

SCAPIS

Swedish **C**Ar**D**io**P**ul**M**onary **b**io**I**mage **S**tudy

A national resource for research and one of the biggest programs for research in heart and lung disease



Dödsorsaker 1952-2010 för män och kvinnor

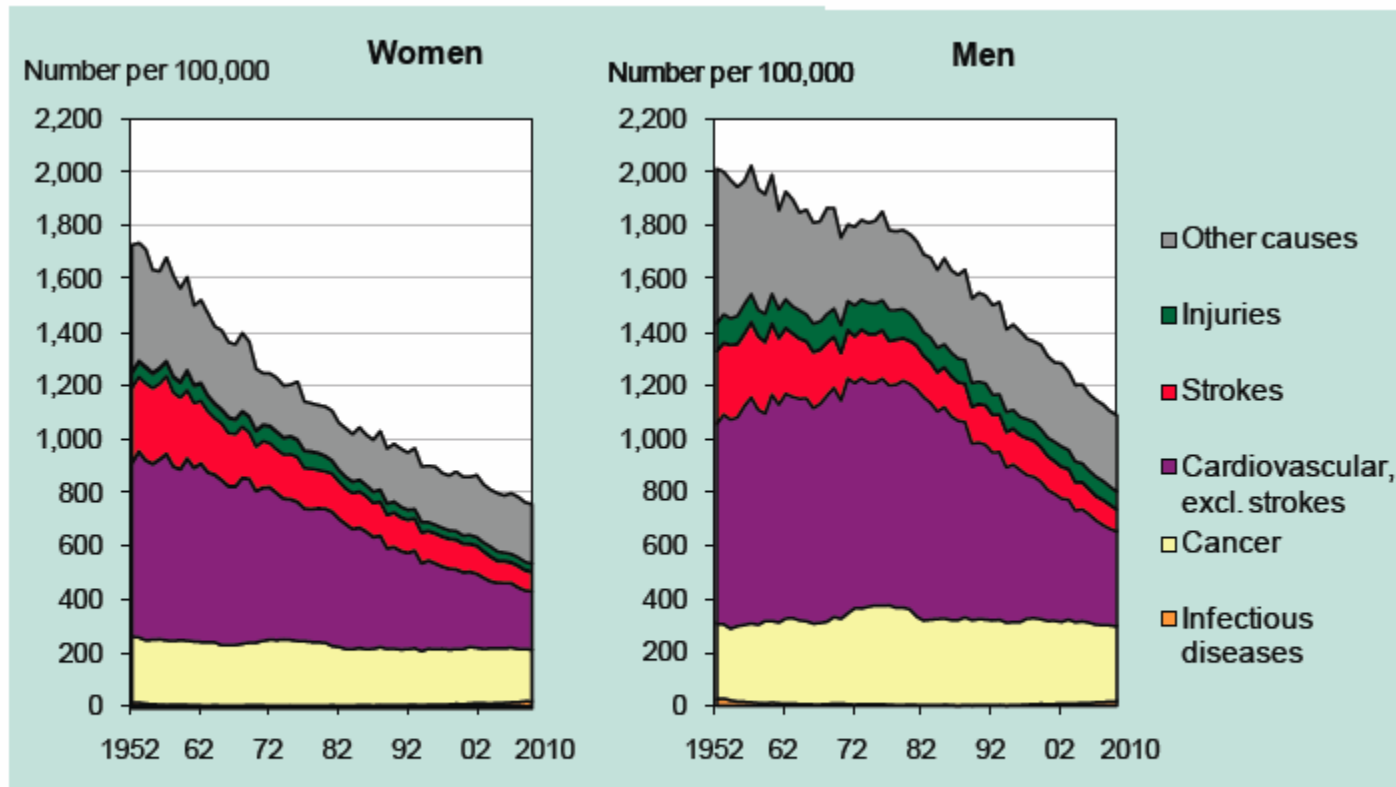


Figure 3. Mortality by cause of death, 1952–2010.

