Begränsad delning

Hur ökar vi graden av följsamhet till läkemedelsbehandling och levnadsvanor? Erfarenheter från VIPVIZA studien

Ulf Näslund

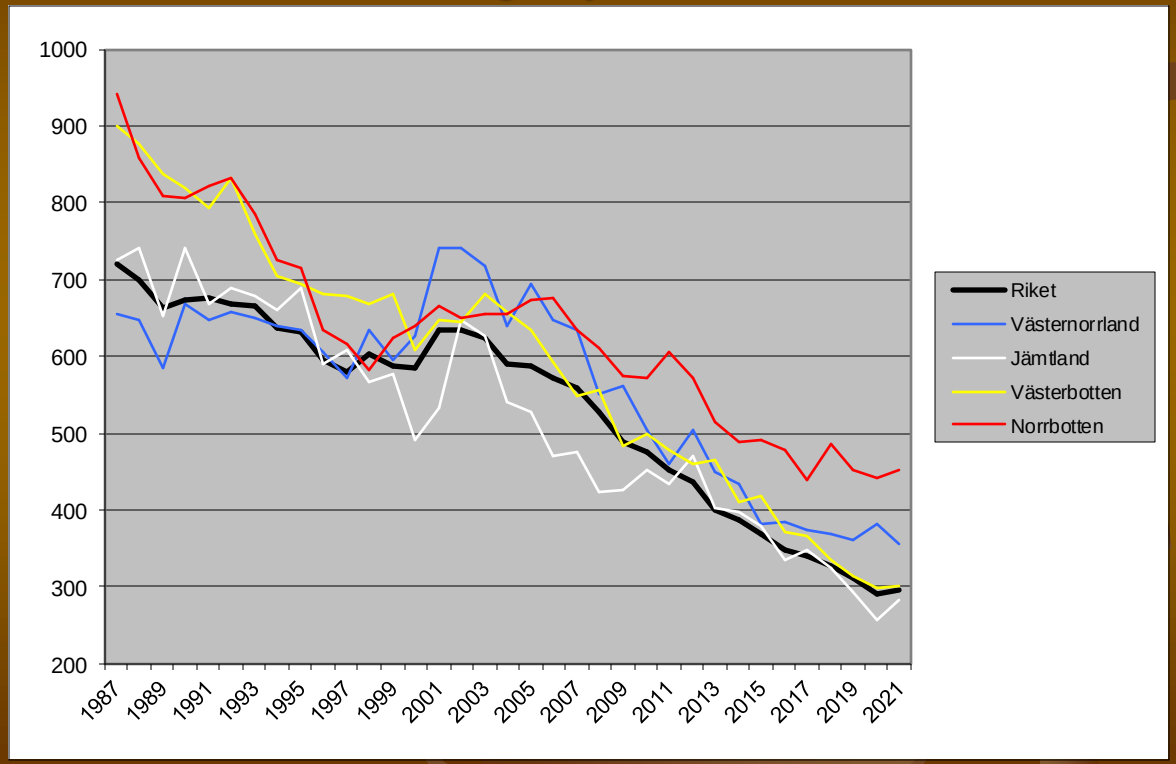
Institutionen för folkhälsa och klinisk medicin

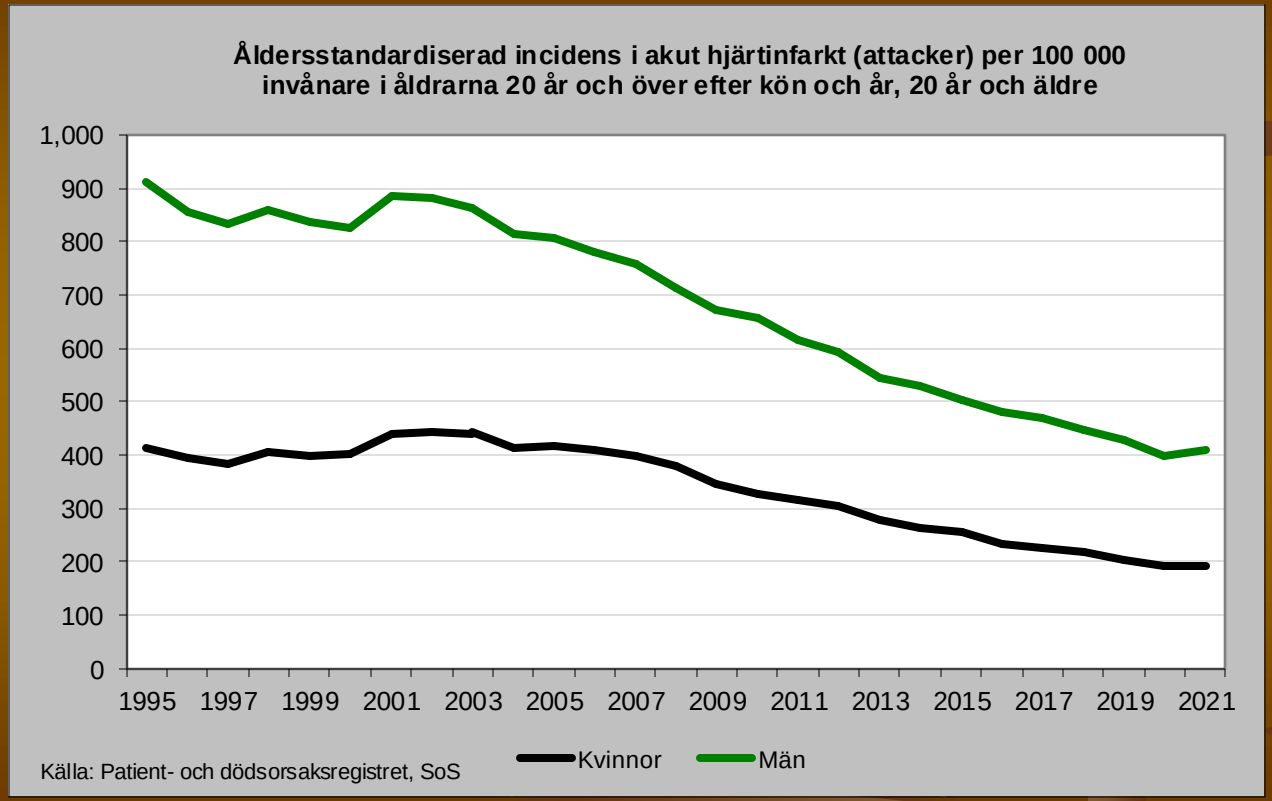
Umeå Universitet

Begränsad delning

Åldersstandardiserad incidens i akut hjärtinfarkt per 100 000 inv

Norrlandstingen jämfört med riket




Åldersstandardiserad incidens i akut hjärtinfarkt (attacker) per 100 000 invånare i åldrarna 20 år och över efter kön och år, 20 år och äldre
1,000
900
800
700
600
500
400
300
200
100
0
1995
1997
1999
2001
2003
2005
2007
2009
2011
2013
2015
2017
2019
2021
Källa: Patient- och dödsorsaksregistret, SoS
Kvinnor
Män

Begränsad delning

Plötslig död,
stroke eller hjärtinfarkt

är första symptom,
insjuknande för >50% av de som har atheroscleros (åderförkalkning).

Begränsad delning

INTERASPIRE

4548 koronarsjuka hospitaliserade pat från 14 länder, intervjuer och mätningar efter 1 år

1% nådde optimal guidance adherence (10 mål)
24% nådde minst 8 av 10 mål

48% fortsatt röka, 61% fortfarande BT >130/80
17% nådde LDL <1,4

EHJ 2024;45:4184-96

Non−HDL-C values at MI admission and early and late follow-up (left panel). Adjusted cox proportional hazard ...

