



# Overdiagnosis among apparently healthy people

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5-7 December 2019 SYDNEY

# SAVE THE DATE

**KEYNOTES:**

 BMJ Editor-in-chief, *Dr Fiona Godlee*

 Low-value care world expert,  
*Prof Adam Elshaug*


# Mii skin

<https://www.youtube.com/watch?v=eQ-rCtptKoY>

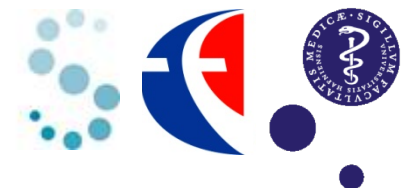


# Overdiagnosis

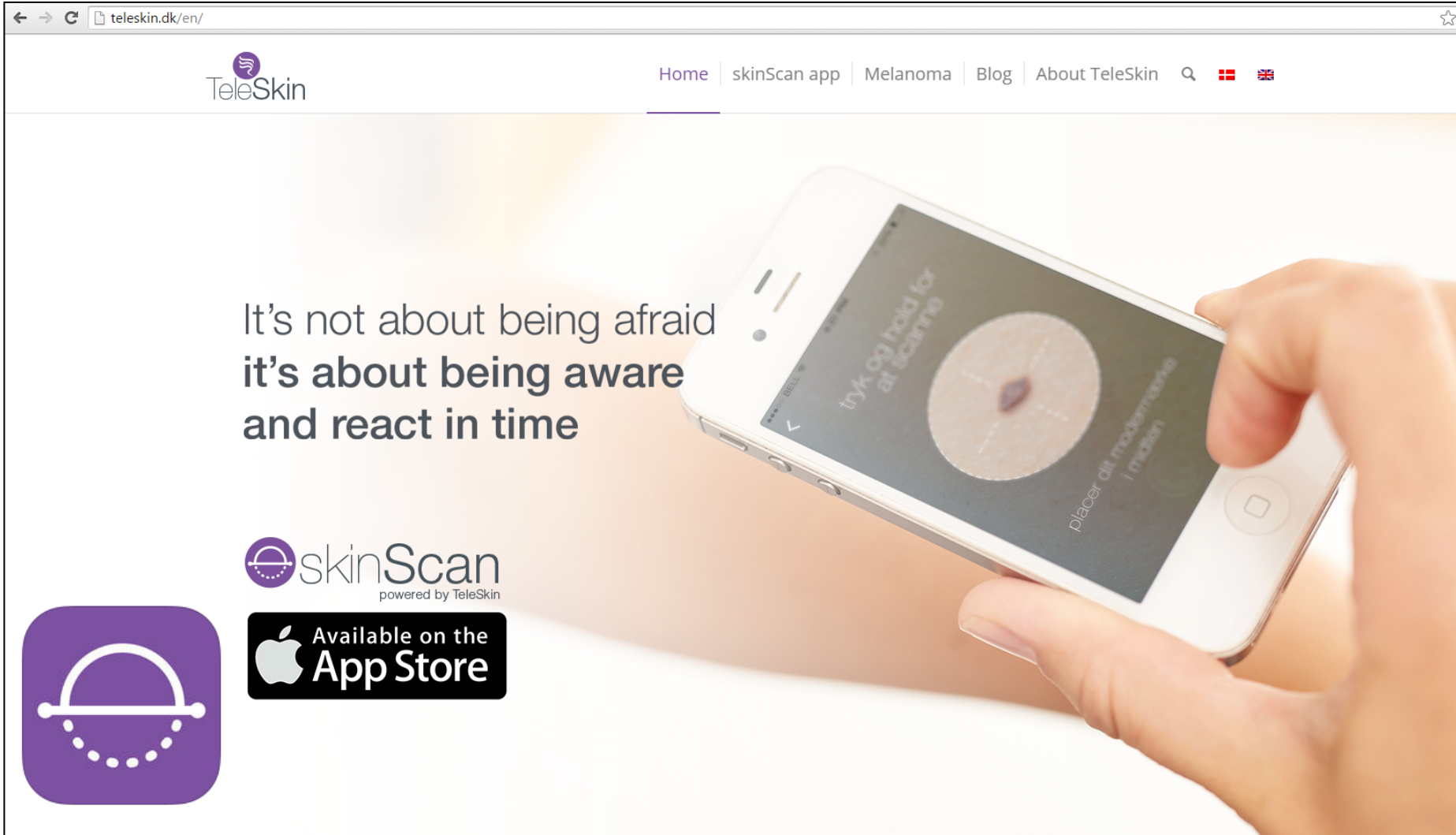
Diagnosis disconnected to prognosis

Assumptions:

- Earlier is better
- More is better



# Skin Scan



← → ↻ teleskin.dk/en/ ☆

TeleSkin

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It's not about being afraid  
**it's about being aware**  
and react in time

