

Nutrition management for CVD

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Objectives

- 1. To discuss current nutrition guidelines for management of Cardiovascular Diseases (CVD).**
- 2. To translate nutrition recommendations into practical interventions relevant to the Malaysian diet & lifestyle for patients & staff.**

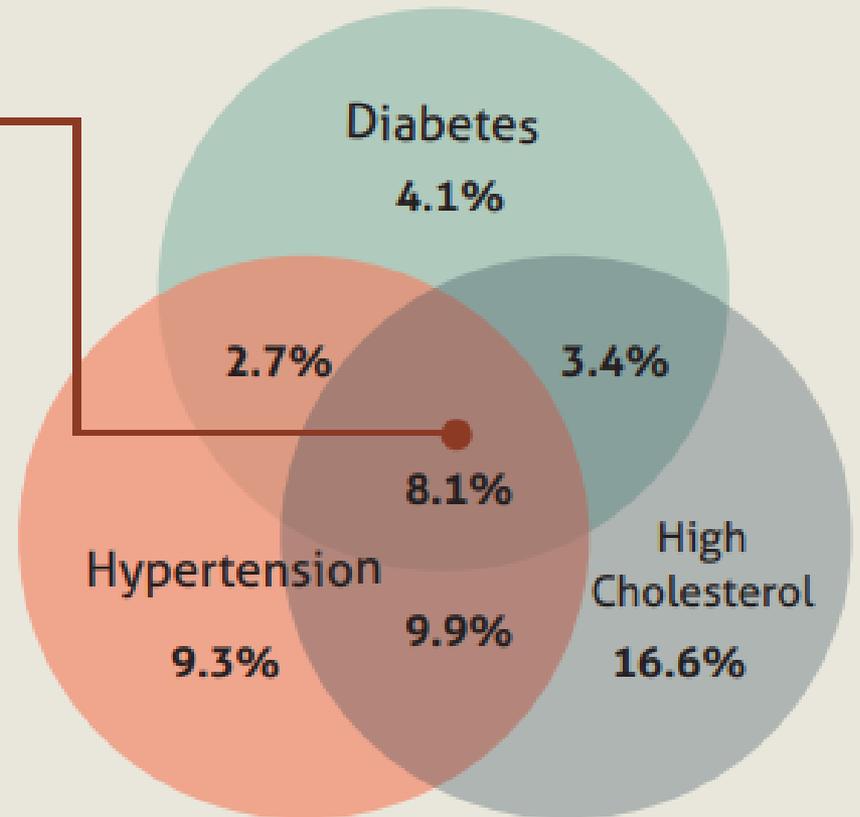
Cardiovascular diseases (CVDs) are the leading causes of death in Malaysia

(such as stroke and coronary heart diseases)



