

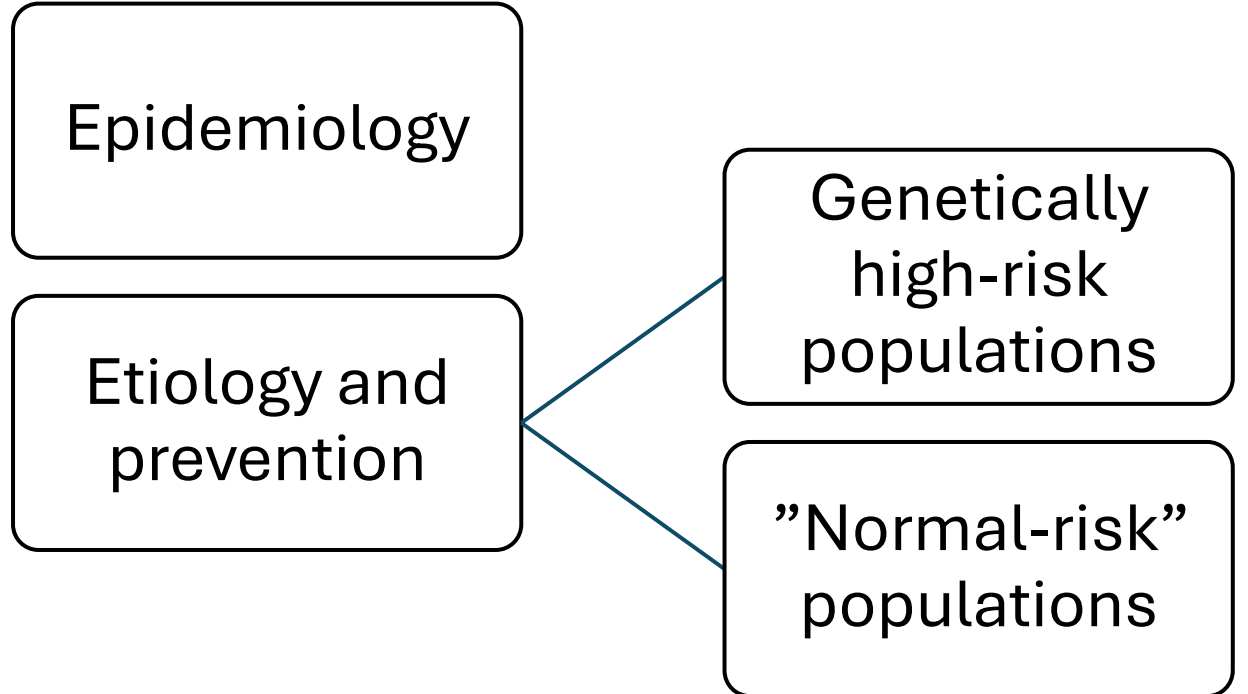
# Epidemiologi, riskfaktorer, genetik, screening

Bethany Van Guelpen

Postgraduatekurs i gastrointestinal cancer

Märsta, 2024

# Outline

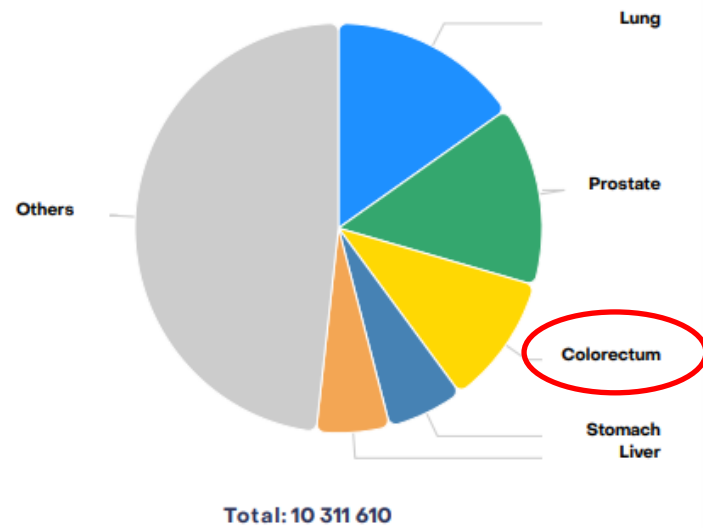


# Epidemiology

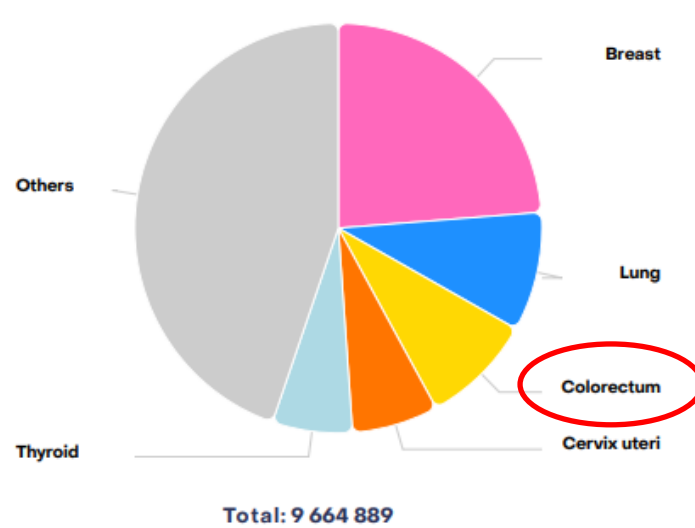
Lifetime risk approximately 1/20

3rd highest incidence, 2nd highest mortality

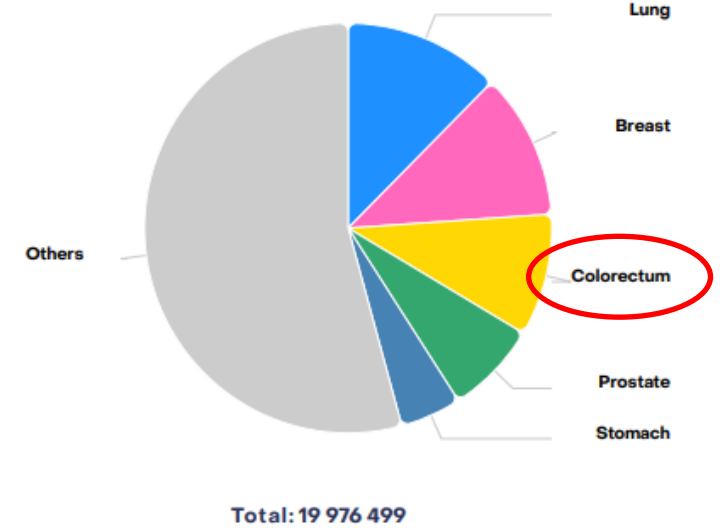
## Males



## Females



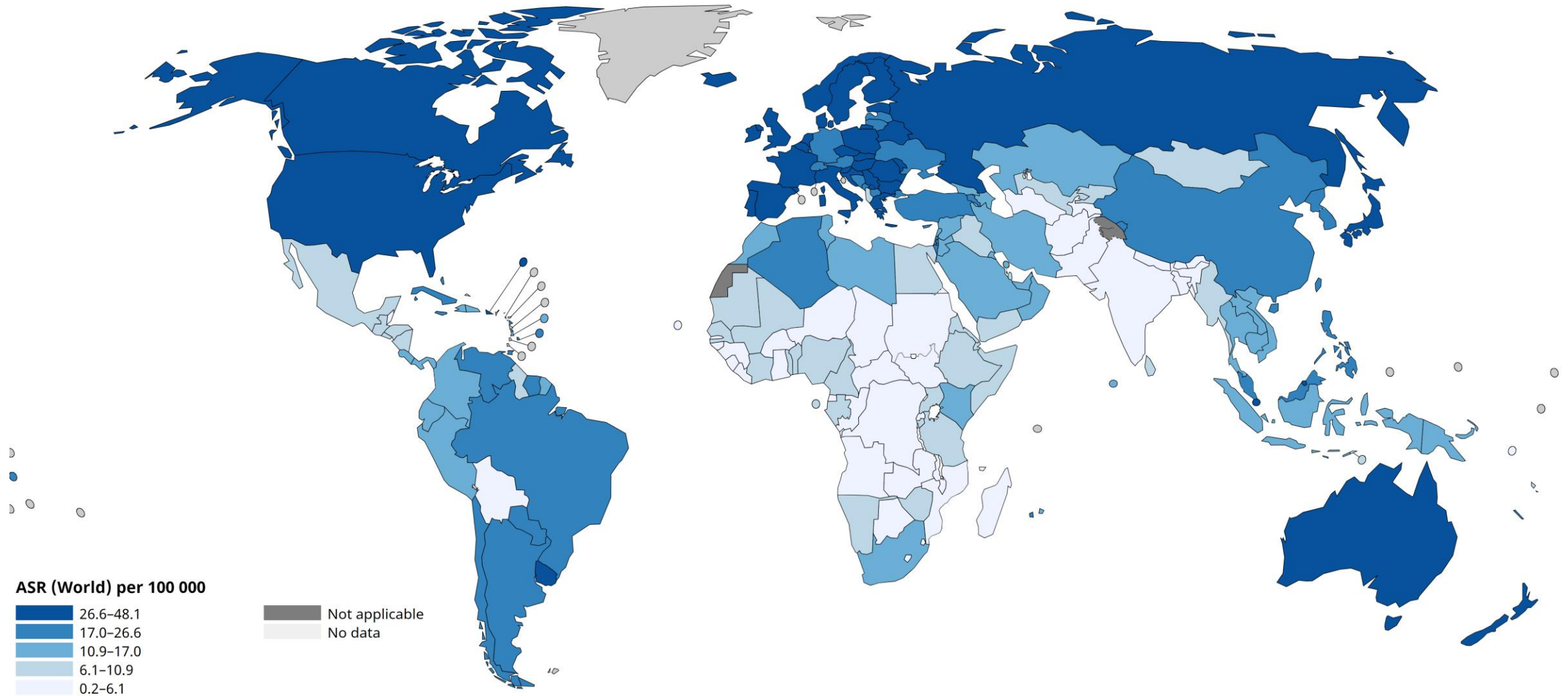
## Both sexes



## Global colorectal cancer incidence

# Age-Standardized Rate (World) per 100 000, Incidence, Both sexes, in 2022

Colorectum



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**Cancer TODAY | IARC**  
<https://gco.iarc.who.int/today>  
Data version: Globocan 2022 (version 1.1) - 08.02.2024  
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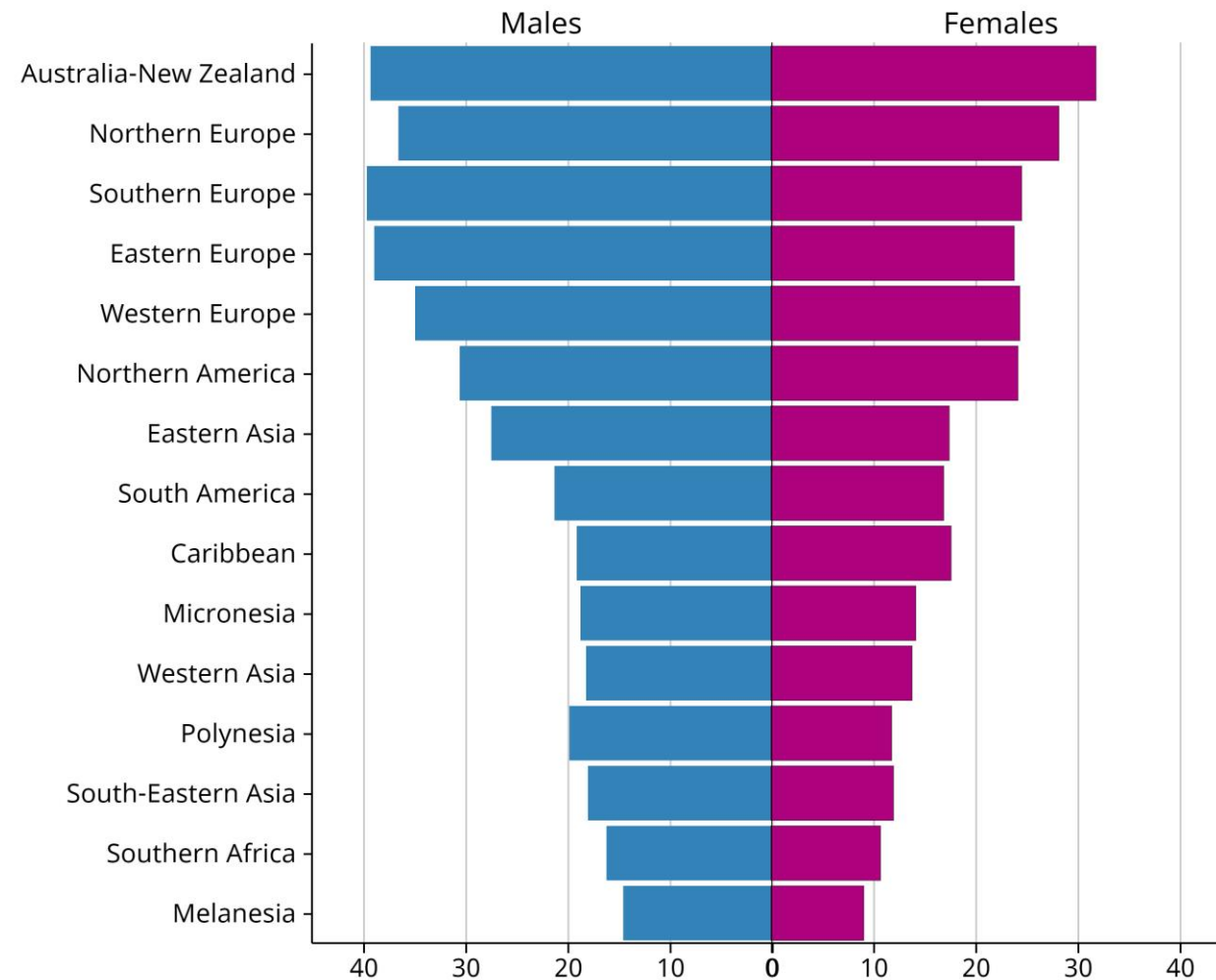
International Agency  
for Research on Cancer



# Age-Standardized Rate (World) per 100 000, Incidence, Males and Females, in 2022

Colorectum

UN Regions (Top 15)

