Prevalence of Cardiovascular Risk Factors, the Metabolic Syndrome and the 10-year risk for Coronary Heart Disease in the Staff of Tseung Kwan O Hospital

Presented by: Dr Cheng Ming Kin
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Tseung Kwan O Hospital
Introduction

- Coronary heart disease (CHD) is the most common cause of death in the world (WHO, 2000)

- In Hong Kong, CHD is the second-most common cause of death. In 2008, CHD causes 6,771 death in Hong Kong

- Metabolic syndrome is associated with increased risk for cardiovascular disease and mortality
Introduction

• Risk factors for the cardiovascular disease are often not recognized or ignored by the staff, but can be reduced by healthy lifestyle choices

• Prevention is better than treatment and we are interested in the health status of the staff working in Tseung Kwan O Hospital (TKOH)

• As part of the 10\textsuperscript{th} Anniversary celebration programme of the Tseung Kwan O Hospital, a comprehensive risk assessment for the cardiovascular health was offered to all hospital staffs
Aim

To determine:
1. The prevalence of cardiovascular risk factors
2. The prevalence of metabolic syndrome
3. To calculate the 10-year risk for coronary heart disease (CHD) for individual TKOH staff
Methodology

- All staff working in TKOH were invited to participate in screening for cardiovascular risk factors during 1 September 2009 to 15 October 2009.
- Open invitation by means of e-mail, kick-off ceremony (28 August 2009), posters, and banners.
Methodology

- All participants filled in a short health questionnaire, had body mass index (BMI), waist circumference and blood pressure measured.
- Fasting blood for glucose and lipid were collected.
Methodology

- The prevalence of individual cardiovascular risk factors, metabolic syndrome (according to modified International Diabetes Federation criteria) and the 10-year risk for coronary heart disease (according to Joint British Societies Guideline 2005) were calculated.
Diagnosis of Metabolic Syndrome

- **Measure (any 3 of 5 constitute diagnosis of metabolic syndrome)**
  1. **Elevated waist circumference:**
     - 90 cm (35.5 inches) in men
     - 80 cm (31.5 inches) in women
  2. **Plus any 2 of the following:**
     - Elevated triglycerides
       - 150 mg/dL (1.7 mmol/L)
     - Reduced HDL-C
       - <40 mg/dL (1.03 mmol/L) in men
       - <50 mg/dL (1.3 mmol/L) in women
     - Elevated blood pressure
       - 130 mm Hg systolic blood pressure
       - or 85 mm Hg diastolic blood pressure
     - Elevated fasting glucose
       - 100 mg/dL (5.6 mmol/L)
10-Year Risk for CHD

Joint British Society CVD Risk Prediction Chart 2005
Flow Chart: Screening, Risk Stratification and Intervention of Study Subject

Health Questionnaire
CHD / DM / HT
Smoking status
Blood Pressure / Body Mass Index
Waist Circumference
Fasting glucose / lipid

10 year risk for CHD

High-Risk >20%
Lifestyle change
Stop smoking
Exercise
Optimal weight
Lecture
Treat HT /DM/ Hyperlipidemia review

Moderate-Risk 10 -20%
Lifestyle change
Stop smoking
Exercise
Optimal weight
Lecture
Nurse counseling

Low-Risk <10%
Lifestyle change
Stop smoking
Exercise
Optimal weight
Lecture
## Result: Baseline Characteristics

### Demographic Factors

<table>
<thead>
<tr>
<th>Data</th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>Sample Size</td>
<td>489 (41%)</td>
</tr>
<tr>
<td>Age (median)</td>
<td>46 years [ range 20 -64 ]</td>
</tr>
<tr>
<td>Female Gender</td>
<td>387 (79%)</td>
</tr>
</tbody>
</table>

### Cardiovascular Risk Factors

<table>
<thead>
<tr>
<th>Number (Percentage)</th>
<th></th>
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</thead>
<tbody>
<tr>
<td>Smoker</td>
<td>22 (4.5%)</td>
</tr>
<tr>
<td>Past History of Hypertension</td>
<td>43 (8.8%)</td>
</tr>
<tr>
<td>Past History of Diabetes mellitus</td>
<td>16 (3.3 %)</td>
</tr>
<tr>
<td>Past History of Coronary Heart Disease</td>
<td>3 (0.6%)</td>
</tr>
</tbody>
</table>
Result:

<table>
<thead>
<tr>
<th>Metabolic Factors</th>
<th>Data</th>
</tr>
</thead>
<tbody>
<tr>
<td>BMI (median)</td>
<td>22.7 [range 14.7 – 38.7]</td>
</tr>
<tr>
<td>BMI ≥ 23 Kg/m²</td>
<td>230 (47%)</td>
</tr>
<tr>
<td>BMI ≥ 25 Kg/m²</td>
<td>115 (24%)</td>
</tr>
<tr>
<td>BMI ≥ 27.5 Kg/m²</td>
<td>49 (10%)</td>
</tr>
<tr>
<td>Waist circumference (median) : male</td>
<td>81.3 cm [range 57 – 108 cm]</td>
</tr>
<tr>
<td>Waist circumference (median) : female</td>
<td>75 cm [range 51 – 104 cm]</td>
</tr>
</tbody>
</table>
### Result: Cardiovascular Risk Factors

