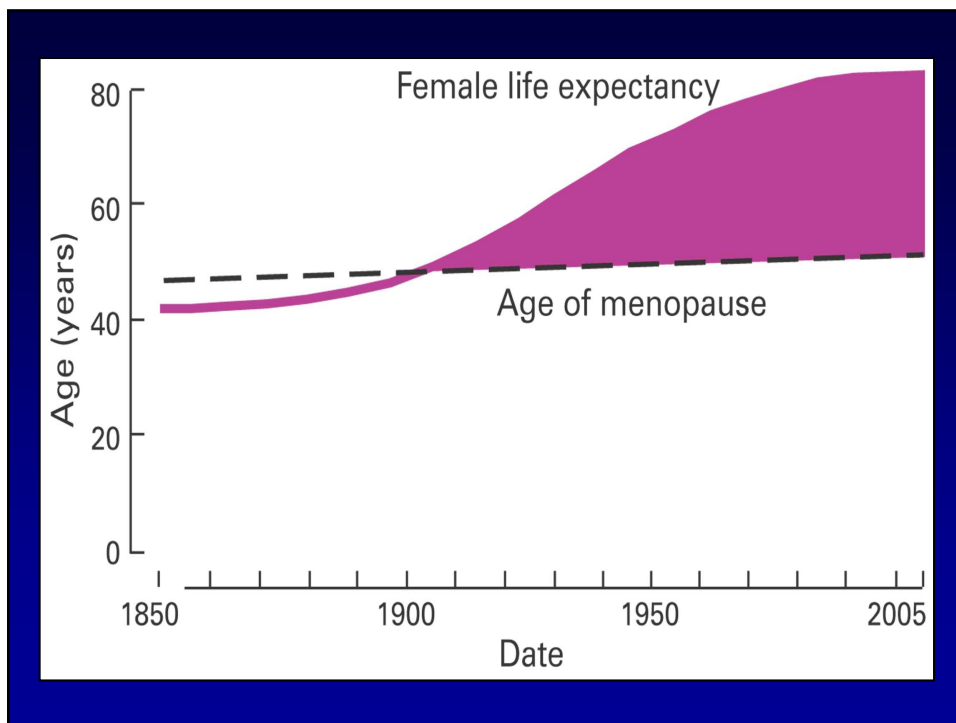
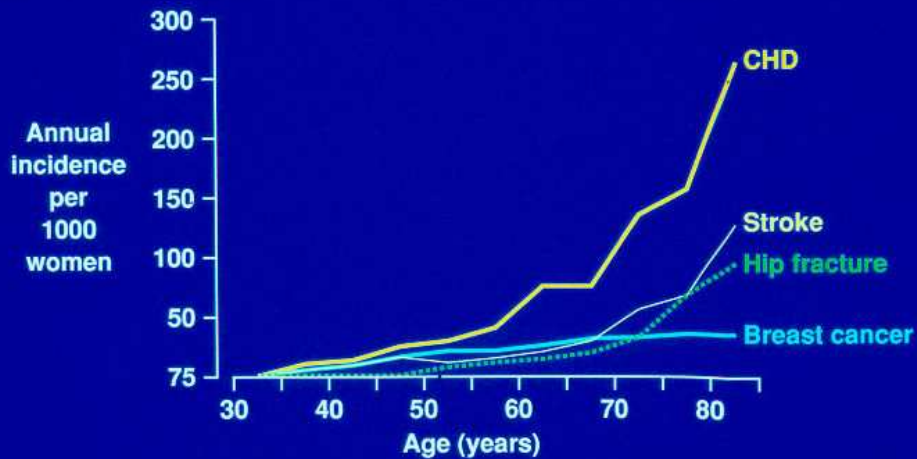


# Gender issues in cardiovascular guidelines

Peter Collins  
Professor of Clinical Cardiology,  
Royal Brompton Hospital & Imperial College  
London, UK



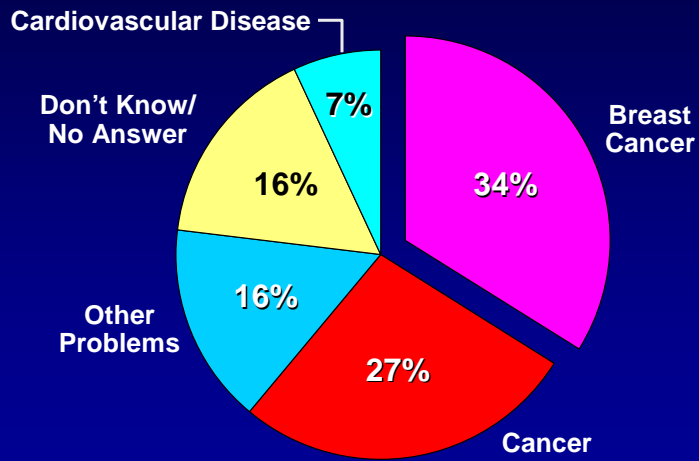
### Incidence of chronic diseases in relation to a woman's age