Key Question

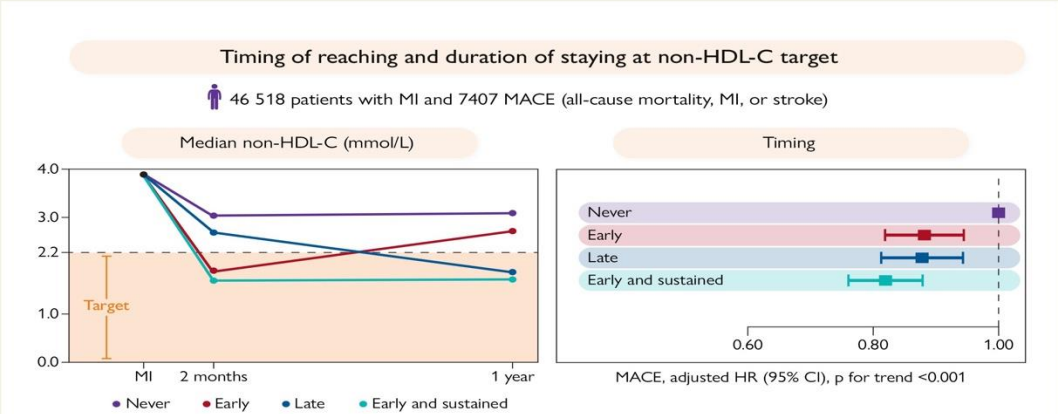
Is intensive, early, and sustained lowering of non-high-density lipoprotein cholesterol (HDL-C) after myocardial infarction associated with a better long-term prognosis?

Key Finding

- Larger non-HDL-C reduction: lower risk of outcomes
- Lowest achieved non-HDL-C: lowest risk of outcomes
- Early and sustained non-HDL-C: lowest risk of outcomes

Take Home Message

Early, intensive and sustained non-HDL-C lowering appears beneficial.



Eur Heart J, Volume 45, Issue 39, 14 October 2024, Pages 4204–4215, https://doi.org/10.1093/eurheartj/ehae576

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Begränsad delning

Non-adherence non-HDL-C

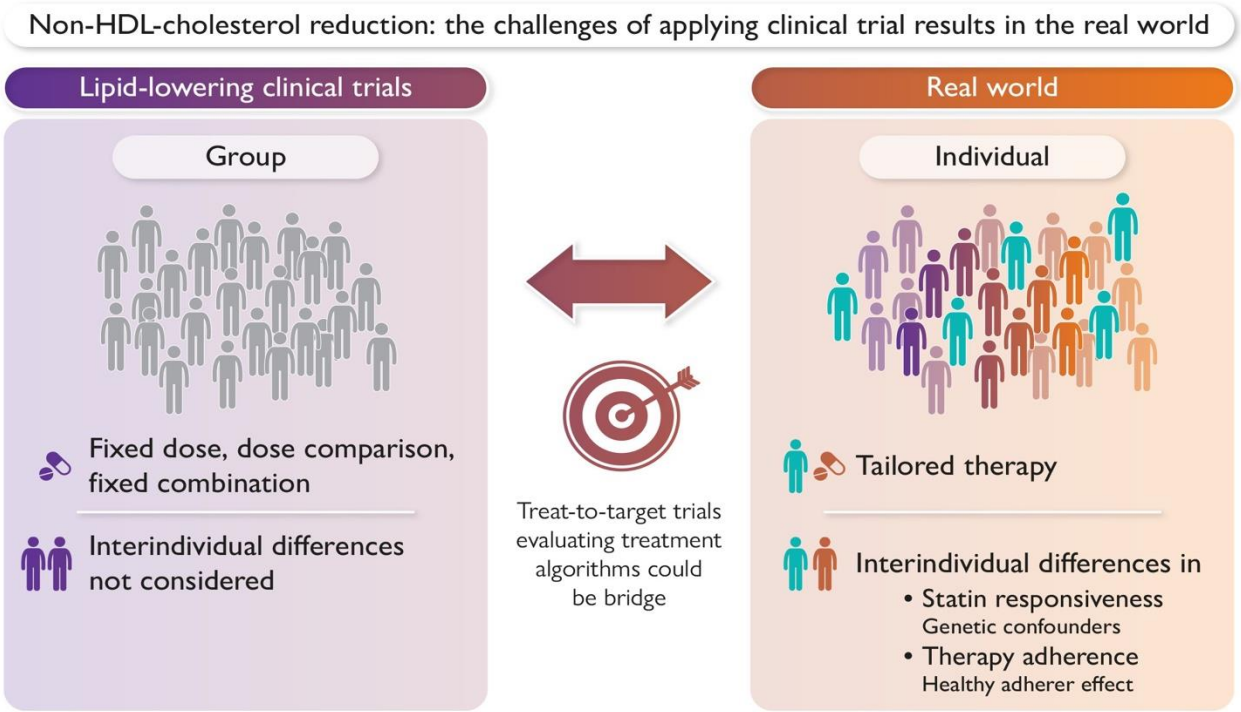
Swedeheart: 56262 MI patienter

Efter 1 år är LDL-C median 1,8

<50% vid behandlingsmål

Schubert et al. EHJ 2024;45:4204-15

Graphical Abstract



Eur Heart J, Volume 45, Issue 39, 14 October 2024, Pages 4216–4218, https://doi.org/10.1093/eurheartj/ehae577

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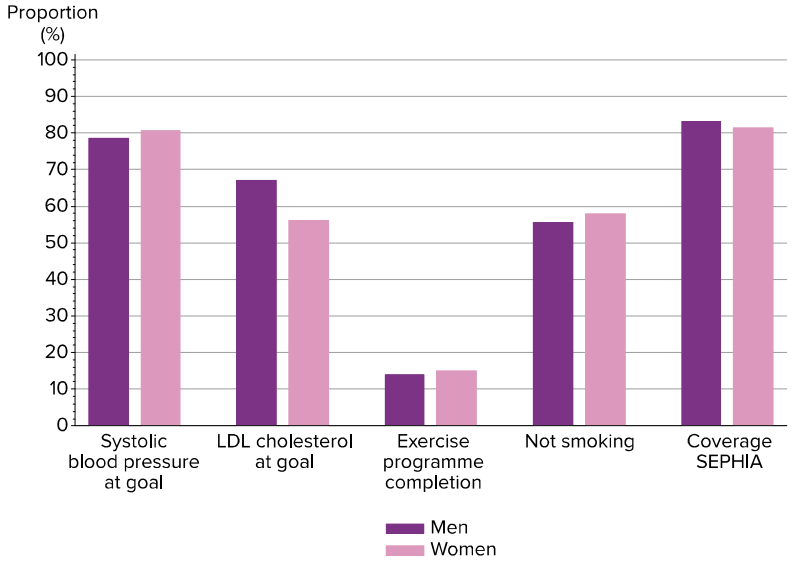


Figure 44. Proportion of patients at goal for systolic blood pressure, LDL cholesterol, completed physical exercise programme, not smoking and attending follow-up, by sex, at 2nd follow-up, 2023.

The proportion of patients at goal for LDL cholesterol at 2nd follow-up seems to be higher among men compared to women, but similar for systolic blood pressure, completed physical exercise programme for at least three months, smokers not smoking and attending follow-up visit. These figures are not adjusted for age.

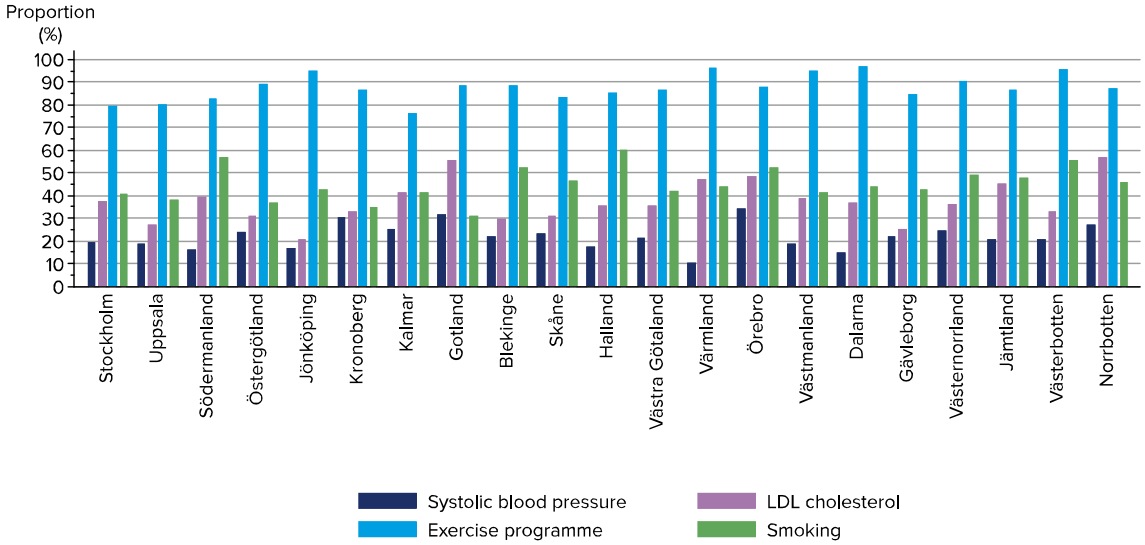


Figure 45. Proportion of patients not at goal for the four main secondary prevention treatment targets by county at 2nd follow-up.