tryk og hold for  
at scanne

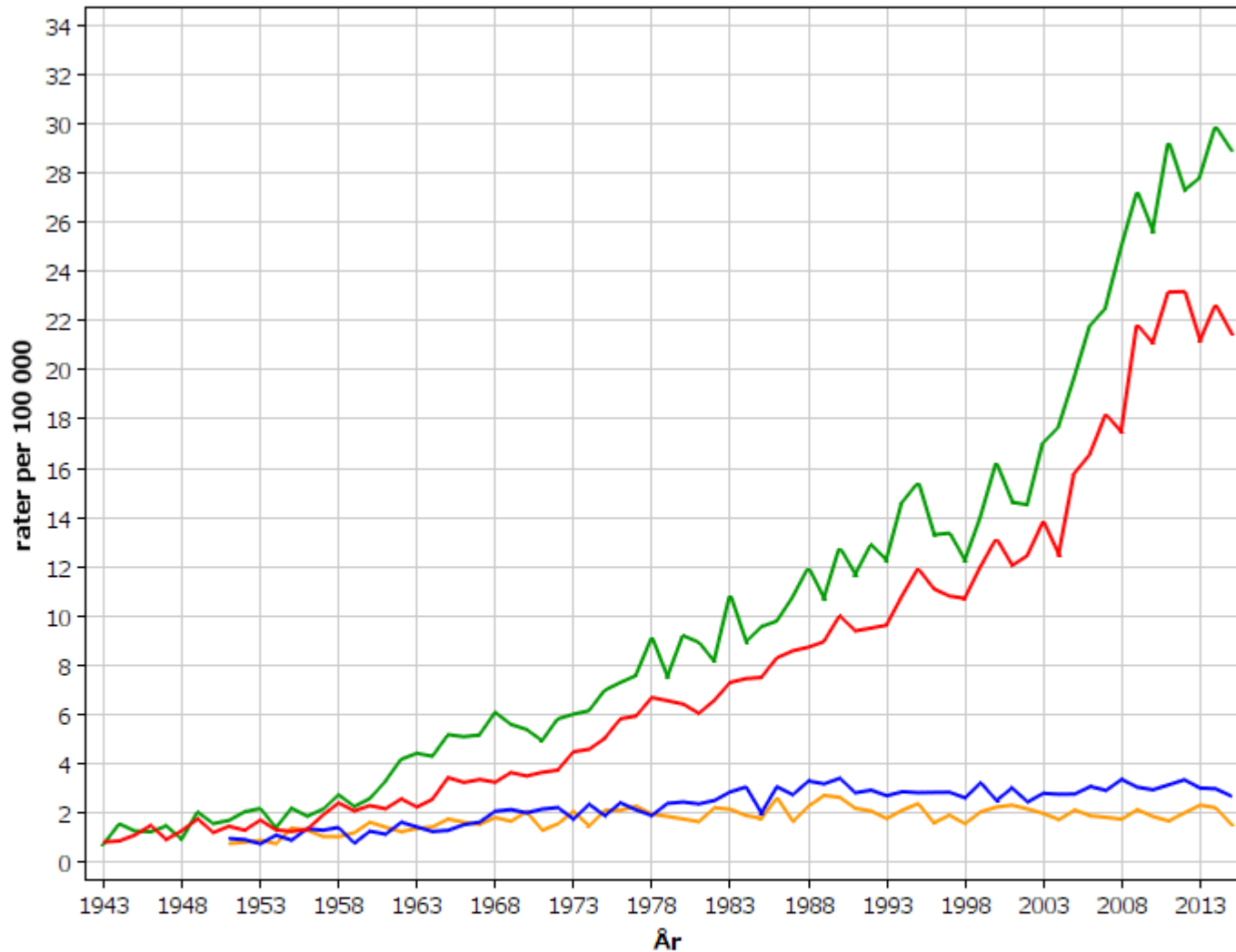
placer dit melanom  
i midten

skinScan  
powered by TeleSkin

Available on the  
App Store



# Malignant melanoma in DK

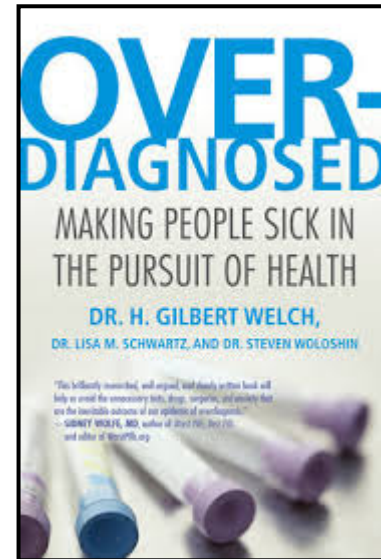


■ Incidens, Mænd    ■ Incidens, Kvinder    ■ Dødelighed, Mænd    ■ Dødelighed, Kvinder

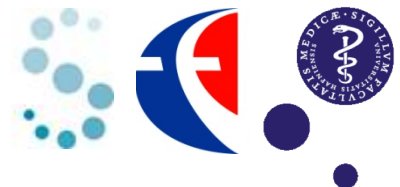
## Overdiagnosis - description

“Overdiagnosis occur when individuals are diagnosed with conditions that will never cause symptoms or death.”

“...the ultimate criterion for overdiagnosis: at the end of life, if the person never developed a problem from her condition, she has been overdiagnosed.”



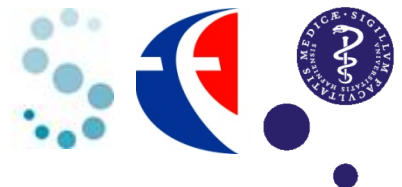
Welch, Schwartz, Woloshin. *Overdiagnosed. Making People Sick in the Pursuit of Health*, Boston: Beacon Press, 2011.



## Overdiagnosis – definition

Overdiagnosis is the diagnosis of deviations, abnormalities, risk factors, and pathologies that in themselves would never cause symptoms (this applies only to risk factors and pathology), would never lead to morbidity, and would never be the cause of death.

Brodersen J. How to conduct research on overdiagnosis. The European Journal of General Practice, 2017.





## Overdiagnosis: what it is and what it isn't

John Brodersen,<sup>1,2</sup> Lisa M Schwartz,<sup>3</sup> Carl Heneghan,<sup>4</sup>  
Jack William O'Sullivan,<sup>4</sup> Jeffrey K Aronson,<sup>4</sup>  
Steven Woloshin<sup>3</sup>

10.1136/ebmed-2017-110886

<sup>1</sup>Centre of Research & Education in General Practice, Department of Public Health, University of Copenhagen, Faculty of Health Sciences, Copenhagen, Denmark

<sup>2</sup>Region Zealand, Primary Health Care Research Unit

<sup>3</sup>Center for Medicine and the Media, The Dartmouth Institute for Health Policy and Clinical Practice, Dartmouth Medical School, Lebanon, New Hampshire, USA

<sup>4</sup>Centre for Evidence-Based Medicine, Nuffield

Why then, can one desire too much of a good thing?

William Shakespeare,  
*As You Like It* (1600)

Rosalind's question, as she is about to marry Orlando, is purely rhetorical—she thinks that one cannot desire too much of a good thing. Nevertheless, trite though it may be, it is true that one can sometimes have it. It is certainly true of healthcare and has been referred to as 'too much medicine',<sup>1</sup> although because of potential confusion with 'too much medication' a better term might be 'too much healthcare'. This includes too much screening of asymptomatic individuals, too much investigation of those with symptoms, too much reliance on biomarkers, too many quasi-diseases, too much

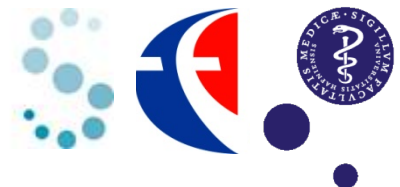
cases commercial incentives, has further propagated overdiagnosis. The more tests you order, the more likely you are to diagnose a 'disease'.<sup>5 6</sup> This is particularly problematic when there is little evidence that early detection improves patient outcomes. Consider the example of thyroid cancer in South Korea. From 1999 to 2008, the incidence of thyroid cancer increased 6.4-fold,<sup>7</sup> but 95% of these cancers were small (<20mm), and they were detected mainly through screening.<sup>7</sup> The mortality from thyroid cancer remained essentially unchanged over the same period.<sup>7</sup> Use of advanced imaging also leads to overdiagnosis by finding incidentalomas—'surprise' abnormalities unrelated to the original reason for doing the test, for example, when a chest CT done to follow-up on a pulmonary nodule detects a small adrenal



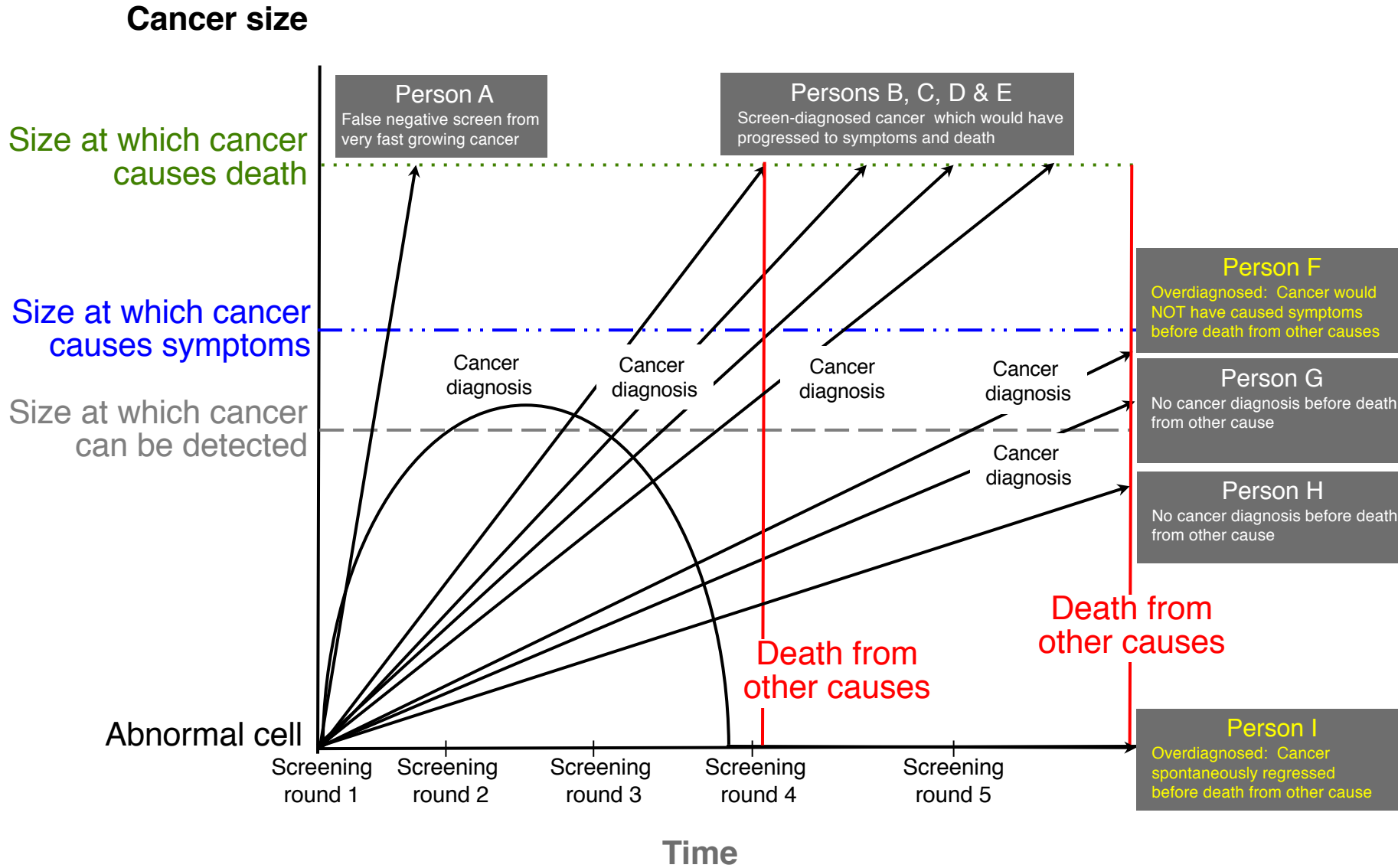
# Overdiagnosis

Broadly, overdiagnosis means making people patients unnecessarily, by identifying problems that were never going to cause harm or by medicalizing ordinary life experiences through expanded definitions of diseases.

