1st ESC Asia Cardiovascular Symposium
—a considered approach to managing a complex challenge

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Bring great knowledge to LIFE
Optimising risk assessment and diagnosis in the Asia-Pacific (AP) region

A/Prof Yean-Teng Lim

Singapore
Atherothrombosis* is the Leading Cause of Death Worldwide†

- Atherothrombosis*: 52%
- Cancer: 24%
- Infectious Disease: 19%
- Pulmonary disease: 14%
- Violent death: 12%
- AIDS: 5%

*Cardiovascular disease, ischemic heart disease and cerebrovascular disease
†Worldwide defined as Member States by WHO Region (African, Americas, Eastern Mediterranean, European, South-East Asia and Western Pacific)
Fig. 3.4 Additive properties of risk factors for subjects 42–43 years of age. HBP, high blood pressure; Chol, cholesterol; LVH, left ventricular hypertrophy. From Kantel, Clinical misconceptions dispelled by epidemiological research. Circulation 1995;92:3350–60.
Effect of potentially modifiable risk factors associated with myocardial infarction in 52 countries (the INTERHEART study): case-control study

Salim Yusuf, Steven Hawken, Stephanie Ôunpuu, Tony Dans, Alvaro Avezum, Fernando Lanas, Matthew McQueen, Andrzej Budaj, Prem Pais, John Varigos, Liu Lisheng, on behalf of the INTERHEART Study Investigators *

Summary
Background Although more than 80% of the global burden of cardiovascular disease occurs in low-income and middle-income countries, knowledge of the importance of risk factors is largely derived from developed countries. Therefore, the effect of such factors on risk of coronary heart disease in most regions of the world is unknown.

Methods We established a standardised case-control study of acute myocardial infarction in 52 countries, representing every inhabited continent. 15,152 cases and 14,820 controls were enrolled. The relation of smoking, history of hypertension or diabetes, waist/hip ratio, dietary patterns, physical activity, consumption of alcohol, blood apolipoproteins (Apo), and psychosocial factors to myocardial infarction are reported here. Odds ratios and their 99% CIs for the association of risk factors to myocardial infarction and their population attributable risks (PAR) were calculated.

Findings Smoking (odds ratio 2.87 for current vs never, PAR 35.7% for current and former vs never), raised ApoB/ApoA1 ratio (3.25 for top vs lowest quintile, PAR 49.2% for top four quintiles vs lowest quintile), history of hypertension (1.91, PAR 17.9%), diabetes (2.37, PAR 9.9%), abdominal obesity (1.12 for top vs lowest tertile and 1.62 for middle vs lowest tertile, PAR 20.1% for top two tertiles vs lowest tertile), psychosocial factors (2.67, PAR 32.5%), daily consumption of fruits and vegetables (0.70, PAR 13.7% for lack of daily consumption), regular alcohol consumption (0.91, PAR 6.7%), and regular physical activity (0.86, PAR 12.2%), were all significantly related to acute myocardial infarction (p<0.0001 for all risk factors and p=0.03 for alcohol). These associations were noted in men and women, old and young, and in all regions of the world. Collectively, these nine risk factors accounted for 90% of the PAR in men and 94% in women.

Interpretation Abnormal lipids, smoking, hypertension, diabetes, abdominal obesity, psychosocial factors, consumption of fruits, vegetables, and alcohol, and regular physical activity account for most of the risk of myocardial infarction worldwide in both sexes and at all ages in all regions. This finding suggests that approaches to prevention can be based on similar principles worldwide and have the potential to prevent most premature cases of myocardial infarction.
“Superior Doctors Prevent the Disease.
Mediocre Doctors Treat the Disease Before Evident.
Inferior Doctors Treat the Full Blown Disease.”

*Huang Dee: Nai - Ching (2600 B.C. 1st Chinese Med*
Cardiovascular disease (CVD) prevention in clinical practice

- Patients with established atherosclerotic CVD (secondary prevention)
- Asymptomatic individuals at increased risk of CVD (primary prevention)
  - Those with multiple risk factors
  - Diabetes mellitus type 2 or type 1 with microalbuminuria
  - Patients with single risk factor but associated with end-organ damage
  - Close relatives of patients with premature atherosclerotic CVD or of those at very high risk
Optimising risk assessment and diagnosis in the AP region

• Are risk factors screened for and in which populations?
• What risk-assessment tools are currently used and are they effective?
• Generation of appropriate risk scores to assess risk of CVD based on multiple risk factors
Are risk factors screened for in the AP region?