Wenger NK, Br Med J 1997;315:1085-1090

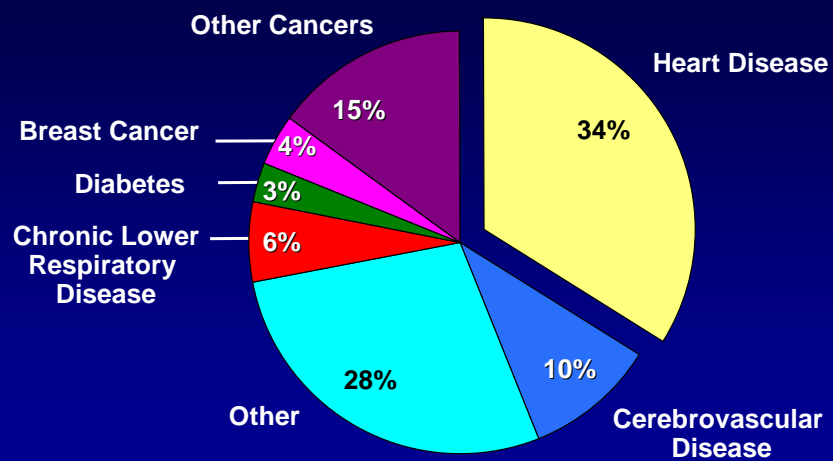
- Many women and their physicians are unaware that cardiovascular disease (CVD) is the commonest cause of death in women.

## Women's Perceptions of Their Greatest Health Problems



Adapted from Mosca L, et al. *Arch Fam Med.* 2000;9:506-15.

## Causes of Death Among Women\*



\* Percentage of total deaths in 1999 among women aged 65 years and older.

Anderson RN. *Natl Vital Stat Rep.* 2001;49:1-13.

## Women Enrolled in Major Cardiovascular Trials

---

- 4S (Simvastatin) 20%
- CARE (Pravastatin) 14%
- WOSCOP (Pravastatin) 0%
- CHAOS (Vit E) 10%
  
- AIRE (Ramipril) 17%
- ISIS 3 (Streptokinase) 27%
- ISIS 4 (Mg, nitrate, captopril) 26%

## Clinical Practice Guidelines

- systematically developed statements to assist practitioners with decisions about appropriate health care for specific patients' circumstances
- Guidelines often assumed to be epitome of evidence-based medicine
- Guideline recommendations imply not only an evaluation of the evidence but also a value judgment based on personal or organizational preferences regarding the various risks and benefits of a medical intervention for a population

## ACC/AHA Guidelines

- 20 years - American College of Cardiology (ACC) and American Heart Association (AHA) have released clinical practice guidelines to provide recommendations on care of patients with cardiovascular disease.
- The ACC/AHA guidelines currently use a grading schema based on level of evidence and class of recommendation (available at <http://www.acc.org> and <http://www.aha.org>).

## Scientific Evidence Underlying the ACC/AHA Clinical Practice Guidelines

Pierluigi Tricoci; Joseph M. Allen; Judith M. Kramer; et al.  
*JAMA*. 2009;301(8):831-841

## Context

- The joint cardiovascular practice guidelines of the American College of Cardiology (ACC) and the American Heart Association (AHA) have become important documents for guiding cardiology practice and establishing benchmarks for quality of care

## Objective

- To describe the evolution of recommendations in ACC/AHA cardiovascular guidelines and the distribution of recommendations across classes of recommendations and levels of evidence

## Data Sources and Study Selection

- Data from all ACC/AHA practice guidelines issued from 1984 to September 2008 were abstracted by personnel in the ACC Science and Quality Division
- Fifty-three guidelines on 22 topics
- Total of 7196 recommendations

## Data Extraction

- Number of recommendations and the distribution of classes of recommendation (I, II, and III) and levels of evidence (A, B, and C) determined
- The subset of guidelines that were current as of September 2008 was evaluated to describe changes in recommendations between the first and current versions as well as patterns in levels of evidence used in the current versions

## Classes of Recommendations

Classes of Recommendations	Definition
Class I	Evidence and/or general agreement that a given treatment or procedure is beneficial, useful, effective.
Class II	Conflicting evidence and/or a divergence of opinion about the usefulness/efficacy of the given treatment or procedure.
<i>Class IIa</i>	Weight of evidence/opinion is in favour of usefulness/efficacy.
<i>Class IIb</i>	Usefulness/efficacy is less well established by evidence/opinion.
Class III	Evidence or general agreement that the given treatment or procedure is not useful/effective, and in some cases may be harmful.

