



# Overdiagnosis in screening

A medical delusion?

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# What is Overdiagnosis?

- Detection of disease in asymptomatic persons that will never produce morbidity or mortality (not false positives, not pseudodisease)
- When does it occur
  - Screening: asymptomatic persons: cancers,
  - Incidental findings e.g. AAA, TURP
- Harms: unnecessary overtreatment, worry, cost
  - Breast: for every 1 life saved (1 in 2000) , 10 women will have an unnecessary lumpectomy, mastectomy or radiation (Gotzsche et al BMJ 2006)

# Estimates of overdiagnosis

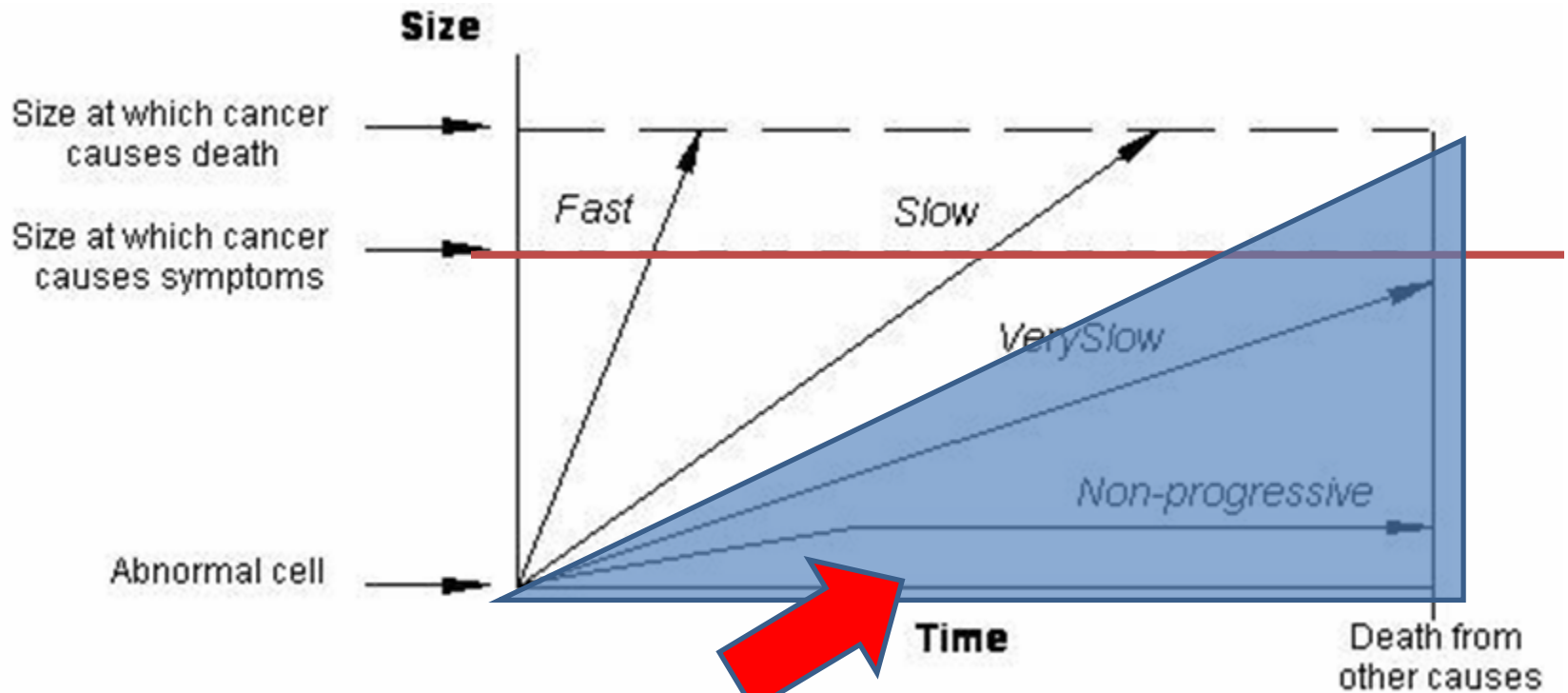
- Prostate cancer = 60%
- Breast cancer = 25%
- CXR or sputum for lung cancer = 50%
- neuroblastoma, thyroid cancer, melanoma, and kidney cancer

From *Overdiagnosis in cancer* H. Gilbert Welch, William C. Black, *Journal of the National Cancer Institute* Advance Access published online on April 22, 2010

# Why does it happen?

- The cancer never progresses or in fact regresses
- Cancer progresses slowly so that patient dies of other causes before it becomes symptomatic:
  - Cancer size at detection
  - Growth rate
  - Co-morbidities leading to mortality
  - Patient age

# Heterogeneity of cancer progression



How big is this population??