• Yes, but only selected individuals or situations!
• Why?
  – Socio-economic reasons
  – Unaffordable healthcare
  – Limited or lack of healthcare resources
  – Lack of public awareness (or plain ignorance)
  – Limited screening programmes/dissemination of clinical practice guidelines
  – Why screen it when you cannot do anything about it?
    Suboptimal diagnosis and management of CVD risk factors
Are risk factors screened for in the AP region?

Screening for diabetes in high-risk populations in China

Hospital poster

Recruit patients with >2 risk factors:
1. Family history of type 2 diabetes
2. Hypertension
3. Obesity
4. History of gestational diabetes
5. Delivery of a baby >4kg
6. Dyslipidaemia
7. >40 years old

Toll-free hotline provided
Results of 2002 screening campaign for diabetes – evoke awareness of treatment

<table>
<thead>
<tr>
<th>City</th>
<th>Total hospitals</th>
<th>Total patients</th>
<th>NGT</th>
<th>IGT</th>
<th>DM</th>
<th>Patients, n (%)</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Guangzhou</td>
<td>10</td>
<td>4,585</td>
<td>2,854</td>
<td>592</td>
<td>1,139</td>
<td>(62) (13) (25)</td>
</tr>
<tr>
<td>Hangzhou</td>
<td>10</td>
<td>5,076</td>
<td>1,559</td>
<td>1,529</td>
<td>1,988</td>
<td>(31) (30) (39)</td>
</tr>
<tr>
<td>Beijing</td>
<td>11</td>
<td>5,166</td>
<td>2,631</td>
<td>452</td>
<td>2,083</td>
<td>(51) (9) (40)</td>
</tr>
<tr>
<td>Shanghai</td>
<td>10</td>
<td>3,810</td>
<td>2,289</td>
<td>516</td>
<td>1,005</td>
<td>(60) (14) (26)</td>
</tr>
<tr>
<td>Total</td>
<td>41</td>
<td>18,637</td>
<td>9,333</td>
<td>3,089</td>
<td>6,215</td>
<td>(50) (17) (33)</td>
</tr>
</tbody>
</table>

IGT, impaired glucose tolerance; NGT, normal glucose tolerance; DM, diabetes mellitus

*4,000 new patients using acarbose
Are risk factors screened for in the AP region?

Patient educational brochure on Health Screening

Ministry of Health, Singapore
Are risk factors screened for in the AP region?

**Should you be screened for high blood pressure?**
If you are 40 years or older, you should check your blood pressure at least once a year.

**Should you be screened for high blood cholesterol?**
You should be screened if you:
- are 40 years or older
- previously had a heart attack, or stroke
- are suffering from diabetes
- have several family members with high cholesterol.

You can consider screening from age 30 years if you:
- have other risk factors for heart disease, for example, you smoke, have high blood pressure or have family members who developed heart disease before 65 years of age
- are Indian or with Indian parentage.

**Should you be screened for diabetes?**
Screening for diabetes should begin at 40 years. Screening should be considered at an earlier age e.g. 30 years if you:
- are overweight/obese [body mass index (BMI) $\geq 25$ kg/m$^2$]
- have high blood pressure (BP $\geq 140/90$ mmHg)
- have a close relative who has diabetes
- had diabetes during pregnancy
- suffer from polycystic ovary disease (multiple cyst of the ovaries)
- have abnormal lipid (fat) levels
- have previously been confirmed with a borderline high fasting blood sugar level.

Are risk factors screened for in the AP region?
Are risk factors screened for in the AP region?

Dear Madam,

INTEGRATED SCREENING PROGRAMME - INVITATION FOR HEALTH SCREENING

In Singapore, about 1 in 4 individuals suffer from chronic diseases such as diabetes, high blood pressure or high cholesterol. Your chance of getting one or more of these chronic diseases increases with age, especially if you are 40 years old and older.