## Levels of Evidence

Level of Evidence A	Data derived from multiple randomized clinical trials or meta-analyses.
Level of Evidence B	Data derived from a single randomized clinical trial or large non-randomized studies.
Level of Evidence C	Consensus of opinion of the experts and/or small studies, retrospective studies, registries.



## Results

- Guidelines with at least 1 revision or update by September 2008 - number of recommendations increased from 1330 to 1973 (48%) from the first to the current version - largest increase observed in use of class II recommendations
- 16 current guidelines reporting levels of evidence, only 314 recommendations of 2711 total are classified as level of evidence A (median, 11%)
- 1246 (median, 48%) are level of evidence C
- Level of evidence significantly varies across categories of guidelines (disease, intervention, or diagnostic) and across individual guidelines
- Recommendations with level of evidence A are mostly concentrated in class I, but only 245 of 1305 class I recommendations have level of evidence A (median, 19%)

## Clinical Practice Guidelines published by AHA/ACC/ESC

### Disease Guidelines

Atrial fibrillation

Heart failure

Perioperative evaluation

Stable angina

Unstable angina

Valvular heart disease

## Change in recommendations and class in AHA guidelines

**Table 1.** Change in the Number of Recommendations and Distribution Across Classes of Recommendation Between First Guideline Version and Current Version<sup>a</sup>

Guidelines by Year of Publication	Class I		Class II		Class III	
	No./Total (%)	Change, %	No./Total (%)	Change, %	No./Total (%)	Change, %
Disease guidelines						
Atrial fibrillation						
2001 <sup>5</sup>	46/95 (48.4)		38/95 (40)		11/95 (11.6)	
2006 <sup>7</sup>	41/111 (36.9)	-23.7	55/111 (49.5)	23.9	15/111 (13.5)	16.7
Heart failure						
1995 <sup>26</sup>	73/127 (57.5)		33/127 (26)		21/127 (16.5)	
2005 <sup>28</sup>	66/129 (51.2)	-11.0	44/129 (34.1)	31.3	19/129 (14.7)	-10.9
Peroperative evaluation						
1996 <sup>39</sup>	8/28 (28.6)		8/28 (28.6)		12/28 (42.9)	
2007 <sup>40</sup>	13/50 (26.0)	-9.3	27/50 (54.0)	88.8	10/50 (20.0)	-53.4
Stable angina						
1999 <sup>46</sup>	67/162 (41.4)		62/162 (38.3)		33/162 (20.4)	
2002 <sup>47</sup>	78/235 (33.2)	-19.7	98/235 (41.7)	9.0	59/235 (25.1)	23.2
Unstable angina						
2000 <sup>49</sup>	86/139 (61.9)		38/139 (27.3)		15/139 (10.8)	
2007 <sup>51</sup>	87/128 (68.8)	1.5	29/128 (22.7)	0.7	12/128 (9.7)	-10.2
Valvular heart disease						
1998 <sup>53</sup>	152/321 (47.2)		114/321 (35.4)		55/321 (17.1)	
2008 <sup>55</sup>	156/320 (48.8)	3.3	124/320 (38.8)	9.5	40/320 (12.5)	-26.8
Change in No. of recommendations	+9		+84		+8	
Change in distribution across classes, median (IQR), %		-10.2 (-17.5 to -1.2)		16.7 (9.1 to 29.5)		-10.6 (-22.8 to 10.0)

## Change in recommendations and class in AHA guidelines

**Table 1.** Change in the Number of Recommendations and Distribution Across Classes of Recommendation Between First Guideline Version and Current Version<sup>a</sup>

Guidelines by Year of Publication	Class I		Class II		Class III	
	No./Total (%)	Change, %	No./Total (%)	Change, %	No./Total (%)	Change, %
Disease guidelines						
Atrial fibrillation						
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2006 <sup>7</sup>	41/111 (36.9)	-23.7	55/111 (49.5)	23.9	15/111 (13.5)	16.7
Heart failure						
1995 <sup>26</sup>	73/127 (57.5)		33/127 (26)		21/127 (16.5)	
2005 <sup>28</sup>	66/129 (51.2)	-11.0	44/129 (34.1)	31.3	19/129 (14.7)	-10.9
Peroperative evaluation						
1996 <sup>39</sup>	8/28 (28.6)		8/28 (28.6)		12/28 (42.9)	
2007 <sup>40</sup>	13/50 (26.0)	-9.3	27/50 (54.0)	88.8	10/50 (20.0)	-53.4
Stable angina						
1999 <sup>46</sup>	67/162 (41.4)		62/162 (38.3)		33/162 (20.4)	
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Unstable angina						
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Valvular heart disease						
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Change in distribution across classes, median (IQR), %		-10.2 (-17.5 to -1.2)		16.7 (9.1 to 29.5)		-10.6 (-22.8 to 10.0)