From Wikipedia <http://en.wikipedia.org/wiki/Overdiagnosis>

*Over Diagnosis in Screening: A Medical Delusion?*

NatiOnal Screening Advisory Committee at The Royal New Zealand College of General Practitioners Conference, Christchurch, 3 September 2010

# Prerequisites

- the existence of a silent disease reservoir:
  - prostate Ca 30-70% OF MEN > 60 yrs at autopsy
    - (Sakr et al, Stamatio et al)
  - Thyroid Ca 36% ..but depends on how finely you slice
    - (Harach et al)
- activities leading to its detection
  - Screening
  - Examination (skin cancer checks....are they screening?), palpation for nodes
  - Investigations...imaging (incidentalomas)...up to 50% of screening colonograms detects an extracolonic abnormality

# Evidence for overdiagnosis

- Screening RCTs
  - Only one breast cancer RCT reported long term..Malmö 15yrs..24% of mammographic cancers were overdiagnosis
  - ERSCP have to detect and treat 42 cancer to save one man's life
- Observational studies
  - Spiral CT increased detection of lung cancer x 10 smokers:non smoker 1:1 c.f 15:1 in the real world
- Case studies: melanoma
  - 103 melanomas: over 20 months, only three lesions showing tumour thickness of 1 mm or more. 1.
  - Regression features

1. Slow-growing melanoma: a dermoscopy follow-up study. Argenziano G, Br J Dermatol. 2010 Feb 1;162(2):267-73.

## Melanoma observational studies

- Melanoma epidemiology show a strong increase in the incidence of thin melanoma, with no corresponding increase in mortality or incidence of thick melanoma.
- May reflect improvements in melanoma prevention, resulting in greater detection of thin, slow-growing melanomas that would be unlikely to progress to thick melanomas within the patient's lifetime.
- or finding a whole lot of inconsequential melanoma

(Argenziano et al Slow-growing melanoma: a dermoscopy follow-up study British Journal of Dermatology 2010 162, pp267–273)

