Muffins
- Double Decker Burger
- Fruity Bread Pudding
- Tofu Corn Soup
- Vietnamese Stuffed Tomatoes

**Special Dietary Requirements**

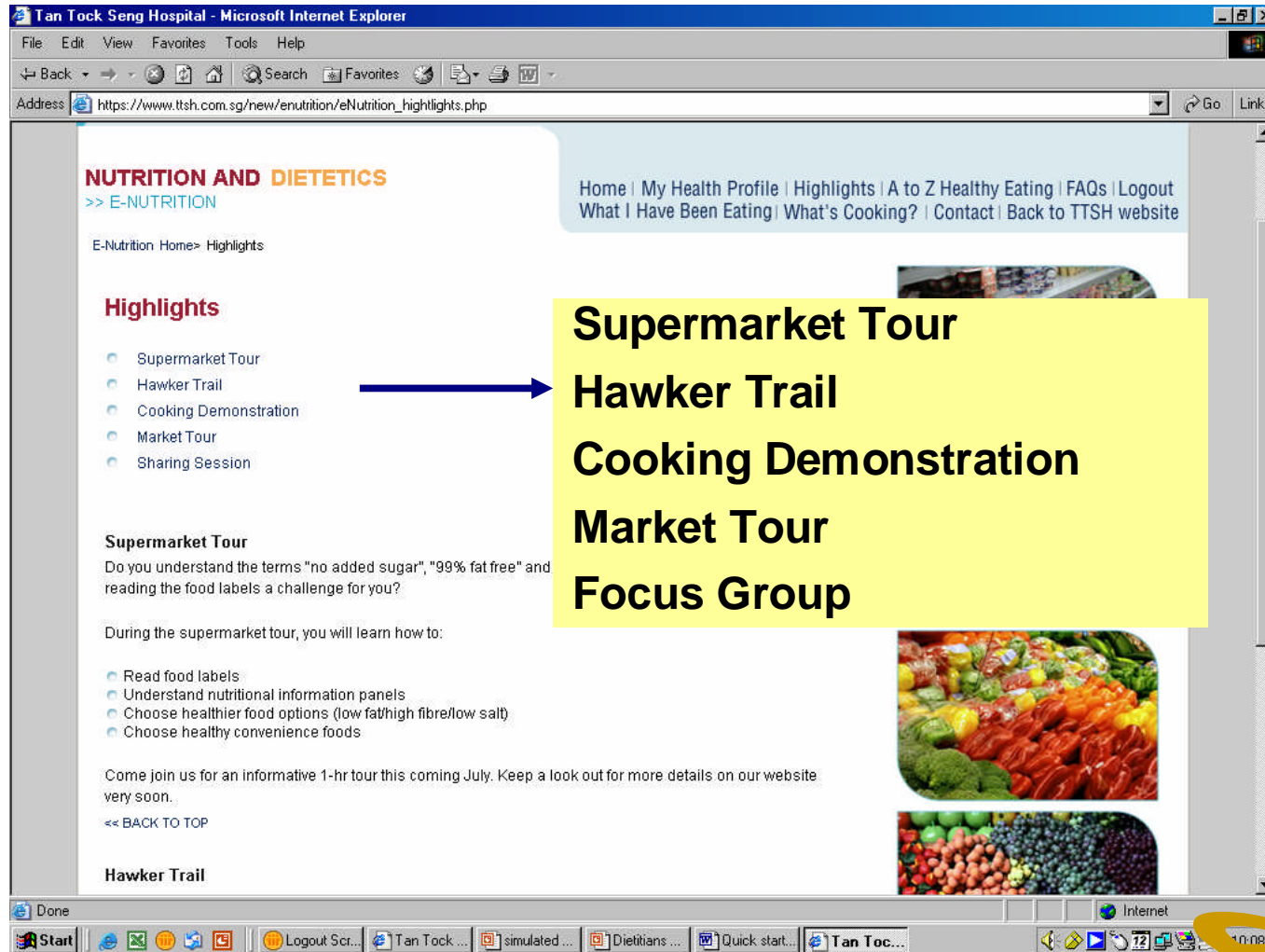
- Choco Oats
- Oriental Agar-agar
- Tomato Fish

Home | My Health Profile | Highlights | A to Z Healthy Eating | FAQs | Logout  
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**Festivities**  
**Healthy Eating**  
**Special Dietary Requirements**



# Events and Activities



The screenshot shows a Microsoft Internet Explorer browser window displaying the Tan Tock Seng Hospital website. The address bar shows the URL: [https://www.ttsh.com.sg/new/enutrition/eNutrition\\_highlights.php](https://www.ttsh.com.sg/new/enutrition/eNutrition_highlights.php). The page content includes a navigation menu with links like Home, My Health Profile, Highlights, A to Z Healthy Eating, FAQs, Logout, What I Have Been Eating, What's Cooking?, Contact, and Back to TTSH website. The main heading is "NUTRITION AND DIETETICS" with a sub-heading ">> E-NUTRITION". Below this, there is a "Highlights" section with a list of activities: Supermarket Tour, Hawker Trail, Cooking Demonstration, Market Tour, and Sharing Session. A blue arrow points from the "Supermarket Tour" link to a yellow callout box. The callout box contains the following text: "Supermarket Tour", "Hawker Trail", "Cooking Demonstration", "Market Tour", and "Focus Group". Below the callout box, there is a section titled "Supermarket Tour" with a paragraph: "Do you understand the terms 'no added sugar', '99% fat free' and reading the food labels a challenge for you?". This is followed by a list of learning objectives: "Read food labels", "Understand nutritional information panels", "Choose healthier food options (low fat/high fibre/low salt)", and "Choose healthy convenience foods". The page also includes a paragraph: "Come join us for an informative 1-hr tour this coming July. Keep a look out for more details on our website very soon." and a link: "<< BACK TO TOP". The bottom of the browser window shows the Windows taskbar with various application icons and the system clock.

# Success Stories – Mr H

	<b>Nov 07</b>	<b>Apr 08</b>
Weight (kg)	108	100.5
Waist circumference (cm)	106	101

- Weekly email updates
- Diet changes: low fat food choices
- Increase in physical activity (needed encouragement)

# Success Stories - Ms C

	<b>Nov 07</b>	<b>Apr 08</b>
Total chol (mmol/L)	4.0	3.0
TG (mmol/L)	2.0	0.8
Weight (kg)	75	67
BMI (kg/m <sup>2</sup> )	29	26
Fasting glucose (mmol)	7.8	6.9
HbA1c (%)	-	6.8



# Members' Comments/Feedback

- *“Recipes very useful in preparing healthier food”*
- *“Hawker trail was a good way to interact with other participants and learn about healthy food choices”*
- *“Being an E-nutrition member helps keep my weight in check”*
- *“E-nutrition has helped to motivate me to achieve my goals”*



# Dietitians' Comments

- Able to track members' progress and their response to dietary intervention recommended
- Empowers patients to take control of their chronic diseases

# Future Directions



## ■ Continual Improvements

- Benefit larger population in the future
  - For statistical analysis
- Publicity, marketing strategies
- Up-to-date evidence-based nutrition information

## ■ Enhancements

- System improvement
- Future plans
  - Leveraging on IT





**THANK YOU**



Tan Tock Seng  
HOSPITAL