Proportion of patients not at goal for systolic blood pressure, LDL cholesterol, completed physical exercise programme for at least three months, smokers not smoking at 2nd follow-up by county, 2023. As for previous years, participation in a physical exercise programme is the goal that seems hardest to reach.

WHY PREVENTION OFTEN FAILS IN REAL LIFE: NON-ADHERENCE

Kones R. Vasc Health and Risk Management 2013
Salinas AM, et al. J Prev Med 2018

Begränsad delning

Evidensbaserad behandling

Rökstopp
Fysisk aktivitet
”Rätt kost”
Blodtrycksbehandling
Statiner, kolesterolsänkning
Diabetes kontroll
”Sköta sitt arv”

”Enkelt, effektivt och billigt…”

Begränsad delning

Prevention misslyckas - låg följsamhet

Budskapet når inte fram
Psykologiska försvarsmekanismer
För svårt, ord, ord, tjat, tjat
Låg motivation
Bristande följsamhet till guidelines

Tänk nytt!

Benjamin Franklin

Berätta - och jag glömmer snabbt

Undervisa mig - och jag kanske förstår – för ett tag

Involvera mig - och jag agerar

- nalta

Begränsad delning

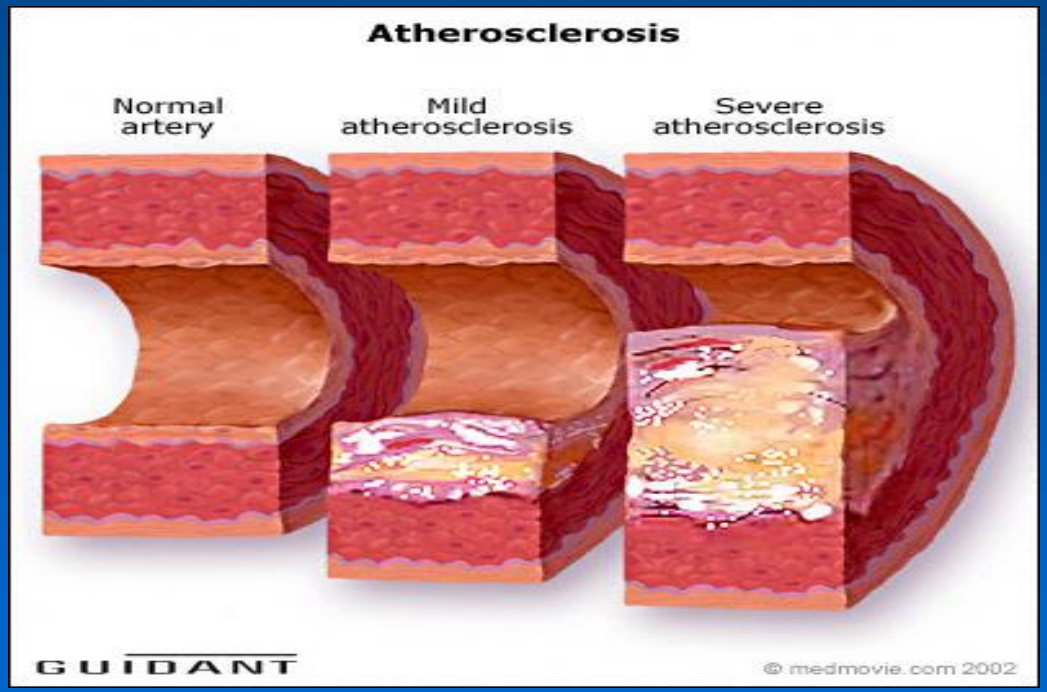
Riskkommunikation

patienter
vs
kunder…

handeln
vs
hälso- o sjukvården

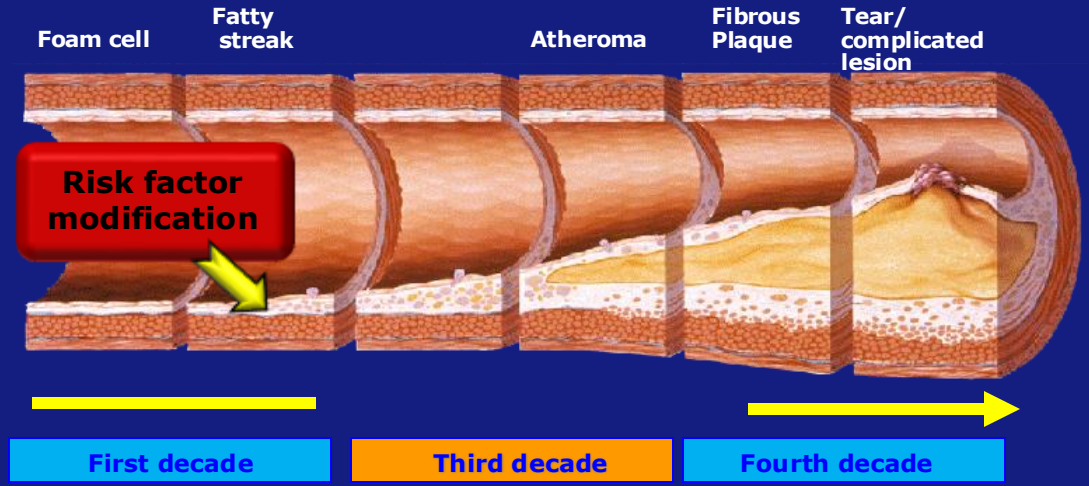
Begränsad delning

Utveckling av åderförkalkning



Begränsad delning

Åderförkalkning utvecklas under decennier, gott om tid att bromsa!



Stary HC et al. Circulation 1995;92:1355–1374

Begränsad delning

ViPViZA

VÄSTERBOTTEN INTERVENTION PROGRAMME
VISUALIZATION OF ATHEROSCLEROSIS

UMEÅ UNIVERSITET

One picture tells more than thousand words

Hypotheses:

- Imaging of silent atherosclerosis will improve risk assessment
- The understanding of an image is superior compared to statistical risk information
- Pictorial information equally effective regardless of sex and socioeconomy
- The risk message needs to be personalized, i.e. adapted to the individual's phenotype, psychological characteristics*, preferences etc

* For example: Health literacy, self-efficacy, coping strategies, anxiety

TÄNK NYTT!

DIN BILD SOM VISAR IMT OCH PLACK

Höger sida

Vänster sida

IMT visas med en färgad linje – GRÖN GUL ORANGE RÖD

Plack visas som en markering – RÖD

Näslund U et al. Published online December 3, 2018 http://dx.doi.org/10.1016/S0140-6736(18)32818-6 – Lancet 2019;393:133-42.

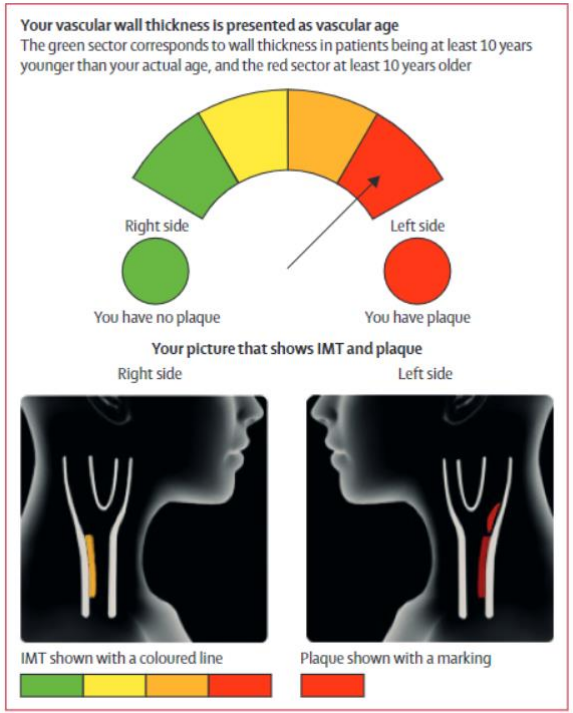


FIGURE 1. Pictorial information about ultrasound results IMT=intima media thickness. Translated from Swedish