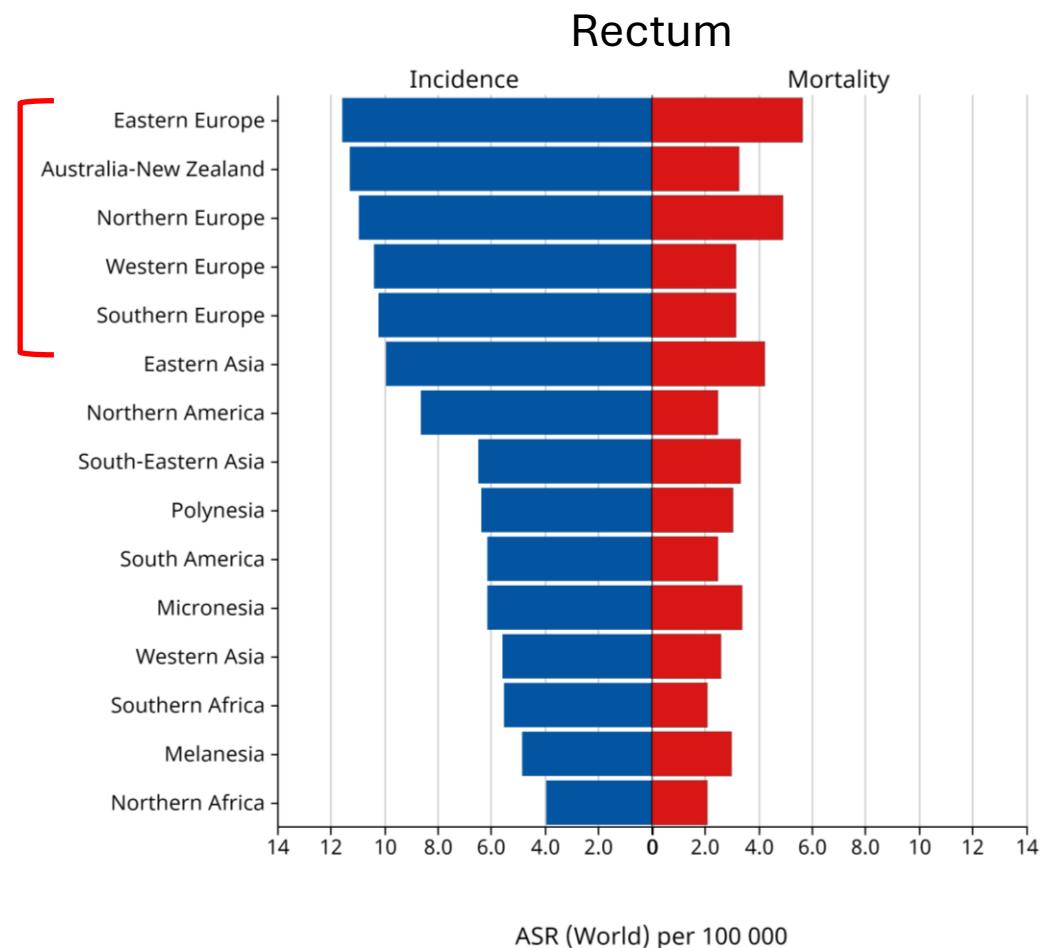
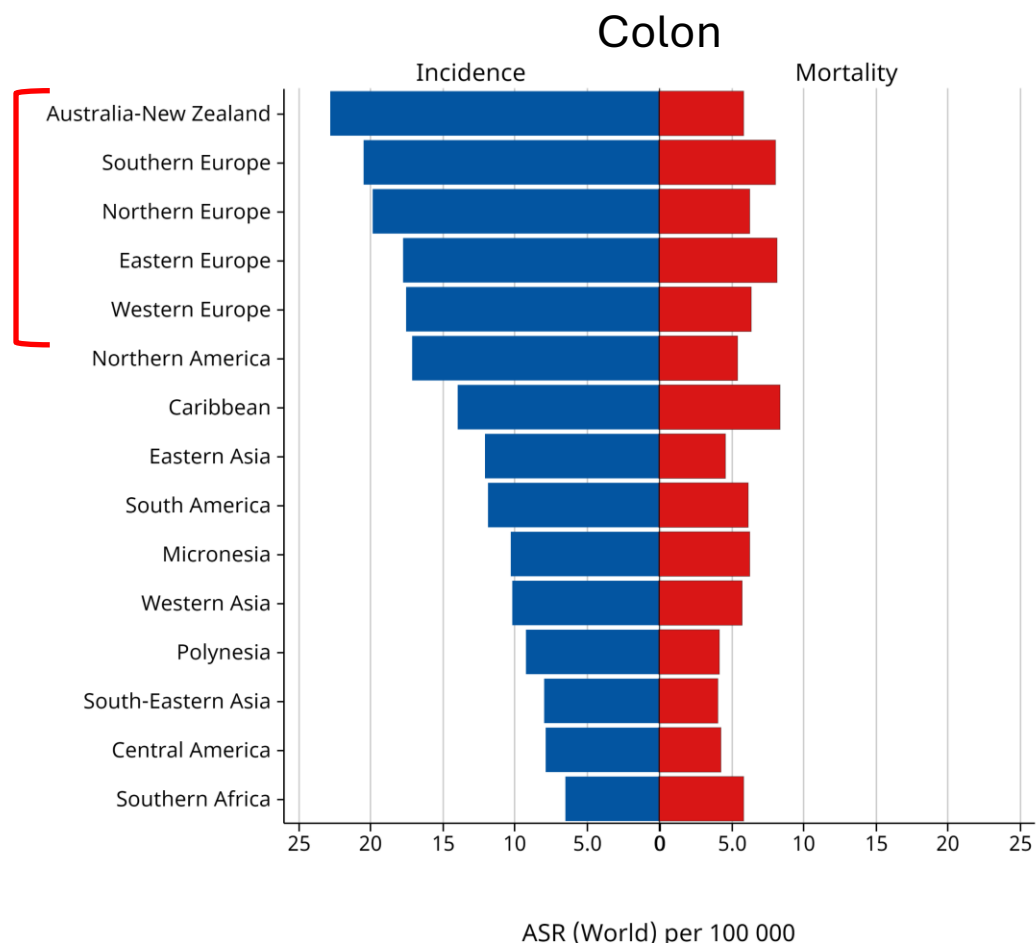


Sex differences are generally greater for rectal cancer than colon cancer in the high-incidence countries.

ASR (World) per 100 000

# Age-standardized incidence and mortality (world) per 100 000, in 2022

UN regions (top 15)



# Mortality - ASR (World) vs Incidence - ASR (World), Both sexes, in 2022

Colorectum

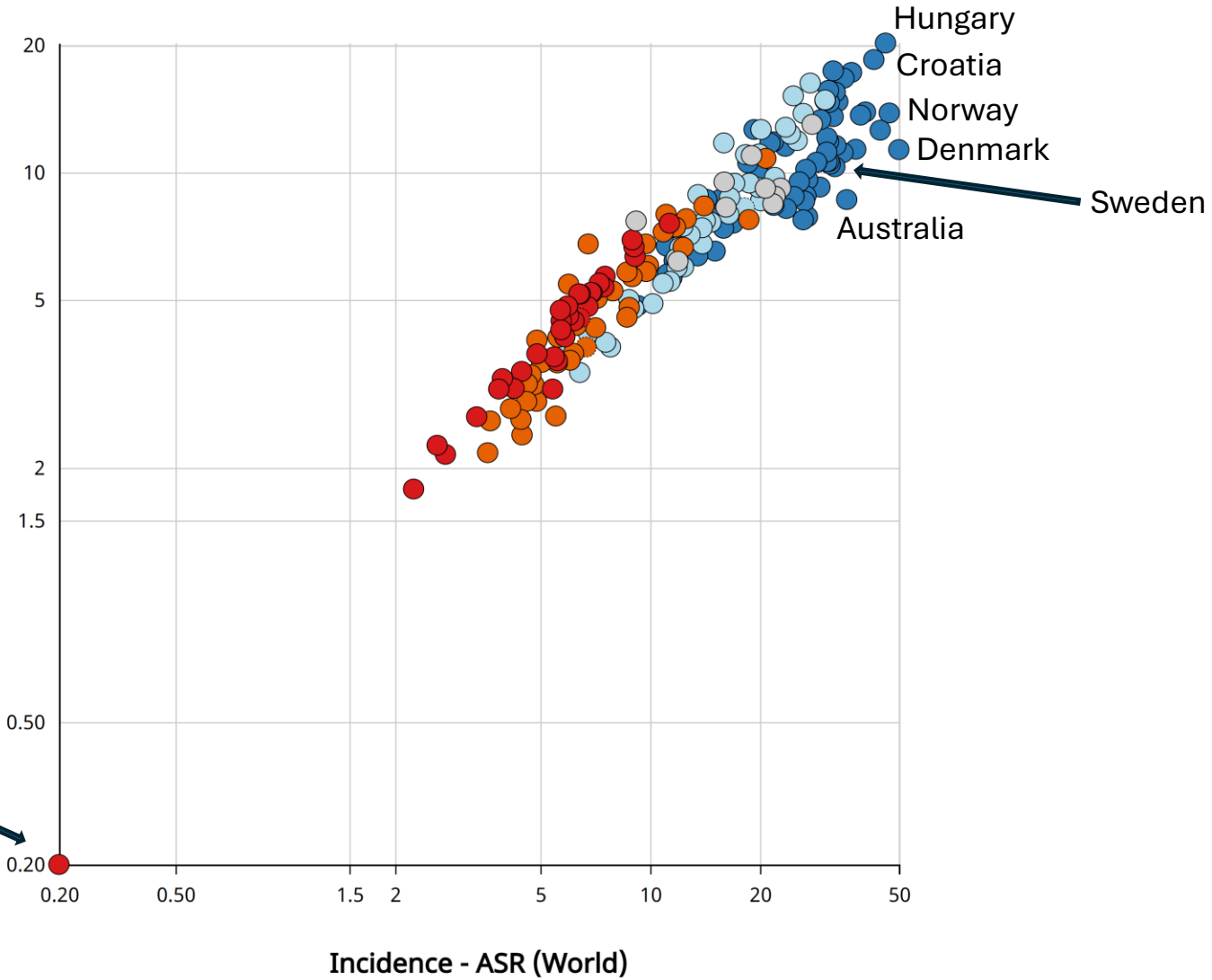
## ASR (World)

HDI

- Very high HDI
- High HDI
- Medium HDI
- Low HDI
- Not applicable

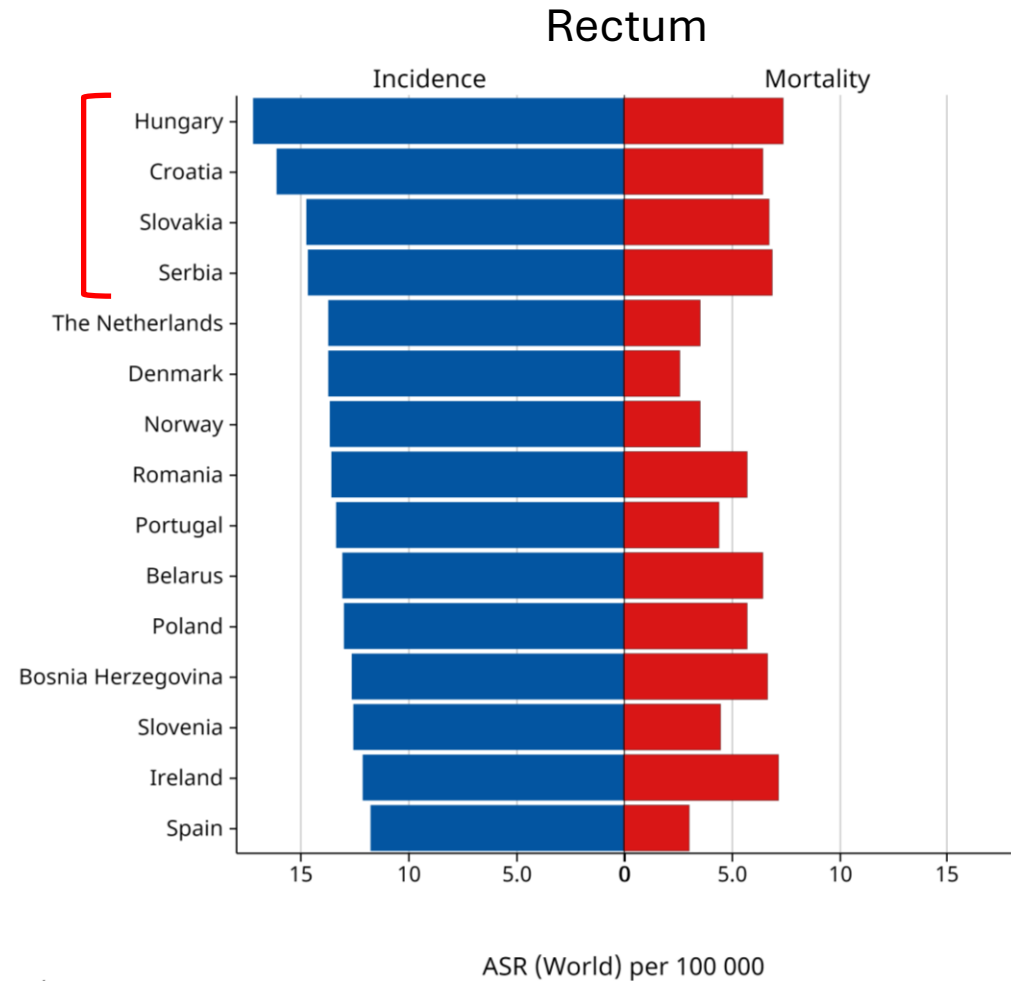
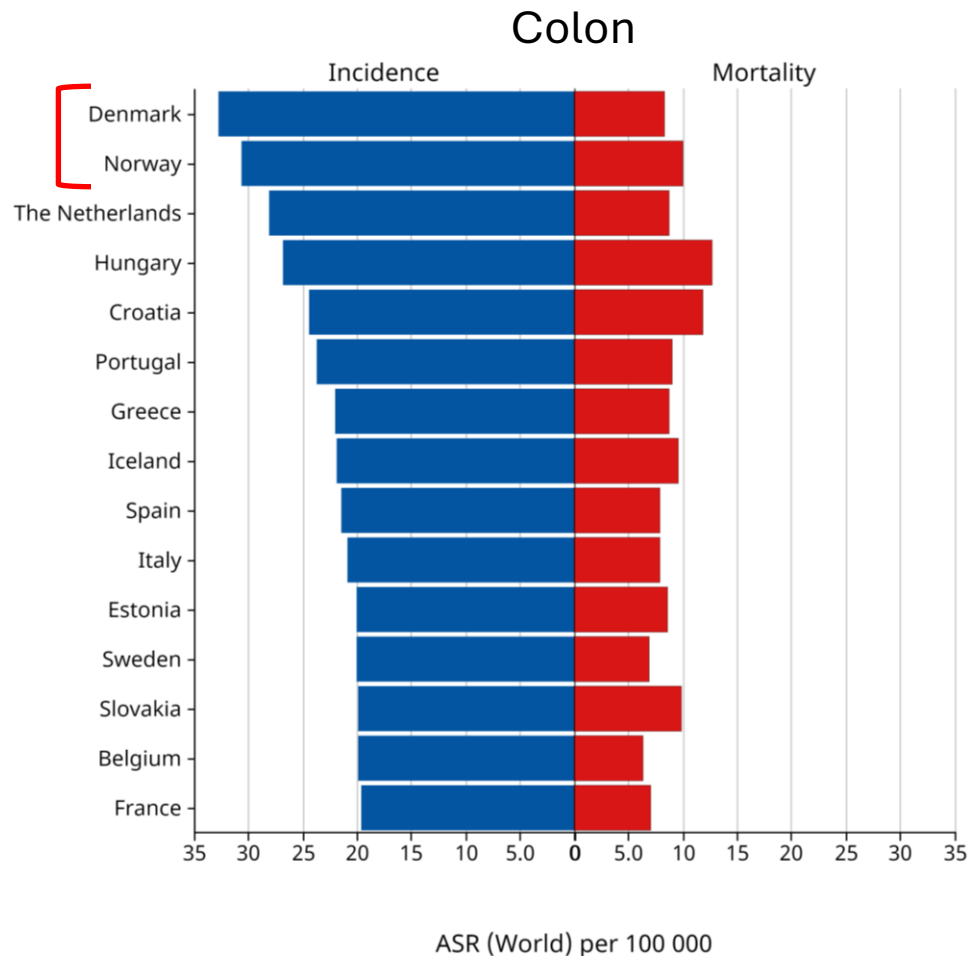
HDI: human development index (life expectancy, schooling, gross national income)

Sierra Leone  
Data out reflects  
data in...