1.7 million people in Malaysia currently live with **three** major risk factors

3.4 million people in Malaysia currently live with **two** major risk factors



CV Risk Factors

1 in 2 adults in Malaysia were **overweight or obese**

1 in 2 adults in Malaysia had **abdominal obesity**

3 in 10
or **6.4 million people** in Malaysia have hypertension

Diabetes in Malaysia

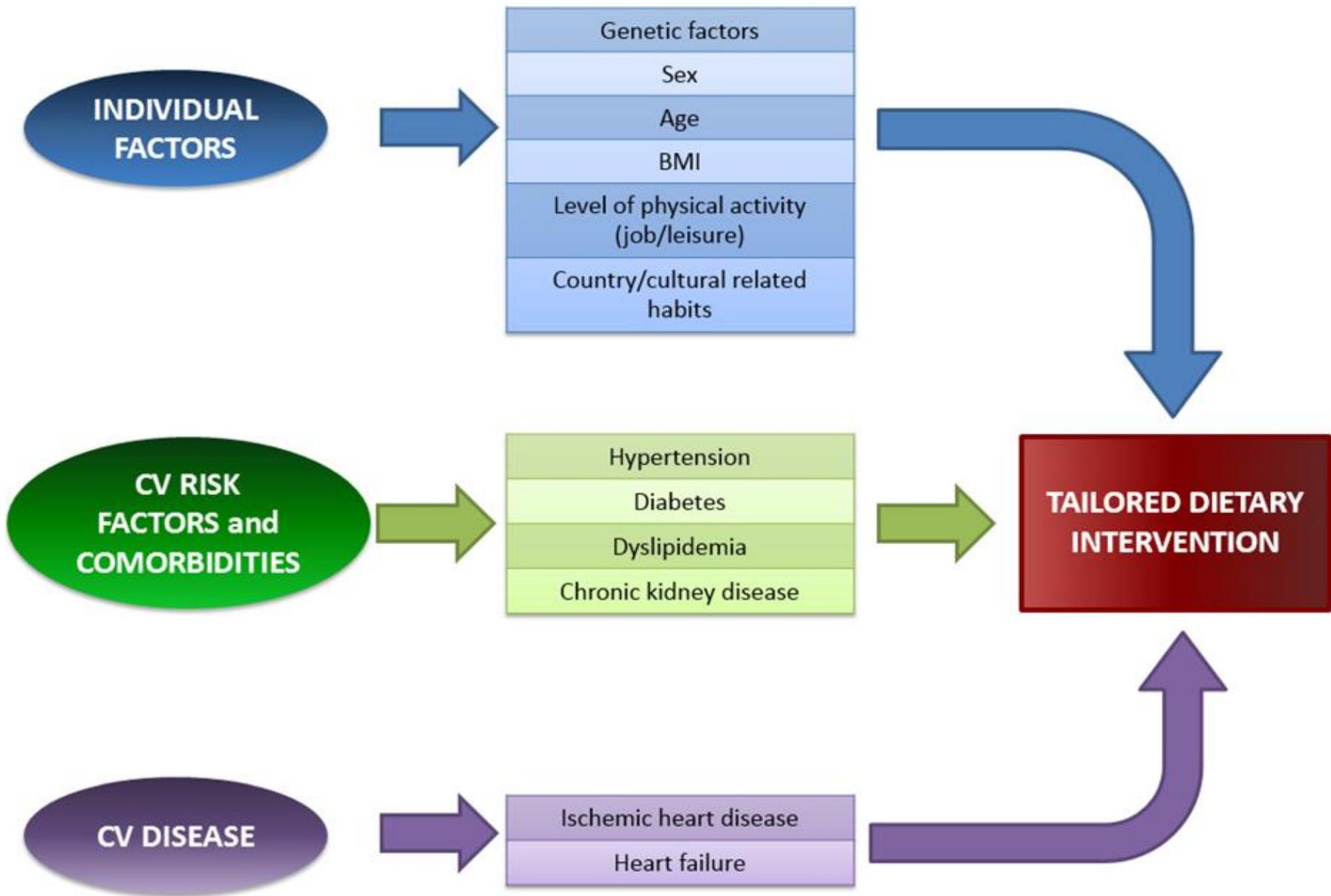
1 in 5 adults in Malaysia have **diabetes**



That's about
3.9 million
people aged 18 years and above



4 in 10 people or **8 million adults** in Malaysia have raised total cholesterol level



Nutrition guidelines for CVD

- **Academy of Nutrition & Dietetics (2011), Disorders of Lipid Metabolism, Evidence Analysis Library**
- **American Heart Association (2019), Guidelines on the Primary Prevention of Cardiovascular Disease**
- **Ministry of Health Malaysia (2017), 5th Edition Clinical Practice Guidelines for Management of Dyslipidemia**
- **Ministry of Health Malaysia (2004), Clinical Practice Guidelines on Management of Obesity**
- **Malaysian Dietitians' Association's (MDA) Medical Nutrition Therapy Guidelines for**
 - **2005: Hyperlipidemia & Hypertension**
 - **2013: Type 2 Diabetes Mellitus**

Main nutrition message

All adults should consume a healthy diet that emphasizes the intake of vegetables, fruits, nuts, wholegrains, lean animal or vegetable protein, fish and minimizes intake of trans fats, processed meats, refined carbohydrates and sweetened beverages.