ViPViZA

UMEÅ UNIVERSITY

One picture says more than thousand words

Intervention: Information to the participant and the primary care physician about the carotid ultrasound results in the form of pictorial and graphical representations in colour of atherosclerosis

Control: No information about ultrasound results

Begränsad delning

Visualization of asymptomatic atherosclerotic disease for optimum cardiovascular prevention (VIPVIZA): a pragmatic, open-label, randomised controlled trial

Ulf Näslund, Nawi Ng, Anna Lundgren, Eva Fhärm, Christer Grönlund, Helene Johansson, Bernt Lindahl, Bertil Lindahl, Kristina Lindvall, Stefan K Nilsson, Maria Nordin, Steven Nordin, Emma Nyman, Joacim Rocklöv, Davide Vanoli, Lars Weinehall, Patrik Wennberg, Per Wester, Margareta Norberg, for the VIPVIZA trial group

- Lancet 2019;393:133-142

Begränsad delning

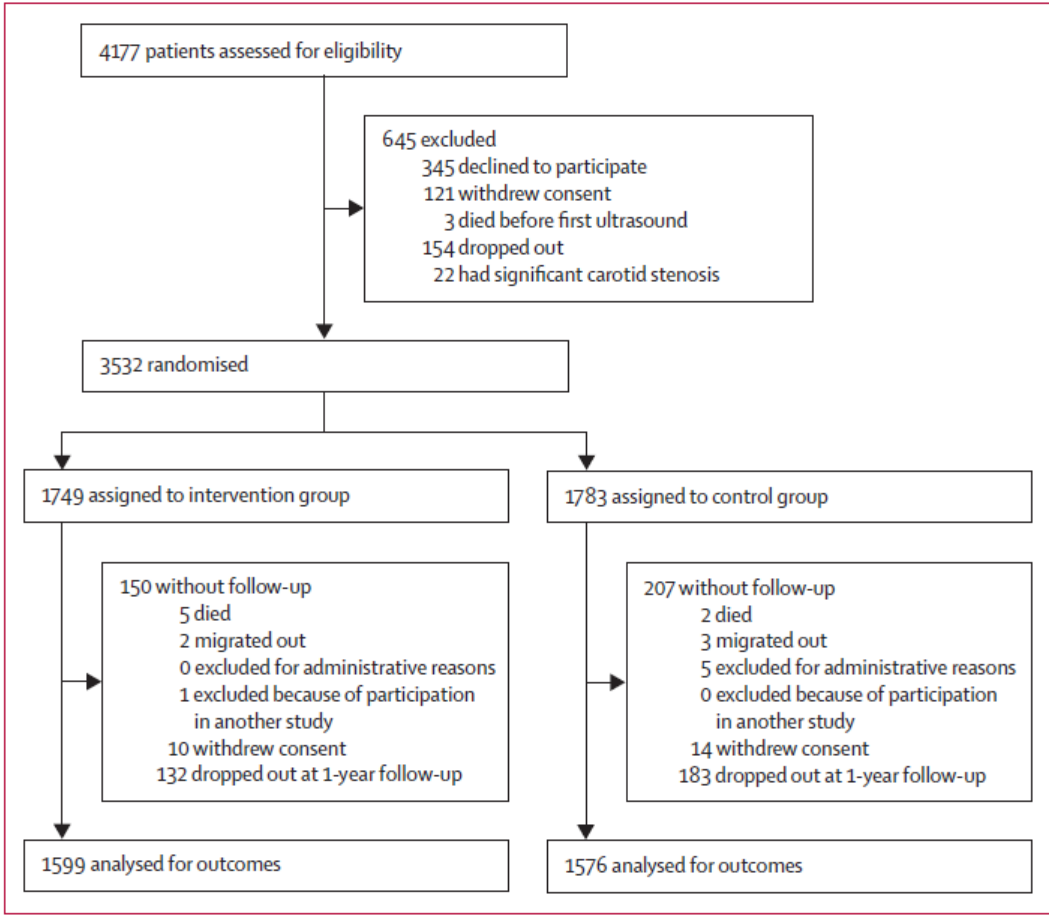
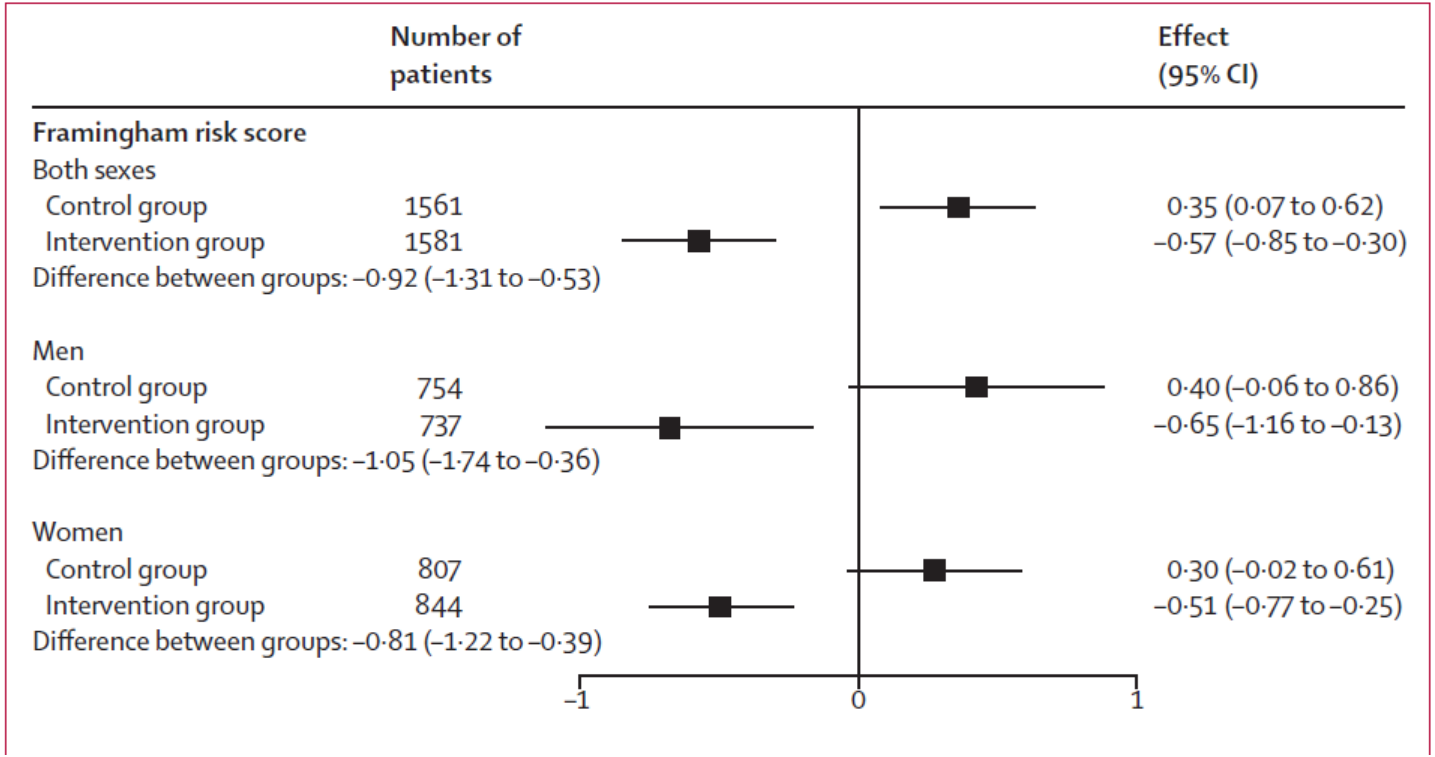


