

SOCIAL ULIGHED I  
OVERLEVELSEN EFTER  
BRYSTKRÆFT

Signe Benzon Larsen

# Disposition

- Social position
- Social position og brystkræft
- Årsager til sociale forskelle
- Livsstil og overlevelse





# Social position

# Social position

- Uddannelse
- Indkomst
- Tilknytning til arbejdsmarked
- Erhverv
- Civil status
- Størrelse på bolig
- ...



# Social position

- Social position påvirker **ikke** direkte risikoen for kræft og overlevelsen efterfølgende
- Forskel i eksponering mellem sociale grupper



# Social position

EUROPEAN JOURNAL OF CANCER 44 (2008) 2074–2085



available at [www.sciencedirect.com](http://www.sciencedirect.com)



journal homepage: [www.ejconline.com](http://www.ejconline.com)



## Social inequality in incidence of and survival from cancer in a population-based study in Denmark, 1994–2003: Summary of findings

Susanne Oksbjerg Dalton<sup>a,\*</sup>, Joachim Schüz<sup>a</sup>, Gerda Engholm<sup>b</sup>, Christoffer Johansen<sup>a</sup>, Susanne Krüger Kjær<sup>a</sup>, Marianne Steding-Jessen<sup>a</sup>, Hans H. Storm<sup>b</sup>, Jørgen H. Olsen<sup>a</sup>

<sup>a</sup>Institute of Cancer Epidemiology, Danish Cancer Society, Strandboulevarden 49, DK-2100 Copenhagen Ø, Denmark

<sup>b</sup>Department of Cancer Prevention and Documentation, Danish Cancer Society, Strandboulevarden 49, DK-2100 Copenhagen Ø, Denmark

### ARTICLE INFO

#### Article history:

Received 6 June 2008

Received in revised form

10 June 2008

Accepted 16 June 2008

Available online 30 July 2008

#### Keywords:

Socioeconomic position

Denmark

Incidence

Survival

Cancer

### ABSTRACT

The purpose of this nationwide, population register-based study was to describe variations in cancer incidence and survival by social position in a social welfare state, Denmark, on the basis of a range of socioeconomic, demographic and health-related indicators. Our study population comprised all 3.22 million Danish residents born in 1925–1973 and aged  $\geq 30$  years, who were followed up for cancer incidence in 1994–2003 and for survival in 1994–2006, yielding 147,973 cancers. The incidence increased with lower education and income, especially for tobacco- and other lifestyle-related cancers, although for cancers of the breast and prostate and malignant melanoma the association was inverse. Conversely there was a general increase in incidence among early retirement pensioners, persons living in rented housing and those living in the smallest dwellings. Also incidence rates were generally higher in persons living alone compared to those living with a partner and in the capital area compared to the rural areas. Social inequality in the prognosis of most cancers was observed, despite the equal access to health care in Denmark, with poorer relative survival related to fewer advantages, regardless of how they were measured, often most pronounced in the first year after diagnosis. Also living alone and having somatic or psychiatric comorbidity negatively impacted the relative survival after most cancers. Our study shows that inequalities in cancer incidence and survival must be addressed in all aspects of public health, with interventions both to reduce incidence and to prolong survival.

© 2008 Elsevier Ltd. All rights reserved.



# Social position og brystkræft

# Social position og brystkræft

EUROPEAN JOURNAL OF CANCER 44 (2008) 1996–2002



available at [www.sciencedirect.com](http://www.sciencedirect.com)



journal homepage: [www.ejconline.com](http://www.ejconline.com)



## Social inequality and incidence of and survival from breast cancer in a population-based study in Denmark, 1994–2003

Kathrine Carlsen\*, Mette Terp Høybye, Susanne Oksbjerg Dalton, Anne Tjønneland

Institute of Cancer Epidemiology, Danish Cancer Society, Strandboulevarden 49, DK-2100 Copenhagen Ø, Denmark

### ARTICLE INFO

#### Article history:

Received 27 May 2008

Accepted 20 June 2008

Available online 11 August 2008

#### Keywords:

Breast cancer

Socioeconomic position

Denmark

Incidence

Survival

### ABSTRACT

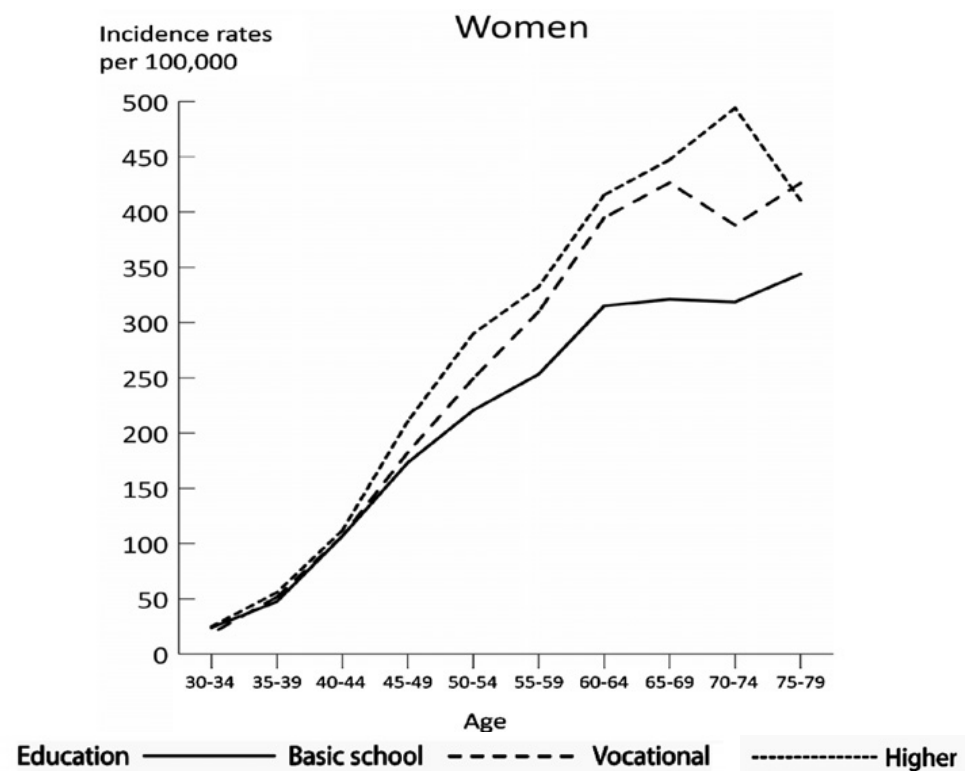
We investigated the effects of socioeconomic, demographic and health-related indicators on the incidence of and survival from breast cancer diagnosed in 1994–2003 with follow-up through 2006 in Denmark using information from nationwide population-based registers. The analyses were based on data on 25,855 patients with breast cancer in a cohort of 3.22 million people born between 1925 and 1973 and aged  $\geq 30$  years. In general, the incidence of breast cancer increased with increasing social advantage, with unemployment or retirement, with increasing urbanicity and with being single or divorced. A history of admission for a psychiatric disorder increased the incidence of breast cancer. The overall relative short-term survival was high (96%), but survival improved with higher educational level and income. Whilst the relative 5-year survival after breast cancer was high (79%), there was significantly poorer relative survival amongst less advantaged and single women.