# A closer look at Europe

Age-standardized incidence and mortality (world) per 100 000, in 2022  
 European countries (top 15)



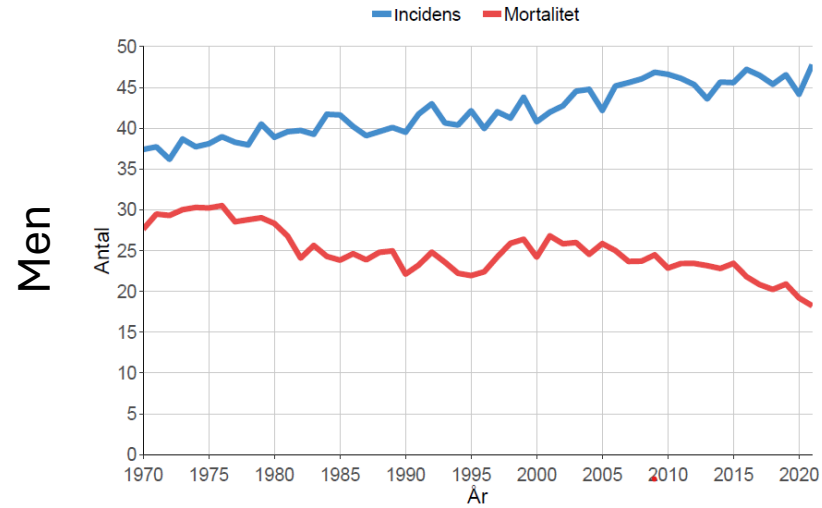


# Time trends in Sweden

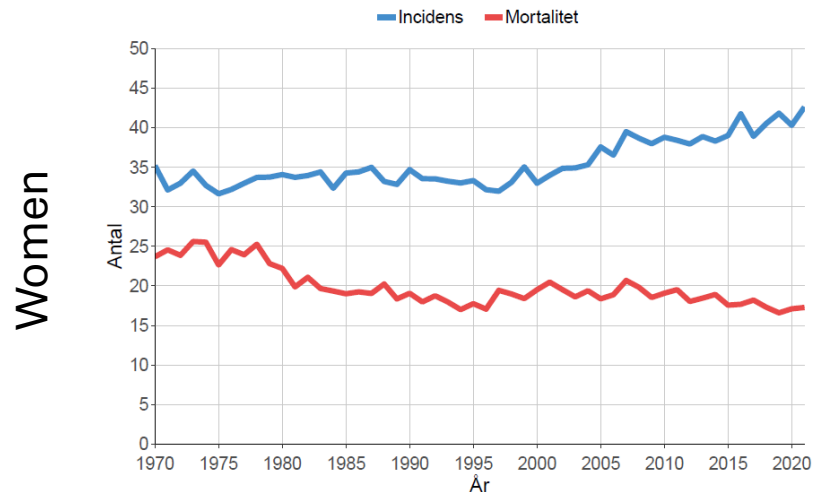
## Koloncancer 2022

Nationell kvalitetsrapport för år 2022 från Svenska Kolorektalcancerregistret

## Colon



Figur 4.2. Ålderstandardiserad incidens och mortalitet per 100 000 invånare i Sverige, män, 1970-2021

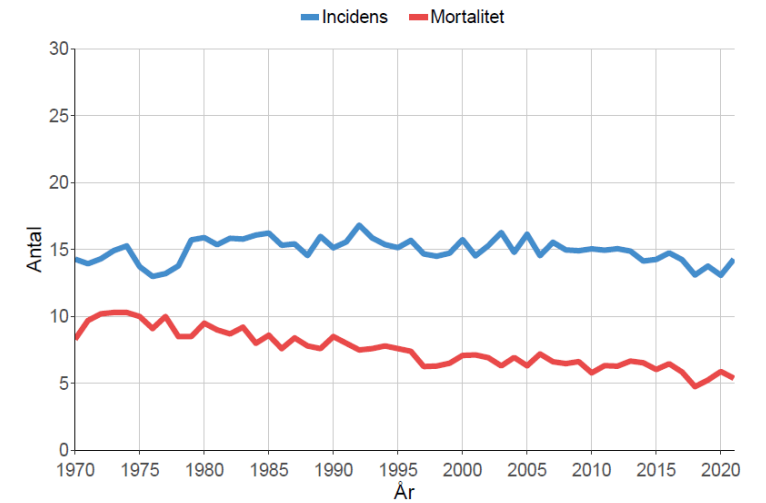


Figur 4.3. Ålderstandardiserad incidens och mortalitet per 100 000 invånare i Sverige, kvinnor, 1970-2021

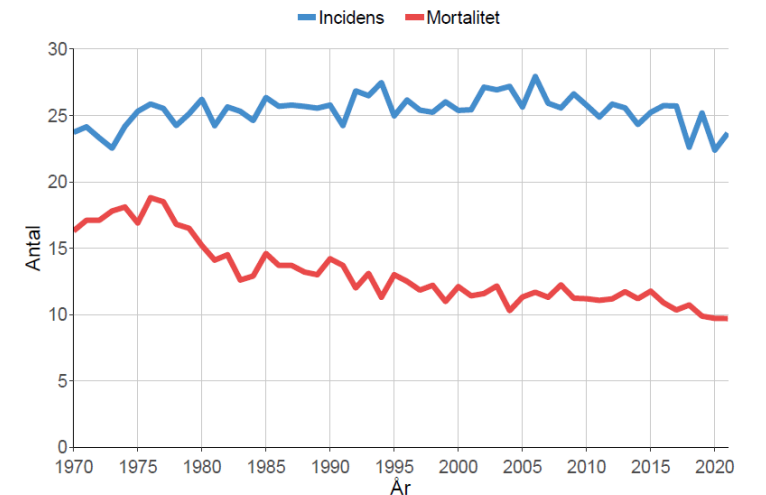
## Rektalcancer 2022

Nationell kvalitetsrapport för år 2022 från Svenska Kolorektalcancerregistret

## Rectum



Figur 4.3. Ålderstandardiserad incidens och mortalitet per 100 000 invånare i Sverige, kvinnor, 1970-2021.

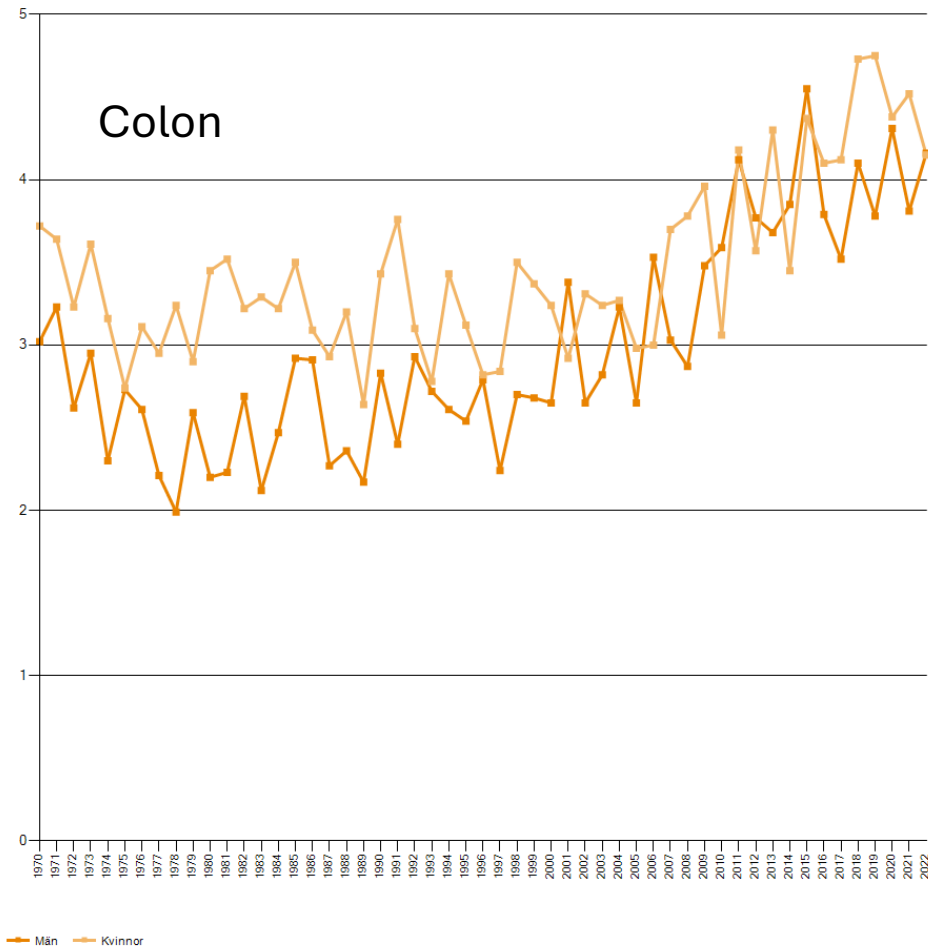


Figur 4.2. Ålderstandardiserad incidens och mortalitet per 100 000 invånare i Sverige, män, 1970-2021.

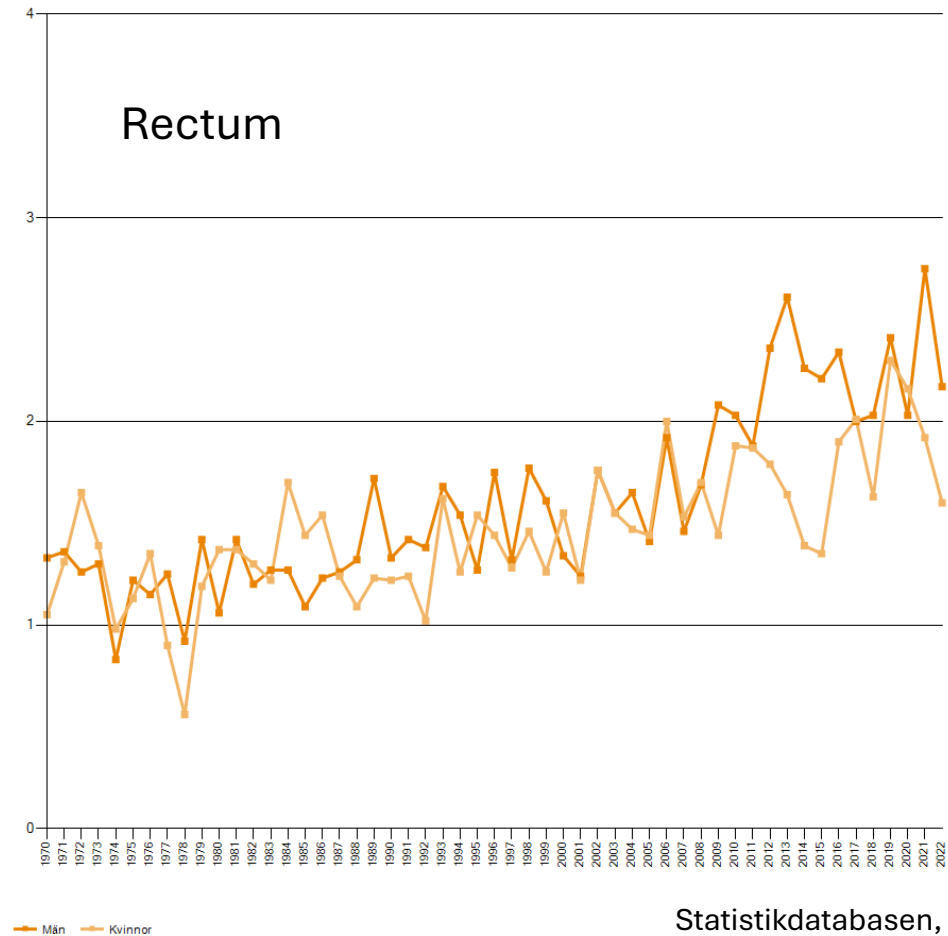
# Increasing incidence <50 years but from low numbers...

Birth cohort phenomenon?

Antal nya cancerfall per 100 000 personer (crude rate), Ålder: 0-49, Riket, Diagnos:153 Tjocktarm, oavsett tumörtyp



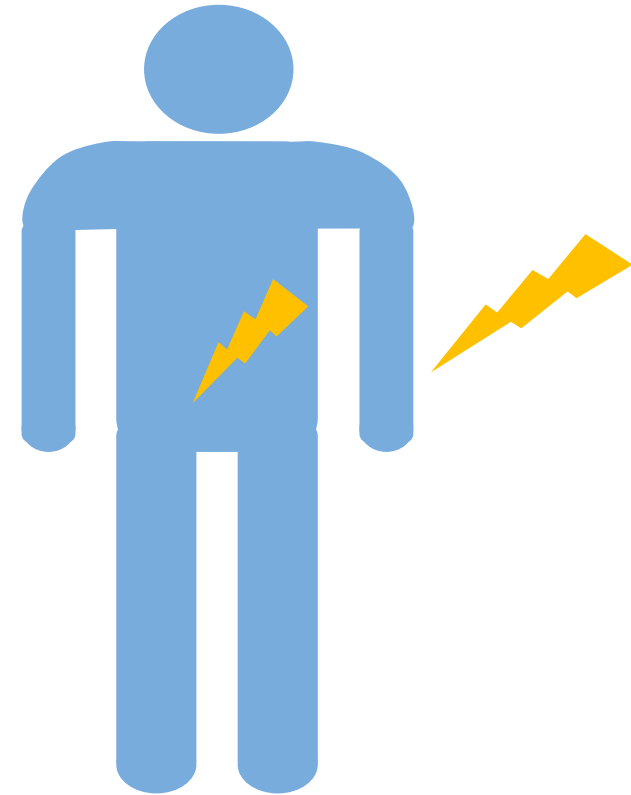
Antal nya cancerfall per 100 000 personer (crude rate), Ålder: 0-49, Riket, Diagnos:1540 Ändtarm, 1548 Ändtarm och anus, flera lokalisationer, oavsett tumörtyp



# Etiology and Prevention

# Non-modifiable risk factors

- Age
- Biological sex
- Height
- Heredity/genetics
- (Ethnicity)



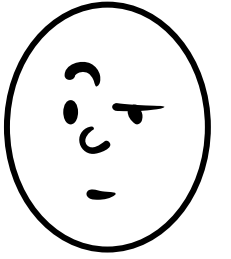
# Genetics

- **Hereditary (Lynch, FAP etc.)**
- **Familial**
- Risk variants

## Family history

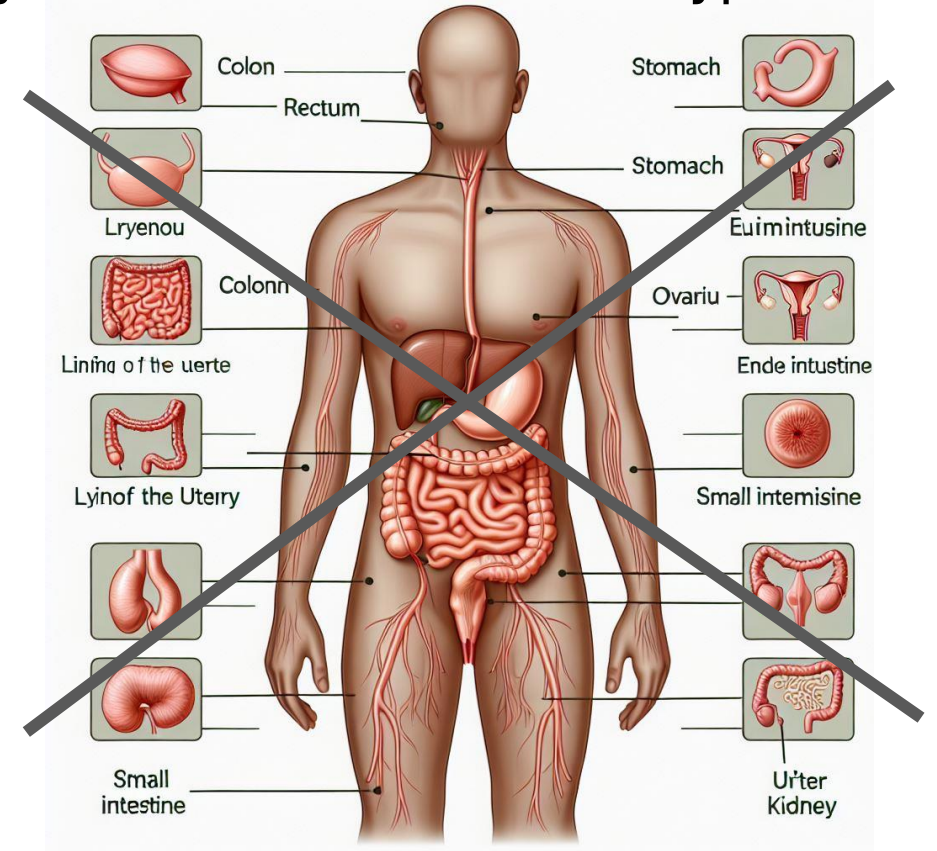
Relation  
Age at diagnosis  
Type

# Lynchs syndrom



- Prevalence 1/300
- 500 known families in Sweden, probably many undiagnosed
- Risk for colorectal cancer 30-70%
- 1-3% of all colorectal cancer
- More often proximal colon, mucinous, high lymphocyte infiltration
- Uterus (40-60% risk), ovarian, stomach, pancreas, urinary tract, prostate