Brodersen, J., et al. (2018). "Overdiagnosis: what it is and what it isn't." BMJ Evidence-Based Medicine **23**(1): 1-3.

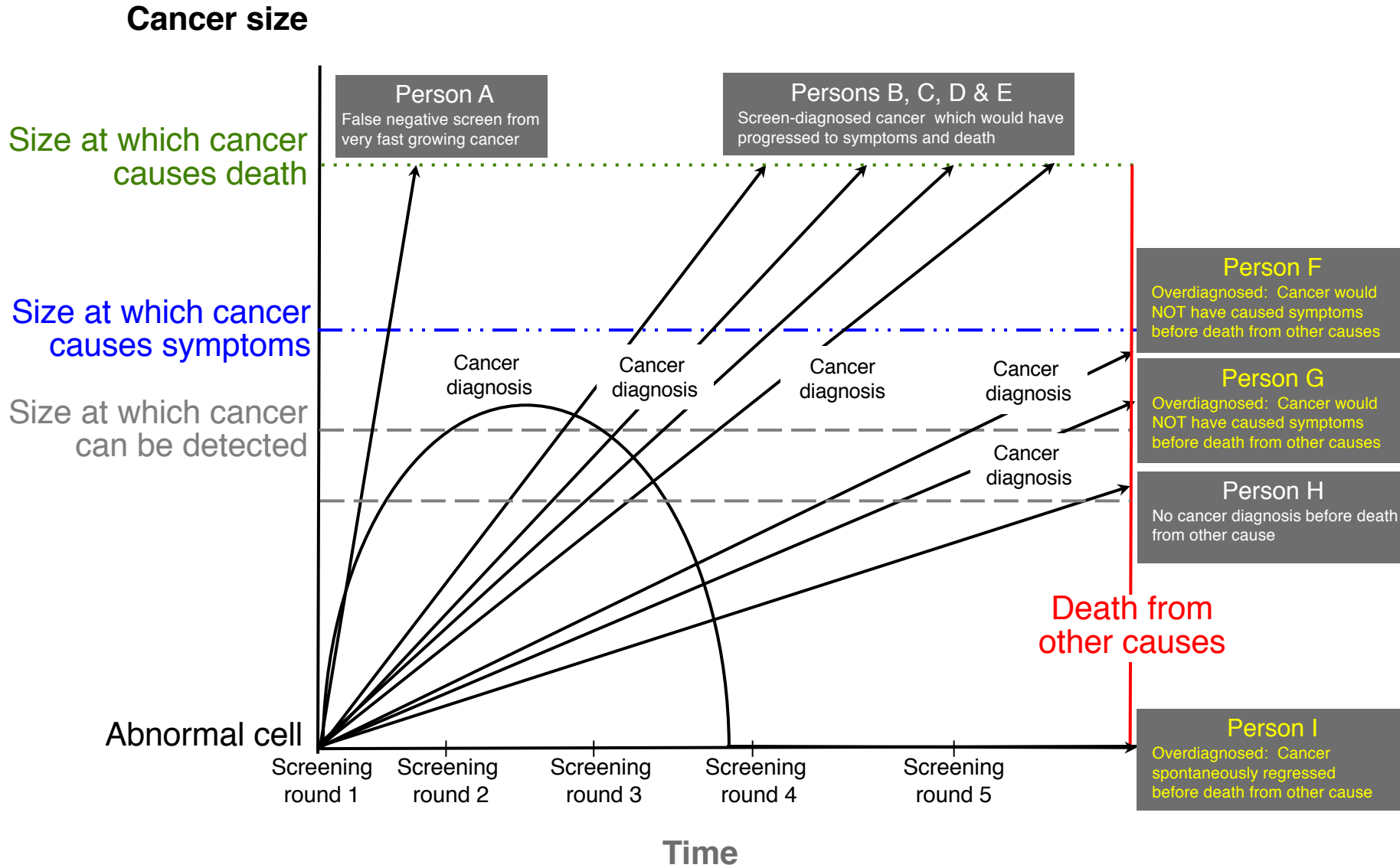


# Model: what happens at cancer screening?



Modified version: Brodersen, Schwartz, Woloshin. Overdiagnosis: How cancer screening can turn indolent pathology into illness. *APMIS* 122 (8):683-689, 2014.

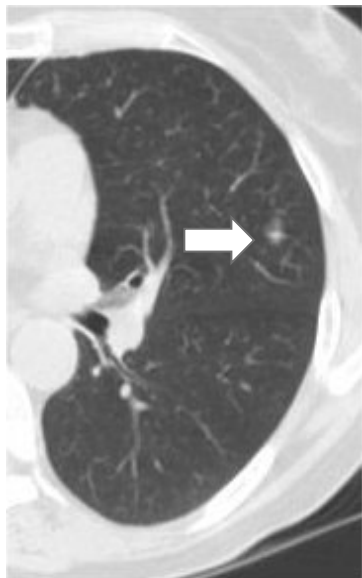
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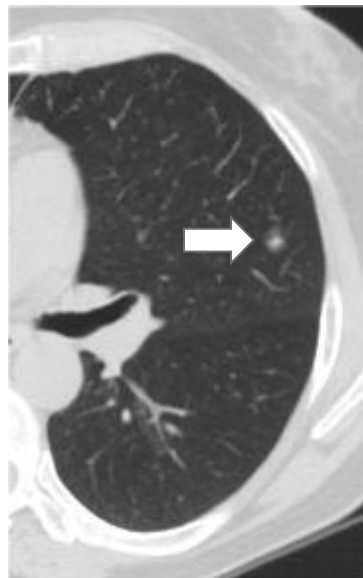
Modified version: Brodersen, Schwartz, Woloshin. *Overdiagnosis: How cancer screening can turn indolent pathology into illness.* *APMIS* 122 (8):683-689, 2014.