Weight reduction

For overweight & obese adults, counselling & calorie restriction are recommended for achieving & maintaining weight loss¹.

- ✓ Achieve BMI < 23
- ✓ Reduce 5-10% of initial weight in 6 months
- ✓ Waist circumference: Men: <90 cm, Women: <80 cm

Benefits²:

- ✓ 50% ↓ fasting blood glucose
- ✓ 10 mmHg ↓ blood pressure
- ✓ 10% ↓ TC, 30% ↓ TG, 15% ↓ LDL, 8% ↑ HDL



Weight reduction

- **Diet to reduce calorie intake by ≥ 500 kcal/day from baseline or calorie restrictions:**
 - **Women: 1200 - 1500 kcal/day**
 - **Men: 1500 - 1800 kcal/day**
- **Very Low Calorie Diet (VLCD) < 800 kcal/day should be prescribed only in limited circumstances, by trained clinicians in a medical care setting with the patient under medical supervision**



Fats

- Fat intake **20 – 30%** of total energy intake
- Saturated fats (SFA) **< 10%** of total energy
- SFA shall be replaced with Polyunsaturated Fats (PUFA), Monounsaturated Fats (MUFA) or complex carbohydrates (CHO)



Fats

- There is no single fat source which is purely SFA, PUFA or MUFA
- Taking PUFA or MUFA without reduction of SFA will not result in CV benefit
- Palm oil can be included:
 - ✓ Balance proportions between SFA & MUFA
 - ✓ Stable at high temperature cooking
 - ✓ Does not require hydrogenation



Trans Fats (TFA)

- Created from partial hydrogenation, more solid & ↑ shelf life
- Prolonged or repeated heating of MUFA & PUFA may convert into TFA
- ↑ intake of TFA, ↑ LDL & ↓ HDL
- Intake of TFA should be limited to **< 1% of total energy**
- ↑ 2% energy intake from TFA, ↑ 23% incidence of CHD
- Substituting 2% of energy from TFA with MUFA & PUFA ↓ CV risk by 21% & 24%



Dietary cholesterol

- Impact on dietary cholesterol on serum cholesterol levels are weak but many high cholesterol foods are also high in SFA
- International guidelines recommend limiting dietary cholesterol **< 200mg/day** ¹
- No significant association was found between egg consumption & CVD mortality ²
- Consumption of eggs in moderation (~1 egg/day) is likely neutral for CVD



1. Ministry of Health Malaysia (2017)

2. Xia et al (2020). Dietary Intakes of Eggs & Cholesterol in Relation to All-Cause and Heart Disease Mortality: A Prospective Cohort Study, Journal of American Heart Association.

Low carbohydrate diet & sugar

- Low CHO diet < 26% of total energy intake results in significant ↓ in TG levels ¹
- Long term effects of a low CHO diet are unknown
- Sugar-sweetened & artificially sweetened beverages ↑ **risk for development of DM**
- 20% ↑ in the frequency of DM with 1 daily serving of these sweetened beverages ²
- Consumption of **added sugar >10%** of daily calories has been associated with increased mortality rate ²



Malaysians and sugary drinks: a not-so-sweet picture

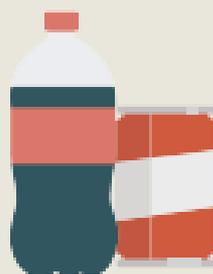
Sugary drinks intake among Malaysian adults