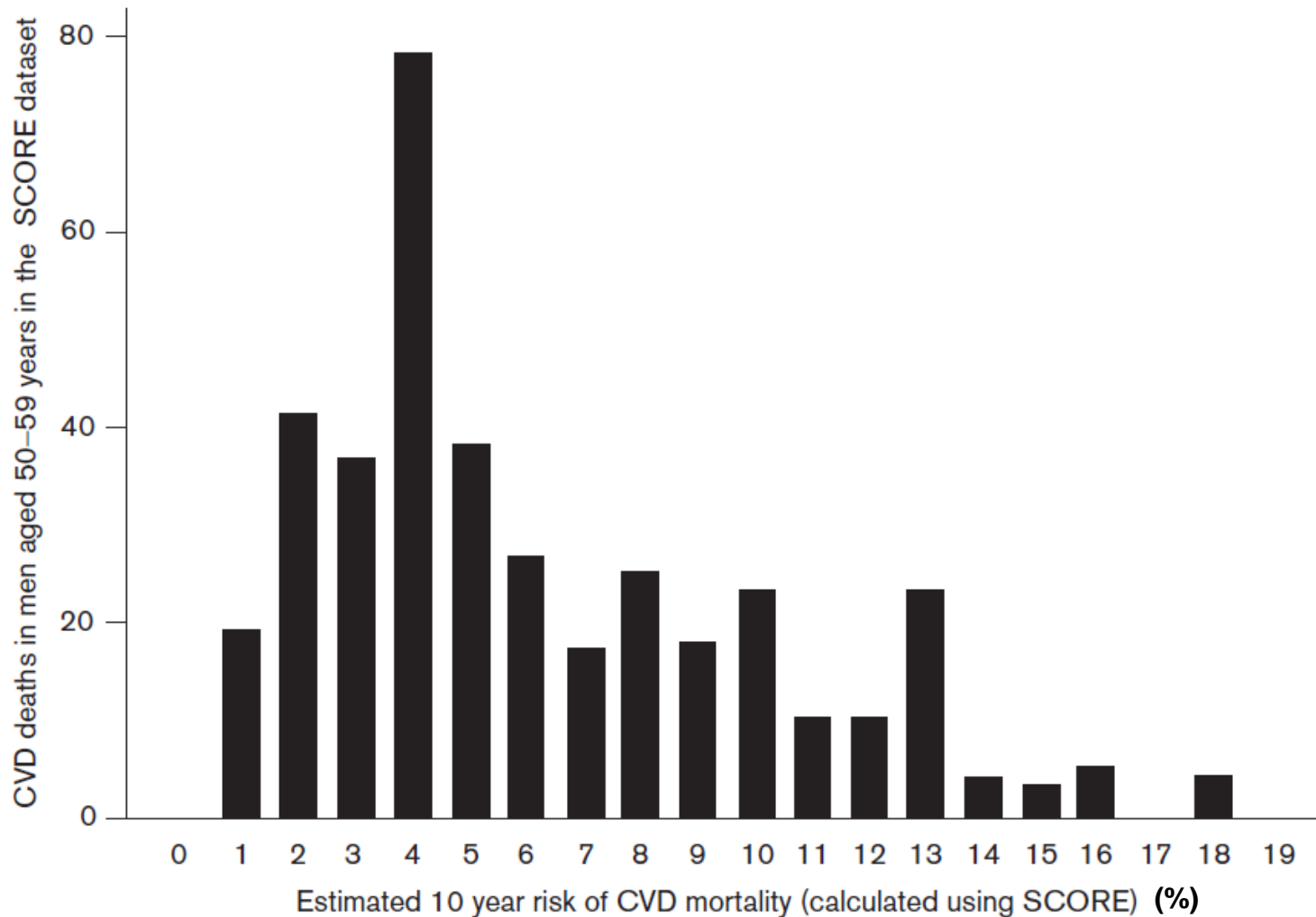
Number of deaths per 100,000, by cause of death and year. Women and men in all age groups, 1952–2010. Standardised by age.

Source: Cause of Death Register, Swedish National Board of Health and Welfare.