# Clinical Practice Guidelines published by AHA/ACC/ESC

## Interventional Guidelines

CABG

PCI

Pacemaker

## Change in recommendations and class in AHA interventional guidelines

	Class I		Class II		Class III	
	No./Total (%)	Change, %	No./Total (%)	Change, %	No./Total (%)	Change, %
Interventional guidelines						
CABG						
1999 <sup>10</sup>	26/56 (46.4)		19/56 (33.9)		11/56 (19.6)	
2004 <sup>11</sup>	39/56 (46.4)	0	34/56 (40.5)	19.3	11/56 (13.1)	-33.3
Pacemaker						
1984 <sup>20</sup>	27/87 (31.0)		29/87 (33.3)		31/87 (35.6)	
2008 <sup>14</sup>	38/122 (31.1)	0.4	50/122 (41.0)	23.0	34/122 (27.9)	-21.8
PCI						
1988 <sup>34</sup>	20/69 (29.0)		27/69 (39.1)		22/69 (31.9)	
2005 <sup>37</sup>	39/136 (28.7)	-1.1	69/136 (50.7)	29.7	28/136 (20.6)	-35.4
Change in No. of recommendations	+43		+78		+9	
Change in distribution across classes, median (IQR), %		0 (-0.6 to 0.2)		23.0 (21.2 to 26.4)		-33.3 (-34.4 to -27.6)

## Change in recommendadtions and class in AHA interventional guidelines

	Class I		Class II		Class III	
	No./Total (%)	Change, %	No./Total (%)	Change, %	No./Total (%)	Change, %
Interventional guidelines						
CABG						
1999 <sup>10</sup>	26/56 (46.4)		19/56 (33.9)		11/56 (19.6)	
2004 <sup>11</sup>	39/56 (46.4)	0	34/56 (40.5)	19.3	11/56 (13.1)	-33.3
Pacemaker						
1984 <sup>20</sup>	27/87 (31.0)		29/87 (33.3)		31/87 (35.6)	
2008 <sup>14</sup>	38/122 (31.1)	0.4	50/122 (41.0)	23.0	34/122 (27.9)	-21.8
PCI						
1988 <sup>34</sup>	20/69 (29.0)		27/69 (39.1)		22/69 (31.9)	
2005 <sup>27</sup>	39/136 (28.7)	-1.1	69/136 (50.7)	29.7	28/136 (20.6)	-35.4
Change in No. of recommendations	+43		+78		+9	
Change in distribution across classes, median (IQR), %		0 (-0.6 to 0.2)		23.0 (21.2 to 26.4)		-33.3 (-34.4 to -27.6)

## Clinical Practice Guidelines published by AHA/ACC/ESC

### Diagnostic Guidelines

Echocardiography

Exercise testing

Radionuclide testing

## Change in recommendadtions and class in AHA diagnostic guidelines

	Class I		Class II		Class III	
	No./Total (%)	Change, %	No./Total (%)	Change, %	No./Total (%)	Change, %
Diagnostic guidelines						
Echocardiography						
1990 <sup>16</sup>	58/116 (50.0)		37/116 (31.9)		21/116 (18.1)	
2003 <sup>17</sup>	190/333 (57.1)	14.1	83/333 (24.9)	-21.9	60/333 (8.0)	-0.5
Exercise testing						
1986 <sup>23</sup>	6/32 (18.8)		15/32 (46.9)		11/32 (34.4)	
2002 <sup>26</sup>	15/71 (21.1)	12.7	37/71 (52.1)	11.2	19/71 (26.8)	-22.2
Radionuclide imaging						
1986 <sup>41</sup>	14/98 (14.3)		78/98 (79.6)		6/98 (6.1)	
2003 <sup>42</sup>	36/84 (42.9)	200.0	43/84 (51.2)	-35.7	5/84 (6.0)	-2.8
Change in No. of recommendations	+163		+33		+46	
Change in distribution across classes, median (IQR), %		14.1 (13.4 to 107.1)		-21.9 (-28.8 to -5.4)		-2.8 (-12.5 to -1.7)
Summary of all guidelines						
Change in No. of recommendations	+215		+195		+63	
Change in distribution across classes, median (IQR), %		0.2 (-9.7 to 5.7)		15.3 (6.9 to 25.4)		-16.4 (-28.4 to -2.2)