# Lung cancer screening with CT

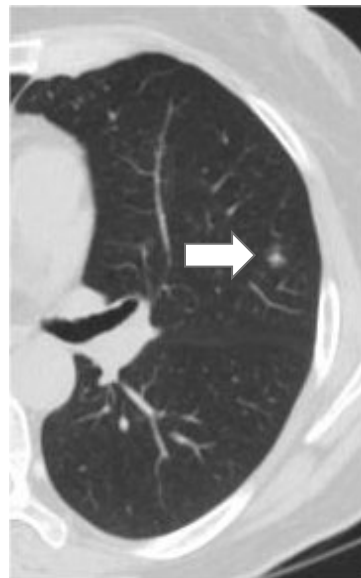
17.08.05



17.11.05



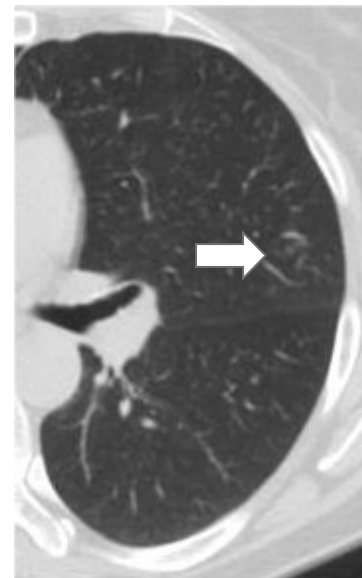
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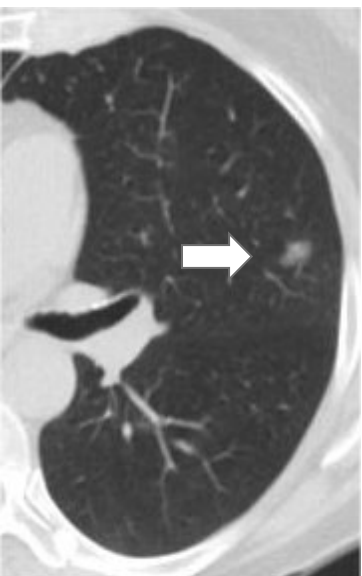
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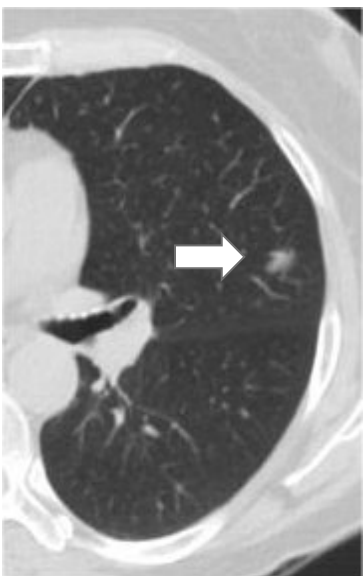
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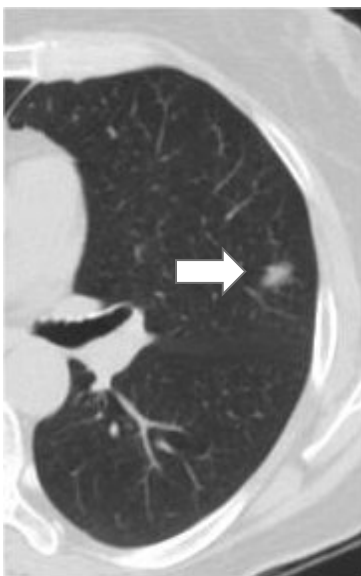
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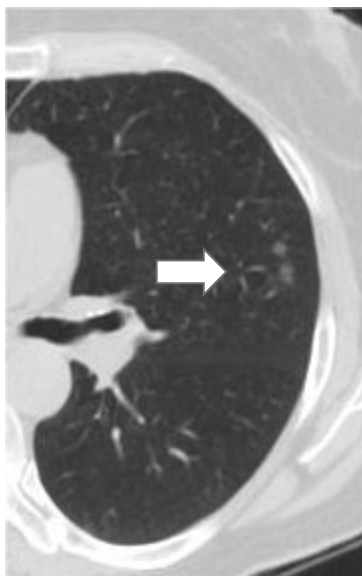
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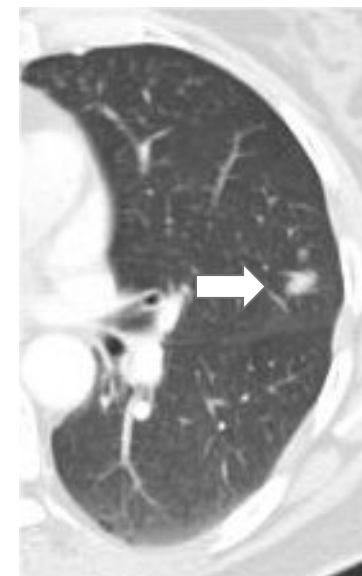
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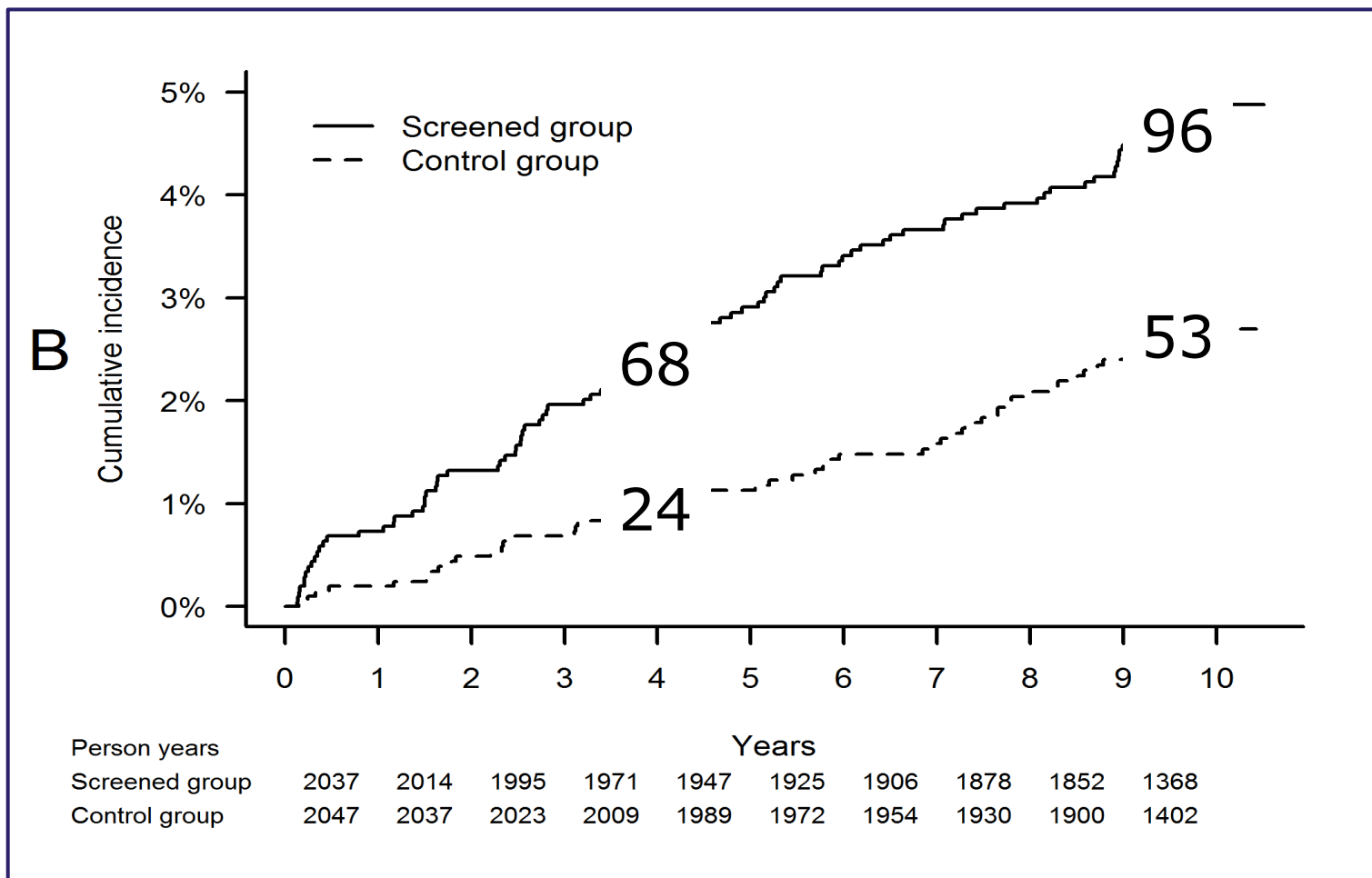
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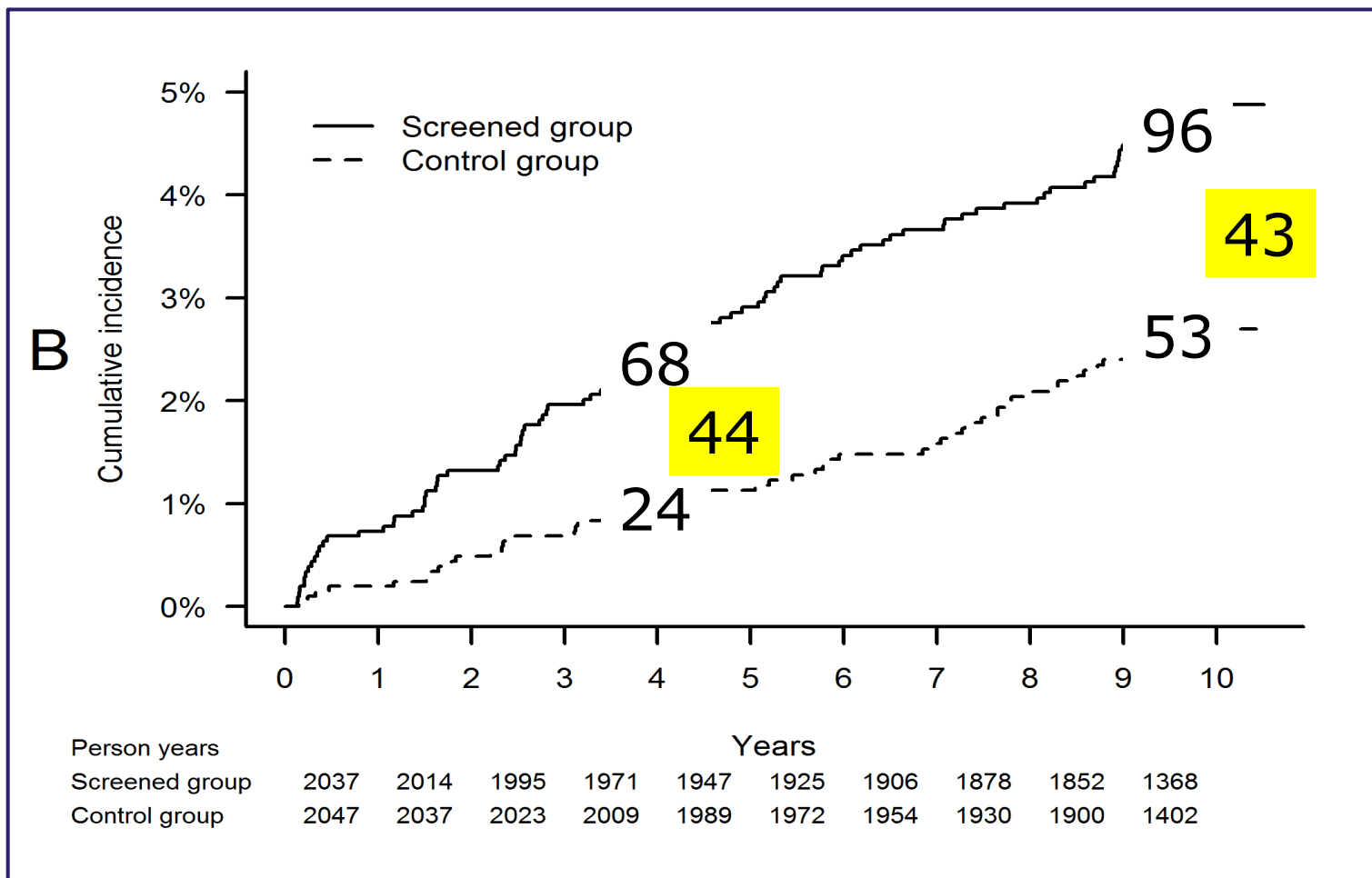
# Overdiagnosis in DLCST at 5 year follow-up