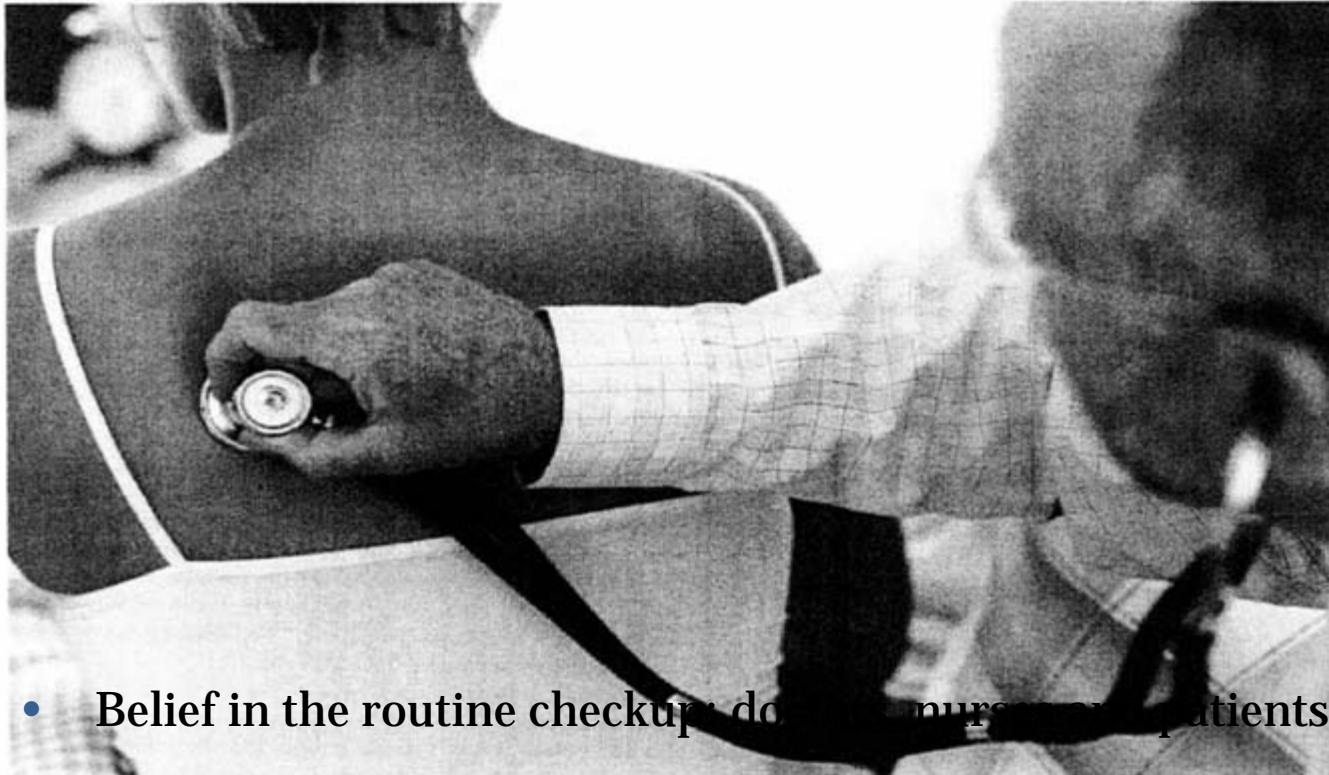


# Cervical screening

- No evidence that screening women aged 22-24 reduced the incidence of cervical cancer at ages 25-29

(Sasieni, Castanon + Cuzick, Effectiveness of cervical screening with age. BMJ 2009; 339:b2968)

# Challenging beliefs



- Belief in the routine checkups: doctors, nurses and patients
- The obligation to investigate: informed consent or medicolegal paranoia
- The danger of incidental findings

## Check-ups pointless?

Annual physicals may cost more than they're worth, writes Marie McCullough

# Patient understanding Breast cancer screening

- Widespread over estimation of screening benefit
  - 68% believed screening reduced their risk of contracting breast cancer,
  - 62% that screening at least halved mortality
  - 75% that 10 years of screening saved 10 of 1000 participants, (10 times the best estimates).

(Schwartz et al Enthusiasm for Cancer Screening in the United States JAMA, January 7, 2004—Vol 291, No. 1)

# If we know about it, what does a GP do?

- Self reflection:
  - Why am I doing this test/investigation?
  - How much do I know about overdiagnosis?
- Transparency and honesty with patients facing possible overdiagnosis
- The overdiagnosis paradox: For an individual, a diagnosis of overdiagnosis can only be made if the individual is not treated and dies from another cause i.e. can't be made at initial diagnosis
- High quality informed consent: achieving the patient perspective on balance of harms vs benefit

# Informed consent issues

- Critical for screening especially contentious
- What then of established programs?
- Informed consent for investigations that have a high chance of incidentalomas?
- Informed consent is hard work
  - Takes time
  - Doctor knowledge and understanding of the issues
  - Communication skills
  - But aren't these key skill sets of any GP?

# What's your attitude towards informed consent?

- Too hard, too time consuming, too much other work
- Patients won't understand (and I haven't bothered to understand)
- Easier to just tick the box
- Specialist will demand it
- I'll be sued

## Remember:

- This is decision affecting a person's life
- Are you being patient centred?
- Is ignorance a valid reason not to know?

## Next steps

- High quality informed consent: needs resourcing, research, New Zealandization
- Understanding patients values
- Increase awareness of overdiagnosis: in the profession (curriculum) and to public
- Increasing the transparency of medicine: patient centredness
- Raise thresholds for screening tests: ignoring small tumours?



## Do we need a new definition of cancer?

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