## Change in recommendadtions and class in AHA diagnostic guidelines

	Class I		Class II		Class III	
	No./Total (%)	Change, %	No./Total (%)	Change, %	No./Total (%)	Change, %
Diagnostic guidelines						
Echocardiography						
1990 <sup>16</sup>	58/116 (50.0)		37/116 (31.9)		21/116 (18.1)	
2003 <sup>17</sup>	190/333 (57.1)	14.1	83/333 (24.9)	-21.9	60/333 (8.0)	-0.5
Exercise testing						
1986 <sup>23</sup>	6/32 (18.8)		15/32 (46.9)		11/32 (34.4)	
2002 <sup>26</sup>	15/71 (21.1)	12.7	37/71 (52.1)	11.2	19/71 (26.8)	-22.2
Radionuclide imaging						
1986 <sup>41</sup>	14/98 (14.3)		78/98 (79.6)		6/98 (6.1)	
2003 <sup>42</sup>	36/84 (42.9)	200.0	43/84 (51.2)	-35.7	5/84 (6.0)	-2.8
Change in No. of recommendations	+163		+33		+46	
Change in distribution across classes, median (IQR), %		14.1 (13.4 to 107.1)		-21.9 (-28.8 to -5.4)		-2.8 (-12.5 to -1.7)
Summary of all guidelines						
Change in No. of recommendations	+215		+195		+63	
Change in distribution across classes, median (IQR), %		0.2 (-9.7 to 5.7)		15.3 (6.9 to 25.4)		-16.4 (-28.4 to -2.2)

## CV Guidelines – general conclusions

- Most current articles called “guidelines” are actually expert consensus reports.
- Revisions of the American College of Cardiology (ACC)/American Heart Association (AHA) guidelines have shifted to more class II recommendations (conflicting evidence and/or divergence of opinion about the usefulness/efficacy of a procedure or treatment)
- 48% of the time, these recommendations are based on the lowest level of evidence (level C: expert opinion, case studies, or standards of care).

## CV Guidelines - general

- This trend is especially disconcerting given the quantity of cardiovascular scientific literature published during the last decade
- Overreliance on expert opinion in guidelines is problematic
- All guideline committees begin with implicit biases and values, which affects the recommendations they make. However, bias may occur subconsciously and, therefore, go unrecognized
- Converting data into recommendations requires subjective judgments

## CV Guidelines - general

### Biases

- The most widely recognized bias is financial
- Guidelines often have become marketing tools for device and pharmaceutical manufacturers.
- While the ACC, AHA and ESC receive no industry funding for guideline development, they may receive industry support to disseminate guideline products such as pocket guides.

## CV Guidelines - general

- ACC/AHA guidelines with at least 1 revision, the number of recommendations increased 48% from the first guideline to the most recent version
- Main messages tend to get lost in minutiae
- Guidelines are not patient-specific enough to be useful and rarely allow for individualization of care
- Most guidelines have a one-size-fits-all mentality and do not build flexibility or contextualization into the recommendations
- There are simply too many guidelines, often on the same topic

## **Women and Gender Issues in the ESC Clinical Practice Guidelines**

### **Clinical Practice Guidelines published by AHA/ACC/ESC**

#### **Main Disease Topics**

**Atrial fibrillation**  
**Heart failure**  
**Perioperative evaluation**  
**Stable angina**  
**Unstable angina**  
**Valvular heart disease**



## **Clinical Practice Guidelines published by ESC**

### **Atrial fibrillation (2001 revised 2006)**

#### **Women mentioned 7 times: prevalence, incidence and prognosis**

- Among men, the age-adjusted prevalence has more than doubled over a generation, while the prevalence in women has remained constant
- Stroke risk greater in women
- amiodarone-associated bradycardia is more common in women than in men

**No gender treatment differences discussed**

## **Clinical Practice Guidelines published by ESC**

### **Heart Failure - 2008 revised 1995, 1997, 2001, 2005**

#### **Women mentioned 6 times: epidemiology, and pregnancy**

- Studies show that the accuracy of diagnosis of HF by clinical means alone is often inadequate, particularly in women, the elderly, and the obese

**No gender treatment differences discussed**

## **Clinical Practice Guidelines published by ESC**

### **Perioperative evaluation**

**Women mentioned twice: ageing population  
and pulmonary disease**

**No gender management differences discussed**

## **Clinical Practice Guidelines published by ESC**

### **Stable Angina 2006**

**Women mentioned 67 times!**

**Discussed extensively**

**Focus on differences in diagnosis,  
presentation, investigation and treatment**

– ‘A considerable proportion of patients, especially women, who undergo coronary arteriography because of symptoms of chest pain do not have significant CAD’