The good news is evidence showed that early detection, for high blood pressure, high cholesterol and diabetes, through screening followed by good healthcare management, can prevent or delay complications such as kidney failure, heart attack, and stroke. Screening is available and now made affordable at a Chronic Disease Management Programme (CDMP)-registered GP clinic near you. Once you are 40 years old and older, you should check for the following:

<table>
<thead>
<tr>
<th>Conditions to be screened</th>
<th>Type of Screening</th>
<th>Recommended Frequency</th>
</tr>
</thead>
<tbody>
<tr>
<td>Obesity</td>
<td>Body Mass Index (BMI) Measurement</td>
<td>Once a year</td>
</tr>
<tr>
<td>High Blood Pressure</td>
<td>Blood Pressure Measurement</td>
<td>Once a year</td>
</tr>
<tr>
<td>High Cholesterol</td>
<td>Fasting Blood Test</td>
<td>Once a year</td>
</tr>
<tr>
<td>Diabetes</td>
<td>Fasting Blood Test</td>
<td>Once every 3 years</td>
</tr>
<tr>
<td>Cervical Cancer (for women who ever had sex)</td>
<td>Pap Smear</td>
<td></td>
</tr>
</tbody>
</table>

If you have not been told to have any of the above conditions, or have not been screened for the above conditions at the recommended frequency, the Health Promotion Board invites you to get screened at a CDMP-registered GP clinic. The laboratory cost of these tests has been brought down through bulk purchase arrangements. The estimated cost of screening for these conditions at a CDMP clinic is about $18 - $18 (instead of $40 to $65). The doctor’s consultation may range from $15 - $25.

Please bring this letter with you when you see your doctor for screening.

Make an appointment today with your CDMP-registered GP and get screened for the above disease conditions. A pamphlet with more information on the Integrated Screening Programme and a list of CDMP-GP clinics is enclosed.

Please call 1800-223-1313 should you have any enquiries on the Integrated Screening Programme.

Thank you.

Programme Manager
Integrated Screening Programme
Health Promotion Board

30 July 2008

[Health Promotion Board]
3 Second Hospital Avenue
Singapore 169337

[Image of health promotion logo]
## National health survey 2004

<table>
<thead>
<tr>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>Diabetes mellitus</td>
<td>10.0 (9.0, 11.0)</td>
<td>9.5 (8.7, 10.4)</td>
<td>7.8 (7.0, 8.6)</td>
<td><strong>–1.7</strong> ** two-tailed**</td>
</tr>
<tr>
<td>Impaired glucose tolerance</td>
<td>15.3 (14.1, 16.6)</td>
<td>15.3 (14.3, 16.4)</td>
<td>11.5 (10.5, 12.5)</td>
<td><em><strong>–3.8</strong></em> ** three-tailed**</td>
</tr>
<tr>
<td>Hypertension (BP $\geq$ 140/90 mmHg)</td>
<td>24.0 (22.3, 25.8)</td>
<td>28.0 (26.5, 29.6)</td>
<td>24.0 (22.5, 25.6)</td>
<td><em><strong>–4.0</strong></em> ** three-tailed**</td>
</tr>
<tr>
<td>Obesity ($\geq$ 30 kg/m²)</td>
<td>5.3 (4.6, 6.0)</td>
<td>6.2 (5.5, 6.8)</td>
<td>6.8 (6.1, 7.6)</td>
<td>0.6</td>
</tr>
<tr>
<td>High cholesterol ($\geq$ 6.2 mmol/L)</td>
<td>21.4 (20.0, 22.8)</td>
<td>26.0 (24.8, 27.3)</td>
<td>18.1 (16.8, 19.3)</td>
<td><em><strong>–7.9</strong></em> ** three-tailed**</td>
</tr>
<tr>
<td>Cigarette smoking (at least 1 cigarette a day)</td>
<td>17.8 (16.5, 19.1)</td>
<td>15.0 (14.0, 16.1)</td>
<td>12.5 (11.4, 13.5)</td>
<td><em><strong>–2.5</strong></em> ** three-tailed**</td>
</tr>
<tr>
<td>Regular exercise (at least 3 times a week; 20 minutes or more per session)</td>
<td>13.5 (12.3, 14.6)</td>
<td>17.0 (15.9, 18.1)</td>
<td>25.0 (23.6, 26.4)</td>
<td><strong>8.0</strong>* ** three-tailed**</td>
</tr>
</tbody>
</table>