self-prepared drinks



53.2%
daily

carbonated and non-carbonated drinks



4.2%
daily

premixed drinks

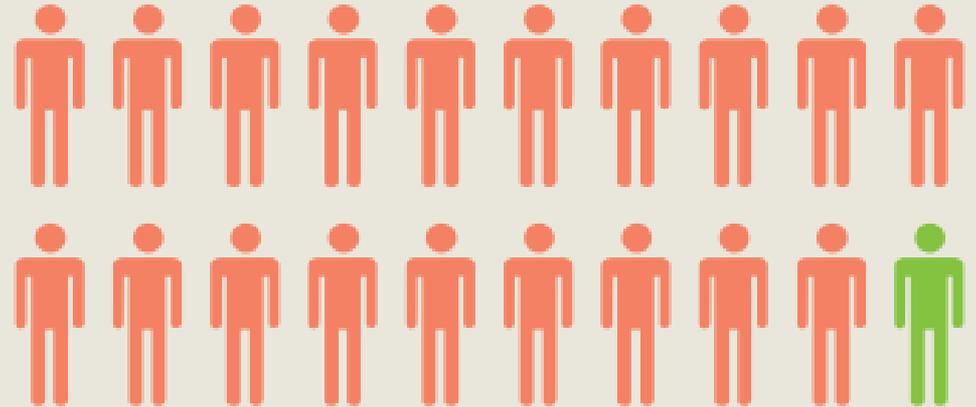


6.7%
daily

- Sugar added self-prepared drink: coffee, tea, chocolate or malted beverages added with sugar or/and sweetened condensed milk or sweetened creamer (based on Operational Definition by Nutrition Division, Ministry of Health Malaysia)
- Premixed drinks: Instant drink products containing sugar (e.g. premix coffee, tea, chocolate, soy, cereal)

Fiber

95%

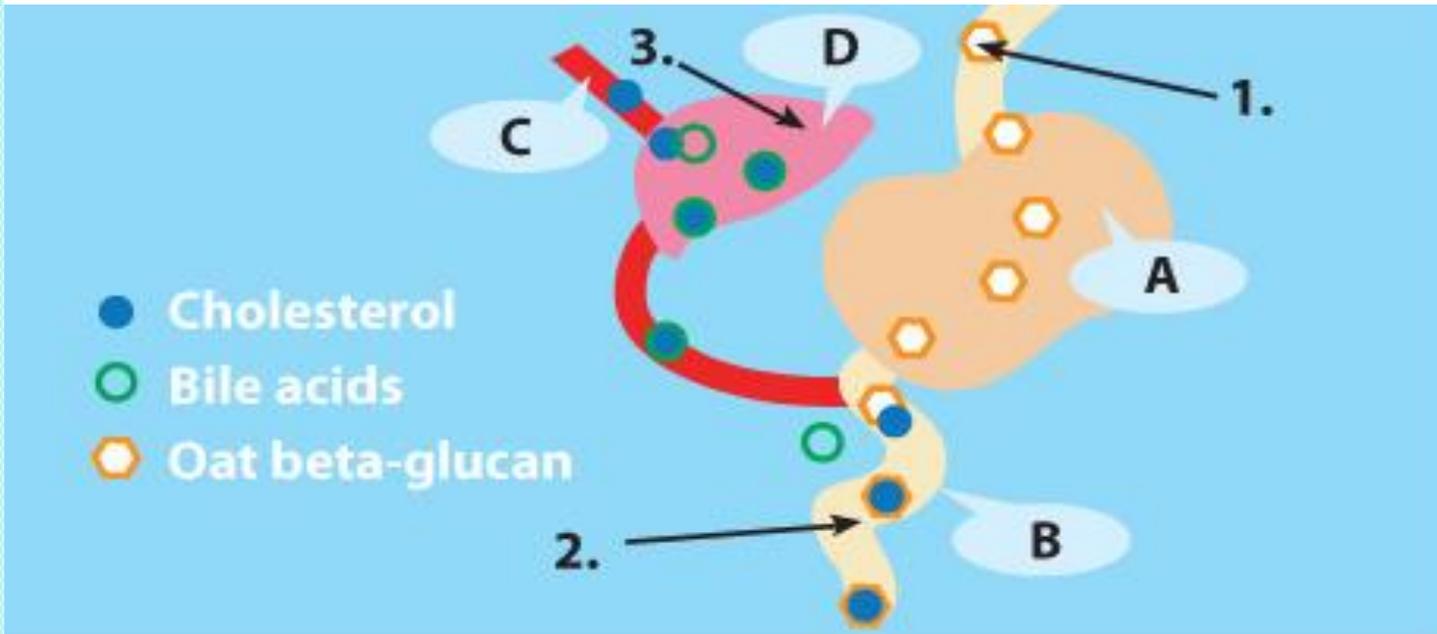


of Malaysian adults **do not** eat the recommended daily amount of both fruits and vegetables.