## ”Lynch-associated cancer types”



# ”Prevention” in Lynch – surveillance colonoscopy

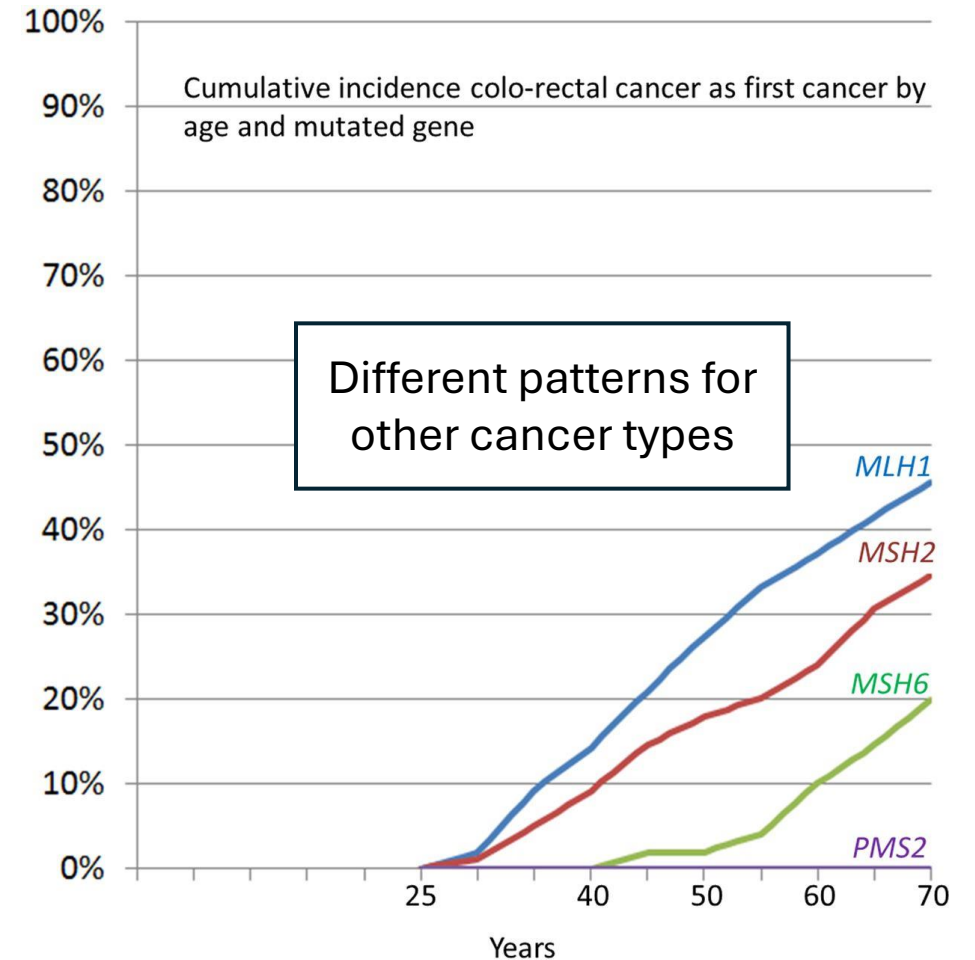
Typically 2-year interval

Starting age:

- *MLH1*: 25 years
- *MSH2*: 25 years
- *MSH6*: 30 years
- *PMS2*: 35 years

Consider modifying:

- Younger age of diagnosis in family
- Other risk factors, e.g. heavy smoking history, obesity, male sex, inflammatory bowel disease.



# Prevention in Lynch

## Pharmacoprevention:

- >75 mg ASA (CAPP2 600 mg, CAPP3 and AAS-Lynch ongoing)
- Resistant starch? (CAPP2, noncolonic cancers)

## Lifestyle:

- Body size
- Smoking
- Alcohol
- Physical activity
- Diet

KLINISKE RETNINGSLINJER | KRÆFT

## Arvelig disposition for kolorektalcancer, Lynch syndrom, FCC og let øget risiko – Udredning, behandling og screeningsprogrammer

Version 2.0

**GODKENDT**  
3. juni 2022 (DMCG)  
**Administrativ godkendelse**  
7. juni 2022 (Sekretariatet for Kliniske Retningslinjer på Kræftområdet)

**REVISION**  
Planlagt: 1. juni 2024

**INDEKSERING**  
Kolorektalcancer, arvelig kræft, kræftpatie udredning, behandling, screeningskontrol

CAPP2:  
Burn J *et al.* Lancet 2020;395:1855-1863  
Mathers J *et al.* Cancer Prev Res. 2022;15(9):623-634  
Mohavedi M *et al.* J Clin Oncol. 2015;33(31):3591-7

Guidelines

OPEN ACCESS

## Guidelines for the management of hereditary colorectal cancer from the British Society of Gastroenterology (BSG)/Association of Coloproctology of Great Britain and Ireland (ACPGBI)/United Kingdom Cancer Genetics Group (UKCGG)

Kevin J Monahan<sup>1,2</sup>, Nicola Bradshaw<sup>3</sup>, Sunil Dolwani<sup>4</sup>, Bianca Desouza<sup>5</sup>, Malcolm G Dunlop<sup>6</sup>, James E East<sup>7,8</sup>, Mohammad Ilyas<sup>9</sup>, Asha Kaur<sup>10</sup>, Fiona Lalloo<sup>11</sup>, Andrew Latchford<sup>12</sup>, Matthew D Rutter<sup>13,14</sup>, Ian Tomlinson<sup>15,16</sup>, Huw J W Thomas<sup>1,2</sup>, James Hill<sup>11</sup> Hereditary CRC guidelines eDelphi consensus group

**ABSTRACT**  
Heritable factors account for approximately 35% of colorectal cancer (CRC) risk, and almost 30% of the population in the UK have a family history of CRC. The quantification of an individual's lifetime risk of gastrointestinal cancer may incorporate clinical and molecular data, and depends on accurate phenotypic assessment and genetic diagnosis. In turn this may facilitate targeted risk-reducing interventions, including endoscopic surveillance, preventative surgery and chemoprophylaxis, which provide opportunities for cancer prevention. This guideline is an update from the 2010 British Society of Gastroenterology/Association of Coloproctology of Great Britain and Ireland (BSG/ACPGBI) having a family history of a first-degree relative (FDR) or second degree relative (SDR) with CRC. While highly penetrant syndromes such as Lynch syndrome (LS), familial adenomatous polyposis (FAP) and other polyposis syndromes account for account for only 5–10% of all CRC diagnoses, advances in genetic diagnosis, improvements in endoscopic surgical control, and medical and lifestyle interventions provide opportunities for CRC prevention and effective treatment in susceptible individuals. The purpose of this guideline is to provide an evidence-based framework for the optimal management of hereditary CRC for clinicians involved in their management, including gastroenterologists, oncologists, pathologists, geneticists, surgeons, and primary care physicians.

**KEYWORDS**  
Colorectal cancer, Lynch syndrome, hereditary, guidelines, prevention, surveillance, surgery, chemoprophylaxis, genetic testing, endoscopy, lifestyle, medical interventions.

DOI: 10.1002/hls.11902  
Review

## European guidelines from the EHTG and ESCP for Lynch syndrome: an updated third edition of the Mallorca guidelines based on gene and gender

T. T. Seppälä<sup>1,2,3</sup>, A. Latchford<sup>4</sup>, I. Negoi<sup>5</sup>, A. Sampaio Soares<sup>6,7</sup>, R. Jimenez-Rodriguez<sup>8,9</sup>, L. Sánchez-Guillén<sup>10</sup>, D. G. Evans<sup>11</sup>, N. Ryan<sup>12</sup>, E. J. Crobbie<sup>13</sup>, M. Dominguez-Valentin<sup>14</sup>, J. Burn<sup>15</sup>, M. Kloor<sup>16,17</sup>, M. von Knebel Doeberitz<sup>18,19</sup>, F. J. B. van Duijnhoven<sup>20</sup>, P. Quirke<sup>21</sup>, J. R. Sampson<sup>22</sup>, F. Maler<sup>23,24</sup>, G. Möslein<sup>25,26</sup>, on behalf of the European Hereditary Tumour Group (EHTG) and European Society of Coloproctology (ESCP)

**ABSTRACT**  
Lynch syndrome is the most common genetic predisposition for hereditary cancer but remains underdiagnosed. Large prospective observational studies have recently increased understanding of the effectiveness of colonoscopic surveillance and the heterogeneity of cancer risk between genotypes. The need for gene- and gender-specific guidelines has been acknowledged. The European Hereditary Tumour Group (EHTG) and European Society of Coloproctology (ESCP) developed a multidisciplinary working group consisting of surgeons, clinical and molecular geneticists, pathologists, epidemiologists, gastroenterologists, and patient representation to conduct a graded evidence review. The previous Mallorca guideline format was used to revise the clinical guidance. Consensus for the guidance statements was acquired by three Delphi voting rounds. **Results:** Recommendations for clinical and molecular identification of Lynch syndrome, surgical and endoscopic management of Lynch syndrome-associated colorectal cancer, and preventive measures for cancer were produced. The emphasis was on surgical and gastroenterological aspects of the cancer spectrum. Manchester consensus guidelines for gynaecological management were endorsed. Executive and layperson summaries were provided. **Conclusion:** The recommendations from the EHTG and ESCP for identification of patients with Lynch syndrome, colorectal surveillance, surgical management of colorectal cancer, lifestyle and chemoprevention in Lynch syndrome that reached a consensus (at least 80 per cent) are presented.

Received: March 24, 2020. Revised: May 16, 2020. Accepted: June 14, 2020  
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# Familial adenomatous polyposis (FAP)

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- Prevalence 35/1 000 000
- 200 families in Sweden
- >25% de novo mutation
- Small intestine, desmoid, osteoma of jaw, papillary thyroid cancer (1-12% risk), hepatoblastoma in childhood

## Prevention of FAP

- Surveillance colonoscopy usually annually from 12-15 years
- Prophylactic surgery when the number and size of polyps becomes unmanageable

# Summary of monogenic variants

## Replication repair deficiency

- Multiple cancer types
- High microsatellite instability and tumor mutational burden
- Colorectal cancer more often proximal colon, mucinous, high lymphocyte infiltration
- Therapeutic prediction: immune checkpoint inhibitors (positive), chemotherapy (negative)
- Lynch: mismatch repair protein: MLH1, MSH2, MSH6, PMS2
- Polymerase-proofreading associated polyposis: POLE, POLD
- Other genes: EPCAM (mutation causes MSH2 promoter methylation), MSH3, MLH3

## Polyposis syndromes

- 1% of colorectal cancer
- Pathogenic variant found:
  - Most patients with >100 polyps
  - Few patients with 10-100 polyps
- Familial adenomatous polyposis (FAP) and attenuated FAP (AFAP): APC
- MUTYH-associated polyposis (MAP), NTHL1, MSH3 (all recessive)
- Polymerase-proofreading (POLE, POLD)
- Hamartomatous e.g. STK11 (Peutz-Jegher), PTEN (Cowden) etc
- Juvenile polyposis (BMPR1A, SMAD4)
- Serrated polyposis (no genes?)

A growing list...

# Vilka bör erbjudas cancergenetisk utredning?

- Individ som insjuknat i tjock- och ändtarmscancer eller livmoderkroppscancer före 50 års ålder
- Familj där två eller flera 1a eller 2a gradsläktingar med tjock- och ändtarmscancer eller Lynchs syndrom-associerade tumörer\* i samma släktgren varav en insjuknat före 60 års ålder
- Individ med metakron eller synkron tjock- och ändtarmscancer cancer eller Lynch syndrom-associerade tumörer\*
- Misstanke om ärftligt polypossyndrom
- Påvisad dMMR med förlust av MSH2, MSH6 och/eller isolerad PMS2-förlust
- Påvisad dMMR med förlust av MLH1 vid avsaknad av BRAF-mutation (BRAF vildtyp)

Är det någonsin bråttom att utreda?

\* Tjock- och ändtarmscancer samt cancer i livmoderkropp, äggstockar, tunntarm, magsäck eller urinvägar.

# Familial colorectal cancer

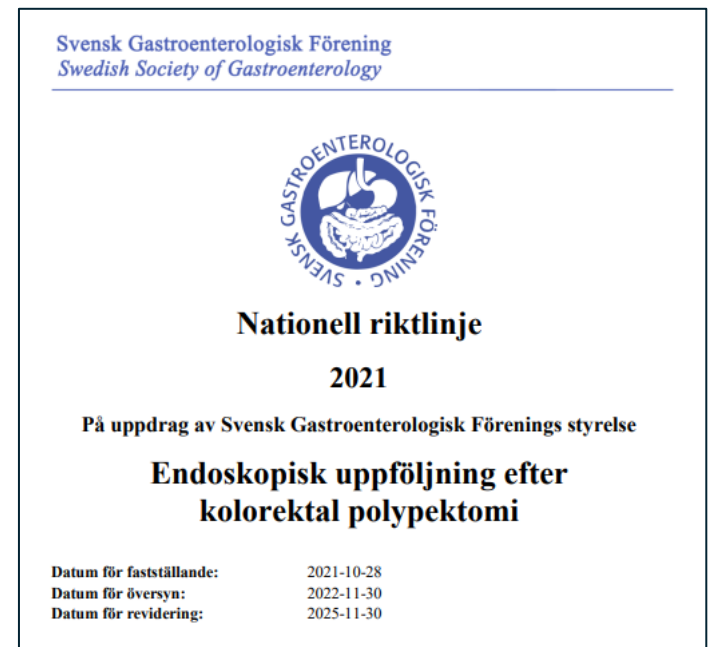
- 1 first degree relative with colorectal cancer at age <50 years: one-time colonoscopy at age 55
- 2 first degree relatives with colorectal cancer: one-time colonoscopy at age 55
- 3 first degree relatives with colorectal cancer: colonoscopy after 5 years starting 5 years before the earliest case
  
- Normal findings → return to screening
- Adenoma/polyps → polyp follow-up protocol
- Renewed assessment after 5-10 years

# Prevention in other higher-risk populations



An AI-generated image of “a polyp” (Copilot) ·  
September 2024

- Inflammatory bowel disease
- After polypectomy



# Modifiable risk factors

## LIFESTYLE

**Tobacco smoking**  
**Alcohol consumption**

Physical activity

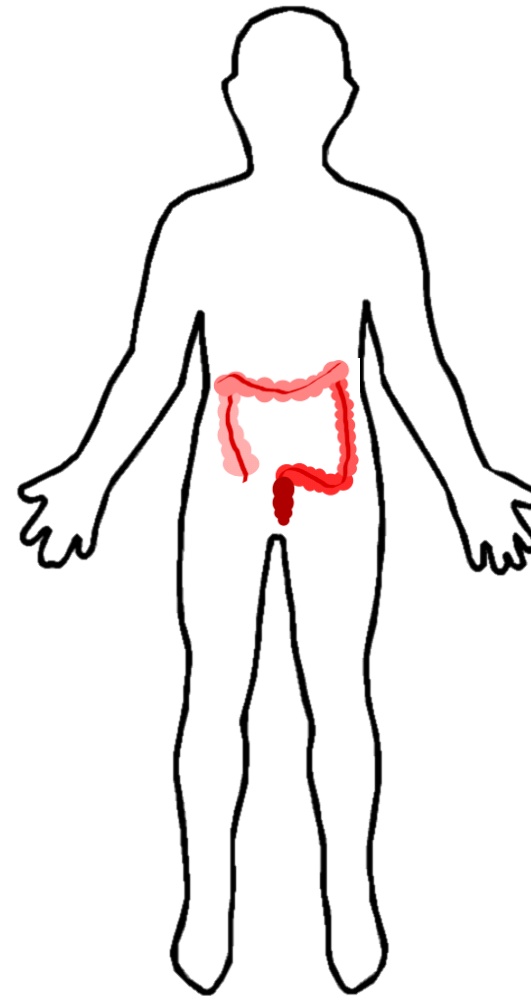
## MEDICAL

**Excess body fat**  
**Poor glucose control**  
**Inflammatory bowel disease (poorly controlled)**

Antibiotics?

