To screen or not to screen: a pro view

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Cancer screening in older Individuals

- Overview of cancer screening
- Potential risks of cancer screening and age
- General benefits of cancer screening in all patients
- What we should do for older patients
Cancer screening in older Individuals

• Overview of cancer screening
How to protect your house from a fire?

Smoke detector

Fireman on duty
24 hours
Theoretical basis for screening asymptomatic individuals for cancer

Screening → Early detection → Improved curability

Standard end points of RCT of cancer screening: reduction of cancer-specific mortality
Modalities of cancer screening

**Breast**
- Self-examination
- Physical examination
- Mammography
- Digital mammography
- MRI

**Colorectal**
- FOBT
- FIT
- Stool DNA
- Circulating DNA
- Flexible sigmoidoscopy
- Colonoscopy
- Computed tomographic Colonography (CTC)
Questions

• Intervals between screening sessions
• Total number of screening sessions
• Risk
• Intermediate end-points
Cancer screening in older Individuals

• Potential risks of cancer screening and age
Pros and cons of mammography

**PROS**

- Increased incidence
- Mammography PV+ increases with age
- Reassurance
- Detection early stages
- May reduce breast cancer related mortality

**CONS**

- Anxiety false positive results
- Risk of benign biopsy
- False reassurance
- Overdiagnosis
- No reduction in breast cancer related mortality when life-expectancy lower than 10 years

Schonberg J AM Ger Soc, 2016
Pros and cons of colorectal cancer screening

**Pros**
- Increased incidence and prevalence of cancer
- Reduced risk of emergency surgery
- Reduced risk of cancer-related mortality

**Cons**
- Increased risk of perforation and major bleeding (4 and 8/10K)
- Increased risk of false positive occult blood
- Increased risk of dehydration from preparation to colonoscopy
- Decreased benefits from reduced life-expectancy
Cancer screening in older Individuals

• General benefits of cancer screening in all patients
Meta-analysis of screening mammography

• Reduction breast cancer mortality age 50-74
• Reduction independent of mammographic technique and screening Interval
• No effect overall mortality

Kerlikowske et al, JAMA, 1995, 273, 149
Nelson et al, 2016, 164, 244
1.11. Comparison 1 Screening with mammography versus no screening, Outcome 11 Overall mortality, 7 years follow up, women at least 50 years of age.

Gøtzsche PC, Jørgensen KJ. Screening for breast cancer with mammography. Cochrane Database of Systematic Reviews 2013, 6. Art. No.: CD001877. DOI: http://dx.doi.org/10.1002/14651858.CD001877.pub5
Figure 2. Overview of study design. a = screening interval; b = follow-up period for cancer ascertainment; BrCA = ...
## Colorectal cancer screening

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<th>Screening test</th>
<th>CRC mortality</th>
<th>Time frame</th>
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<td>reduction</td>
<td>11-12 years</td>
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<td>reduction</td>
<td>24 years</td>
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Lin et al, 2016 Health Services Technology Assessment Texts (HSTAT)
Colorectal cancer screening

• Secondary endpoints:
  Detection of large adenomas

Complications Colonoscopy: 4 perforations/10K
  8 major bleeding/10k

Lin et al, 2016 Health Services Technology Assessment Texts (HSTAT)
Fig 3 Pooled mortality curves for breast cancer.

Sei J Lee et al. BMJ 2013;346:bmj.e8441

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Fig 2 Pooled mortality curves for colorectal cancer.

Sei J Lee et al. BMJ 2013;346:bmj.e8441

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Cancer screening in older Individuals

• What we should do for older patients
Benefits of mammography in older women: SEER data

Reduction breast cancer mortality age 67-85
Reduction risk of death age 65-85
Benefits disappeared in presence of severe comorbidity

McCarty et al, J AM Ger Soc, 2000, 48, 1226
Sensible recommendations

• Institute screening based on life-expectancy (5-10 years) and not on chronologic age
• Mammogram every 2 years appears to be gold standard
• Professional physical examination of the breast yearly is a reasonable alternative
Sensible recommendations

• Institute screening based on life-expectancy (5-10 years) and not on chronologic age
• Fecal examination for DNA every 2-3 years appears the most reasonable approach
• Colonoscopy or CTC every ten years are reasonable alternatives