**Recommendation for fiber 20 - 30g per day
with soluble fiber 7 – 13g per day².**

Beta glucan

- A type of soluble fiber in grains & mushrooms
- **2 - 3g** beta glucan daily ↓ LDL by 7 - 15%



Oats



Barley



Mushroom

Plant sterols

- **Steroid compounds found in plants e.g. legumes, lentils, nuts & seeds**
- **Similar in structure to cholesterol in the human body**
- **2 - 3g per day ↓ intestinal cholesterol absorption**
- **↓ LDL by 7 - 15% & no effect on HDL**
- **Doesn't interfere with the action of statins**
- **Difficult to achieve from food alone:**
 - **Normal diet: 200-300 mg/day**
 - **Vegetarian diets: 500-600 mg/day**
- **Consider foods added with plant sterols**

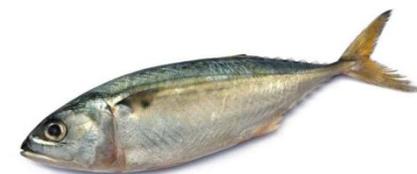


Omega-3

- ↓ TG, ↓ plaque build up & curbs inflammation
- **EPA & DHA:** salmon, *kembung*, *jelawat*, *keli*, *patin*, *senangin*, white pomfret
- **ALA:** flaxseed oil, canola oil, soybean, chia seed, walnuts, green leafy vegetables
- Recommendations (EPA & DHA) ¹:
 - ✓ 1 g per day for people with CVD
 - ✓ 2 - 4 g per day to lower TG
- Omega-3 supplements: reasonable treatment for the 2^o prevention of CHD death ²



110g Salmon
= 1.9g EPA & DHA



110g *Kembung*
= 2.9g EPA & DHA

Nuts

- **Good source of MUFA, fibre, plant sterols, Vitamin E**
- **E.g. walnuts, almonds, pecans, cashews, peanuts**
- **150g of nuts per week helps to ↓ LDL 6 - 29%**
- **Example of 30g nuts ~ 1 **small** handful**



Sodium



- **↑ sodium intake ↑ blood pressure (BP)**
- **Dietary Approaches to Stop Hypertension (DASH) diet with salt intake < 1 teaspoon per day ¹**
- **↓ systolic BP 5 - 11mmHg ¹**
- **↓ risk of CHD by 21%, stroke 19% & heart failure 29% ²**

Food items	Servings per day for 2000 kcal
Grains	7-8
Poultry, fish, lean meat	2 x 90g
Vegetables & fruits	4-5 each
Dairy products	2-3
Oil	2-3
Nuts & seeds	4-5 servings per week

1. American Heart Association (2019)

2. Salehi-Abargouei et al (2013). Effects of DASH diet style on fatal or non-fatal CVD incidence: a systematic review and meta-analysis on observational prospective studies, Nutrition, 29(4):611-618

Low sodium initiative

Guideline for Healthcare Professionals
Health Education and Communication Tools to Reduce
Salt Intake in Malaysia



First Edition

Resipi Masakan

#SedapTakSemestinyaMasin



Cawangan Penyakit Tidak Berjangkit
Bahagian Kawalan Penyakit
Kemajuan Kesihatan Malaysia
&
Subsaran Dietetik dan Sejian
Hospital Selangor

PANDUAN PENGIRAAN SODIUM (GARAM)



#SedapTakSemestinyaMasin

PENGENALAN

Pengambilan garam atau dikenali *sodium chloride*, yang berlebihan, akan meningkatkan risiko penyakit tekanan darah tinggi, strok dan jantung.