## ASA/NSAID

Menopausal hormone therapy  
Statins?  
Metformin?



## DIET

### Processed meats

**Red meat**  
**Low vegetable consumption?**  
**Low fruit consumption?**  
**Foods with heme iron?**

Whole grains and foods with fiber

Dairy products

Calcium

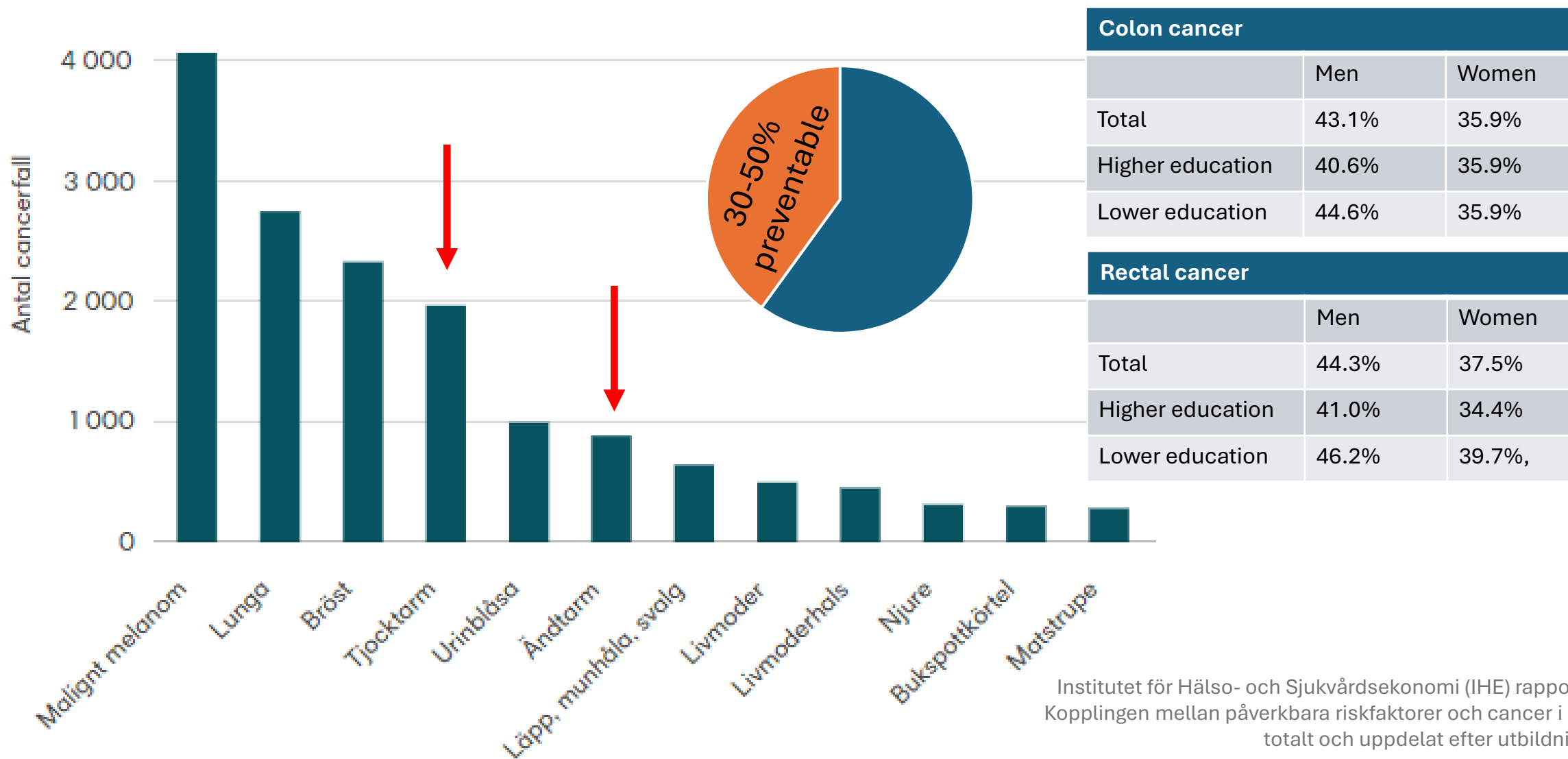
Foods with vitamin C?

Fish?

Vitamin D?

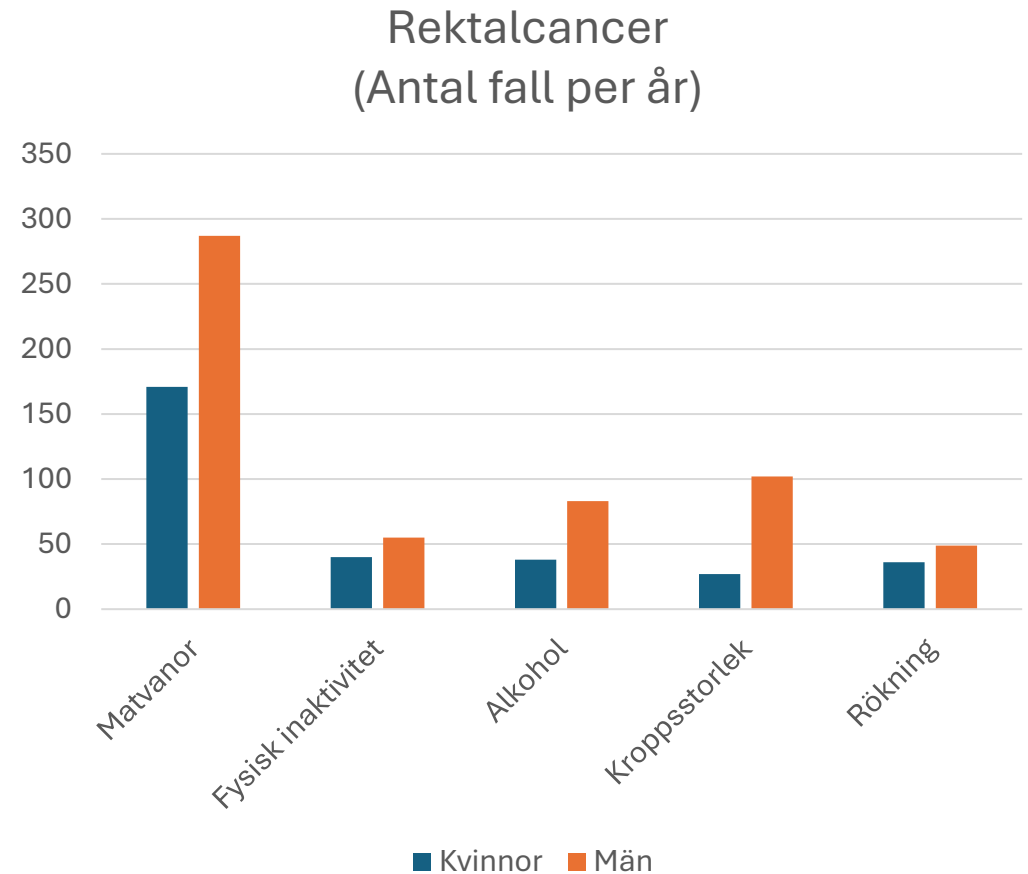
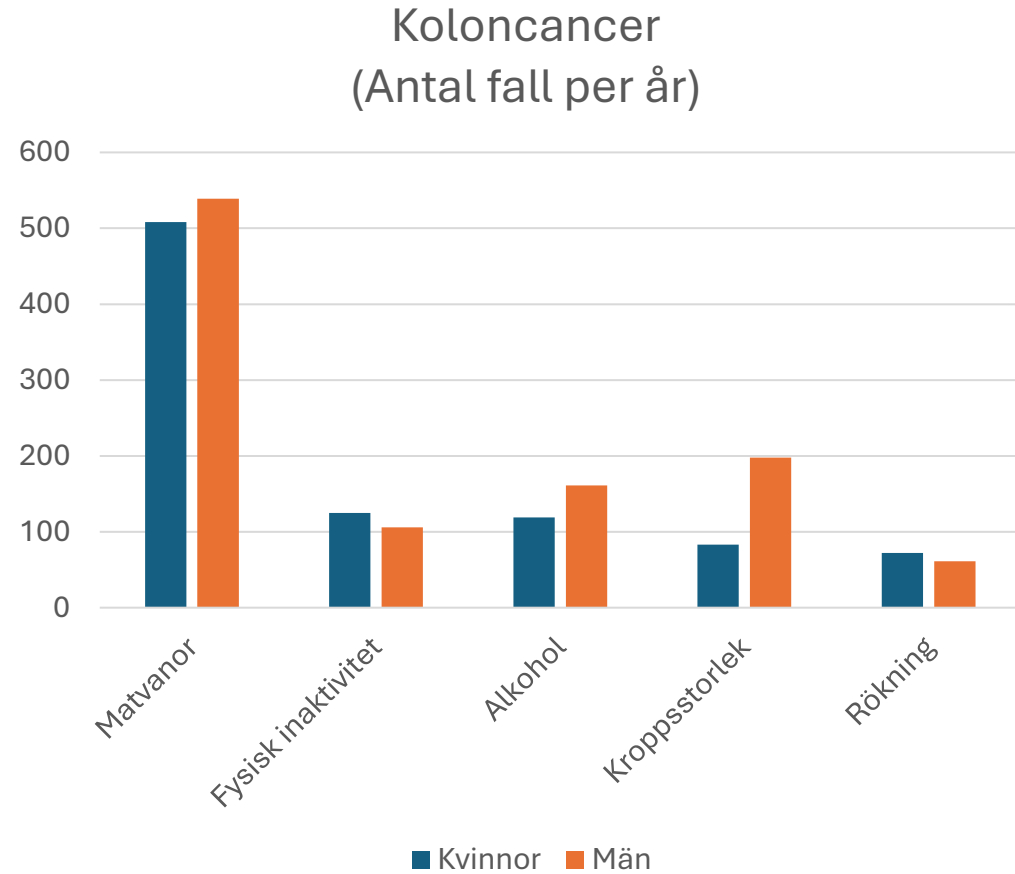
Established risk factors in bold. Increased risk in orange, decreased risk in green

# Preventable cases in Sweden



Institutet för Hälso- och Sjukvårdsekonomi (IHE) rapport, 2023  
 Kopplingen mellan påverkbara riskfaktorer och cancer i Sverige;  
 totalt och uppdelat efter utbildningsnivå

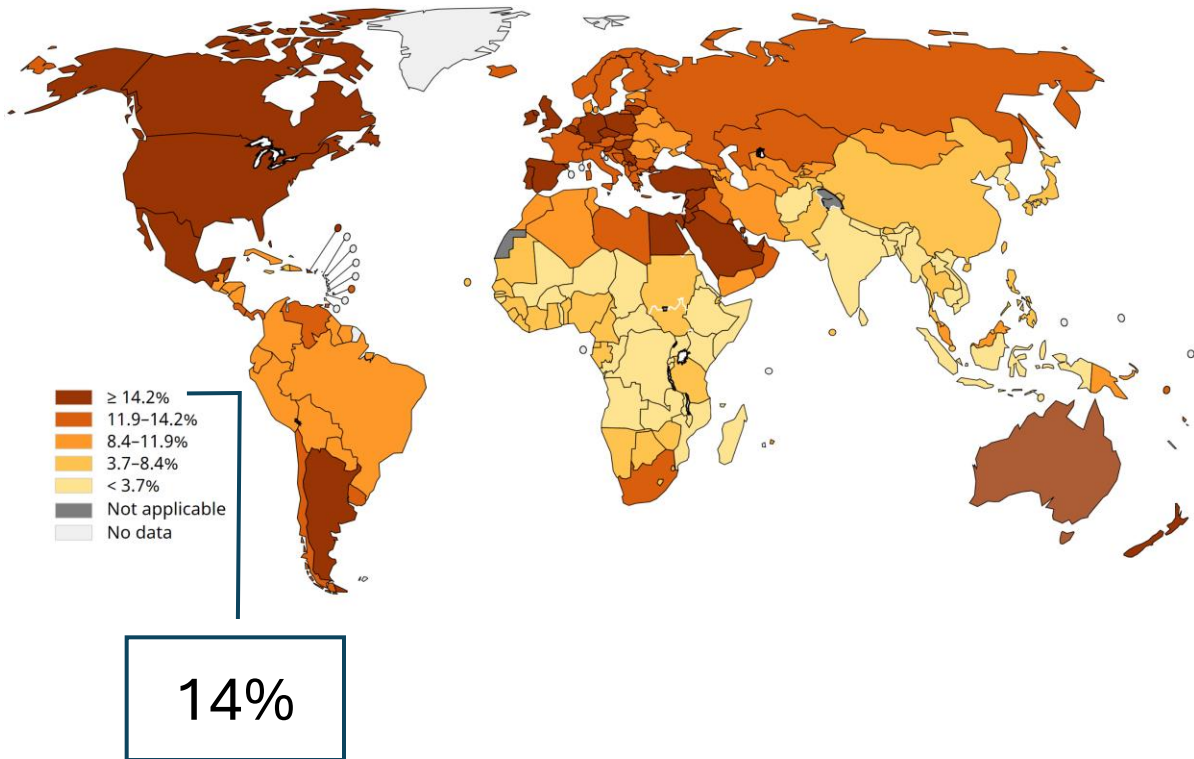
# Relative importance of lifestyle-related factors