Figure 2: **Trial profile**

Begränsad delning



Begränsad delning

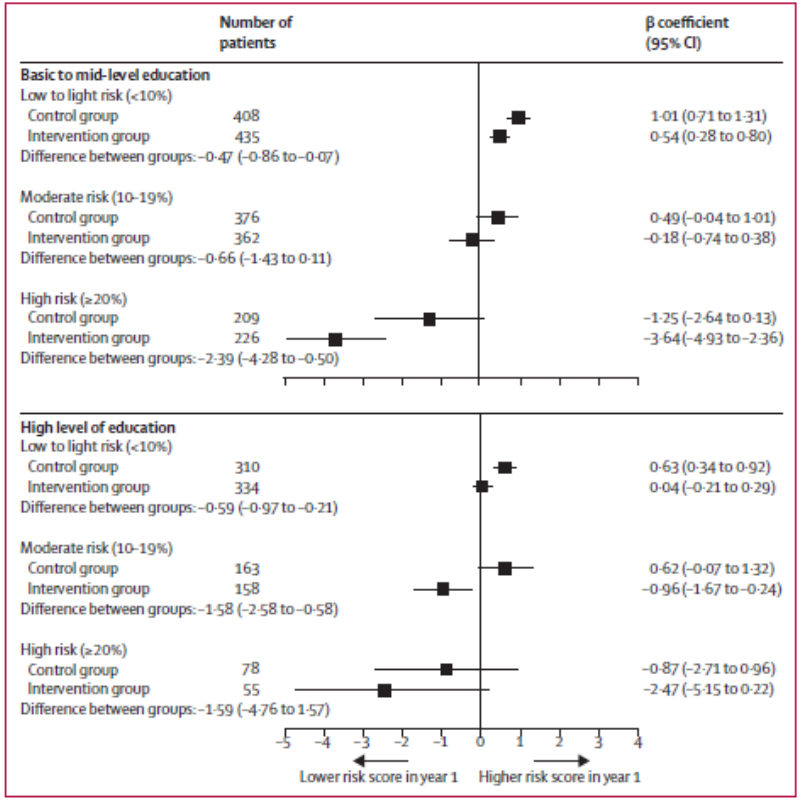


Figure 5: **Changes in Framingham risk score by baseline risk categories in the intervention and control group between baseline and 1-year follow-up stratified by education level**
Difference between groups is given with 95% CI.

Begränsad delning

Resultat 1 års uppföljning

Bättre riskfaktorbild!

Oberoende av utbildningsnivå eller kön

De med högsta risken hade största effekten

3 YEAR FU

Bengtsson A et al. Am J Prev Card 2021

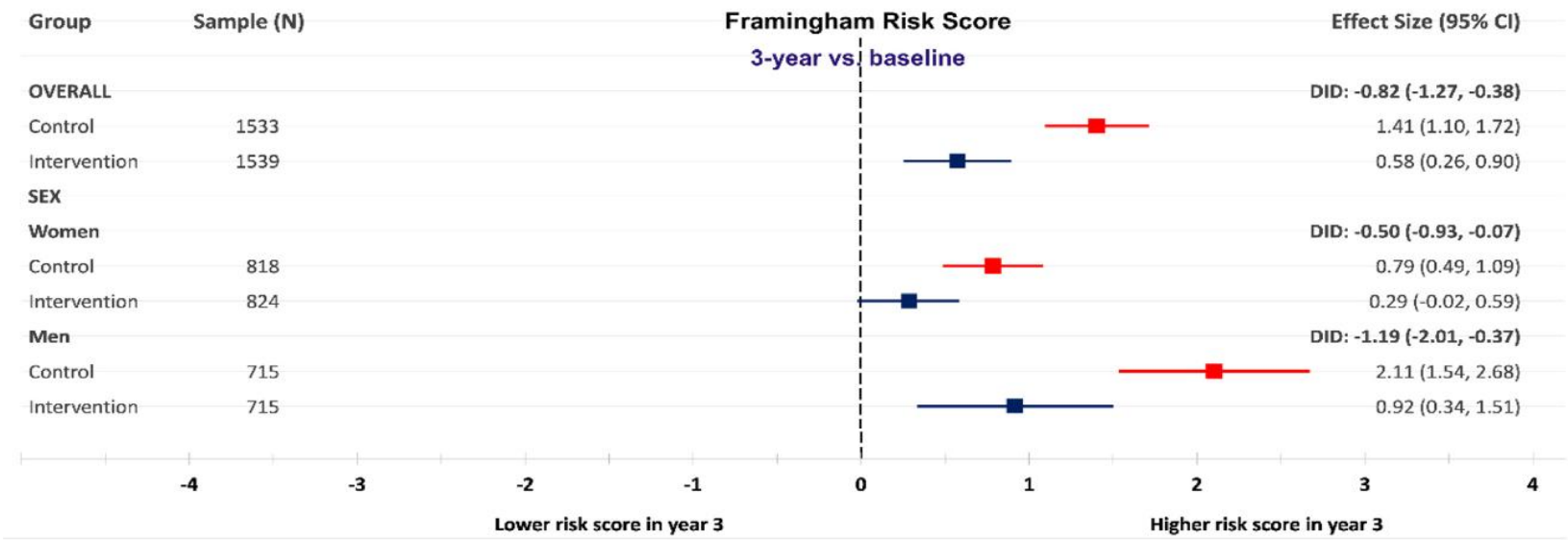


FIGURE 2 (part 1 of 4). Changes between baseline and 3-year follow-up in Framingham Risk Score in the intervention and control group, in total, by sex, education, baseline risk categories and atherosclerosis severity category.

ViPViZA

UMEÅ UNIVERSITY

3 YEAR FU – EDUCATION LEVEL

Bengtsson A et al. Am J Prev Card 2021

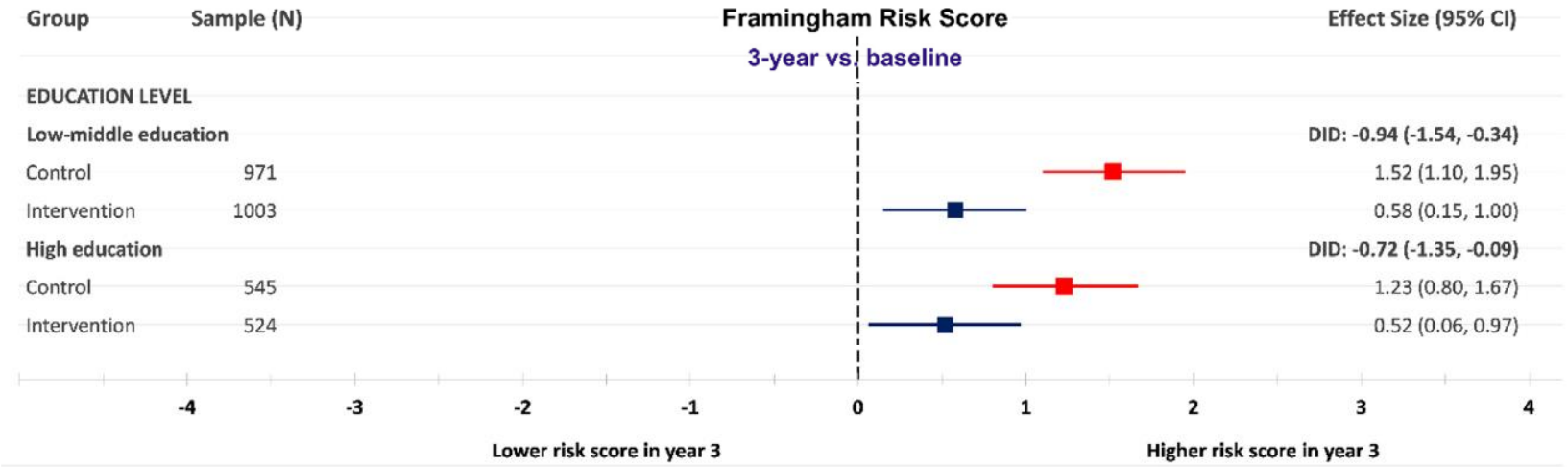


FIGURE 2 (part 2 of 4). Changes between baseline and 3-year follow-up in Framingham Risk Score in the intervention and control group, in total, by sex, education, baseline risk categories and atherosclerosis severity category.

ViPViZA

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Begränsad delning

Resultat 3 års uppföljning

Resultaten från 1 år står sig!