AMBIL GARAM

5g SEHARI = 1 PARAS SUDU TEH
= 2000mg sodium

2000mg sodium = 10 Point

PENGIRAAN SODIUM

Kaedah mengenal pasti kandungan sodium dalam makanan menggunakan sistem *point sodium*. Pengiraan sodium boleh dibahagikan kepada:

- Penambahan *sodium* sewaktu penyediaan makanan dan sewaktu makan
- Pemilihan makanan sewaktu di luar

UKURAN RUMAH TANGGA



1 POINT = 200mg sodium

**MAKANAN SEMULAJADI
(2 POINT / HARI)**

**POINT KIRA
(8 POINT / HARI)**

**MAKANAN SEGAR
(MAKANAN YANG
BELUM DIPROSES /
DIMASAK DIBEKUKAN)**

**HIDANGAN SAMPINGAN
(0-2 POINT / HARI)**

**HIDANGAN UTAMA
(6-8 POINT / HARI)**

11.8%

Malaysians
drink alcohol



1 in 2

! binge drink

1 in 10

! practice HED

Alcohol

150
calories



BEER

360 ml

100
calories



SPIRITS

45 ml

100
calories



WINE

150 ml

Men: **2** standard drinks per day
Women: **1** standard drink per day

Are we active enough?



1 in 4

adults* in
Malaysia are
**physically
NOT active**

* 16 years and above

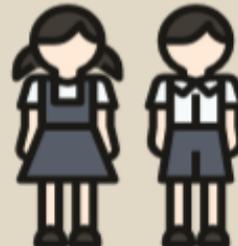
Who were the least active physically?



28%
of
FEMALES



59%
of those aged
75 YEARS & ABOVE



39%
of
STUDENTS



27%
of
URBAN DWELLERS

Physical activity

- ✓ Minimum **150 minutes** per week of accumulated **moderate-intensity** or
- ✓ **75 minutes** per week of **vigorous-intensity**
- ✓ Higher levels of physical activity **200 - 300 minutes/week** to maintain weight loss or minimize weight regain after 1 year

Intensity	METs	Examples
Sedentary behavior*	1–1.5	Sitting, reclining, or lying; watching television
Light	1.6–2.9	Walking slowly, cooking, light housework
Moderate	3.0–5.9	Brisk walking (2.4–4 mph), biking (5–9 mph), ballroom dancing, active yoga, recreational swimming
Vigorous	≥6	Jogging/running, biking (≥10 mph), singles tennis, swimming laps

Inpatient Dietetics Services

- Automatic referrals for patients post-CABG, post-PCI & those at Nutrition Risk e.g. uncontrolled DM, obesity
- Nurses create referral alerts (green apple) in IT system
- Generates >200 referrals per month

A2 ZONE 2	A3 ZONE 1	A3 ZONE 2	A4 ZONE 1	A4 ZONE 2	B1 ZONE 2
B2 ZONE 1	B2 ZONE 2	B3 ZONE 1	B3 ZONE 2	B4 ZONE 1	B4 ZONE 2
B5 ZONE 1	B5 ZONE 2	Blk A-Coronary Care Unit	Blk A-HDU Renal	Blk A-Intensive Care Unit	Blk B - High Dependency Unit
HDU Cardiology	Paediatric ICU	Sleep Lab	Ward Emergency		
22 Patients Not In Bed:0	Patients In Department:22				
Help					

Sex	Age	Adm Date	Department	Doctor	Exp Disch Date	Temporary Location	Icon Profile
Male	71 Yrs	06/08/2017,09:50	Cardiology	TAN SRI DATO' SERI DR. ROBAAYAH	,		
Male	76 Yrs	03/08/2017,11:31	Cardiology	DR. SURINDER KAUR	,		
Male	63 Yrs	05/08/2017,08:26	Cardiology	DATO' DR. BALACHANDRAN K	,		
Male	76 Yrs	06/08/2017,13:45	Cardiology	DATO' DR. BALACHANDRAN K	,		