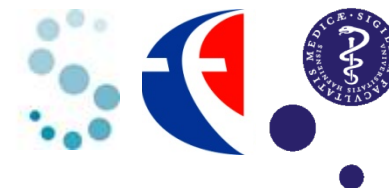
Wille et al. Results of the Randomized Danish Lung Cancer Screening Trial with Focus on High-risk Profiling. *Am.J Respir.Crit Care Med.*, 2015.



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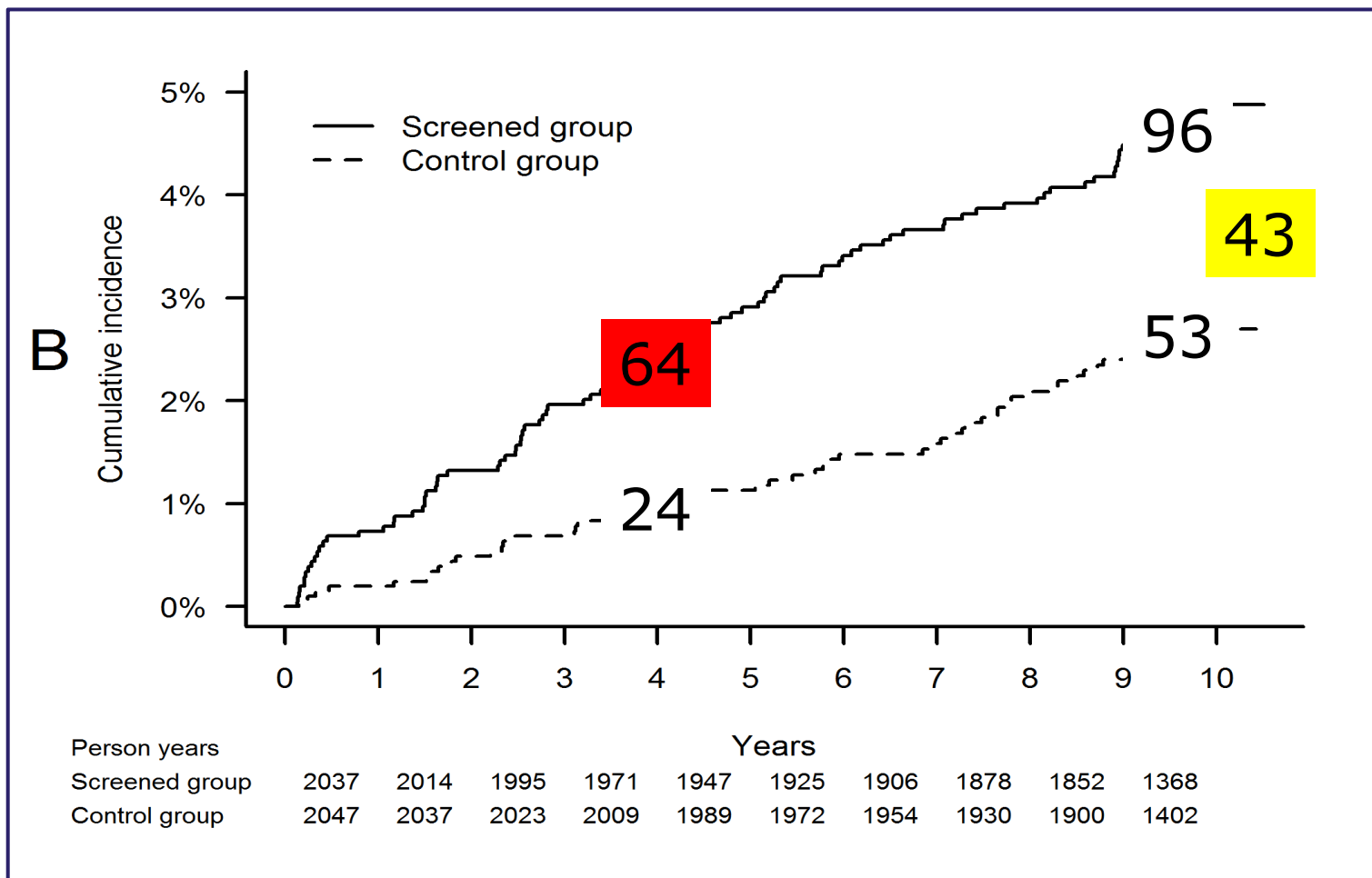


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# Overdiagnosis in DLCST at 5 year follow-up



Wille et al. Results of the Randomized Danish Lung Cancer Screening Trial with Focus on High-risk Profiling. *Am.J Respir.Crit Care Med.*, 2015.