– **Also HRT discussed**

**Women discussed as a special subgroup**

## Clinical Practice Guidelines published by ESC

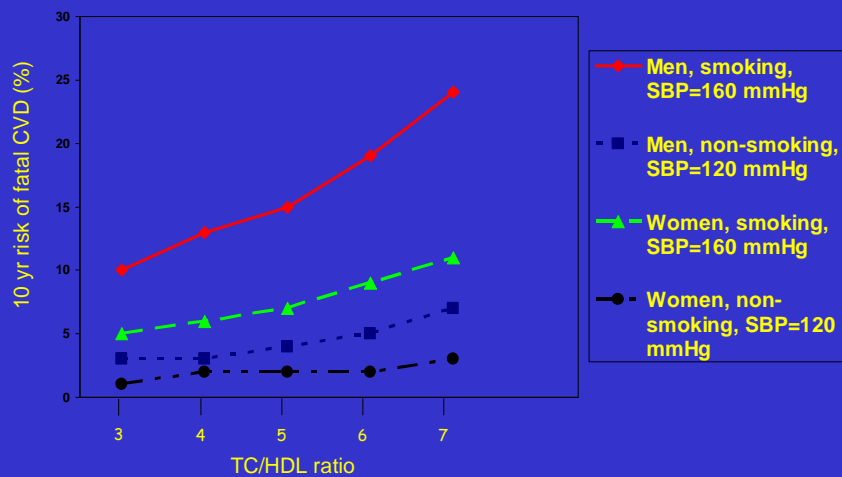
### CVD Prevention 2007

Women mentioned 60 times

Women discussed as a gender issue

- 'The benefits of statins in healthy asymptomatic women are unproven'

The relationship of total cholesterol / HDL cholesterol ratio to 10 year fatal CVD events in men and women aged 60 yrs with and without risk factors, based on a risk function derived from the SCORE project.



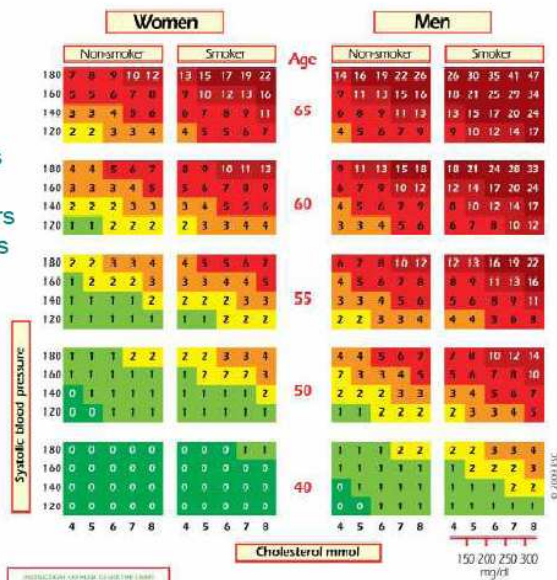
# Cardiovascular Risk Assessment - Methodology

## SCORE Chart

Based on

- 12 European cohorts
- 250,000 patients
- 3 million person-years
- 7,000 fatal CV events

High CV risk  
= 5% risk of CV death over 10 years



# Seville Guide 2008



## ASSESSMENT AND MANAGEMENT OF CARDIOVASCULAR RISKS IN WOMEN

A SHORT GUIDE FOR MENOPAUSE PHYSICIANS

### Chairpersons

Professor Peter Collins  
Imperial College London  
Royal Brompton Hospital  
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UK

Professor Amos Pines  
Departments of Medicine T\*  
Tel-Aviv Souraski Medical Center  
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Professor Martin Birkhäuser  
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kriologie und Reproduktionsmedizin  
Frauenklinik  
Bonn  
Switzerland

Professor Giuseppe Resano  
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San Raffaele-Roma  
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### Faculty members

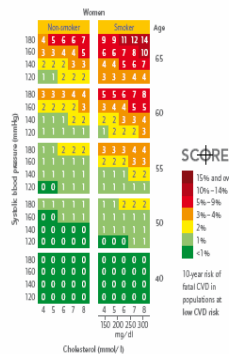
Cathy Casey (Ireland)  
Caroline Daly (UK)  
Marco Cambacciani (Italy)  
Risto Kaaja (Finland)  
Stéphane Laurent (France)  
Taru Mikkola (Finland)

Santiago Palacios (Spain)  
Tobiasz Simon (France)  
John Stevenson (UK)  
Marco Stamba-Badiale (Italy)  
Eberhard Windler (Germany)

### Acknowledgement

We are grateful to the attendees of the meeting on Cardiovascular Risk Assessment and Management in Menopausal Women at the Gynecological Setting, Seville, 1-2 June 2007, who participated in the Workshop sessions, for their contribution to this guide.

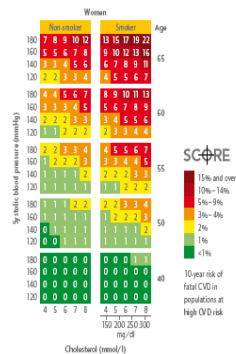
SCORE CHART SHOWING 10-YEAR RISK OF FATAL CVD IN WOMEN IN LOW-RISK POPULATIONS



Note: Low-risk countries are: Belgium, France, Greece, Italy, Luxembourg, Spain, Switzerland and Portugal.