© 2008 Elsevier Ltd. All rights reserved.

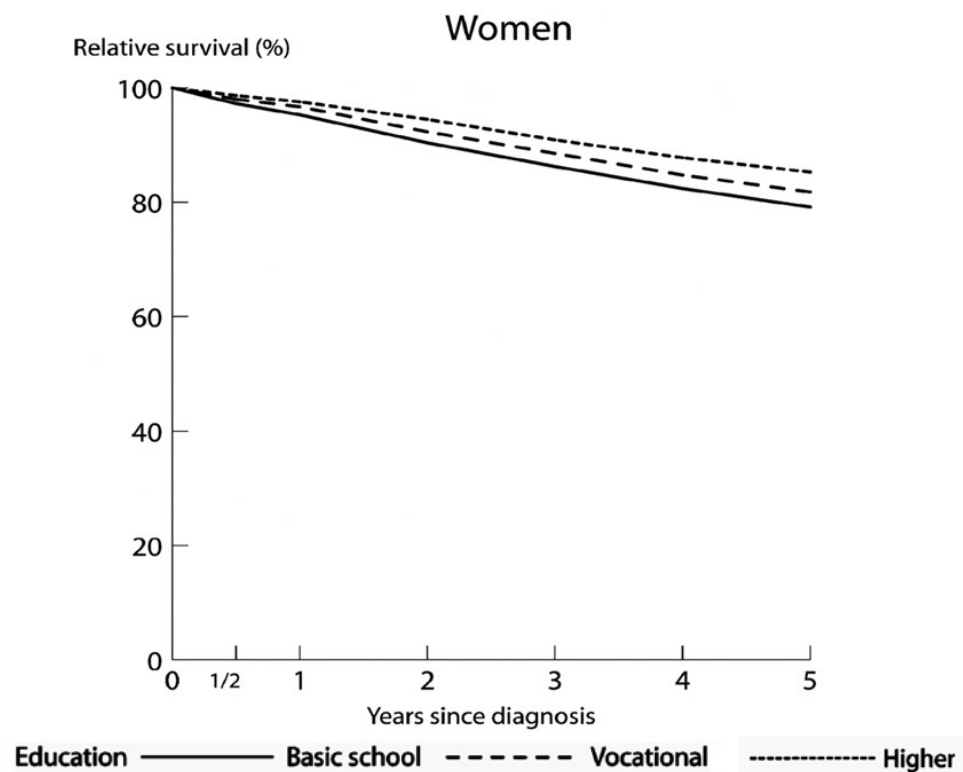




# Social position og brystkræft

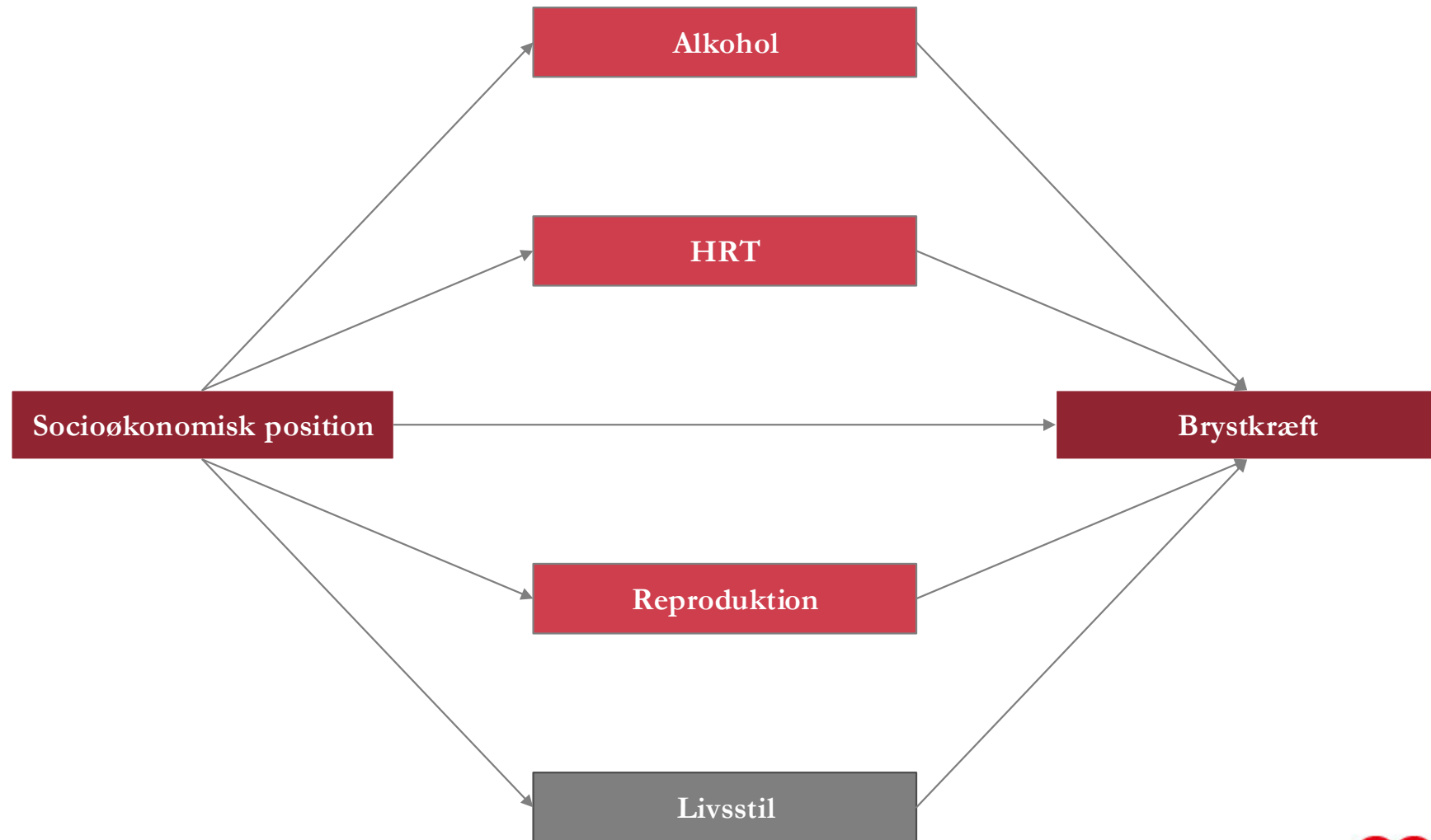


# Social position og brystkræft



# Årsager til sociale forskelle

# Social position og forekomst



# Livsstil og forekomst

Cancer Epidemiology 35 (2011) 438–441



ELSEVIER

Contents lists available at ScienceDirect

Cancer Epidemiology

The International Journal of Cancer Epidemiology, Detection, and Prevention

journal homepage: [www.cancerepidemiology.net](http://www.cancerepidemiology.net)



## Socioeconomic position and lifestyle in relation to breast cancer incidence among postmenopausal women: A prospective cohort study, Denmark, 1993–2006

Signe Benzon Larsen<sup>a,\*</sup>, Anja Olsen<sup>a</sup>, John Lynch<sup>c</sup>, Jane Christensen<sup>a</sup>, Kim Overvad<sup>b</sup>, Anne Tjønneland<sup>a</sup>, Christoffer Johansen<sup>a</sup>, Susanne Oksbjerg Dalton<sup>a</sup>

<sup>a</sup>Institute of Cancer Epidemiology, Danish Cancer Society, Strandboulevarden 49, 2100 Copenhagen Ø, Denmark

<sup>b</sup>Department of Epidemiology, School of Public Health, Aarhus University, Bartholins Allé 2, DK-8000 Aarhus C, Denmark

<sup>c</sup>Sansom Institute for Health Research, University of South Australia, City East Campus (Playford P5-06), GPO Box 2471, Adelaide, SA 5001, Australia

### ARTICLE INFO

#### Article history:

Received 29 September 2010  
Received in revised form 10 December 2010  
Accepted 13 December 2010  
Available online 11 January 2011