# Overdiagnosis in DLCST at 5 year follow-up

Screening detected overdiagnosis:

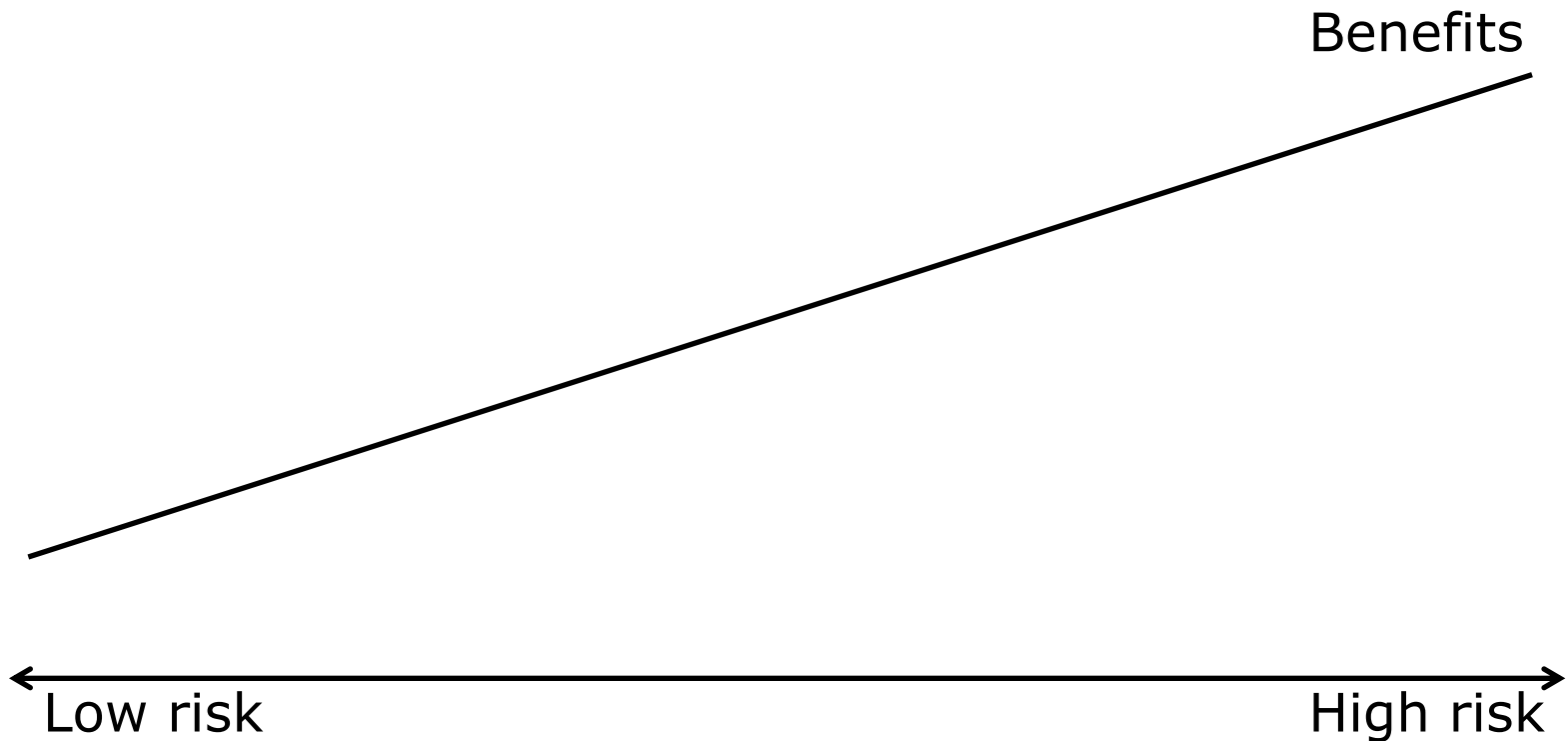
$$43/64 = \mathbf{67.2\%}$$

[95% CI; 37.1%-95.4%]

Heleno, Siersma, Brodersen. Estimation of overdiagnosis of lung cancer in low-dose computed tomography screening. *JAMA Internal Medicine*, 2018.



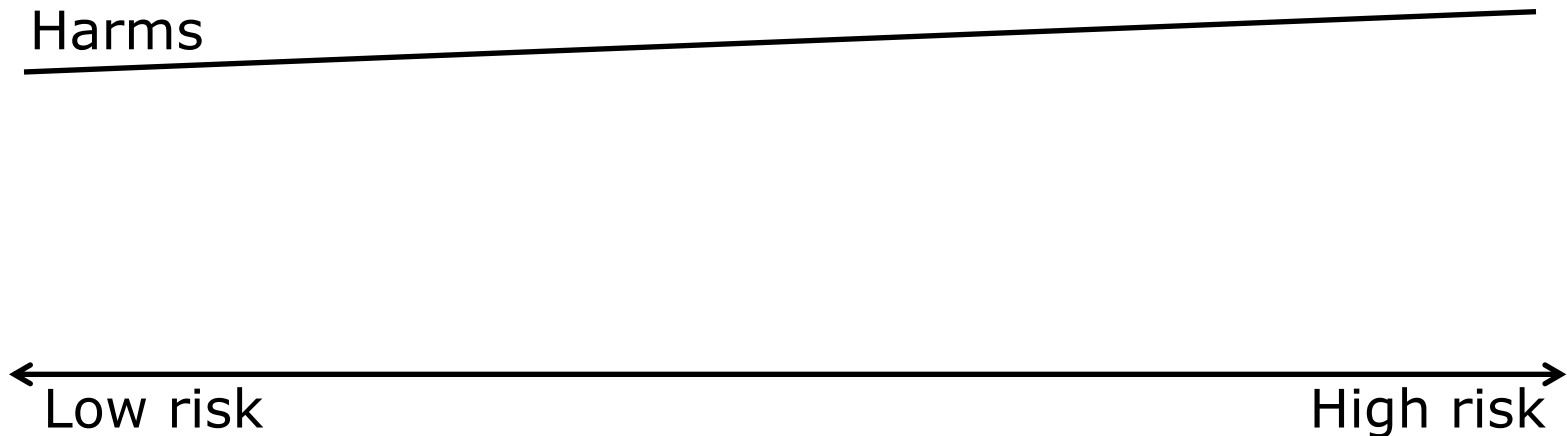
# Any medical intervention: Balance of benefits & harms



Glasziou & Irwig (1995). "An evidence based approach to individualising treatment." *BMJ* **311**(7016): 1356-1359.