Age-standardised to the 2000 Singapore resident population. Prevalence of all risk factors except hypertension relate to persons aged 18–69 years. Prevalence for hypertension is for population aged 30-69 years. **0.001< p<0.01.**
Risk-assessment tools used in Western populations

- Framingham-based risk equation (USA)¹
- Systematic Coronary Risk Evaluation (SCORE; Europe)²
- PREDICT™ (New Zealand)³
- Joint British Societies’ coronary risk prediction⁴
- HeartScore (Europe)

How frequently do you make use of risk chart (or risk tool)?

- Always: 1%
- Sometimes: 13%
- Never: 43%
- Don't Know: 43%

Hobbs FD et al. Fam Pract 2002;19:596-604
Screening tools developed for Western populations are not necessarily appropriate for AP populations.

A cardiovascular risk-prediction model will perform well in a given population if 3 major characteristics are similar in both the test population and the population from which the model was developed:

1. The nature and strength of the association between each risk factor included in the model and the risk of a CVE
2. Mean levels (or prevalence) of the risk factors
3. Background incidence of CVD
Risk assessment in the AP region: considerations

• Screening tools developed for Western populations are not necessarily appropriate for AP populations
  – The Framingham risk equations, which were developed based on a US population during the peak of CVD incidence in that country, have been shown to overestimate global cardiovascular risk when applied to cohorts in Europe and Asia

• Resources for risk factor screening are limited in many AP countries
  – Reliable and inexpensive tools to evaluate CV risk in individuals are needed in this region
The Asia Pacific Cohort Studies Collaboration (APCSC) pools data from existing longitudinal studies with information on CVD in the AP region.

APCSC has data on over 650,000 participants:
- 44 separate cohort studies in mainland China, Hong Kong, Taiwan, Japan, South Korea, Singapore, Thailand, New Zealand and Australia.

Considered the largest epidemiological collaboration in the southern hemisphere:
- Within the top five of the world's largest medical studies.

# Risk factor characteristics and background incidence of CVD

<table>
<thead>
<tr>
<th></th>
<th>Mean systolic BP, mmHg (SD)</th>
<th>Mean total cholesterol, mmol/L (SD)</th>
<th>Current smoking, %</th>
<th>CVD incidence (per 1000 patient-years)</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Men</strong></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Asian cohorts</td>
<td>126 (15)</td>
<td>5.0 (0.87)</td>
<td>57.5%</td>
<td>3.45</td>
</tr>
<tr>
<td>Framingham cohort</td>
<td>123 (19)&lt;sup&gt;a&lt;/sup&gt;</td>
<td>5.5 (1.03)&lt;sup&gt;a&lt;/sup&gt;</td>
<td>49.6&lt;sup&gt;a&lt;/sup&gt;</td>
<td>17.1&lt;sup&gt;a&lt;/sup&gt;</td>
</tr>
<tr>
<td><strong>Women</strong></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Asian cohorts</td>
<td>117 (14)</td>
<td>4.9 (0.88)</td>
<td>0.9%</td>
<td>1.19</td>
</tr>
<tr>
<td>Framingham cohort</td>
<td>129 (22)&lt;sup&gt;a&lt;/sup&gt;</td>
<td>5.6 (1.19)&lt;sup&gt;a&lt;/sup&gt;</td>
<td>36.8&lt;sup&gt;a&lt;/sup&gt;</td>
<td>9.55&lt;sup&gt;a&lt;/sup&gt;</td>
</tr>
</tbody>
</table>

<sup>a</sup>p<0.001

CI, standard deviation

Asia Pacific Cohort Studies Collaboration. J Epidemiol Community Health 2007;61:115-21
## Association between risk factors and CVE

