

# Prostate Cancer Screening

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# Background

- ◆ Consultant Urologist 15 yrs
- ◆ Clinical lecturer Univ of Otago
- ◆ RACS Examiner 10yrs ( senior 2 yrs)
- ◆ PI multiple Ca Pr clinical studies

- ◆ Exercise for Cancer prevention
- ◆ Know my own PSA



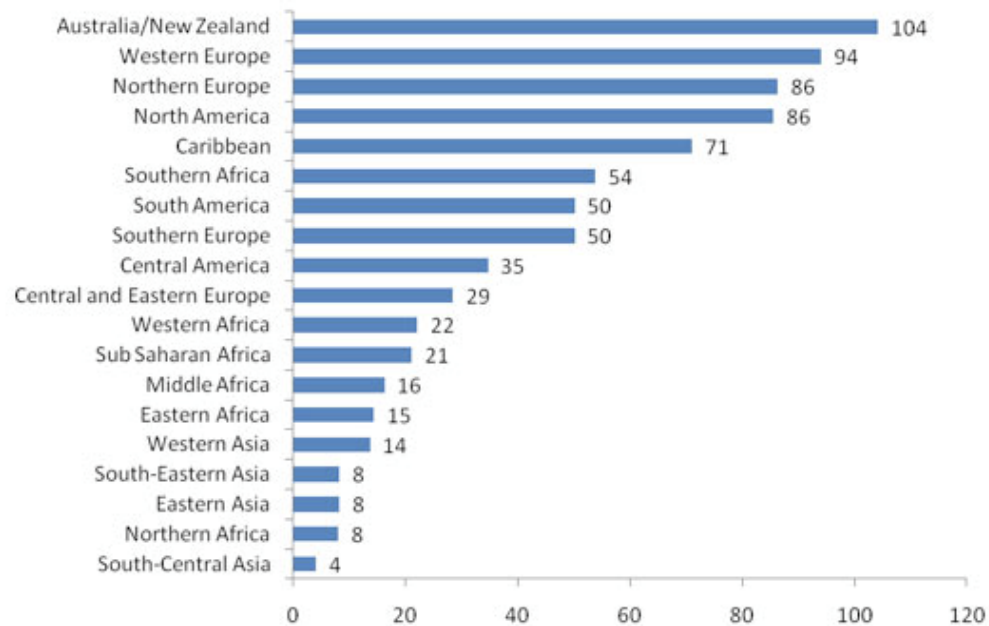
# Objectives

- ◆ Prostate cancer overview
- ◆ PSA
- ◆ Screening studies
- ◆ Recommendations



# Prostate cancer incidence 2008

**Age standardised incidence rates for prostate cancer 2008**



# Prostate cancer

- ◆ **Commonest solid malignancy diagnosed**
- ◆ **3<sup>rd</sup> commonest cause cancer death ( 600/yr)**
- ◆ **Majority die with not because of Ca Pr**
- ◆ **Long natural Hx, benefit of treatment > 10yr**
- ◆ **Screening studies inadequate follow up**
- ◆ **Reduction advanced disease / mortality ( 40**





# Current data

- ◆ PSA > 4 abnormal : 25% PPV for Ca Pr
- ◆ Biopsy : 2.5% sepsis, 0.5% retention
- ◆ Treatment:
  - 35% Active Surveillance
  - 45% surgery
  - 20% radiotherapy