Vi kan bygga nya verktyg för den förebyggande behandlingen

SINGLE-ARM CROSS-OVER - STATINS

Holmberg H et al. European Heart Journal Open 2022

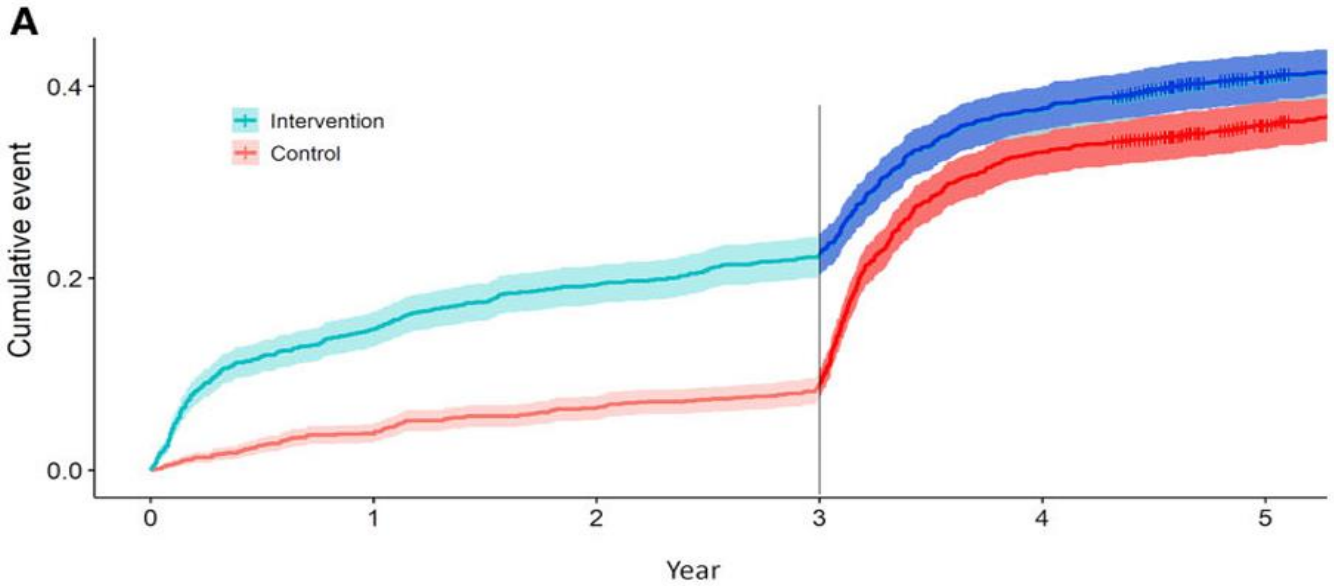


FIGURE 2A. Illustrating the temporal strata and cumulative proportion with stat in treatment.

ViPViZA

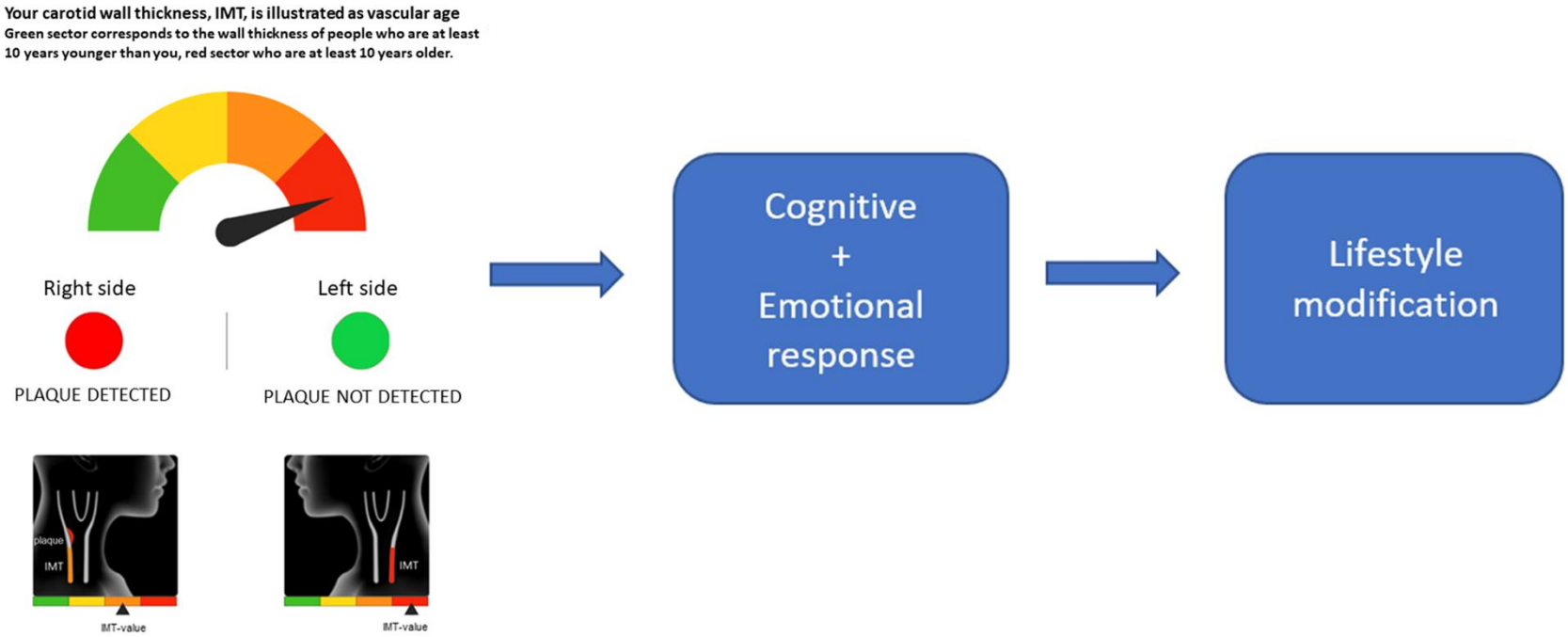
UMEÅ UNIVERSITY

VIPVIZAs intervention fungerar

1. *Vid 1 års uppföljning*
2. *Efter 3 år*
3. *Kontrollgruppen visar samma resultat efter cross-over*
4. *Effekt oberoende av kön eller utbildningsnivå*
5. *Effekt både för individer med resp utan statin vid studiestart*
6. *Liten, men signifikant effekt i väggtjocklek vid 3 år (ultraljud)*
7. *Hollands G et al. Systematisk översikt. PLOS Medicine 2022*

SOCIAL SUPPORT

- Low emotional support is directly associated with behavioral CVD risk factors, 10-year risk of CVD morbidity and mortality & carotid plaque
- Access to social support should be considered in early prevention of CVD
    - (Nordin S et al. Psychology & Health)



SCANDINAVIAN JOURNAL OF PRIMARY HEALTH CARE
https://doi.org/10.1080/02813432.2023.2178850

Taylor & Francis
Taylor & Francis Group

ORIGINAL ARTICLE

OPEN ACCESS Check for updates

Cognitive and emotional reactions to pictorial-based risk communication on subclinical atherosclerosis: a qualitative study within the VIPVIZA trial

Elin M. Andersson[a], Helene Johansson[b], Steven Nordin[a] and Kristina Lindvall[b]

Research Square

Preprints are preliminary reports that have not undergone peer review. They should not be considered conclusive, used to inform clinical practice, or referenced by the media as validated information.

From risk communication about asymptomatic atherosclerosis to cognitive and emotional reactions and lifestyle modification

Elin M. Andersson et al. Thesis 2024

Begränsad delning

BETYDELSEN AV EMOTIONELLA FAKTORER

- Avgörande var emotionella reaktioner!
- Men det var inte *vilken* känsla de upplevde som var avgörande, utan att känslopåslaget (arousal) var högt

(Elin Andersson, avhandling 2024, psykologi, Umeå)

Begränsad delning

Summerat från VIPVIZA

”En bild säger mer än tusen ord”

Oberoende av utbildningsnivå eller kön, dvs en mer jämlik effekt

Emotionell respons viktig för att bli motiverad

Utveckling av VIPVIZAs forskningsplattform

?

