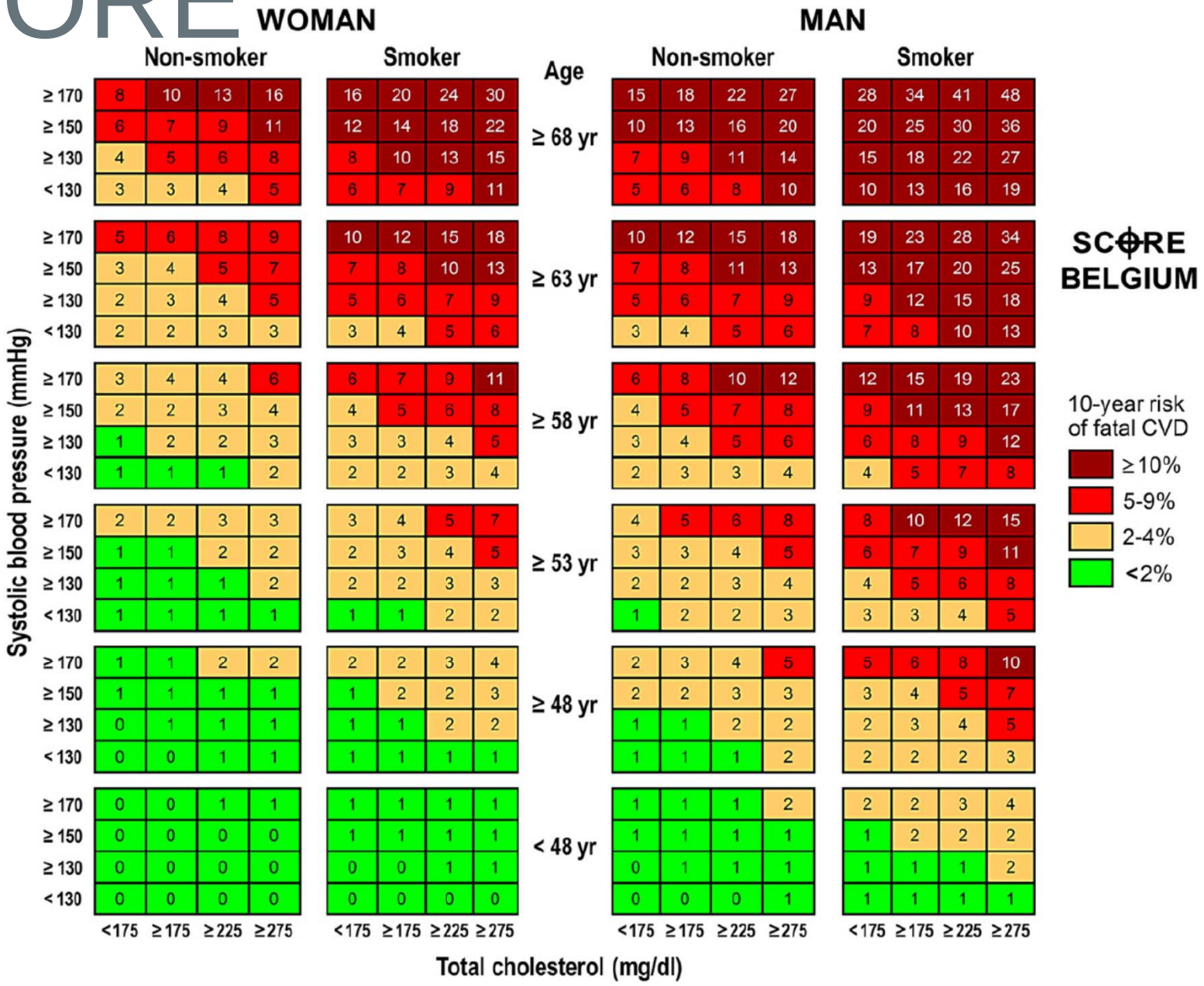
Federaal Kenniscentrum voor de Gezondheidszorg
Centre Fédéral d'Expertise des Soins de Santé
Belgian Health Care Knowledge Centre

# *Usefulness of markers of atherosclerosis for predicting the risk of a first cardiovascular event*

Roberfroid D., San Miguel L., Paulus D.

# SCORE


WOMAN
MAN
Non-smoker
Smoker
Non-smoker
Smoker
Age
≥ 68 yr
≥ 63 yr
≥ 58 yr
≥ 53 yr
≥ 48 yr
< 48 yr
Systolic blood pressure (mmHg)
≥ 170
≥ 150
≥ 130
< 130
<175 ≥175 ≥225 ≥275
Total cholesterol (mg/dl)
SCORE BELGIUM
10-year risk of fatal CVD
≥10%
5-9%
2-4%
<2%