Outpatient Dietetics Services

PREMIER
WELLNESS



CARDIOLOGIST CONSULTATION

GENERAL ASSESSMENT

- Physical Examination
- Body Mass Index (BMI)
- Blood Pressure & Heart Rate

RADIOLOGY INVESTIGATION

- Chest X-ray
- Ultrasound* – Full Abdomen & Pelvis (Female) OR Prostate (Male)

CARDIAC SERVICE INVESTIGATION

- Electrocardiogram (ECG)
- Exercise Stress Echocardiography [Treadmill Stress Echocardiography OR Dobutamine Stress Echocardiography]
- Vascular Ankle Brachial Index (ABI)

PHYSIOTHERAPY

- Lung Function Test
- Breath Carbon Monoxide Test

LABORATORY TEST

- Urine FEME
- Full Blood Count
- Kidney Function & Uric Acid
- Liver Function Test
- Fasting Serum Lipids
- Thyroid Function Test (FT4 & TSH)
- Fasting Blood Sugar
- HbA1c
- High Sensitivity C-Reactive Protein (hsCRP)
- Hepatitis B (Antigen)
- Hepatitis B (Antibody)
- CA125 - (Female) OR Prostate Specific Antigen (PSA) (Male)
- Carcino Embryonic Antigen (CEA)
- Alpha Fetoprotein

DIETICIAN COUNSELLING

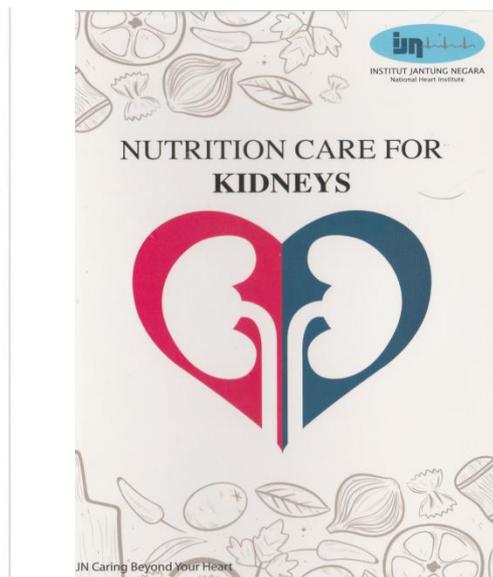
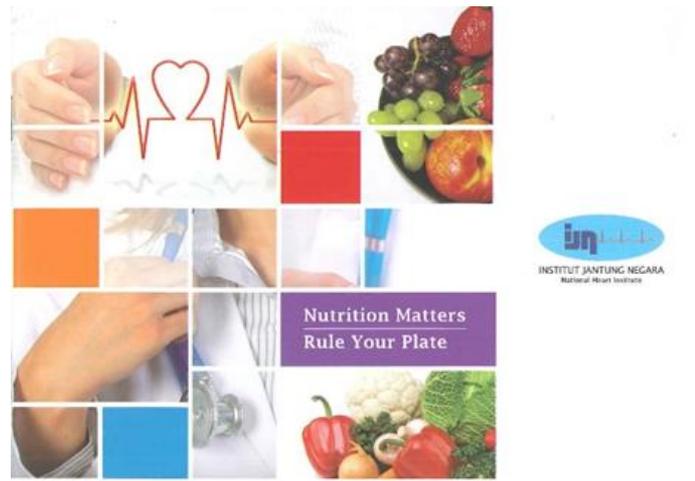
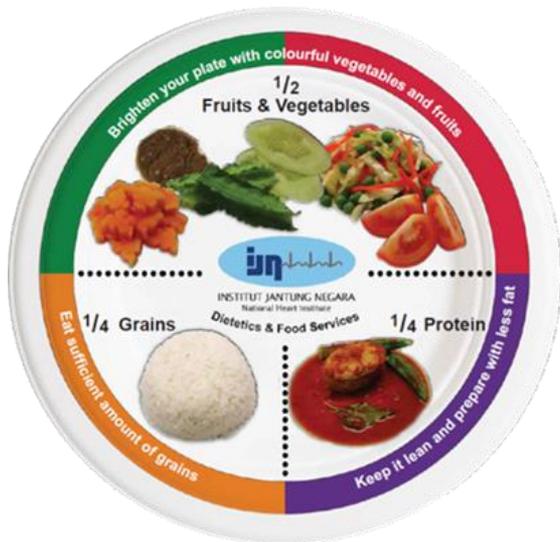
Inclusive of Summary Report.
Prices are subject to change.