#### Keywords:

Socioeconomic position  
Lifestyle factors  
Breast cancer

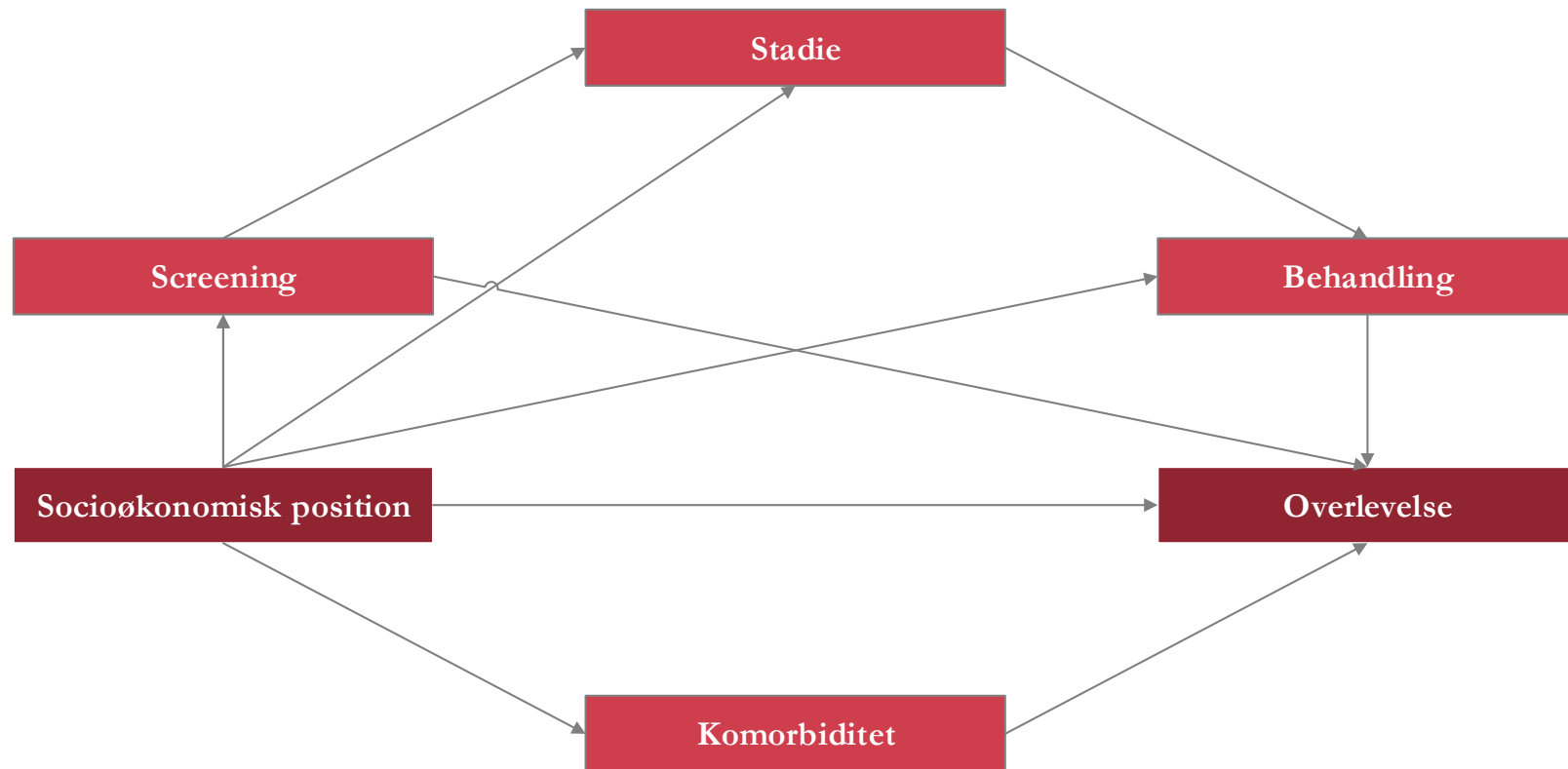
### ABSTRACT

**Background:** In Denmark, the incidence of breast cancer is higher among women with higher socioeconomic position. We investigated whether differences in exposure to certain risk factors contribute to this gradient, as measured from education, income and occupation. **Methods:** We conducted a cohort study of 23 111 postmenopausal women aged 50–65 years who were enrolled in the prospective Danish 'Diet, Cancer and Health' study between 1993 and 1995. At baseline, all women filled in a questionnaire on lifestyle and food frequency. The results were analysed in Cox proportional hazard models. **Results:** Part of the association with