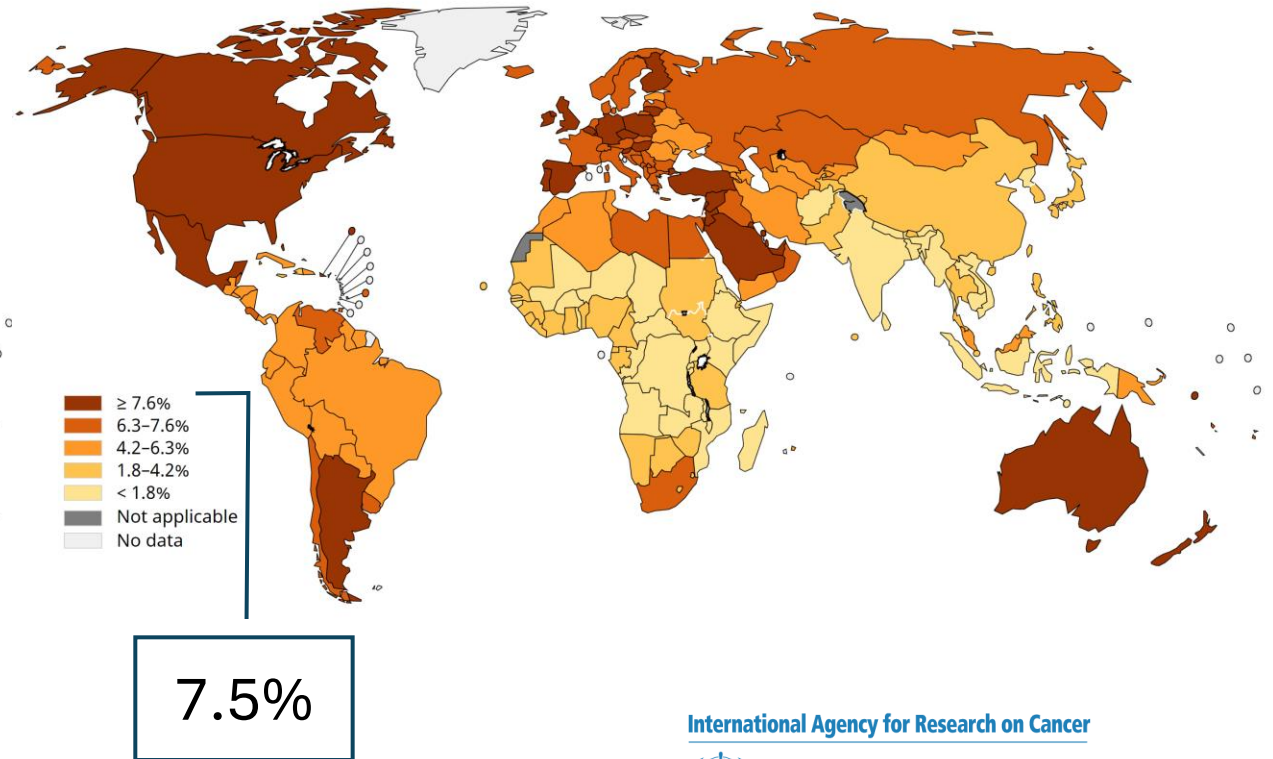


# Proportion of cases attributable to excess BMI

## Colon cancer



## Rectal cancer



# Prevention in “normal-risk” populations

- Society level
- Population level
- Individual level



# Society-level prevention



## Taxes on sugary drinks: Why do it?



ERFONDEN



[åvoshop](#) [Om cancer](#) [Minska risken](#) [Forskning](#) [Råd & Stöd](#) [Om oss](#)

## Producentavgift på socker i dryck

Producentavgift på socker i dryck

Sverige behöver en producentavgift på sockersötade drycker. Som ett steg mot mer hälsosamma levnadsvanor vill Cancerfonden att en producentavgift på socker i drycker som läsk införs. Evidensen är tydlig. En producentavgift skulle sänka sockerhalten.

# Population-level prevention

- Lifestyle recommendations
- General screening programs
- Screening awareness campaigns
- Self-exam campaigns (thankfully not for colorectal cancer)
- Standardized care pathways



Did you know that about half of all cancers could be avoided?

What can you do to reduce your risk of cancer?

**1 DO NOT SMOKE**  
One in three of all cancers is related to smoking. Cut out the cigarettes and cut your cancer risk.

An illustration of a pair of black scissors cutting through a lit cigarette. The cigarette is yellow and white, with a red flame and smoke rising from the tip.

**2 AVOID SECOND-HAND SMOKE**  
Keep your home and workplace smoke free. Second-hand smoke increases the risk of lung cancer and heart disease in non-smokers.

An illustration of a pair of human lungs, one green and one red. Grey smoke is shown entering from the left side, representing second-hand smoke.

**3 BE A HEALTHY WEIGHT**  
As the amount of fat in the body increases, so does the chance of developing certain cancers. Take action to have a healthy body weight by being physically active and eating a healthy diet.

An illustration of a white platform scale with a circular dial on top. A red needle points to the center. The word 'HEALTHY' is written in red above the scale.

**4 BE PHYSICALLY ACTIVE IN EVERYDAY LIFE**  
Limit the time you spend sitting and aim for at least 30 minutes of moderate physical activity a day.

An illustration of a blue silhouette of a person walking. To the left, there is a digital timer showing '30 min' in blue.

**5 HAVE A HEALTHY DIET**  
Eat fruit, vegetables, whole grains and pulses. Limit foods high in sugar, salt and fat. Avoid processed meat and limit red meat.

An illustration of a white plate with a fork and knife. On the plate are a banana, an orange, a tomato, and a corn cob.

**6 AVOID ALCOHOL**  
Drinking alcohol can cause at least seven types of cancer. Cutting back - or even better - avoiding alcohol altogether will reduce your risk.

An illustration of two bottles of alcohol, one green and one brown, with a red dashed line indicating a reduction or avoidance.

**7 AVOID TOO MUCH SUN**  
Skin cancer is the most common cancer in Ireland with over 10,000 new cases diagnosed in 2011. Be SunSmart: protect your skin when outdoors (sunscreen is not enough) and avoid sunbeds.

An illustration of a person in a pink shirt and hat holding a black umbrella. A bright yellow sun is shining in the background.

**8 POLLUTANTS**  
Protect yourself in your workplace and follow health and safety instructions.

An illustration of a person's head and shoulders wearing a grey protective mask. Below the mask are several small, colorful dots representing pollutants.

**9 RADIATION**  
Find out if you are exposed to radiation from naturally high radon levels in your home. Find out more information on radon levels from the Environmental Protection Agency. [www.epa.ie](http://www.epa.ie)

A yellow radiation warning symbol (a black trefoil) on a black background.

**10 ADVICE FOR WOMEN**  
Breastfeeding is proven to reduce the risk of cancer. HRT is a hormonal drug for menopausal symptoms which increase risk of certain cancers. Limit HRT.

An illustration of a pink silhouette of a woman breastfeeding an infant. Below it is a red pill bottle with white pills.

**11 GET VACCINATIONS**  
Some cancers are spread by viruses and bacteria. Ensure your children take part in vaccination programmes for Hepatitis B (for newborns) and Human papillomavirus (HPV) (for girls over 12 years).

An illustration of a grey silhouette of a person standing next to a red syringe.

**12 GET SCREENED FOR CANCER**  
Screening is checking for cancer or conditions that may lead to cancer in people that may have no symptoms. Take part in organised cancer screening programmes for bowel cancer (men and women), breast cancer (women) and cervical cancer (women). [www.cancerscreening.ie](http://www.cancerscreening.ie)

An illustration of a grey silhouette of a person standing at a white screening machine.

Find out more about the **European Code Against Cancer** and ways to reduce your cancer risk on [www.cancer.ie/europeancode](http://www.cancer.ie/europeancode) or call: 1800 200 700

Cancer specialists and scientists from across Europe compiled the code based on the latest scientific evidence on cancer prevention. This code was developed by the International Agency for Research on Cancer and the European Commission 2014.

# Lifestyle recommendations – the bigger picture



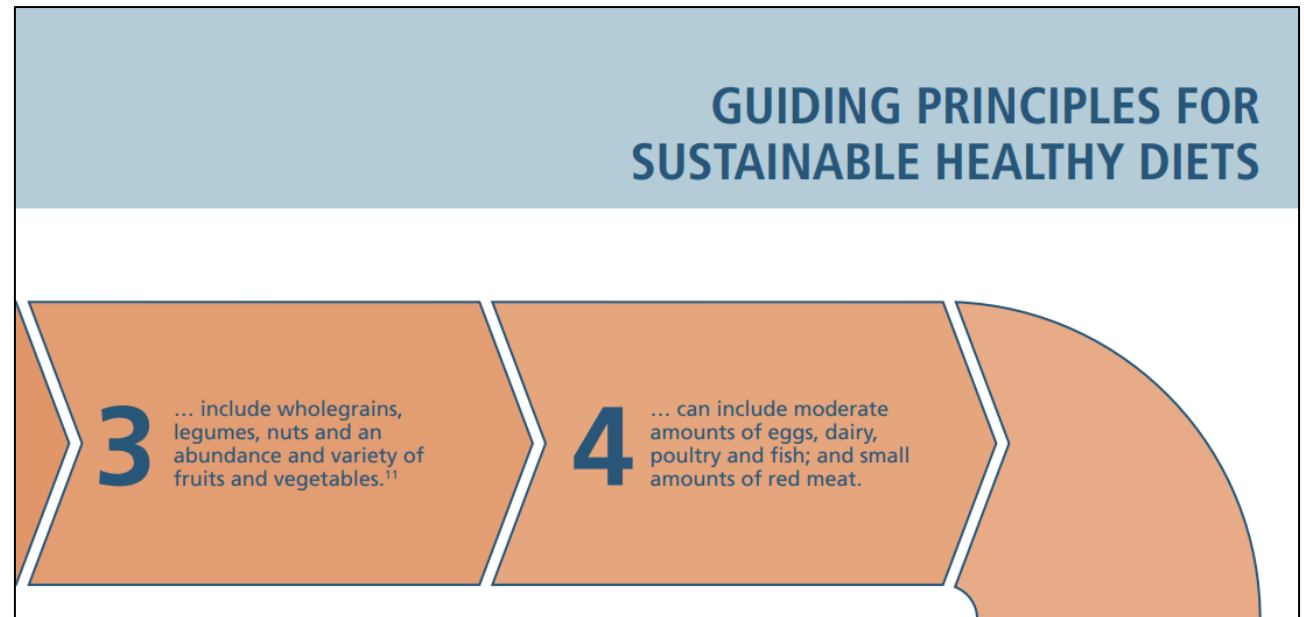
Other cancer



Other chronic diseases



Sustainability

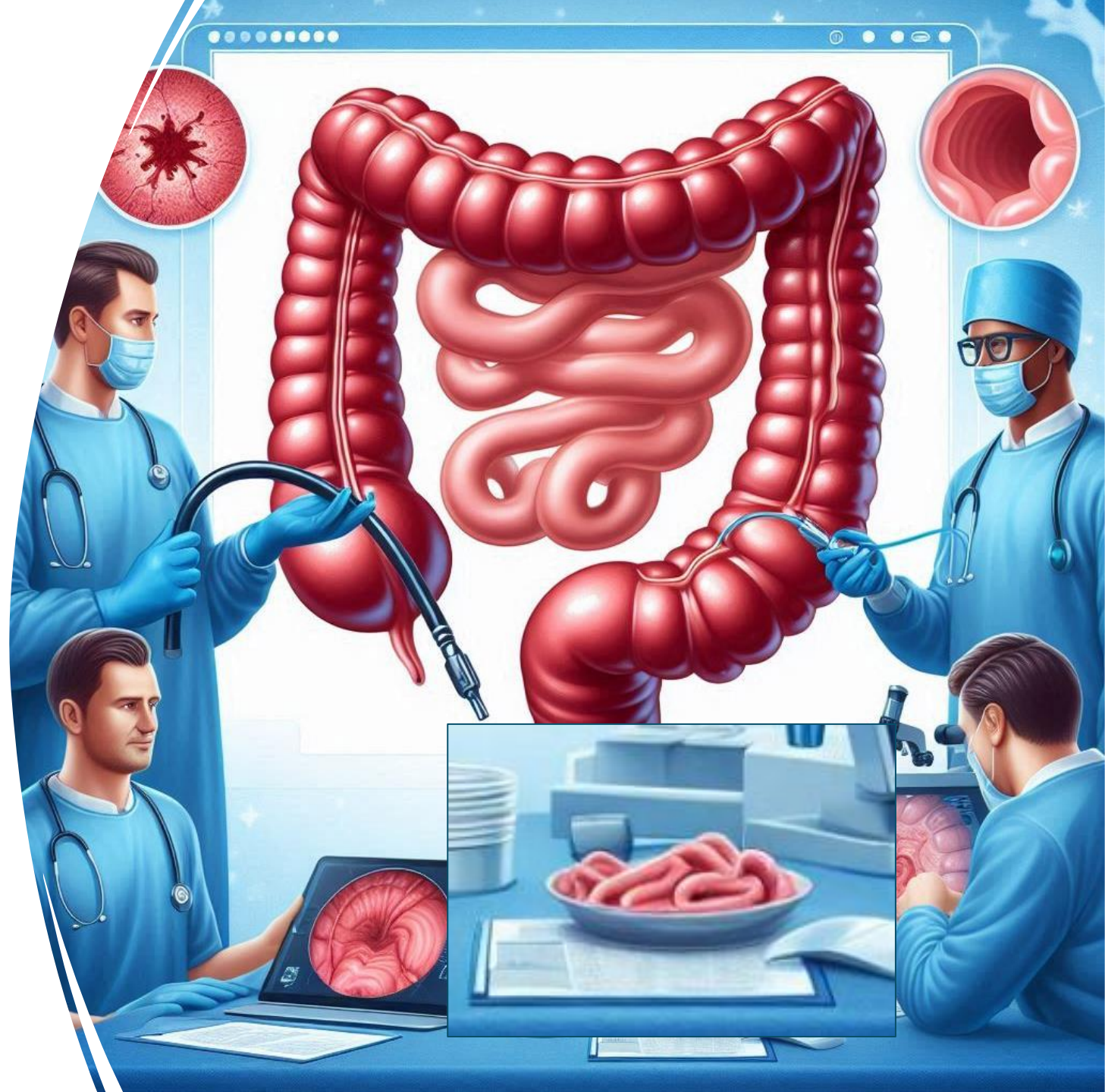


... include whole grains, legumes, nuts and an abundance and variety of fruits and vegetables

... can include moderate amounts of eggs, dairy, poultry and fish; and small amounts of red meat.

# Prevention through screening

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# Overview of screening principles

## “Medical”

- Important health problem
- Natural history adequately understood
- Recognizable asymptomatic phase
- Suitable test or examination
- Test and diagnostics acceptable to the population
- Accepted treatment for patients with recognized disease
- Treatment more effective in early phase than clinically diagnosed disease
- Health gains outweigh negative effects of screening
- Screening program ethically acceptable

## ”Structural”

- Cost effective
- Feasible (facilities, resources)
- Information to target population
- Equality aspects clear
- Plan for evaluation of effects

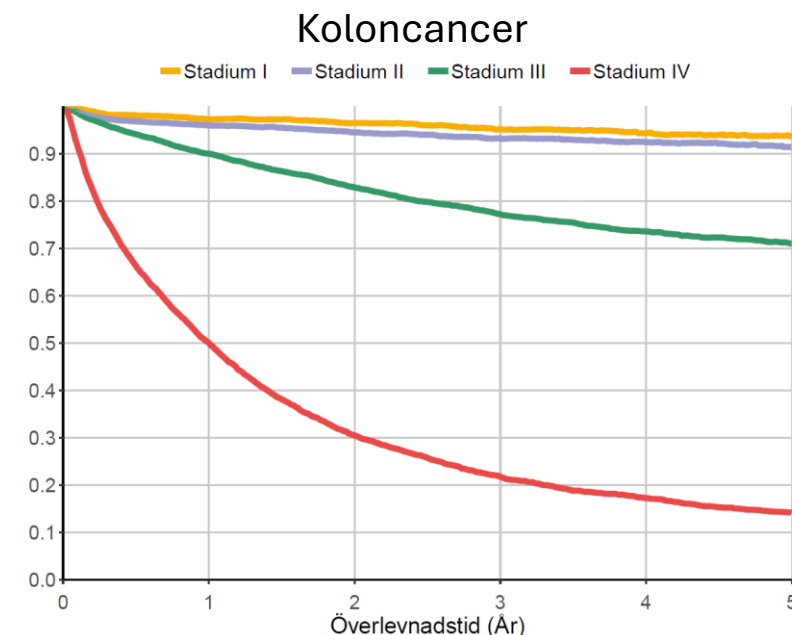
These lists are a summary of several sources and are modified in wording but not content. The division into medical and structural is my view. Key references are:

World Health Organization, Wilson, J. M. G. & Jungner, G. (1966). The principles and practice of screening for disease. World Health Organization.