<table>
<thead>
<tr>
<th>Metabolic Factor</th>
<th>Number (Percentage)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Hypertension (BP ≥ 140/90 )</td>
<td>64 (13%)</td>
</tr>
<tr>
<td>Newly diagnosed Hypertension</td>
<td>21 (4.3%)</td>
</tr>
<tr>
<td>Hypercholesterolemia (TC &gt; 5.2 mmol/L)</td>
<td>178 (36.3%)</td>
</tr>
<tr>
<td>Low Density Lipoprotein -C (LDL-C ≥ 2.6 mmol/L)</td>
<td>302 (61.9%)</td>
</tr>
<tr>
<td>Hypertriglyceridemia (TG ≥ 1.7 mmol/l)</td>
<td>70 (14.3%)</td>
</tr>
<tr>
<td>History of diabetes mellitus or FBS ≥ 7.1 mmol/L</td>
<td>23 (4.7%)</td>
</tr>
<tr>
<td>Newly diagnosed diabetes mellitus</td>
<td>7 (1.4%)</td>
</tr>
<tr>
<td>Result</td>
<td>Number (Percentage)</td>
</tr>
<tr>
<td>---------------------------------------------</td>
<td>---------------------</td>
</tr>
<tr>
<td>Metabolic Syndrome</td>
<td>23 (4.7%)</td>
</tr>
<tr>
<td>10-year risk for CHD ≥ 20% [High Risk]</td>
<td>9 (2%)*</td>
</tr>
<tr>
<td>10-year risk for CHD 10 -20% [Moderate Risk]</td>
<td>47 (10%) ¶</td>
</tr>
<tr>
<td>10-year risk for CHD ≤ 10% [Low Risk]</td>
<td>425 (88%) ‡</td>
</tr>
</tbody>
</table>

*100% are male
¶ 53% are male 47% female
‡ 16% are male 84% female
Conclusion

- The individual risk factors for CHD are commonly seen in the staff of TKOH

- Nearly 5% of staff have metabolic syndrome and therefore at high risk of cardiovascular morbidity and mortality

- Relatively high percentage of “apparently healthy” staff (12%) are classified as having moderate to high 10-year risk for CHD
Discussion

- The prevalence of individual risk factors and metabolic syndrome is not as high as the figure quoted in the Hong Kong Cardiovascular Risk Factor Prevalence Survey-2 (2004) and the Cardiac Health Promotion Program in the Community (2007 Chan KM et al.)

- The low percentage (2%) of high risk group (10-year risk for CHD > 20%) may be related to the young age of the staff, majority of them are being female and they are more health conscious.

- However, the percentage of moderate risk group (10-year for CHD risk 10-20%) is 10% which is relatively high.
4.3% of the staff are newly diagnosed to have hypertension and 1.4% of the staff are newly diagnosed to have diabetes mellitus by the study.

Screening of cardiovascular risk factors is worthwhile because of the relatively high yield in those “apparently healthy” and asymptomatic individuals.

Targeted intervention should be implemented for prevention of CHD.

Enhance the overall health of the workforce.
Risk Factor Intervention:

- Lifestyle modification
- Stop smoking
- Body weight management
- Lipid control
- Diabetes and blood pressure control should be practiced in order to prevent major CHD event
將軍澳醫院十周年，我們精心炮製一連串的慶祝活動，內容豐富又精彩，期望同大家開開心心、高高興興歡迎醫院生辰，立即click入以下連結，約定您的家人朋友一齊參與啦！

- 員工社區健康運動日 (2010.1.1)
  - 「員工個人及隊際賽」報名表
  - 「同步2000/ 5000步」報名表

- 10周年慶祝晚宴 (2009.12.18)

- 10周年典禮暨開放日 (2009.11.7)

- 糖尿病足工作坊 (2009.10.17-18)

- 社區安全及健康教育推廣 (2009.10 - 2010.9)

- 日間醫療服務大樓奠基典禮 (2009.9.20)

- 員工健康推廣：冠心病風險評估 (2009.8 - 2009.11)

- 員工攝影比賽：「生命 - 由我演繹」

- 醫院傑出成就展板

- 十周年年報 - 編撰中
Acknowledgment

STAFF WELLNESS WORK GROUP

1.1 Core Members:
- Dr. Steven Tsang (AC/Med) Chairman
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- Ms Jennifer San (WM/Med)
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- Community project workgroup of Department of Medicine (民康橋)

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- Ms. Rosa Chan (EN/X Ray)
- Ms. Lam Man Yi (EN/5C/Med)

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- Dr. Myles Chan (Resident/Med)
- Ms. Karen Lee (Dietitian)
- Mr. Tong Au (SPT i/c)
- Ms. Kong Siu Man (APN)
- And others...

All staff involved in TKOH
- Department of Medicine
- Department of Clinical Pathology
- Human Resources Department
- Specialist Outpatient Department
- Integrated Rehabilitation Services

Sponsor:
- TKOH Staff Welfare Committee
- Roche Diagnostic Ltd
Thank You