socioeconomic position is due to the potential mediators reproductive pattern, use of hormone replacement therapy and alcohol consumption. After simultaneous adjustment for these factors, the hazard ratios were 1.06 (95% confidence interval [CI], 0.88–1.27) for women with higher education and 1.07 (95% CI, 0.85–1.34) for women with higher income. The HR ratio for women working as higher officials when compared with unskilled workers was 1.23 (0.96–1.59). **Conclusion:** The results support the hypothesis that the higher incidence of breast cancer among socially advantaged women is mediated partly by differences in exposure to reproductive factors, hormone replacement therapy and alcohol.

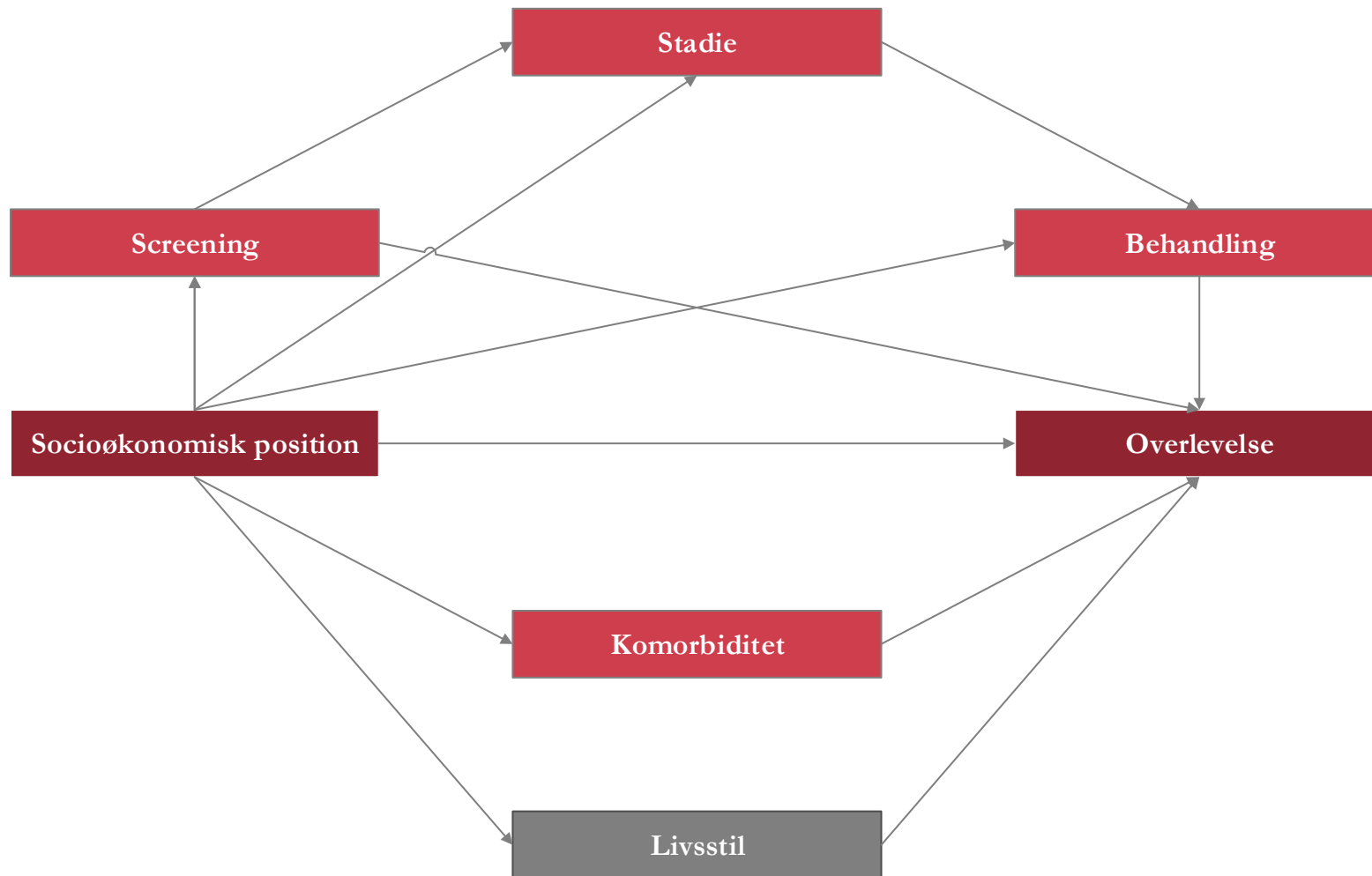
© 2010 Elsevier Ltd. All rights reserved.