Socialstyrelsen. Nationella screeningprogram. Modell för bedömning, införande och uppföljning. Socialstyrelsen artikelnummer 2019-4-12 Stockholm2019 [2020-12-09].

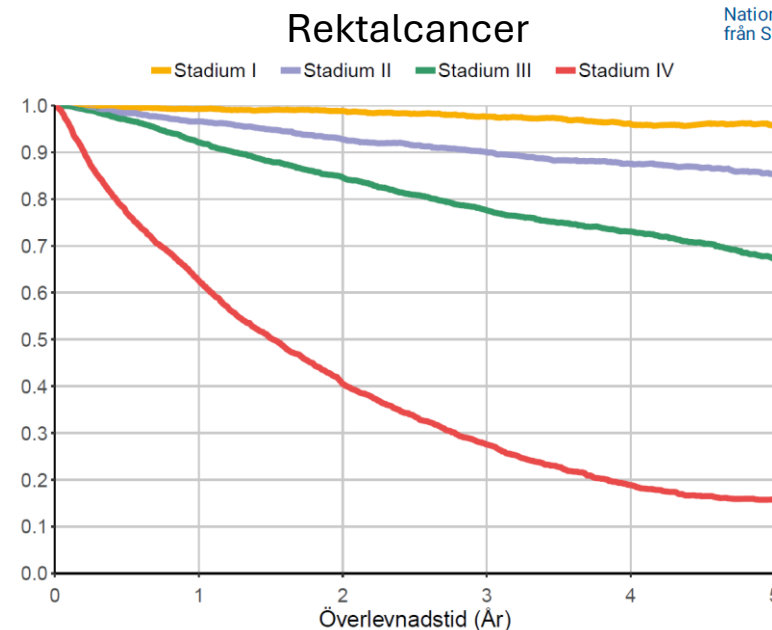
# Colorectal cancer screening

- **Prevention:** removal of precancerous lesions
- **Early detection:** "40-45% of cases shift from more advanced stages to stage I, i.e. in absolute terms an increase from approximately 10-15% to 20-25%"
- **Lower mortality:** "Approximately 300 colorectal cancer deaths annually in Sweden can be prevented"



### Koloncancer 2022

Nationell kvalitetsrapport för år 2022  
från Svenska Kolorektalcancerregistret



### Rektalcancer 2022

Nationell kvalitetsrapport för år 2022  
från Svenska Kolorektalcancerregistret



# Screening methods



- Stool-based tests
  - **Fecal immunochemical test (FIT)**
  - High-sensitivity guaiac fecal occult blood test (gFOBT)
  - Stool DNA test
- Direct tests
  - **Colonoscopy**
  - Flexible sigmoidoscopy
  - CT colonography

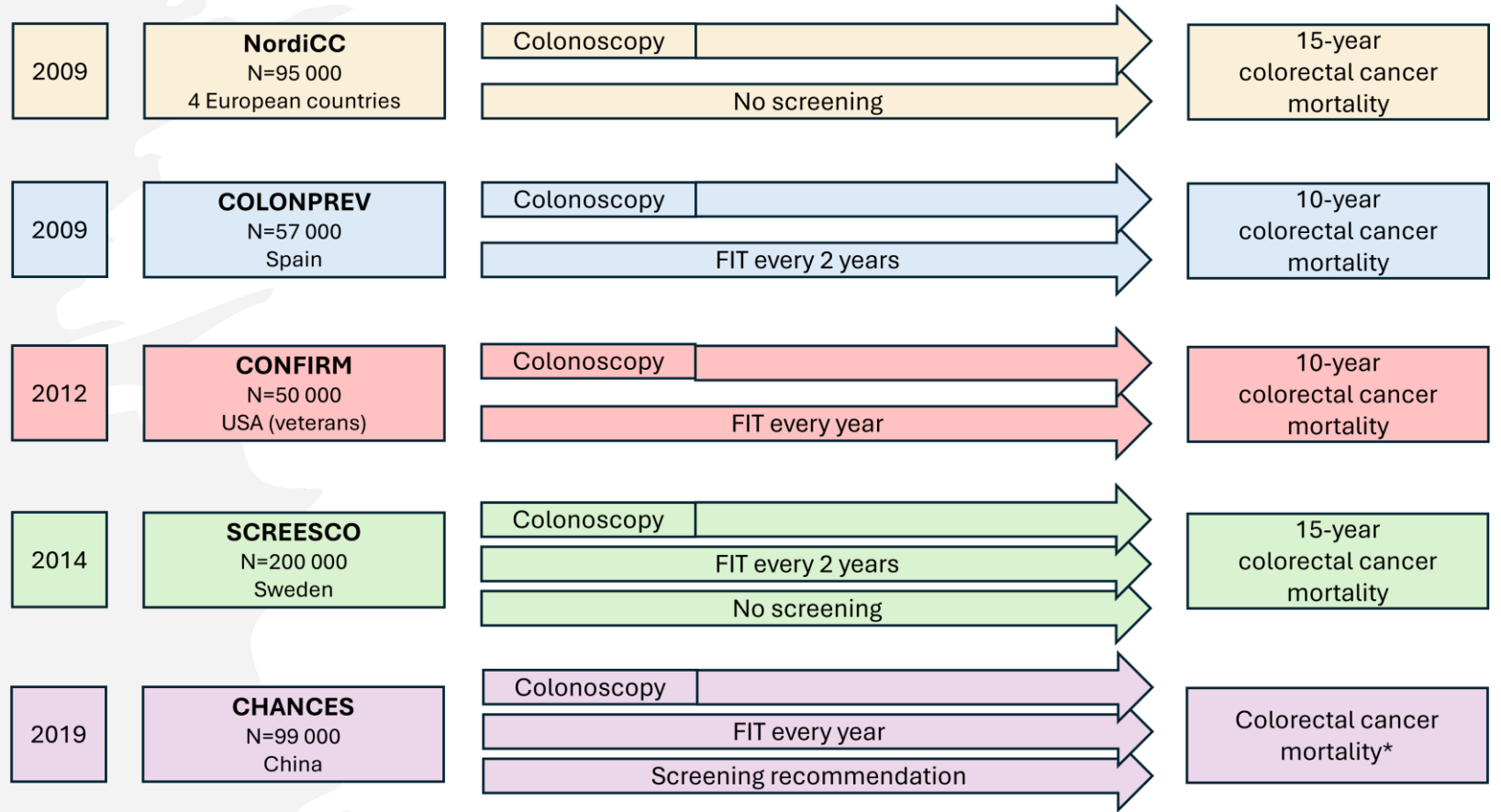
	Sick	Healthy	
Positive test	True positive	False positive	<b>PPV</b> $\frac{\text{true positives}}{\text{all positives}}$
Negative test	False negative	True negative	<b>NPV</b> $\frac{\text{true negatives}}{\text{all negatives}}$
	<b>Sensitivity</b> $\frac{\text{true positives}}{\text{all sickies}}$ FIT: 75-80%	<b>Specificity</b> $\frac{\text{true negatives}}{\text{all healthies}}$ FIT: 95%	

”Spin”: high specificity rules in.  
 ”Snout”: high sensitivity rules out.

Positive and negative predictive values depend on prevalence.

- USA:
- High-sensitivity gFOBT or FIT annually
  - sDNA-FIT every 1-3 years
  - CT colonography every 5 years
  - Flexible sigmoidoscopy every 5 years
  - Flexible sigmoidoscopy every 10 years + FIT annually
  - Colonoscopy screening every 10 years

# Large-scale colonoscopy studies



\*Secondary outcome. (Combined lung and colorectal cancer screening study)

# Screening effectiveness

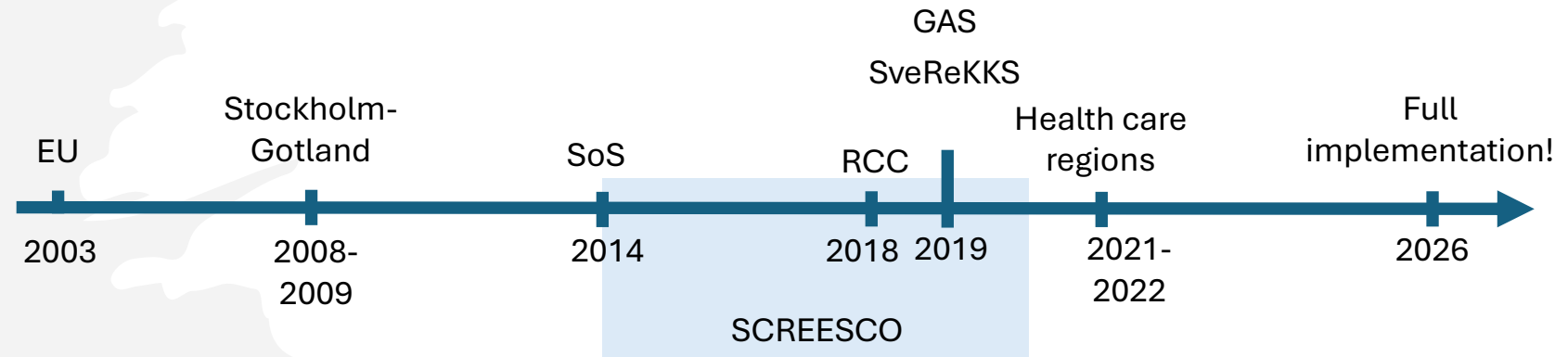
## Colonoscopy studies - NordiCC

- Intention to treat:
  - Incidence reduction 18%
  - Colorectal cancer mortality reduction 10%
- Per protocol:
  - Incidence reduction 31%
  - Colorectal cancer mortality reduction 50%

## Sigmoidoscopy studies

- Incidence reduction 20%, limited to left-sided colorectum (16% in women, 25% in men, mostly in higher age group)
- Colorectal cancer mortality reduction 20% (also more in men than women)

# Screening in Sweden



- ”...samtliga personer med normalrisk för tjock- och ändtarmscancer i åldern 60–74 år får erbjudande om att testa sig för eventuell förekomst av ockult blod i avföringen vartannat år”
- ”De individer som testas positivt kallas till vidare utredning med koloskopi”



Map of “Sweden” and flag generated with AI (Copilot – September 2024)

# Screening age – when to start?

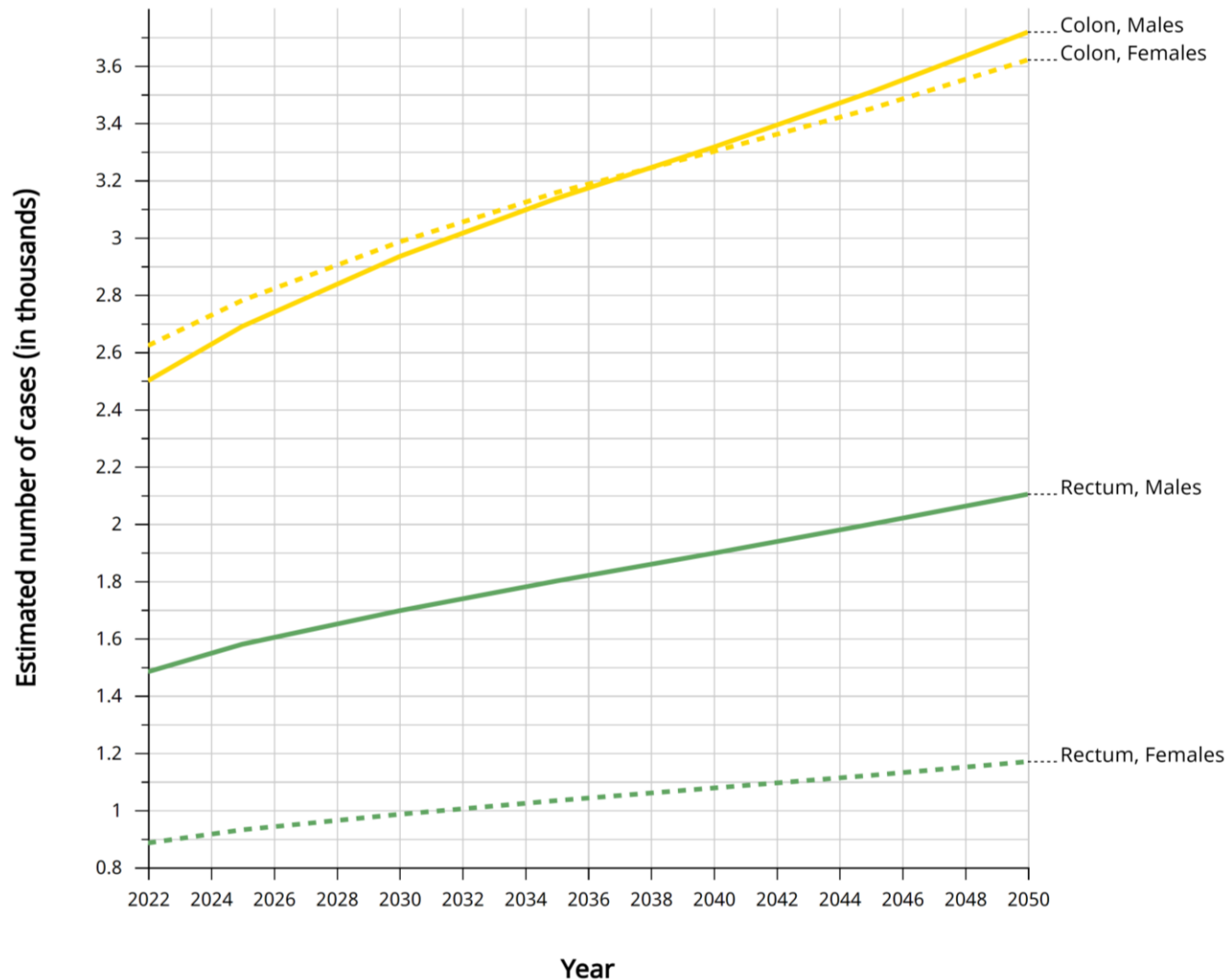
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- Sweden: 60 years
- Europe: 50 years
- USA: 45 years
- Early-onset colorectal cancer is on the rise, but still only 6% cases in Sweden.



Hur vanligt är tarmcancer bland unga? Vilka symtom ska man vara uppmärksam på? Och vilka är riskfaktorerna? Se professor i kirurgi Anna Martling berätta om tre viktiga fakta om tarmcancer. Foto: Midhat Poturovic.

Estimated number of new cases from 2022 to 2050, Males and Females, age [0-85+]  
Sweden



Predicted increases in incidence

	Men	Women
Colorectal	38%	30%
Colon	40%	32%
Rectal	35%	27%

Predicted increases in mortality

	Men	Women
Colorectal	49%	39%
Colon	50%	40%
Rectal	46%	38%

All increases are <20% for 0-74 y

..... and when to end?