- Riskfaktorer har minskat
- Förbättrad behandling

Antal kardiovaskulära dödsfall i relation till uppskattad kardiovaskulär risk



SCAPIS outline

Identification of vulnerable plaques

- ✓ CTA
- ✓ Ultrasound (carotid artery)
- ✓ ULA-OP or MRI (carotid artery)

Visceral adipose tissue, epicardial and liver fat

- ✓ CT

Structural changes in lung tissue

- ✓ CT

Baseline survey includes:

- ✓ Blood tests
- ✓ Anthropometry
- ✓ Blood pressure, ankle-arm index
- ✓ Physical activity measurement
- ✓ Lung function tests (spirometry and CT)
- ✓ ECG (V-ECG)
- ✓ Detailed questionnaire - Environmental and socioeconomic factors

Local and central biobank for blood and urine analyses

Follow-up via national registries

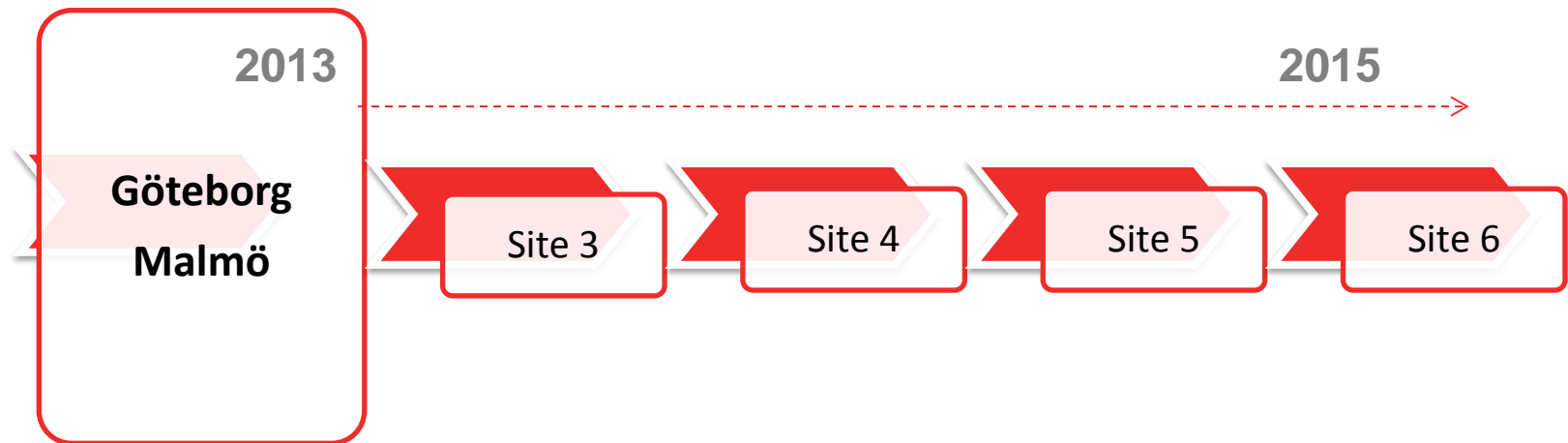
- ✓ Morbidity
- ✓ Mortality



Research centers at six universities

30,000 men and women aged 50 to 64 years

Sequential start – *transfer of knowledge and experiences to new sites*



- **Göteborg;** Pilot study (n=1111). Full study started okt/nov 2013
- **Malmö/Lund;** Start mars 2014.
- **Stockholm;** Planned start mars 2015.
- **Uppsala/Linköping/Umeå;** Planned start fall 2015.