# Social position og overlevelse



# Social position og overlevelse



# Livsstil

- Rygning
  - Kræftfremkaldende – men ikke relateret til brystkræft
  - Påvirker det generelle helbred
  - Påvirker behandlingen
  
- Alkohol
  - Kræftfremkaldende
  - Anerkendt risikofaktor for brystkræft
  - Påvirker det generelle helbred



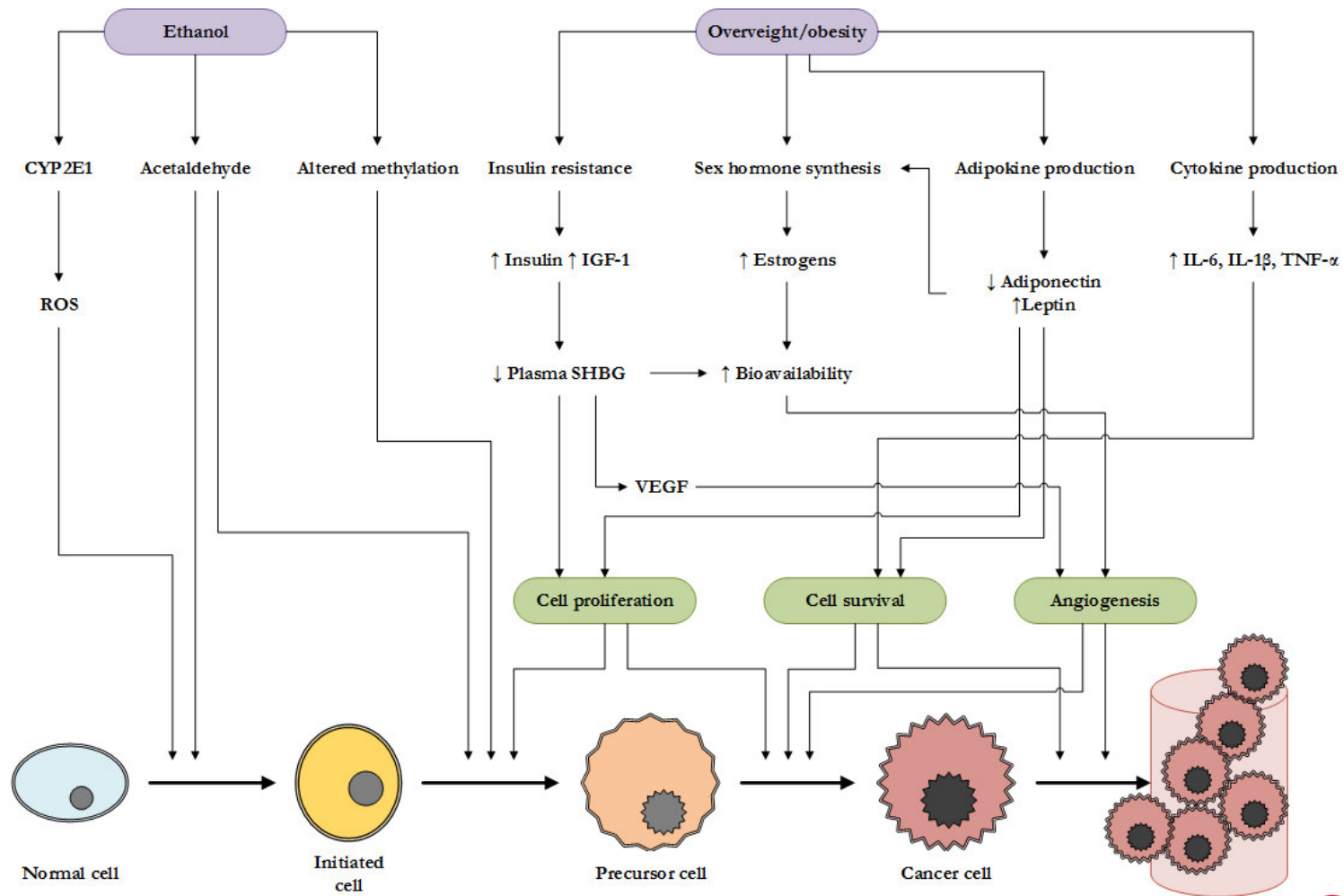


# Livsstil

- Overvægt og fedme
  - Anerkendt carcinogen
  - Påvirker diagnosticeringen
  - Påvirker det generelle helbred
  - Påvirker behandlingen
  
- Komorbiditet
  - Ikke direkte kræftfremkaldende
  - Diabetes påvirker carcinogenesisen
  - Stor betydning for behandlingen
  - Stor betydning for det generelle helbred



# Påvirkning af carcinogenesisen



# Livsstil og overlevelse

# Livsstil og overlevelse

*Acta Oncologica*, 2015; 54: 780–788

informa  
healthcare

## ORIGINAL ARTICLE

### Influence of metabolic indicators, smoking, alcohol and socioeconomic position on mortality after breast cancer

SIGNE BENZON LARSEN<sup>1</sup>, NIELS KROMAN<sup>2</sup>, ELSE HELENE IBFELT<sup>1,3</sup>,  
JANE CHRISTENSEN<sup>1</sup>, ANNE TJØNNELAND<sup>1</sup> & SUSANNE OKSBJERG DALTON<sup>1</sup>

<sup>1</sup>Danish Cancer Society Research Center, Copenhagen Ø, Denmark, <sup>2</sup>Department of Breast Surgery, Copenhagen University Hospital, Copenhagen Ø, Denmark and <sup>3</sup>Research Centre for Prevention and Health, Glostrup University Hospital, Glostrup, Denmark

## ABSTRACT

**Background.** Factors differently distributed among social groups like obesity, metabolic syndrome, diabetes, smoking, and alcohol intake predict survival after breast cancer diagnosis and therefore might mediate part of the observed social inequality in survival.