# Other aspects

## Potential downsides:

- Cancer worry
- False negatives
- False sense of security
- Physical discomfort
- Complications of colonoscopy (perforation, bleeding, 1/200)
- Overdiagnosis of polyps
- Overtreatment of cancer (negligable on group level)

## Potential challenges:

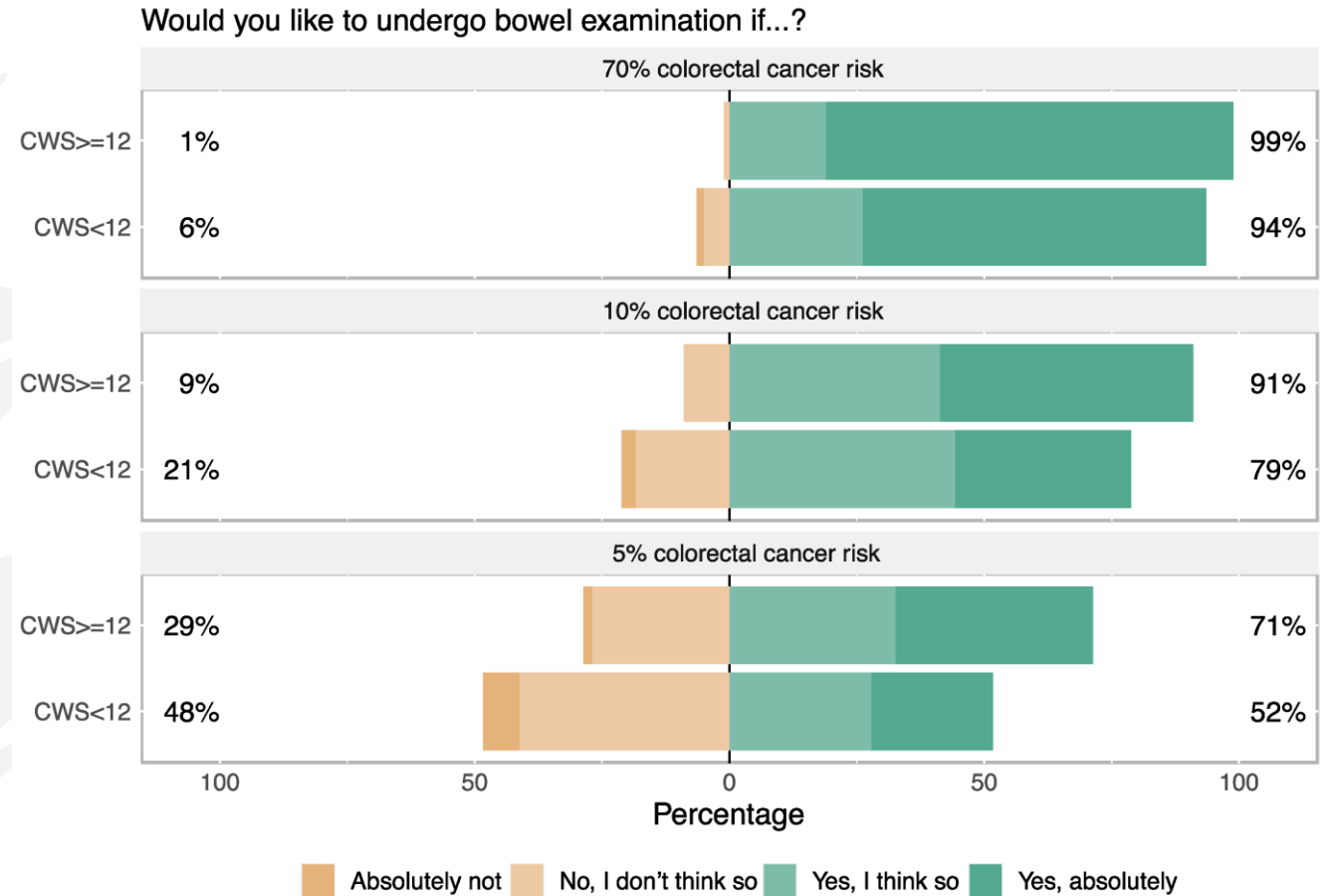
- Compliance
- Healthy screenee bias (health equity)
- Access to colonoscopists
- Colonoscopy quality measures (bowel prep, cecal intubation rates, adenoma detection rates)

# Screening compliance

*“Risk tools improved patient risk perception, knowledge, and screening intentions, but not necessarily screening behavior.”*



Anna Rosén





# Individual-level (precision?) prevention

Mat och dryck   Vikt   **Rörelse**   Solning   Tobak

## Rörelse

Hej! Fortsätt att röra på dig varje dag så behåller du en låg cancerrisk kopplat till fysisk aktivitet.

Fysisk aktivitet minskar risken för sju olika cancerformer men skyddar också mot viktuppgång och hjälper dig att hålla en hälsosam vikt.

### Medelintensiv aktivitet

Rör på dig minst 150 minuter i veckan så att pulsen höjs. Ju mer desto bättre, men all rörelse räknas.

+ Jag vill ha tips

### Högintensiv aktivitet

Rör på dig minst 75 minuter i veckan så pulsen höjs rejält. Ju mer desto bättre, men all rörelse räknas.

+ Jag vill ha tips

### Stillasittande

Forskning visar att långvarigt stillasittande ökar risken för flera olika cancerformer. Därför är det bra att undvika långvarigt stillasittande så gott det går!

+ Jag vill ha tips

### Steg per dag

Sträva efter att komma upp i minst 7 000 steg varje dag.

+ Jag vill ha tips

CANCERFONDEN

## Här är ditt resultat:

Högre risk   Lägre risk

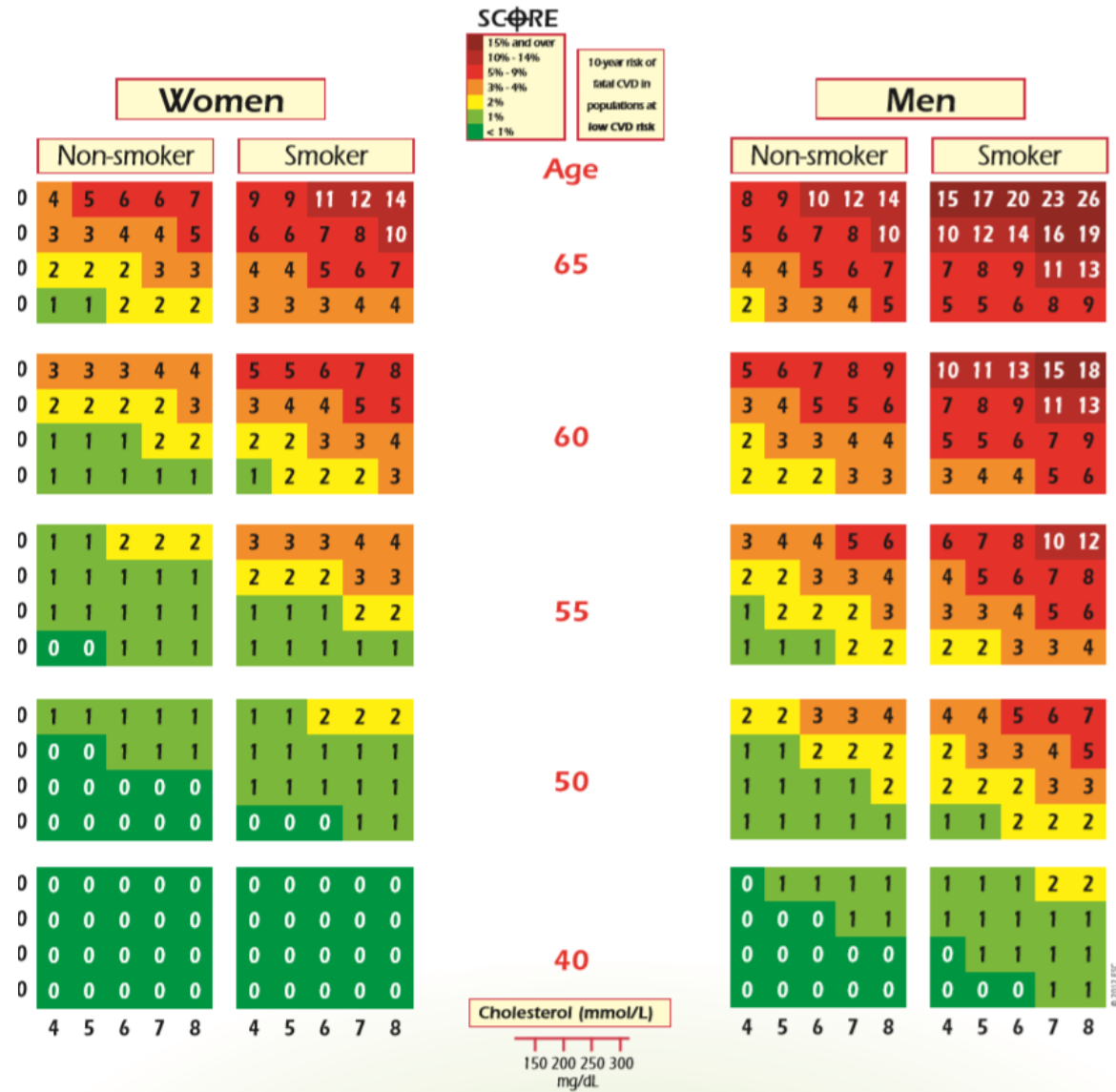
Ditt resultat

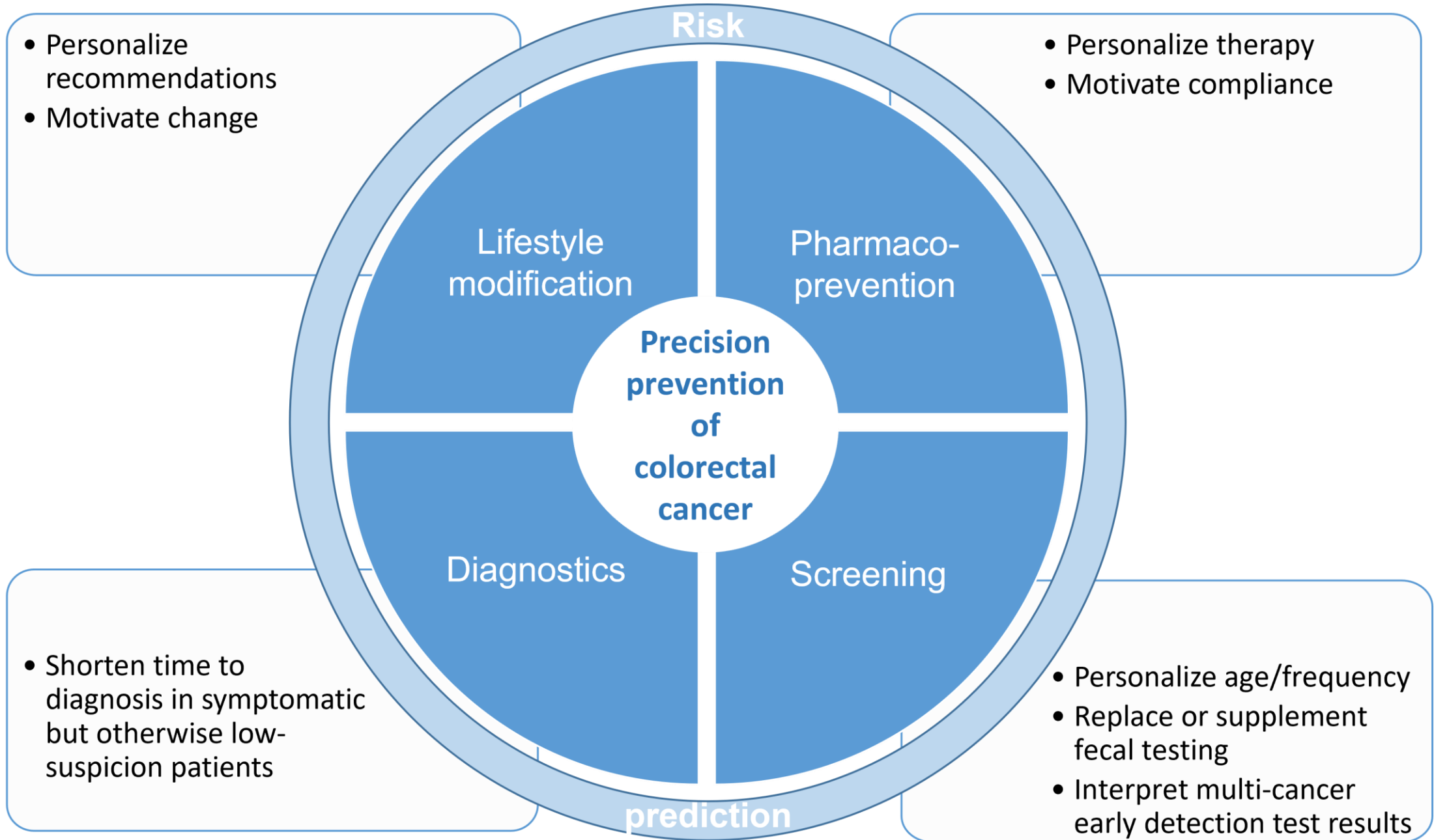
Se ditt resultat fråga för fråga

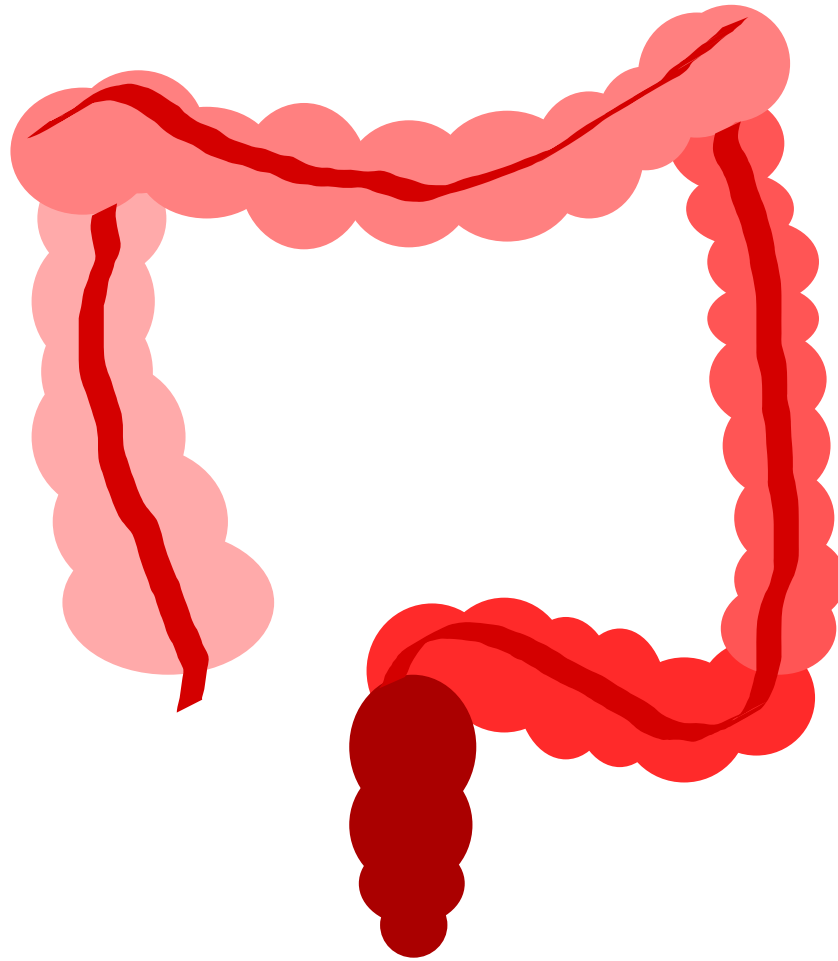
www.cancerfonden.se

Risk of death due to cardiovascular disease within 10 years.

Example: male, 65 yr old smoker with high blood pressure and high cholesterol, risk 20-25%







The End