### Hazard ratio (95% CI) for association between major risk factor and CVD

<table>
<thead>
<tr>
<th></th>
<th>Age (+ 10 years)</th>
<th>Systolic BP (+ 10 mmHg)</th>
<th>Total cholesterol (+ 1 mmol/L)</th>
<th>Current smoking</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Men</strong></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Asian cohorts</td>
<td>1.92 (1.79, 2.06)</td>
<td>1.31 (1.28, 1.33)</td>
<td>1.10 (1.05, 1.16)</td>
<td>1.38 (1.25, 1.53)</td>
</tr>
<tr>
<td>Framingham</td>
<td>1.98 (1.85, 2.12)</td>
<td>1.13 (1.09, 1.17)&lt;sup&gt;b&lt;/sup&gt;</td>
<td>1.16 (1.09, 1.24)</td>
<td>1.44 (1.25, 1.66)</td>
</tr>
<tr>
<td><strong>Women</strong></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Asian cohorts</td>
<td>2.06 (1.84, 2.31)</td>
<td>1.26 (1.22, 1.30)</td>
<td>1.03 (0.95, 1.12)</td>
<td>1.36 (1.02, 1.82)</td>
</tr>
<tr>
<td>Framingham</td>
<td>2.18 (1.96, 2.42)</td>
<td>1.19 (1.14, 1.23)&lt;sup&gt;a&lt;/sup&gt;</td>
<td>1.15 (1.07, 1.24)&lt;sup&gt;a&lt;/sup&gt;</td>
<td>1.74 (1.44, 2.10)</td>
</tr>
</tbody>
</table>

<sup>a</sup> p≤0.05; <sup>b</sup>p<0.001

CI, confidence interval

Asia Pacific Cohort Studies Collaboration. J Epidemiol Community Health 2007;61:115-21
Framingham equation overestimates CVD risk in Asian populations

Observed and predicted CVE rate according to deciles of predicted risk in Chinese patients

Asia Pacific Cohort Studies Collaboration. J Epidemiol Community Health 2007;61:115-21
Risk-assessment options in AP populations

- Development of new equations
- Recalibration of existing risk-assessment equations
- Modifications to existing equations or definitions
Development of a new CVD equation specifically for Asian populations

Observed and predicted CVE rate according to deciles of predicted risk in Chinese patients

Asia Pacific Cohort Studies Collaboration. J Epidemiol Community Health 2007;61:115-21
Recalibration of Framingham risk equation for use in Asian populations

Observed and predicted CVE rate according to deciles of predicted risk in Chinese patients

Asia Pacific Cohort Studies Collaboration. J Epidemiol Community Health 2007;61:115-21
Disease-specific risk equations: UKDPS overestimates CHD risk in Chinese patients with type 2 diabetes

Predicted versus observed hard CHD probability during 5-year follow-up in 7067 Hong Kong Chinese type 2 diabetes patients

Using UKPDS hard CHD risk engine
Using Hong Kong’s (HK’s) total CHD risk engine

CHD, coronary heart disease

Modifications to existing equations or definitions

Metabolic syndrome

ATP III clinical identification of the metabolic syndrome

<table>
<thead>
<tr>
<th>Risk factor</th>
<th>Defining level</th>
</tr>
</thead>
<tbody>
<tr>
<td>Abdominal obesity, given as waist circumference*†</td>
<td></td>
</tr>
<tr>
<td>Men</td>
<td>&gt;102 cm (&gt;40 in)</td>
</tr>
<tr>
<td>Women</td>
<td>&gt;88 cm (&gt;35 in)</td>
</tr>
<tr>
<td>Triglycerides</td>
<td>≥150 mg/dL</td>
</tr>
<tr>
<td>HDL cholesterol</td>
<td></td>
</tr>
<tr>
<td>Men</td>
<td>&lt;40 mg/dL</td>
</tr>
<tr>
<td>Women</td>
<td>&lt;50 mg/dL</td>
</tr>
<tr>
<td>Blood pressure</td>
<td>≥130/≥85 mmHg</td>
</tr>
<tr>
<td>Fasting glucose</td>
<td>≥110 mg/dL‡</td>
</tr>
</tbody>
</table>


Metabolic syndrome
(Syndrome X)

- Central obesity
- High blood pressure
- High triglycerides
- Low HDL cholesterol
- Insulin resistance
Can We Apply the National Cholesterol Education Program Adult Treatment Panel Definition of the Metabolic Syndrome to Asians?