**Material and methods.** We conducted a cohort study among 1250 postmenopausal breast cancer patients identified among 29 875 women in the Danish Diet, Cancer and Health Study. Participants completed questionnaires and anthropometric measurements were made at enrollment. Information on survival, socioeconomic position, and comorbidity was obtained by linkage to national Danish registries. Clinical information was obtained from the nationwide Danish Breast Cancer Database. Selected information was obtained from hospital records at time of diagnosis. All analyses were based on Cox proportional hazard models, using death from all causes as outcome.

**Results.** Median follow-up was 9.6 years [interquartile range (IQR), 2.2–17.0 years]. The hazard ratio (HR) for death from all causes increased with lower education ( $p$  for trend, 0.01). Adjustment for disease-related prognostic factors, comorbidity and metabolic indicators measured as BMI, waist circumference and diabetes, and smoking and alcohol affected but did not explain the social gradient.

**Conclusion.** The findings indicate that these factors explain some but not all the social inequality in survival after breast cancer and that improvement of lifestyle to some extent would improve survival among women with low socioeconomic position.

For personal use only.

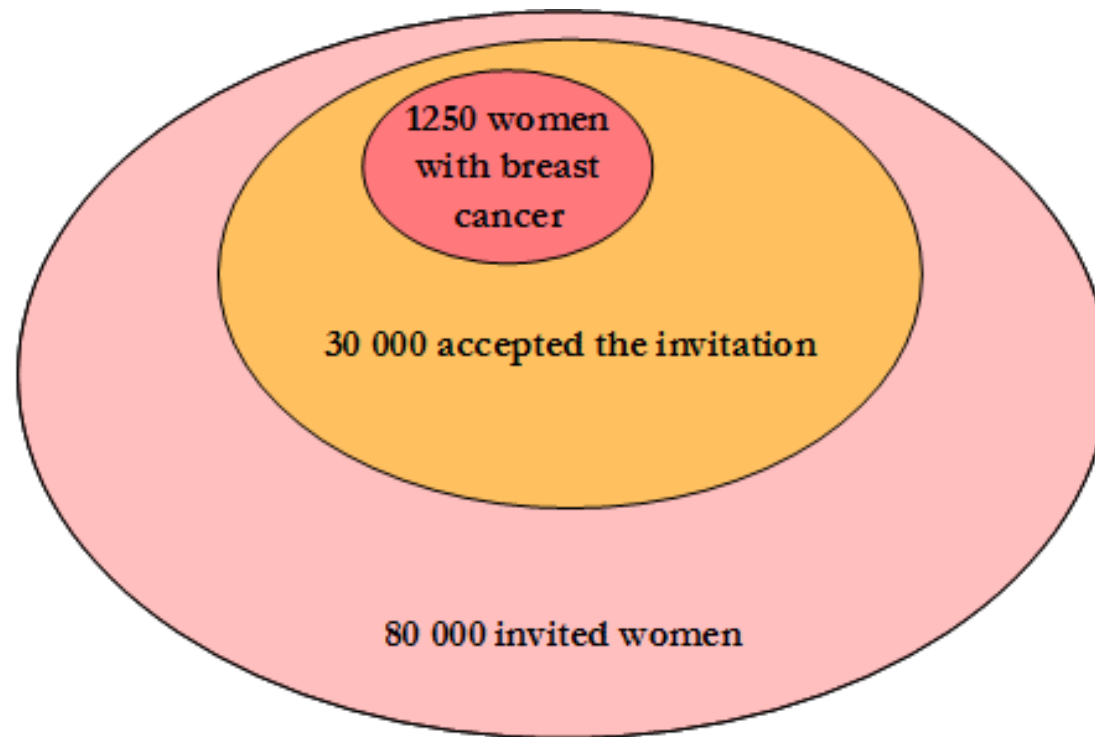


# Kost, kræft og helbred kohorten

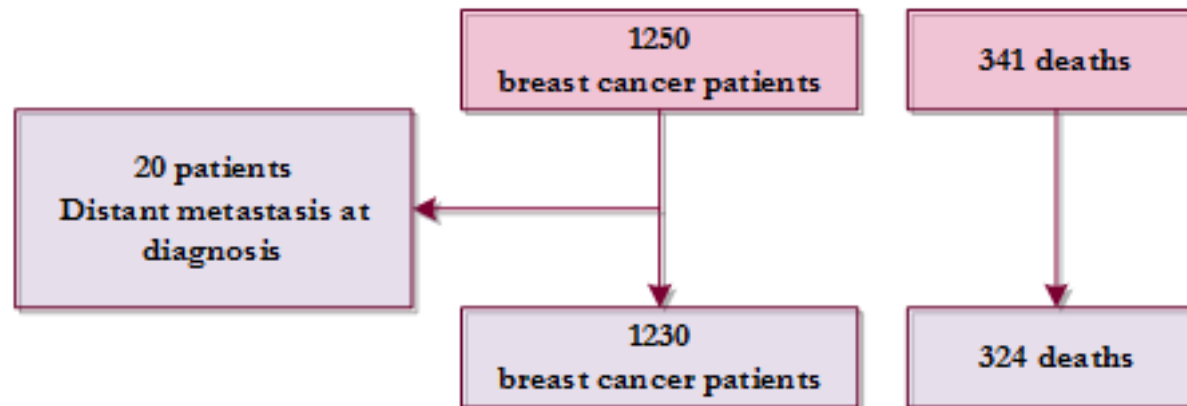
- Populationsbaseret prospektiv kohorte
- Etableret fra 1993-97
- Invitationkriterier:
  - Mellem 50 og 64 år
  - Født i Danmark
  - Bosat i Storkøbenhavn eller Århus-området
  - Ingen tidligere cancer (bortset fra alm. hudkræft)