Metastatic disease morbid/expensive  
Reduction in mortality

# Prof Richard Ablin

Prof Immunology from Arizona



Discovered PSA: Prostate specific not Cancer specific

# PSA

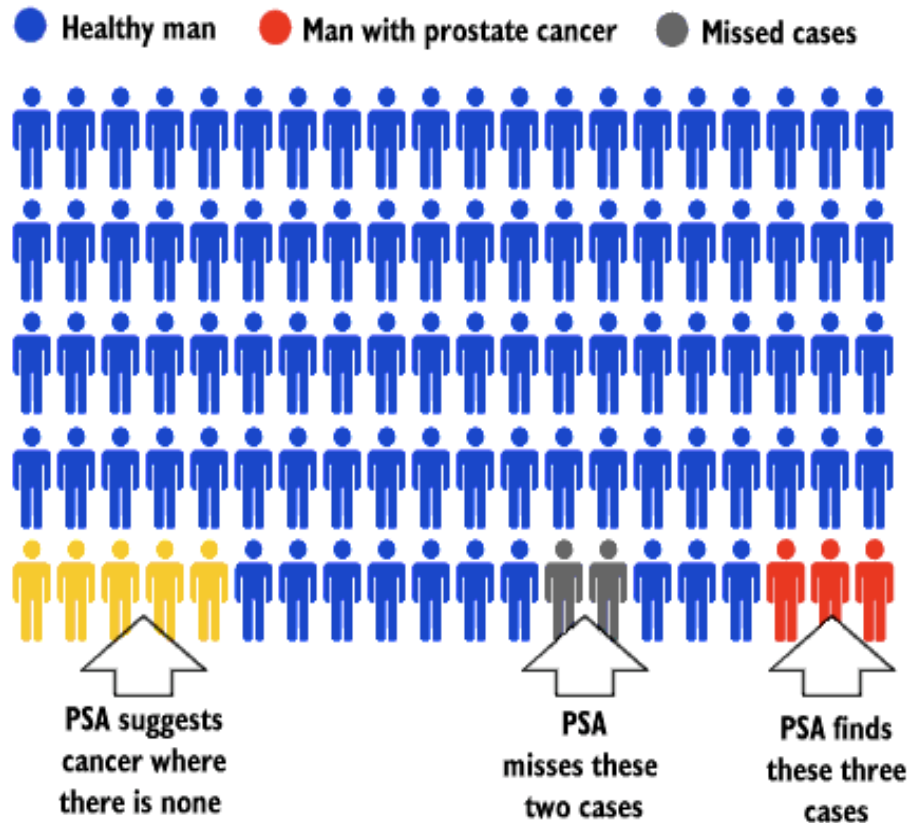
- Normal protein, role to liquify sperm
  - No PSA level that diagnose Ca Pr
  - Increase PSA increase Ca Pr diagnosis
- PSA > 4 ng/ml is abnormal**

Age Range (years)	Serum PSA Concentration (ug/L)
40 - 49	< 2.5
50 - 59	< 3.5
60 - 69	< 4.5
70 - 79	< 6.5

Source : Oesterling JE et al. **JAMA** 1993; 270:860



# Men over 50 yrs : PSA



# PSA in “younger” male

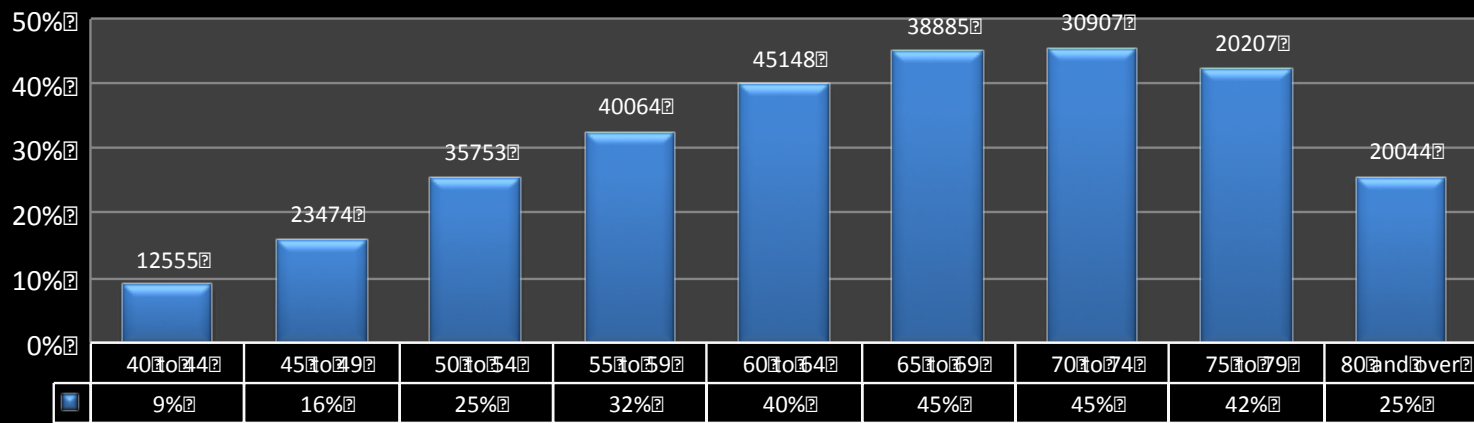
- ◆ Longitudinal population studies
- ◆ **PSA < 0.6ng/ml** 40-45 yrs... reassuring
- ◆ **PSA > 0.6ng/ml** 40-45 yrs... Incr diagnosis and death Ca Pr
- ◆ 2.5 - 4 times risk with positive family history