Studiebas

- 5000 män och kvinnor per universitetsort
- 50-64 år
- Slumpmässigt valda från befolkningen i Malmö, Göteborg, Stockholm, Uppsala, Umeå, Linköping

Core

Optional

Investigation	Göteborg	Malmö
Medical history	X	X
Questionnaire	X	X
Diet questionnaire	X	X
Blood tests/biobanking blood and urine	X	X
Anthropometry	X	X
Lung function tests (spirometry/CO-diff)	X	X
Accelerometry (7 days)	X	X
Blood pressure/ankle-arm index	X	X
ECG	X	X
Ultra sound carotids	X	X
CT (lungs, heart, body composition)	X	X
MRI carotids (5-10% of individuals)	X	X
Microbiotics	X	X
Fitness bicycle	X	
Sleep apnea test	X	
Physical self-efficacy test	X	
Uric acid (extra blood test)	X	
V-ECG	X	
Cognitive test (trail making)	X	
Cadmium (extra blood test)	X	
Creatinine follow-up	X	
Impaired Glucose Tolerance	X	
Tomosynthesis	X	
CT – lungs after full expiration	X	X
Impulsoscillometry (IOS)		X
Echocardiography		X
Orthostatic blood pressure		X
ECG deep breathing		X
Pulse wave analysis		X
Advanced glycated endproducts		X
Nano particle retention test		X
Ultra Sound plaque analysis		X
The Satisfaction with life-test		X
Life orientation test – revised		X
Riksmaten		X



SCAPIS Malmö/Lund

(n=5000, random sample, 50-64 years)

Recruitment

Letter of invitation
Phone call (at least x3)
New letter if no contact

Scheduled visits

Communication activities

Day 1

Informed consent

-Blood and urine
-Biobanking
Analysis of lipids, creatinin,
Glc, HbA1c, RBC, WBC, diff

Questionnaire
Diet questionnaire
Anthropometry
Accelerometry (7 days)

Day 2

Ankle-arm index
ECG 5 min+*deep breathing*
Orthostatism
Pulse wave analysis
AGE-reader

Ultrasound carotids

Spirometry
Impulsoscillometry
Nano particle retention

Day 3

CT-thorax + *CT expiration*
CT-Angio

CT-body composition
Echocardiography

Coronary computed tomography angiography (CTA)