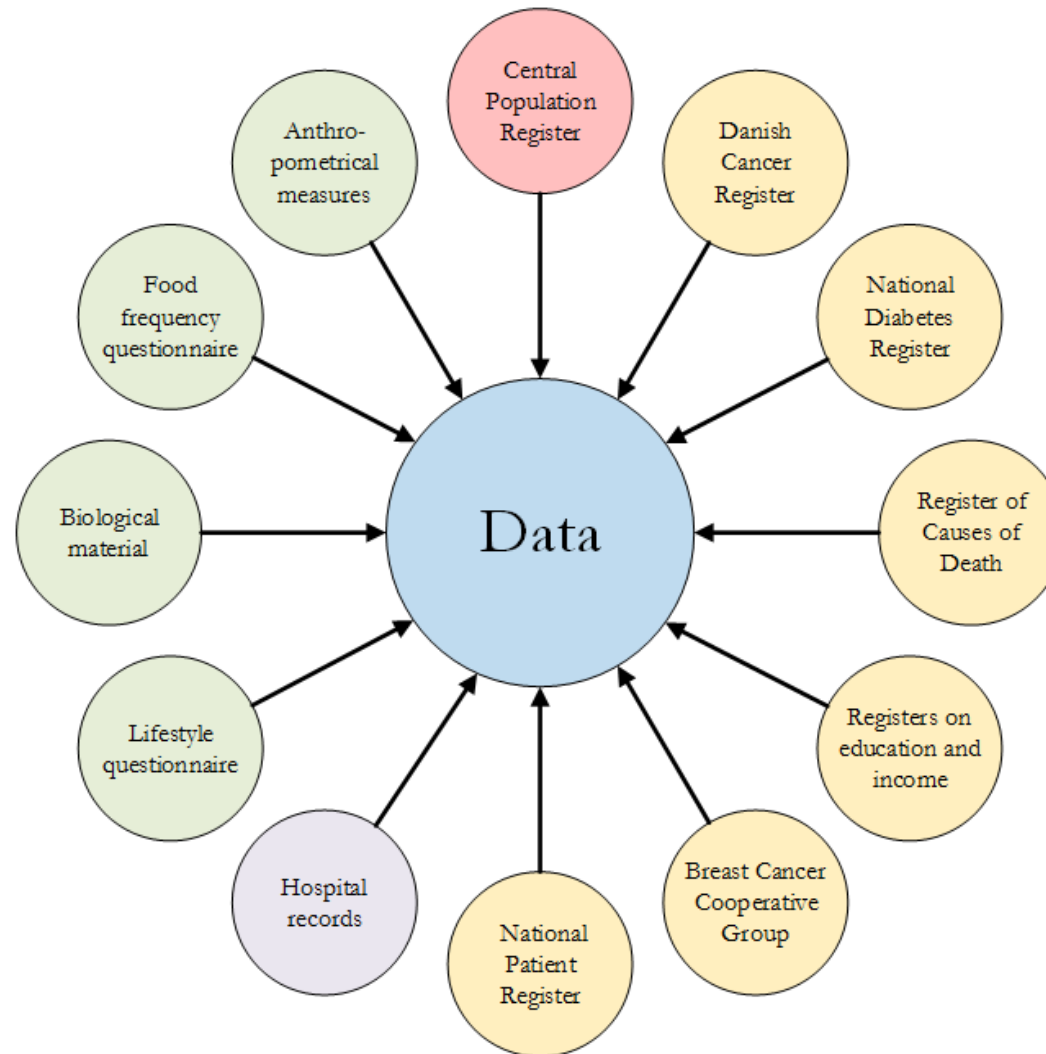
# Deltagere



# Deltagere



# Informationskilder





# Information fra patientjournaler

## Indsamling af journaloplysninger – Brystkræft

CPR-nummer \_\_\_\_\_

Indsamlingsdato \_\_\_\_\_

Indsamlet af Initialer \_\_\_\_\_

Indsamlingssted Hospital \_\_\_\_\_ Afdeling \_\_\_\_\_

Højde \_\_\_\_\_ cm

Vægt \_\_\_\_\_ kg

Blodtryk Systolisk \_\_\_\_ mmHg Diastolisk \_\_\_\_ mmHg

Østrogenreceptor status Ingen test \_\_\_\_\_ Pos. Test \_\_\_\_\_ Neg. Test \_\_\_\_\_

Progesteronreceptor status Ingen test \_\_\_\_\_ Pos. Test \_\_\_\_\_ Neg. Test \_\_\_\_\_

HER2 receptor status Ingen test \_\_\_\_\_ Pos. Test \_\_\_\_\_ Neg. Test \_\_\_\_\_