Adapted from Conroy, MH et al. Estimation of ten-year risk of fatal cardiovascular disease in Europe: the SCORE project. Eur Heart J 2003; 24: 987–1003, with permission from the European Society of Cardiology.

SCORE CHART SHOWING 10-YEAR RISK OF FATAL CVD IN WOMEN IN HIGH-RISK POPULATIONS



Note: High-risk countries are all Western European Countries except Belgium, France, Greece, Italy, Luxembourg, Spain, Switzerland and Portugal.

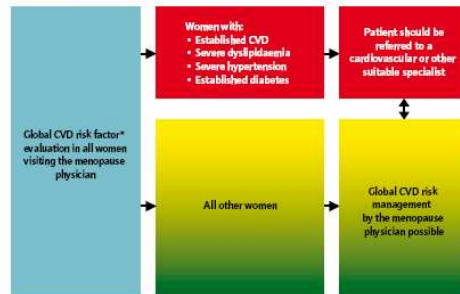
Adapted from Conroy, MH et al. Estimation of ten-year risk of fatal cardiovascular disease in Europe: the SCORE project. Eur Heart J 2003; 24: 987–1003, with permission from the European Society of Cardiology.

## WHICH PATIENTS CAN BE MANAGED FOR GLOBAL CARDIOVASCULAR RISK BY A MENOPAUSE PHYSICIAN?

9

- A woman with a high-risk profile or overt cardiovascular disease (CVD) requires intensive management, including drug therapy.
- Collaboration with a cardiovascular specialist is essential if global cardiovascular risk is high, or if cardiovascular disease is present.

Figure 1. Diagrammatic guide to determining patients suitable for cardiovascular risk management.



Abbreviations: CVD: Cardiovascular disease

\*Refer to page 7 of the guide for a list of cardiovascular risk factors for women.

## HOW TO MANAGE HIGH BLOOD PRESSURE

21

**TARGET:** Systolic blood pressure/ diastolic blood pressure <140/<90 mmHg (non-diabetic patient), or <130/<80 mmHg (patient with diabetes or chronic kidney disease)

- After the age of 45 years, blood pressure rises steeply in women, and by the age of 60, average SBP levels in women are higher than in men.
- In hypertensive postmenopausal women, only about one-third have effectively controlled blood pressure levels.
- High blood pressure is one of the most powerful modifiable risk factors for cardiovascular morbidity and mortality.
- A decrease in SBP of only 2-3 mmHg lowers the likelihood of death from stroke by 10% and from ischaemic heart disease or other vascular causes by 7%.
- At each consultation, the blood pressure of women at higher risk of having raised blood pressure – especially peri-menopausal women – must be measured.
- Lifestyle changes help lower blood pressure if it is not seriously elevated (appropriate for women with SBP/diastolic blood pressure (DBP) 120–139/80–89 mmHg).
- A woman with no symptoms of cardiovascular disease requires antihypertensive therapy if blood pressure is high (>140/90 mmHg).
- More rigorous control of blood pressure, using antihypertensive agents, is essential in a woman with additional cardiovascular risk factors, e.g. subclinical organ damage or diabetes.
- Modification of renin-angiotensin-aldosterone system (RAAS) activity might be important in blood pressure control of a hypertensive peri- or post-menopausal woman.

See page 27 for a guide to blood pressure management in a woman asymptomatic for cardiovascular disease.

26

## ACCURATE BLOOD PRESSURE MEASUREMENT – HOW TO AVOID SOME TYPICAL PITFALLS

- Ensure that the woman has been comfortably seated for several minutes in a quiet room.
- Advise the woman to avoid caffeine, exercise and smoking for  $\geq 30$  minutes before measurement.
- Check that no tight clothing constricts the arm.
- Rest the woman's arm on a table, preferably with the brachial artery level with the heart.
- Use a standard cuff (12–13 x 35 cm); have larger and smaller cuffs available.
- The bladder should encircle at least 80% of the arm (but not more than 100%).
- Check that any remaining air in the cuff is evacuated before putting it on the woman's arm.
- Inflate the cuff to  $>30$  mmHg above the estimated SBP needed to occlude the pulse.
- Deflate slowly at a rate of 2–3 mmHg/second until regular tapping sounds are audible.
- Use Korotkoff sounds to identify SBP and DBP: first heard when the cuff pressure equals the SBP, and ceasing once the cuff has been deflated below the DBP.
- Take at least two measurements at an interval of 1–2 minutes; additional measurements are required if the first two vary markedly.
- At the first examination, blood pressure should be checked in both arms to detect possible differences due to peripheral vascular disease.
- If values vary in different arms, use the higher one.