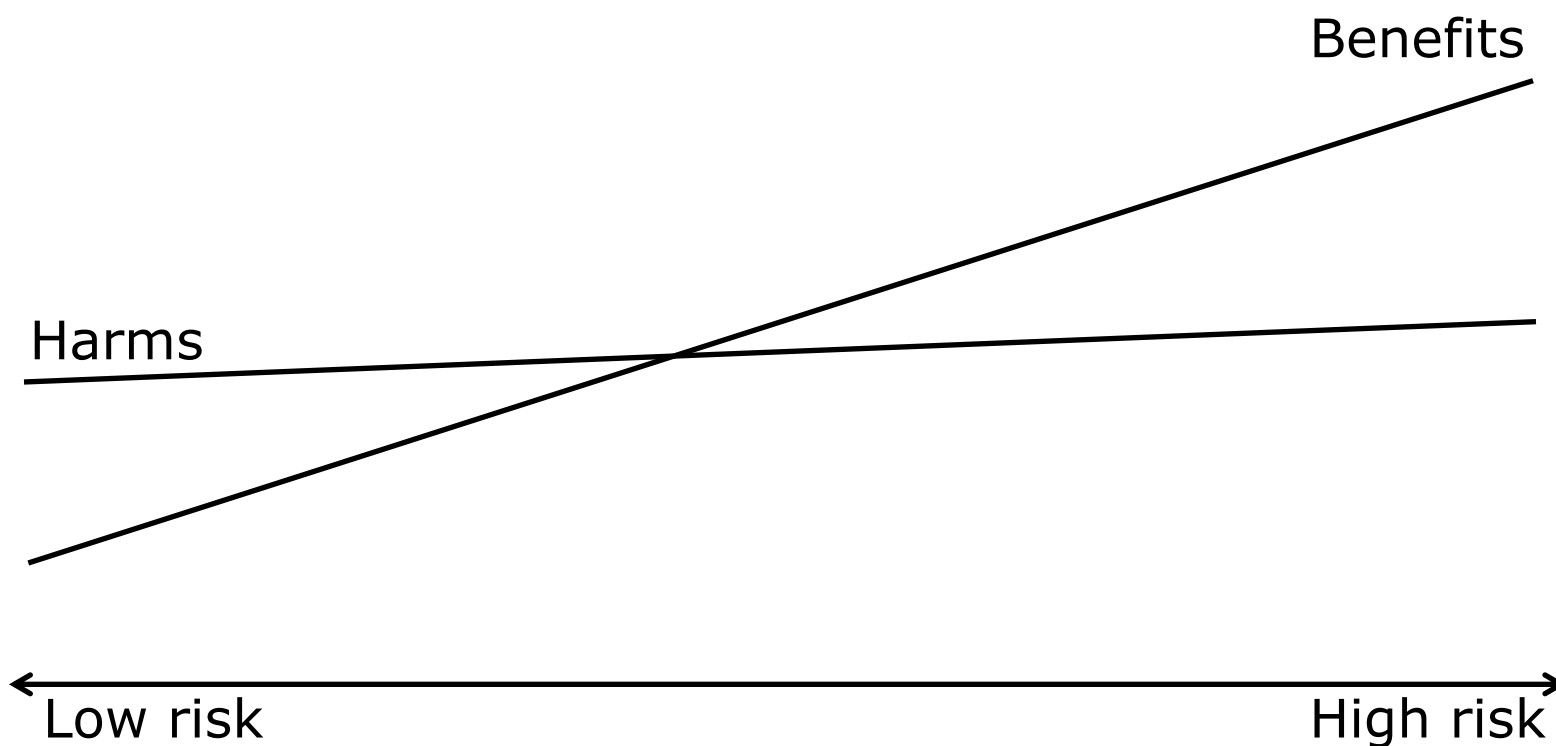
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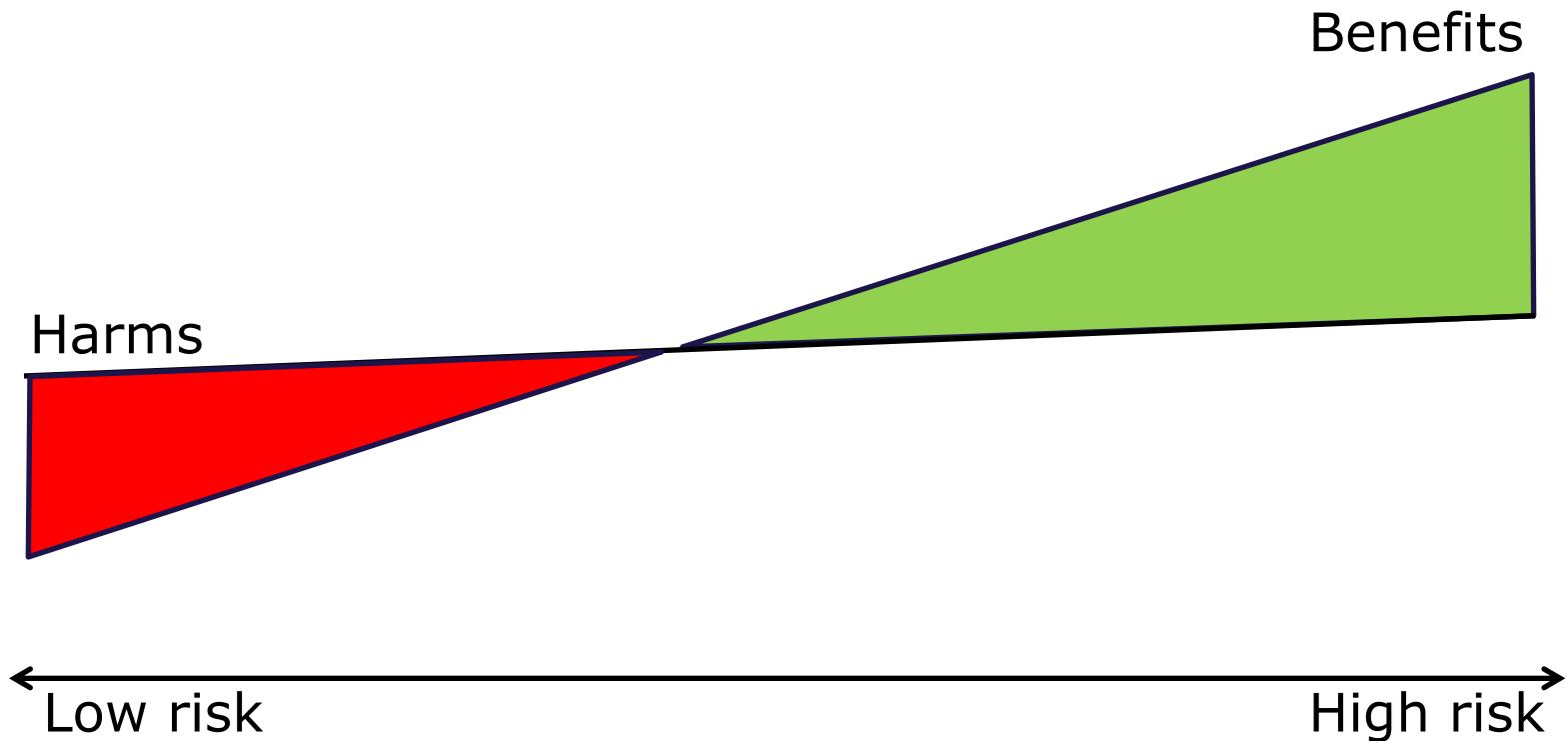
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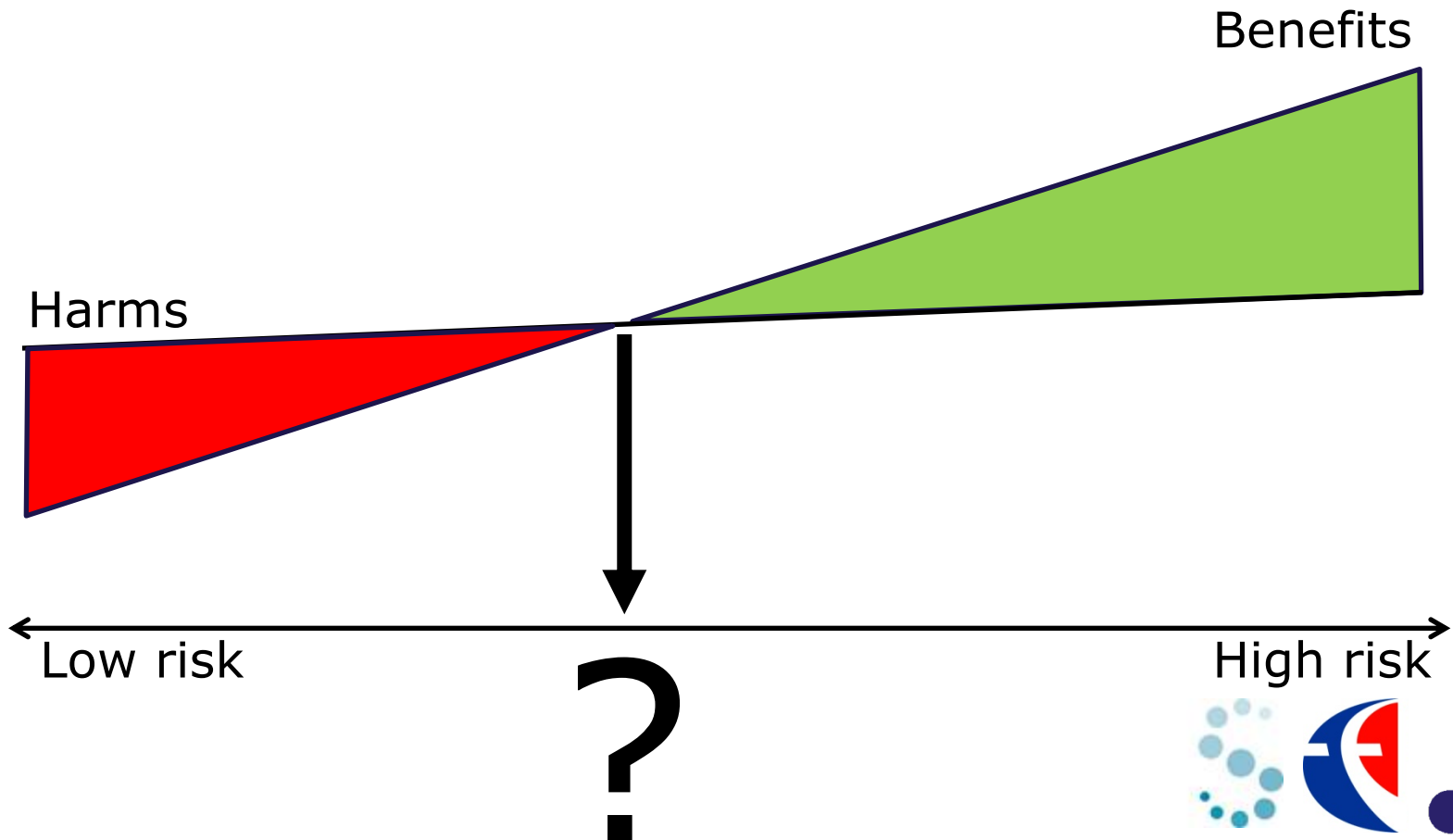
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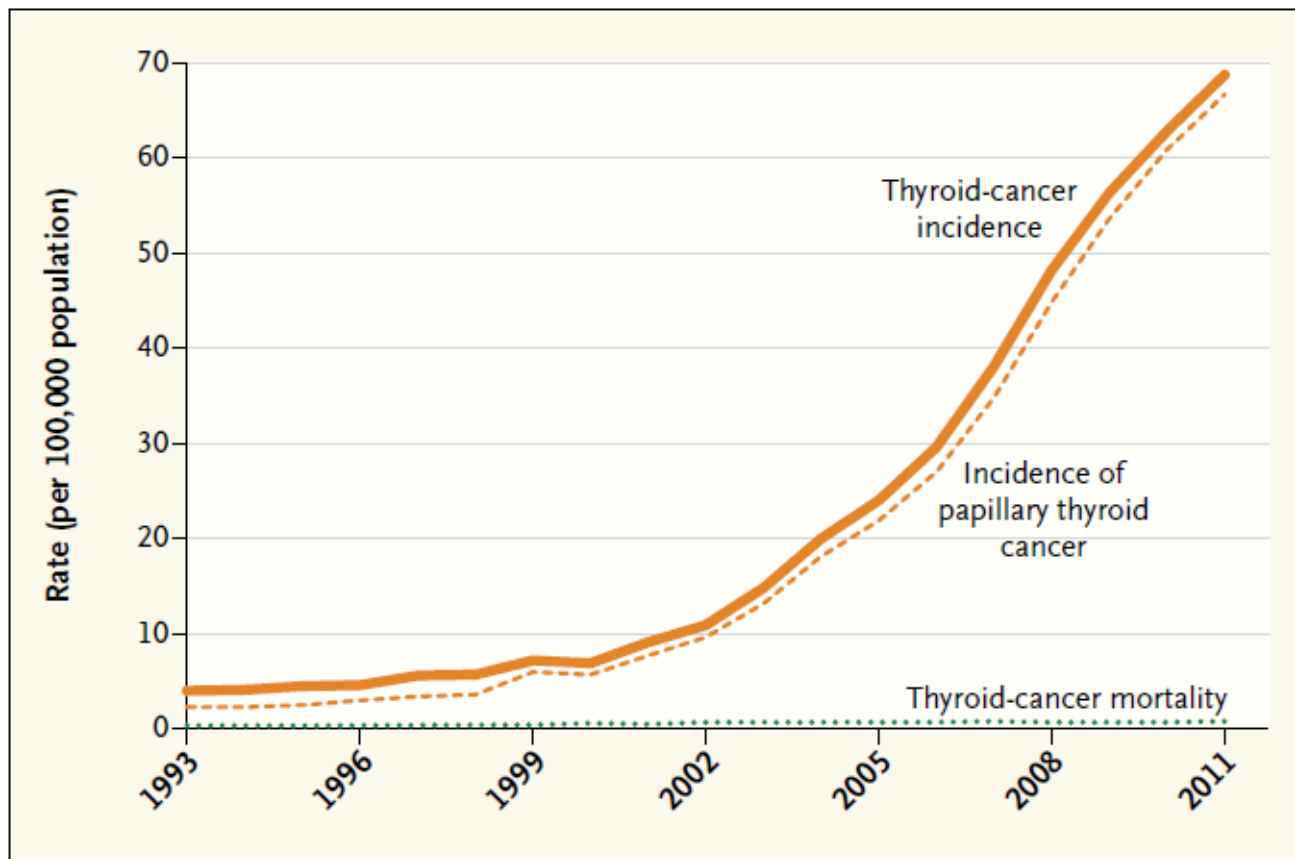
Glasziou & Irwig (1995). "An evidence based approach to individualising treatment." *BMJ* **311**(7016): 1356-1359.