Type 1 diabetes Ja \_\_\_\_\_ Nej \_\_\_\_\_ Dato \_\_\_\_\_

Type 2 diabetes Ja \_\_\_\_\_ Nej \_\_\_\_\_ Dato \_\_\_\_\_

Forhøjet blodtryk Ja \_\_\_\_\_ Nej \_\_\_\_\_ Dato \_\_\_\_\_

Forhøjet kolesterol Ja \_\_\_\_\_ Nej \_\_\_\_\_ Dato \_\_\_\_\_

Ryging Ja \_\_\_\_\_ Nej \_\_\_\_\_ Uoplyst \_\_\_\_\_

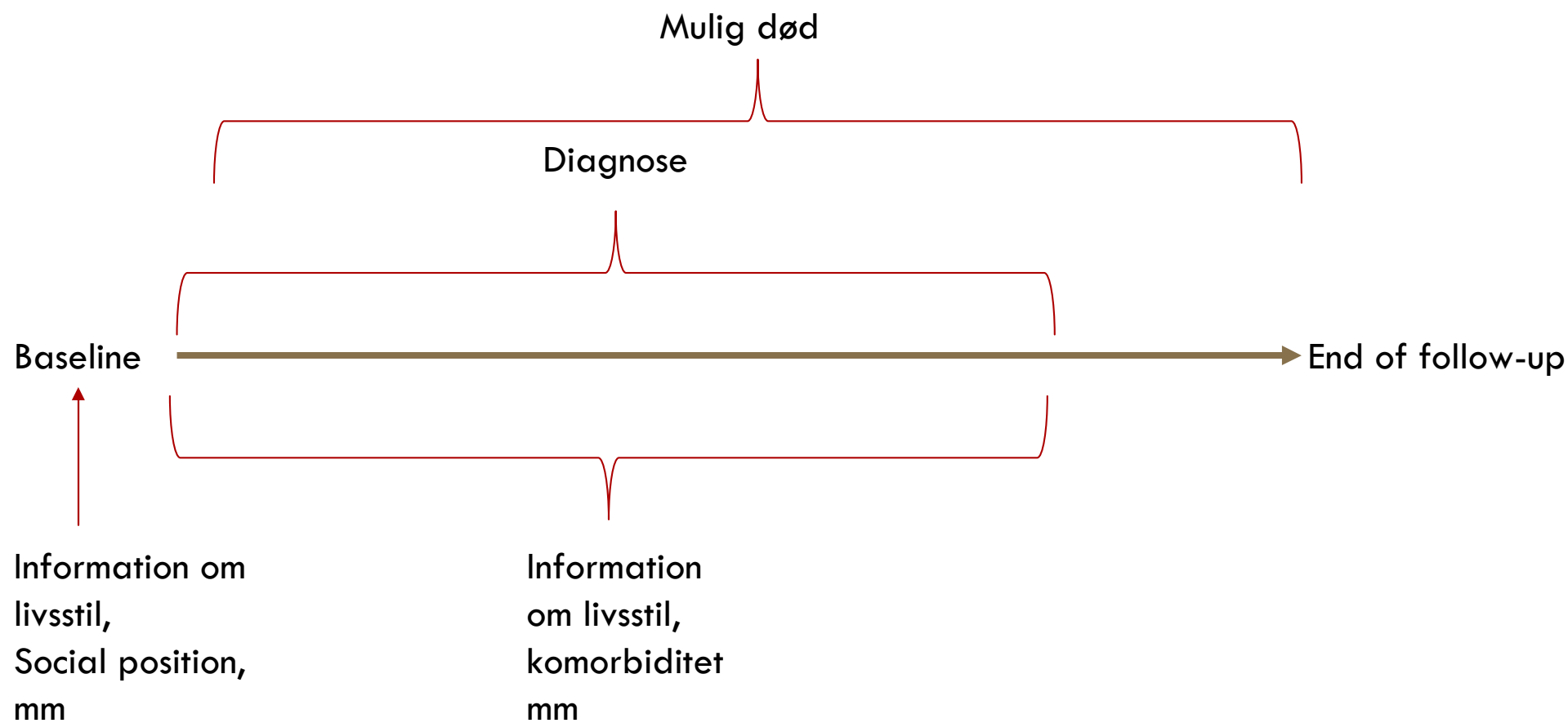
- antal cigaretter \_\_\_\_\_ stk. Uoplyst \_\_\_\_\_

Alkohol Ja \_\_\_\_\_ Nej \_\_\_\_\_ Uoplyst \_\_\_\_\_

- genstande pr. uge. \_\_\_\_\_ genstande Uoplyst \_\_\_\_\_



# Tidslinie



# Resultater

# Sociale forskelle ved **baseline**

	<b>Grundskole/gymnasium %</b>	<b>Lang uddannelse %</b>
Overvægt/fedme	<b>50</b>	<b>35</b>
Taljemål >80	52	36
Nuværende rygere	<b>43</b>	<b>23</b>
>14 genstande om ugen	12	19



# Sociale forskelle ved diagnose

	Grundskole/gymnasium %	Lang uddannelse %
Charlson comorbidity index >1	<b>28</b>	<b>19</b>
Overvægt/fedme	<b>43</b>	<b>27</b>
Stadie 1 ved diagnose	41	39
Tumor størrelse $\leq 20$ mm	64	56
Østrogen receptor positive	75	75
Nuværende rygere	<b>26</b>	<b>15</b>
>14 genstande om ugen	7	12



# Dødelighed i forhold til livsstil

Baseline	Død af alle årsager HR (95% CI)*
BMI	
<25	Reference
25-30	0.97 (0.75-1.25)
>30	<b>1.43 (1.06-1.93)</b>
Rygning	
nuværende	<b>1.56 (1.21-2.03)</b>
tidligere	1.01 (0.75-1.36)
aldrig	Reference

\*Justeret for komorbiditet og kliniske prognostiske faktorer



# Dødelighed i forhold til livsstil

Diagnose	Død af alle årsager HR (95% CI)*
BMI	
<25	Reference
25-30	0.95 (0.72-1.22)
>30	1.09 (0.78-1.51)
Diabetes	
nej	Reference
ja	<b>1.65 (1.09-2.49)</b>
Rygning	
nuværende	<b>1.71 (1.30-2.23)</b>
tidligere ved diagnose	1.27 (0.83-1.93)
tidligere ved baseline	1.01 (0.74-1.37)
aldrig	Reference

\*Justeret for komorbiditet og kliniske prognostiske faktorer



# Dødelighed og uddannelse

	Død af alle årsager	
	HR (95% CI)	HR (95% CI)
	Alder	Justeret*
<b>Uddannelse</b>		
Grundskole/gymnasium	1.40 (1.05-1.86)	1.24 (0.91-1.68)
Erhvervsuddannelse	1.07 (0.81-1.43)	1.03 (0.77-1.40)
Lang uddannelse	Reference	Reference
P for tendens	0.01	0.11

\*Justeret for kliniske prognostiske faktorer, komorbiditet, samt alle inkluderede livsfaktorer







# Konklusion

# Konklusion

- Livsstil længe før diagnose har betydning for overlevelsen efter brystkræft
- Livsstil, komorbiditet og kliniske prognostiske faktorer kan dog ikke forklare hele den sociale ulighed i overlevelsen efter brystkræft
- Men hvad kan ellers medvirke...?
  - Compliance, netværk, kost...?



# Take home message



- Særlig fokus på komorbiditet og livsstil hos kvinder med lav social position!

# Tak for opmærksomheden!

- Og tak til mine samarbejdspartnere!
  - Susanne Oksbjerg Dalton
  - Niels Kroman
  - Jane Christensen
  - Christoffer Johansen
  - Else Ibfelt
  - Anja Olsen
  - Anne Tjønneland
  - Katja Boll