OBJECTIVE — Limited information is available about the metabolic syndrome in Asians. Furthermore, the definition of central obesity using waist circumference may not be appropriate for Asians. The objectives of this study were to determine the optimal waist circumference for diagnosing central obesity in Asians and to estimate the prevalence of the metabolic syndrome in an Asian population.

RESEARCH DESIGN AND METHODS — We used data from the 1998 Singapore National Health Survey, a cross-sectional survey involving 4,723 men and women of Chinese, Malay, and Asian-Indian ethnicity aged 18–69 years. Receiver operating characteristic analysis suggested that waist circumference >80 cm in women and >90 cm in men was a more appropriate definition of central obesity in this population. The prevalence of the metabolic syndrome was then determined using the National Cholesterol Education Program Adult Treatment Panel III (NCEP ATP III) criteria with and without the modified waist circumference criteria.

RESULTS — In Asians, decreasing waist circumference increased the crude prevalence of the metabolic syndrome from 12.2 to 17.6%. Using the modified Asian criteria, the prevalence of the metabolic syndrome increased from 2.0% in those aged 18–39 years to 31.0% in those aged 60–69 years. It was more common in men (prevalence 20.0% in men versus 15.5% in women; P < 0.001) and Asian Indians (prevalence 28.6% in Asian-Indians, 24.2% in Malays, and 14.6% in Chinese; P < 0.001).

CONCLUSIONS — NCEP ATP III criteria, applied to an Asian population, will underestimate the population at risk. With a lower waist circumference cutoff, the prevalence of the metabolic syndrome is comparable to that in Western populations. Ethnic differences are likely to exist between populations across Asia.
## Metabolic syndrome: ethnic-specific values for waist circumference

<table>
<thead>
<tr>
<th>Country/ethnic group</th>
<th>Waist circumference</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Europids</strong>*</td>
<td></td>
</tr>
<tr>
<td>In the US, ATP III values (102 cm male; 88 cm female) are likely to continue to be used for clinical purposes</td>
<td>Male: ≥94 cm</td>
</tr>
<tr>
<td></td>
<td>Female: ≥80 cm</td>
</tr>
<tr>
<td><strong>South Asians, based on a Chinese, Malay and Asian-Indian population</strong></td>
<td>Male: ≥90 cm</td>
</tr>
<tr>
<td></td>
<td>Female: ≥80 cm</td>
</tr>
<tr>
<td><strong>Chinese</strong></td>
<td>Male: ≥90 cm</td>
</tr>
<tr>
<td></td>
<td>Female: ≥80 cm</td>
</tr>
<tr>
<td><strong>Japanese</strong></td>
<td>Male: ≥90 cm</td>
</tr>
<tr>
<td></td>
<td>Female: ≥80 cm</td>
</tr>
<tr>
<td><strong>Ethnic South and Central Americans</strong></td>
<td>Use South Asian recommendations until more specific data are available</td>
</tr>
<tr>
<td><strong>Sub-Saharan Africans</strong></td>
<td>Use European data until more specific data are available</td>
</tr>
<tr>
<td><strong>Eastern Mediterranean and Middle East (Arab) population</strong></td>
<td>Use European data until more specific data are available</td>
</tr>
</tbody>
</table>
Modification of the NCEP ATP III definitions of the metabolic syndrome for use in Asians identifies individuals at risk of ischemic heart disease

Derrick Kenneth F. Mak c, Shing Tai e,*

Abstract

The association b populations. We car diabetes mellitus or associated with the ! sex, ethnic group ar (WC) used to define 38157.4 person-year with increased risk criteria, were also at diagnosis of the MS © 2005 Elsevier Irel

Keywords: Metabolic

Optimising risk assessment and diagnosis in the AP region: conclusions

- Suboptimal diagnosis and management of CVD
- Screening tools developed for Western populations are not necessarily appropriate for AP populations
- Need for reliable and inexpensive tools to evaluate CVD risk in individuals
- Recalibration of existing tools may be a cost-effective means of accurately evaluating CVD risk
- In some populations/diseases, new tools may offer better risk assessment
Thank you
1st ESC Asia Cardiovascular Symposium
—a considered approach to managing a complex challenge