Development

Radiation

Dual energy

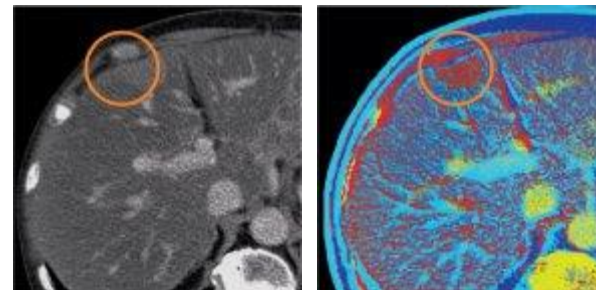
Limitations

Radiation

Contrast

Calcifications

SCAPIS chose Siemens
Somatom definition flash

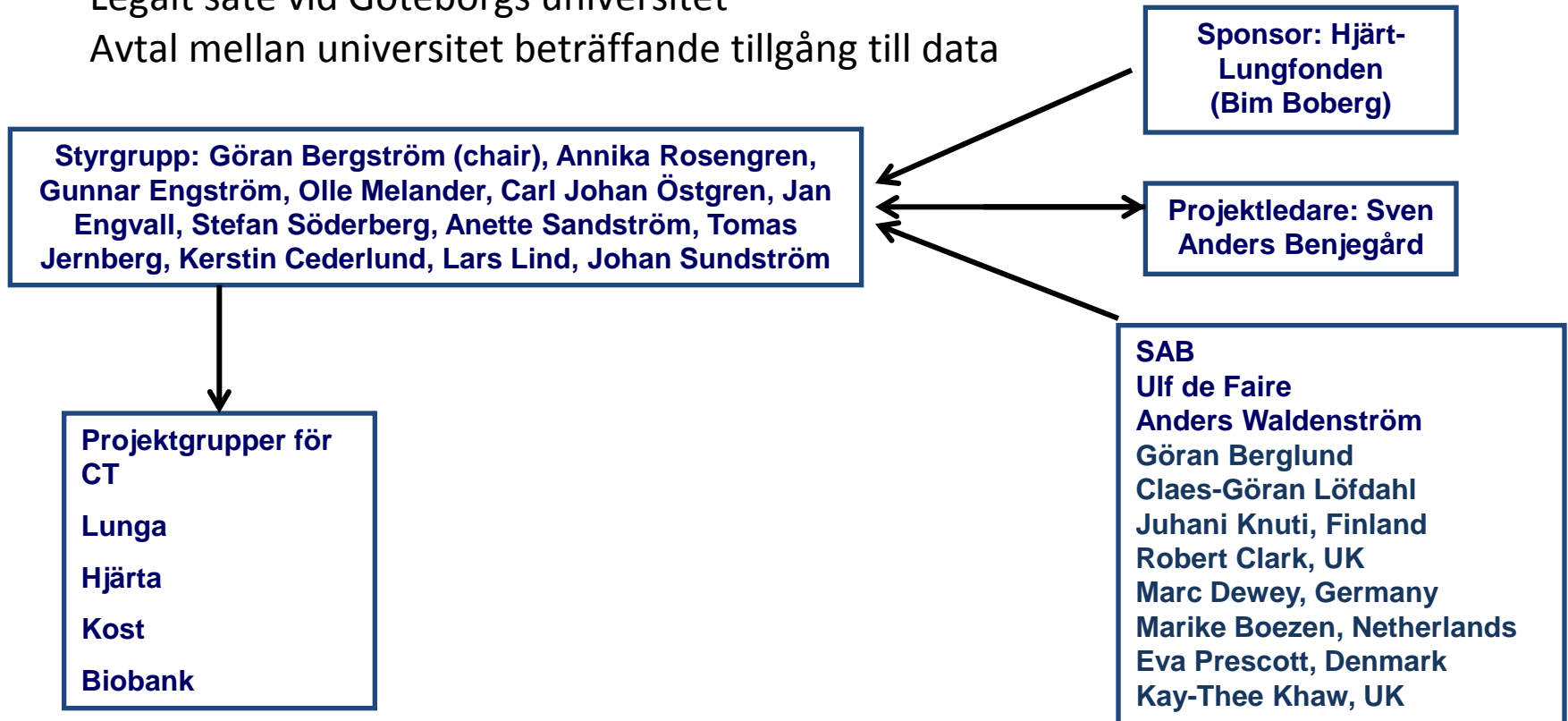


Type of biological sample		Tubes/donor	N of aliquotes	National resource
4 ml EDTA whole blod	Biobanking for DNA-extraction	2 (primary tubes are biobanked)	2	1
8,5 ml EDTA whole blood gel	Biobanking of EDTA-plasma	3	36	12
8,5 ml serum with gel	Biobanking of serum	2	24	12
8,0 ml Li-Hep with gel	Biobanking of Li-Heparin-plasma	2	24	12
6,0 ml Na-Citrate 3,2%	Biobanking av citrate plasma	1	12	6
Urine	Biobanking of urine	2	24	12
Faeces	Biobanking of microbiota		1	



Nationell struktur för SCAPIS

- Legalt säte vid Göteborgs universitet
Avtal mellan universitetet beträffande tillgång till data



SCAPIS Malmö/Lund

Projektledare
Margaretha
Persson

Gunnar Engström, PI; Olle Melander co-PI

Screening-grupp
Margaretha Persson
Gerd Östling

Biobank/prover
Margaretha Persson
Joyce Carlson
Gunilla Nordin-
Fredriksson

Klinisk uppföljning
Klas Gränsbo
Olle Melander

**Klin fys/
EKG/Spiro/sph:**
Per Wollmer

Kardiologi
David Erlinge
Martin Magnusson

CT-grupp
Hanna Markstad
Ellen Ostenfeld
Lisa Ander Olsson
Olle Ekberg
Lars Bååth

Ultraljud/kärl/MR
Gerd Östling
Isabel Goncalves
Anders Gottsäter

Lunggrupp
Eeva Piitulainen
Arne Egesten

Senior advisors
Bo Hedblad
Peter Nilsson

Acknowledgements

Hjärt-Lungfonden

Knut och Alice Wallenbergs stiftelse

Vetenskapsrådet

VINNOVA

Region Skåne

BBMRI

Lunds Universitet



‘Prediction is very difficult, especially about
the future’