# Background

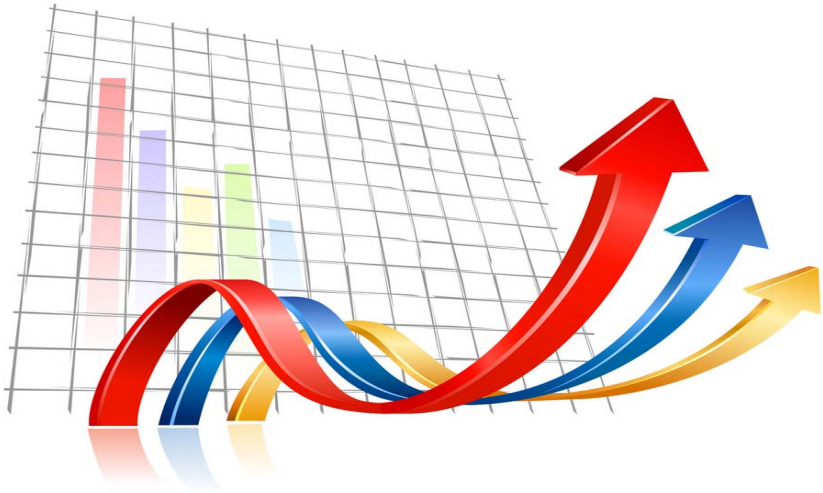
- **Not so performant**
  - 23% to 45% of CVD deaths had not been classified at “high risk” by SCORE
- **Better performance measured by:**
  - NRI=Net Reclassification Improvement

    =%correct reclassification-%incorrect reclassification
  - CNRI=Clinical NRI

    =NRI in those classified at intermediate risk by SCORE

# Research question

- **Risk reclassification by non-invasive markers of subclinical atherosclerosis?**



- **Would it be effective or cost effective?**

# Results – Clinical review

- **Net reclassification:**

| Marker | Stud -ies. | N | Quality of evidence | NRI% (95%CI) | CNRI% (95%CI) | Subgroup |
|---|---|---|---|---|---|---|
| 1. Coronary Artery Calcium Score (CAC) | 7 | 13 685 | High | 14.0 (NR)<br>25.0 (16; 34) | 21.7 (NR)<br>54.8 (41; 69) | Lowest value<br>Highest value |
| 2. Ankle-Brachial Index (ABI) | 5 | 46 082 | Moderate | 4.3 (0.0; 7.6)<br>9.6 (6.1; 16.4) | 15.9 (6.1; 20.6)<br>23.3 (13.3; 62.5) | Men<br>Women |
| 3. Carotid Plaques (CP) | 3 | 22 924 | High | 7.7 (2.3; 11.4) | 17.7 (10.9; 24.7) | - |
| 4. Aortic Pulse Wave Velocity (aPWV) | 3 | 20 275 | Moderate | 4.9 (4.0; 5.9) | 14.8 (12.4; 17.1) | - |
| ~~5. Carotid Intima Media Thickness (cIMT)~~ | ~~2~~ | ~~48 793~~ | ~~High~~ | ~~0.8 (0.1; 1.6)~~ | ~~3.6 (2.7; 4.6)~~ | ~~-~~ |
| ~~6. Flow-mediated dilation (FMD)~~ | ~~2~~ | ~~3 026~~ | ~~Very low~~ | ~~NA~~ | ~~NA~~ | ~~-~~ |

- **Clinical risk-benefit: no study**

# Results – Economic review

**Limited evidence**

Only for CAC

- 5 US based studies (4 cost-utility and 1 cost-effectiveness)
- Only 2 published after 2008 (using as input clinical studies reporting NRI)

**Uncertain results**

No robust data on the long-term consequences of treating patients pharmacologically in response to CAC scores

- No data on the effectiveness of statins in patients with significantly elevated CAC scores
- No good data on adherence

# Conclusions

- **Insufficient evidence to support measurement of those markers**

- **Knowledge gaps:**
  - **Added clinical value**
  - **Predictive value of conventional factors (BMI, sedentarity, etc…) not fully exploited in current SCORE**

# Recommendations

## Clinicians

- No atherosclerosis markers in routine practice for CVD prediction

## Research

- Integrate other conventional risk factors to SCORE
- Evaluate added value of markers against this new SCORE

# Colophon


- **Author(s):** Dominique Roberfroid, San Miguel Lorena, Dominique Paulus
- **Publication date:** 09 April 2015
- **Domain: Health** Technology Assessment (HTA)
- **MeSH:** Cardiovascular disease, biological markers, decision support techniques, predictive value of tests
- **NLM Classification:** WG 141
- **Language:** English
- **Format: Adobe® PDF™ (A4)**
- **Legal depot: D/2012/10.273/47**


- **Copyright: KCE reports are published under a "by/nc/nd" Creative Commons Licence** http://kce.fgov.be/content/about-copyrights-for-kce-reports**.**


***This document is available on the website of the Belgian Health Care Knowledge Centre.***

# THANK YOU!

Federaal Kenniscentrum voor de Gezondheidszorg
Centre Fédéral d'Expertise des Soins de Santé
Belgian Health Care Knowledge Centre