22

## THE MENOPAUSE AND HORMONE REPLACEMENT THERAPY

- The initiation or continuation of hormone replacement therapy (HRT) should be decided according to the individual patient.
- Progestogen should be added to systemic oestrogen in all women with an intact uterus, to prevent endometrial hyperplasia and cancer.
- Some progestins have additional, specific, beneficial effects on blood pressure and plasma lipid and plasma glucose profiles, for example.
- In a woman aged  $<60$  years, recently menopausal, with menopausal symptoms and without symptomatic cardiovascular disease, the initiation of HRT does not cause early harm, and possibly confers long-term cardiovascular benefit.
- If a woman is at increased global cardiovascular risk, HRT is safe to use in the younger woman with indications.
- HRT should not be initiated solely for the prevention of cardiovascular disease and should not be regarded as a substitute for antihypertensive treatment.
- A woman aged  $>60$  years should be counselled on the potential benefits and risks of HRT in women in their age group.

TARGET: Adopt a healthy diet.

- Explain the importance of a varied diet and the need to adjust energy intake to achieve and maintain ideal body weight.
- Encourage the consumption of the following items:
  - Fruits and vegetables (the five-a-day guideline)
  - Whole-grain cereals and bread
  - Low-fat dairy products
  - Fish, especially those rich in omega-3 fatty acids
  - Lean meat
- Advise that total fat intake should be no more than 30% of energy intake, with saturated fats comprising one-third of the total fat intake and total cholesterol <300 mg/day.
- Help the woman to identify foods that are high in saturated fats and cholesterol in order to reduce them in, or remove them from, her diet.
- Suggest replacement of saturated fat with complex carbohydrates, monounsaturated and polyunsaturated fats from vegetables and fish.
- Stress the importance of avoiding foods containing high levels of salt, and of reducing overall salt intake in the diet.

## Clinical Practice Guidelines published by ESC

### Hypertension - 2007

**Women mentioned 45 times!**

**Discussed extensively**

**Treatment of HT as effective in men and women**

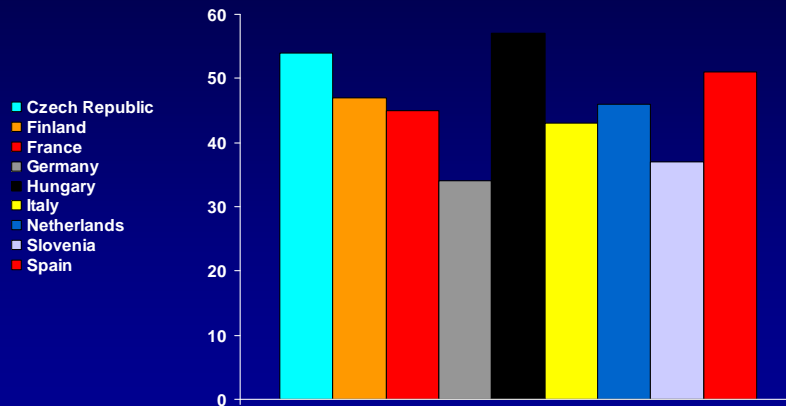
**Focus on treatment in women, pregnancy, pre-eclampsia**

**HRT and oral contraception discussed**

**Women discussed separately (7.7 Box18)**



## Hypertension Control (%) in European Nations



Euroaspire. *Lancet* 2001;357:995-1001

## Clinical Practice Guidelines published by ESC

### STEMI - 2008

Women mentioned 6 times (dose variation of drugs and metabolic syndrome)

No gender treatment differences discussed

**Clinical Practice Guidelines  
published by ESC**

**Valvular Heart Disease**

**Women mentioned once**

**No treatment differences discussed**

**Clinical Practice Guidelines  
published by AHA/ACC/ESC**

**Interventional Guidelines**

**CABG**

**PCI**

**Pacemaker**

## **Clinical Practice Guidelines published by AHA**

### **CABG - 2004**

**Women mentioned 43 times (similar to stable  
angina guideline)**

**Discussed as a special group - extensive**

## **Clinical Practice Guidelines published by ESC**

### **PCI**

**Women mentioned twice**

- **Particular benefit in women for primary PCI**
- **Cardiogenic shock**

## **Clinical Practice Guidelines published by ESC**

### **Pacemaker**

#### **Women mentioned once**

- **Sleep apnoea!**
- **No discussion of gender differences**

## **Evidence-Based Guidelines for Cardiovascular Disease Prevention in Women: 2007 Update**

- Mosca, et al Circulation
- Very comprehensive but:
- Most recommendations IB or less (similar to other guidelines discussed)
- Again reinforcing a paucity of data

## **Conclusions**

- **Guideline statements are often not robustly evidence based**
- **Bias is prevalent**
- **Women and gender are often overlooked**
- **lack of clinical trial data**
- **There is much work to do – there indeed is a need for action!**