*Service available MONDAY to FRIDAY only.

**Allow GP
referrals
to IJN's Diet
Clinic.**

Nutrition education materials

Materials in 3 languages.



Inpatient meals



Modifications for inpatient meals

Fat:

- ✓ Limit deep fried foods to 1x/week
- ✓ Replace *santan* with low fat milk or yogurt
- ✓ Salmon served 3x/week at lunch or dinner



Fiber:

- ✓ 5-6 servings of vegetables & fruits/day
- ✓ Use wholegrains e.g. brown rice, wholemeal bread, oats



Sodium:

- ✓ *Mihun*, *kuey teow* & spaghetti instead of yellow noodles
- ✓ Use fresh protein foods instead of processed ones
- ✓ No MSG in cooking



Nutrition Month

Annual 1-month event since 2010 to promote heart-healthy lifestyle for patients & staff. Activities include:

- Cooking demonstrations with recipe books
- Educational activities e.g. cooking competition, fashion show, edible garden, health booths

Generates **extra revenue** for department 😊



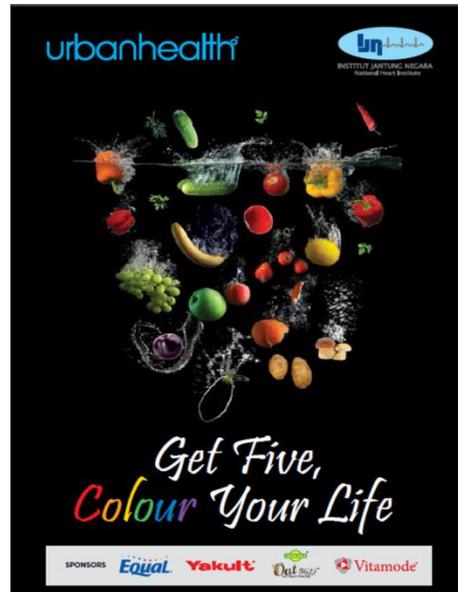
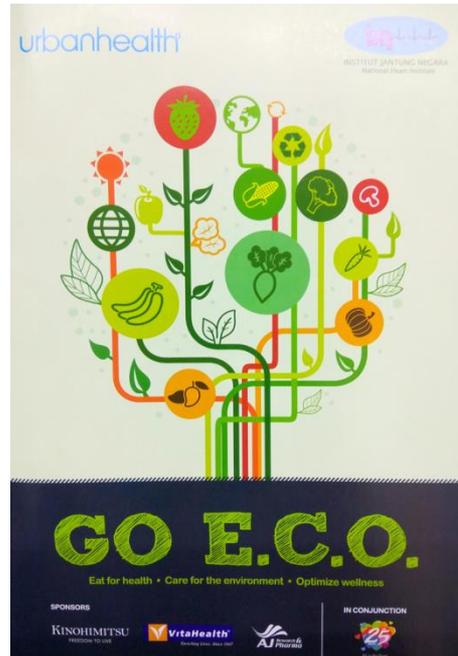
Cooking demonstrations



**Twice a week for a month.
Combined effort between
Dietitians & Cooks.**



Recipe books



Recipe video

**Vegetables curry
with tofu & *tempeh***



**Kuih *ketayap* with
oats & almond**



Cooking competitions



Fashion show... *with fruits & vegetables*



Edible garden

Inter-departmental competition



Conclusion

- Nutrition management for CVD should be **evidenced-based & practical** to manage risk factors
- **Regular follow-up** with patients are necessary to monitor MNT outcomes
- Interdisciplinary **teamwork** is important to help patients achieve lifestyle changes