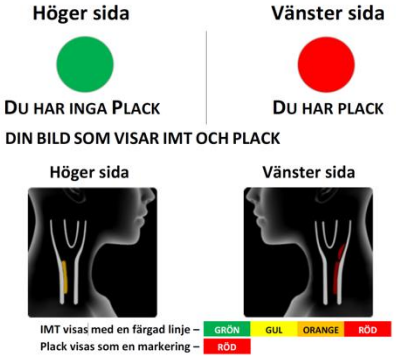
”VÄRLDENS BÄSTA PREVENTION”

Huvudkomponenter

Decentraliserad ultraljudsmätning av ateroskleros med automatiserad tolkning

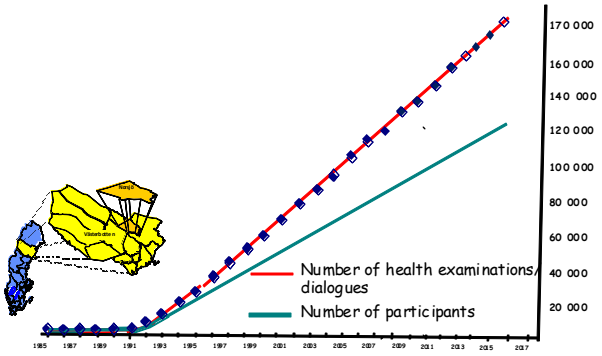
Individualiserad bildbaserad riskkommunikation

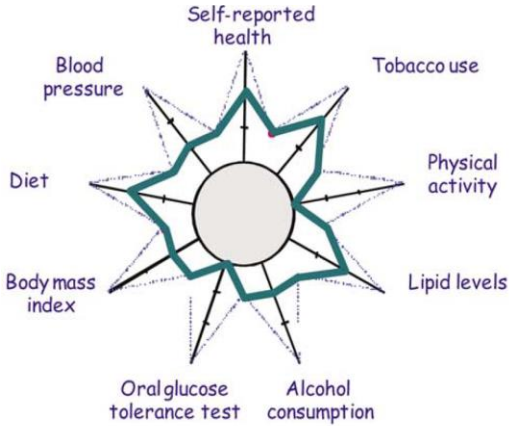
Individualiserade digitala stöd

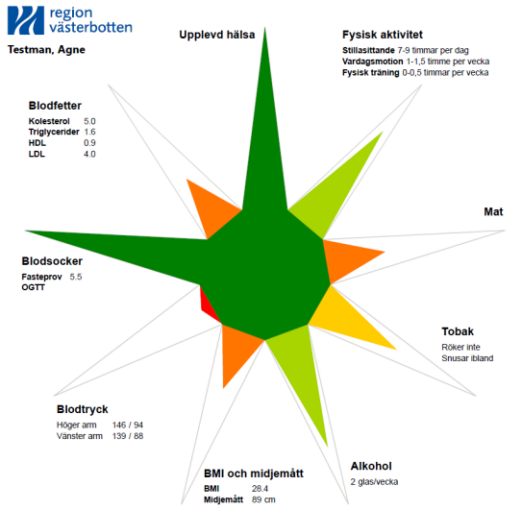


Västerbotten Intervention Programme

- Invites at 40- 50- and 60 years of age
- Integrated in primary health care
- Longitudinal database

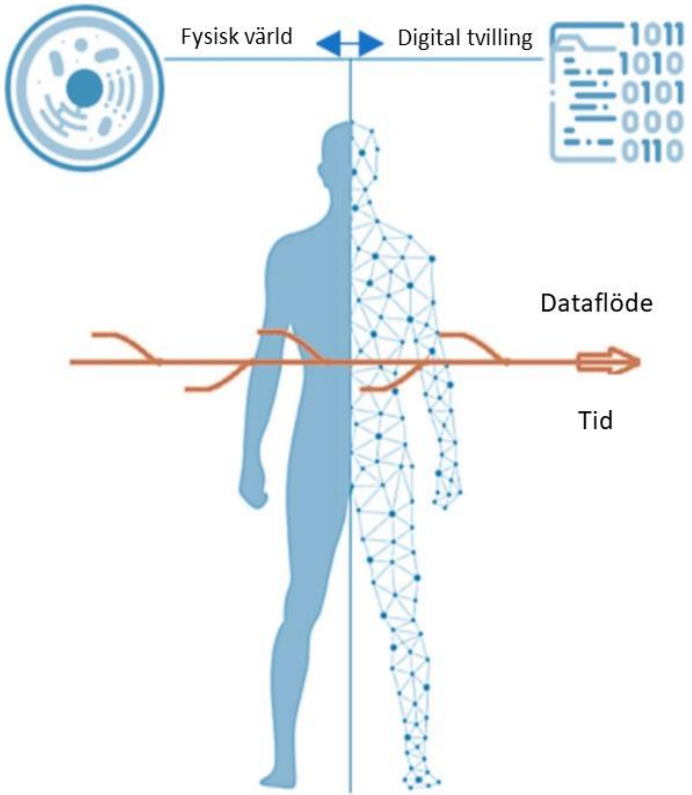






UMEÅ UNIVERSITET

FRAMTIDENS PREVENTION



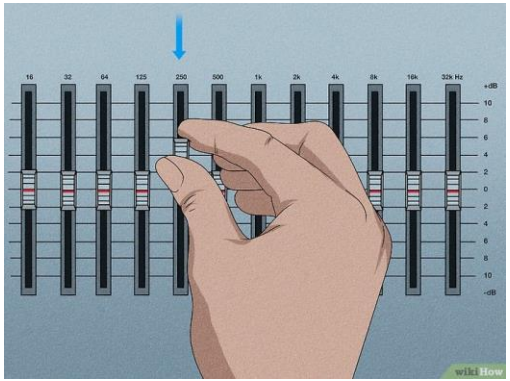
Digital twin - Digital tvilling

En virtuell "spegling" av ett objekt eller ett system som sträcker sig över dess livscykel, uppdateras av realtids-data och använder olika typer av AI för att stödja beslutsfattande

- Ett koncept som används för komplexa system som utveckling och underhåll av flygplan
- Digital tvilling för prevention?

Tabular data

Age	Weight	Smoker	sbp	Chol
50	90kg	Yes	135 mmHg	4.5 mmol/L



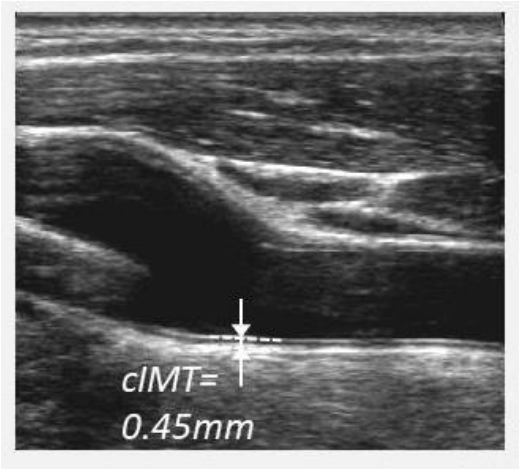
Age	Weight	Smoker	sbp	Chol
60	107kg	Yes	162 mmHg	6.1 mmol/L

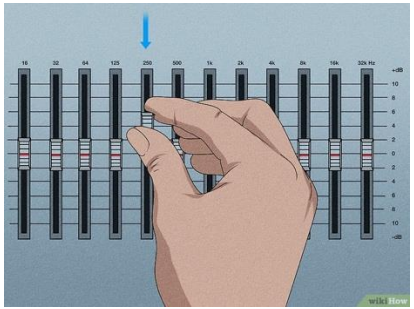
Age	Weight	Smoker	sbp	Chol
60	87kg	No	123 mmHg	3.8 mmol/L

Image-based risk communication with simulation

Increased vascular wall thickness – early sign of atherosclerosis

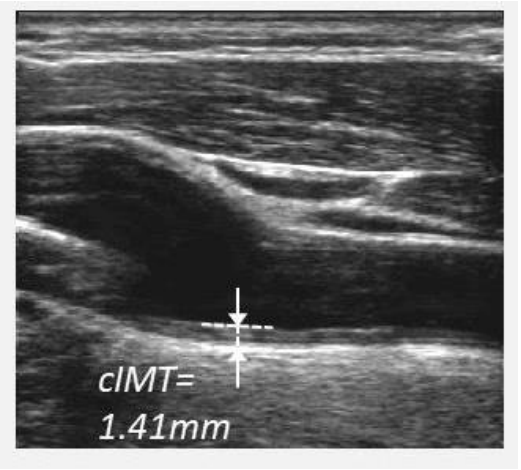
Current

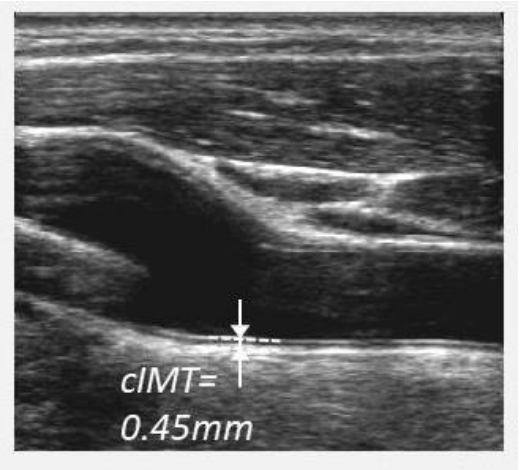




Blood pressure =
Triglycerides =
Physical activity =
Diet =
Alcohol =
Cognition =
Ultrasound =
Quality of life =
(---)