# Any medical intervention: Balance of benefits & harms



# Thyroid cancer in South Korea



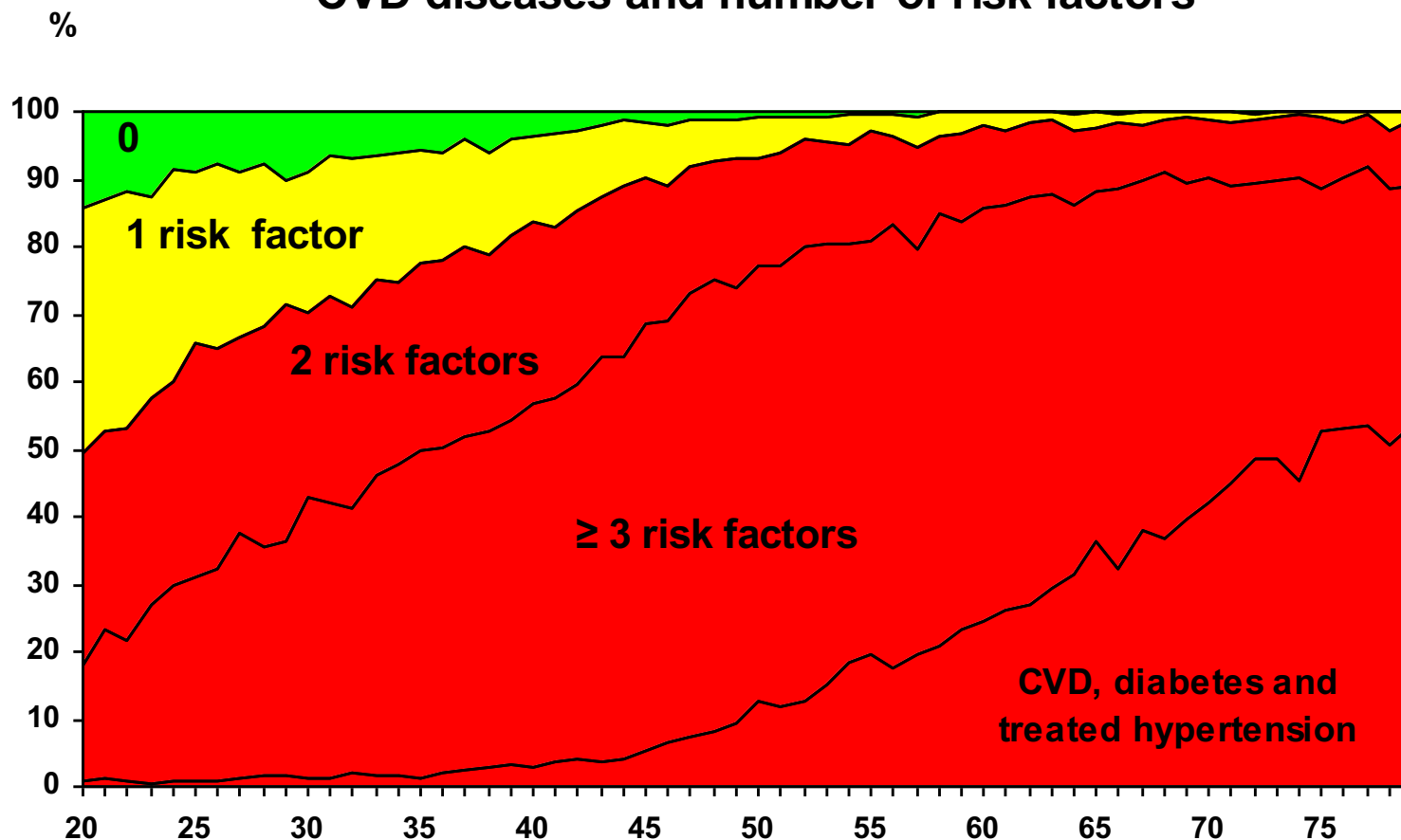
Thyroid-Cancer Incidence and Related Mortality in South Korea, 1993–2011.

Ahn HS, Kim HJ, Welch HG. Korea's thyroid-cancer "epidemic"-- screening and overdiagnosis. *N Engl J Med*. 2014;371(19):1765-7.



# Cardio-vascular Overdiagnosis

## CVD diseases and number of risk factors



H. Petursson et al. Can individuals with a significant risk for cardiovascular disease be adequately identified by combination of several risk factors? *J.Eval.Clin.Pract.* 15 (1):103-109, 2009.





# Survivors stories drive screening towards more overdiagnosis