Prognosis X year





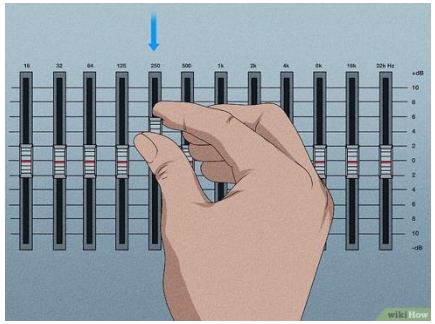
Ali H, Nyman E, Näslund U, Grönlund C, "Translation of atherosclerotic disease features onto healthy carotid ultrasound images using domain-to-domain translation", BSPC, 2023

Prognosis X year

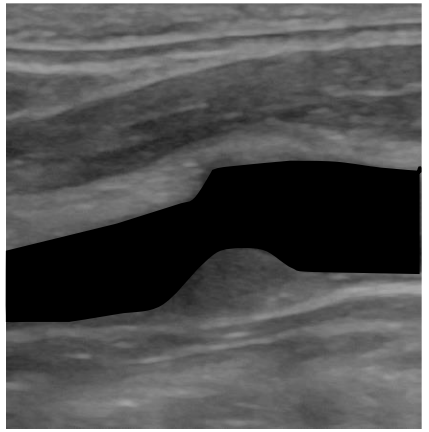
Image-based risk communication with simulation

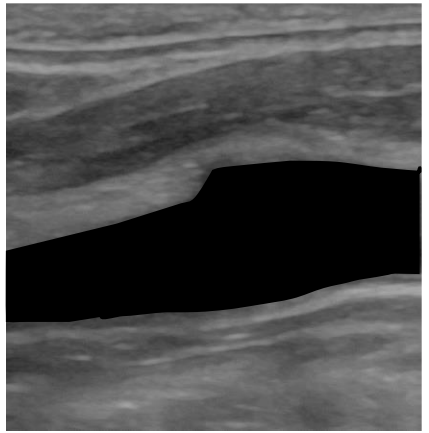
Plaque occurence – manifest atherosclerosis, but treatable!

Current

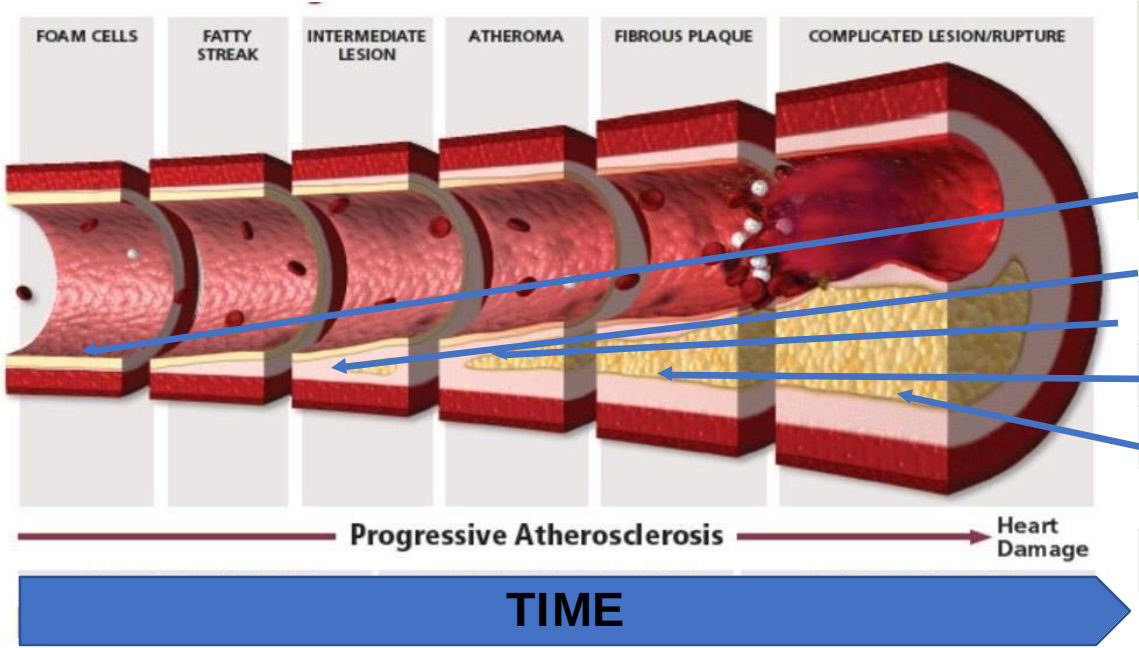


Blood pressure =
Triglycerides =
Physical activity =
Diet =
Alcohol =
Cognition =
Ultrasound =
Quality of life =
(---)





Prevention av åderförkalkning görs för sent i livet …



Age Group	Number of People (2020)	% of Global Population
<20 years	2.6 billion	33.2%
20-39 years	2.3 billion	29.9%
40-59 years	1.8 billion	23.1%
60-79 years	918 million	11.8%
80-99 years	147 million	1.9%
100+ years	0.6 million	0.01%

Ray KK et al 2022 WHF Cholesterol Roadmap- Global Heart Journal DOI: https://doi. org/10.5334/gh.1154

Begränsad delning

JOURNAL OF THE AMERICAN COLLEGE OF CARDIOLOGY VOL. 83, NO. 21, 2024
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THE PRESENT AND FUTURE

JACC STATE-OF-THE-ART REVIEW

Personalized Intervention Based on Early Detection of Atherosclerosis

JACC State-of-the-Art Review

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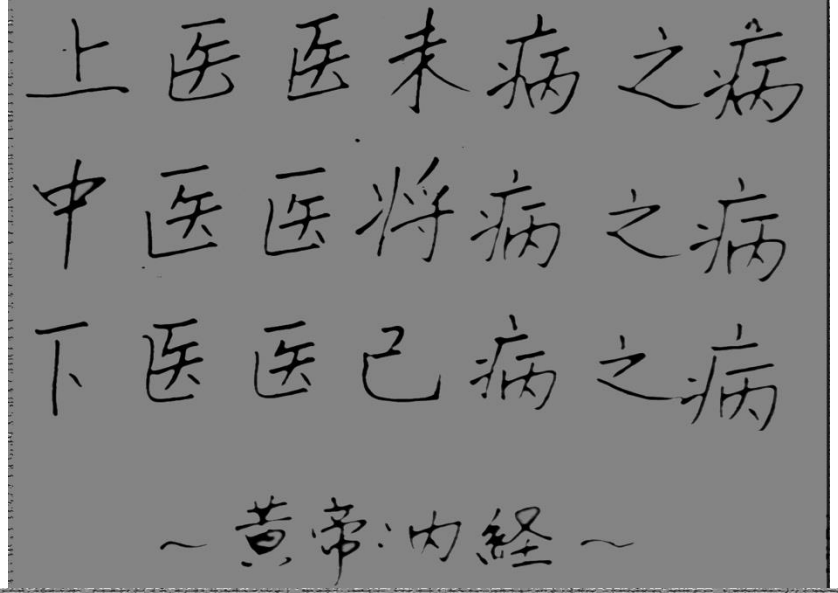
WHY PREVENTION OFTEN FAILS IN REAL LIFE: NON-ADHERENCE

Kones R. Vasc Health and Risk Management 2013
Salinas AM, et al. J Prev Med 2018

Begränsad delning



Superior doctors prevent the disease.
Mediocre doctors treat the disease
before evident. **Subclinical Atherosclerosis**
Inferior doctors treat the full-blown disease.
--Huang Dee: Nai-Ching
(2600 BC First Chinese Medical Text)