# General Practitioners attitudes and practices towards PSA screening in asymptomatic men

Van Rij S<sup>\*^</sup>, Dowell T<sup>#</sup>, Nacey J<sup>^</sup>

\* Wellington Hospital, # Otago University Department of General practice, ^Otago University Department of Surgery

Percentage of population who had PSA testing by age bracket  
(label indicates actual number of men tested)



# NZ GP Survey


- ◆ 1000 survey sent and 280 responded
- ◆ 20% male 40-60yrs have PSA
- ◆ GP initiates majority assessment
- ◆ 20% GP will not initiate discussion
- ◆ 35% PSA done over 75yrs

# Screening studies



The NEW ENGLAND  
JOURNAL of MEDICINE

## Prostate-Cancer Mortality at 11 Years of Follow-up

Schröder, Fritz H ; Hugosson, Jonas ; Roobol, Monique J; Tammela, Teuvo LJ ; Ciatto, Stefano; et al. The New England Journal of Medicine 366. 11 (Mar 15, 2012): 981-90.

Difficulties:

Pre screen PSA, PSA in Control group and

No investigation in active arm with abnormal PSA



# Recent update...

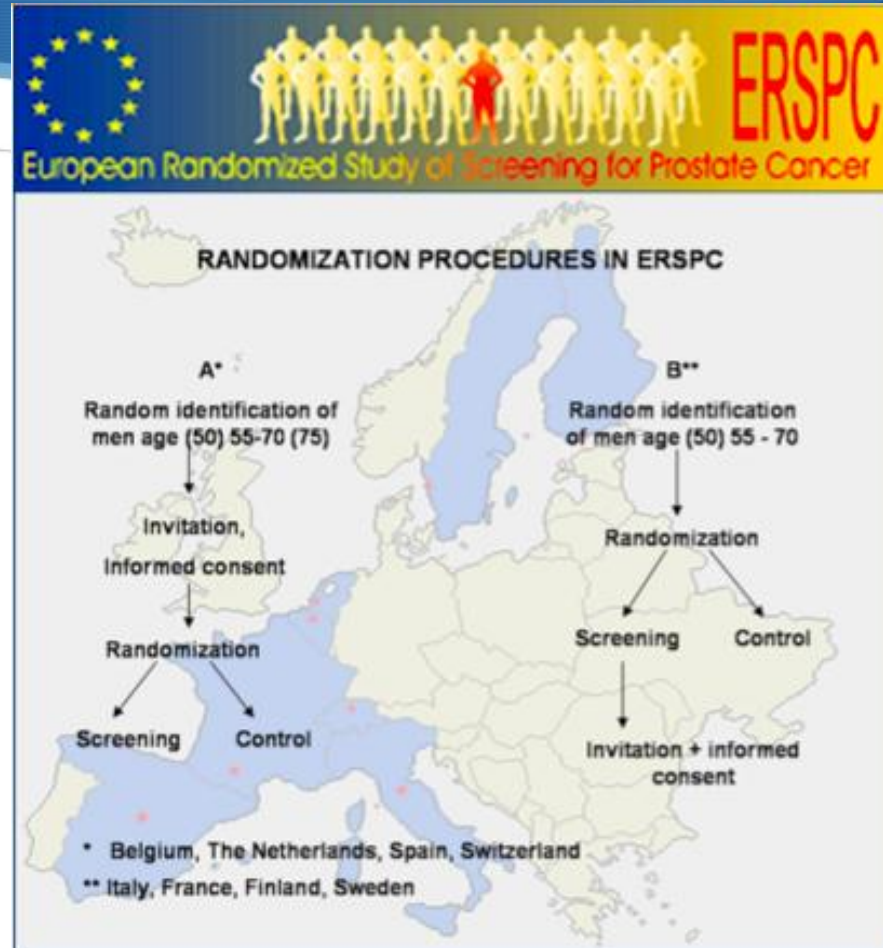


## ERSPC an update



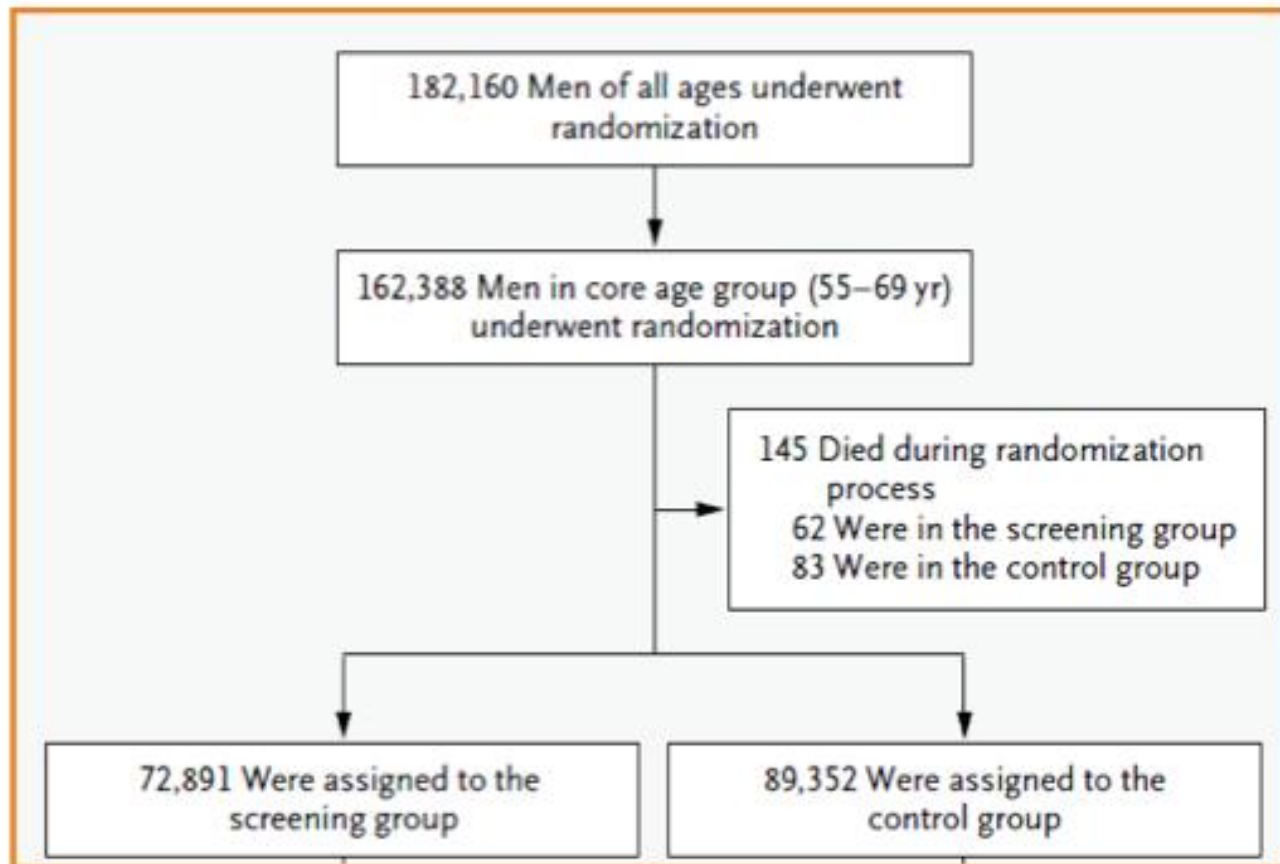
Monique Roobol  
Associate professor  
Dept. of Urology  
Erasmus University Medical Centre  
Rotterdam  
The Netherlands

# Over 180000 enrolled



# Design

## Randomization



# Results

USANZ2012

## Incidence

- Follow-up: median 9.0 years
- 126.462 screens, 2.1 screens per subject, PPV 24.1%
- Screening arm: 5.990 PC's (8.2%)
- Control arm: 4.307 PC's (4.8%)
- Excess incidence: 34 per 1000 men

- Follow-up: median 11.0 years
- 136.689 screens, ( 7.5% increase)
- 2.3 screens per subject, PPV 24.2%
- Screening arm: 6.963 PC's (9.6%) ( an increase of 14%)
- Control arm: 5.396 PC's (6.0%) ( an increase of 20%)
- Excess incidence: 35 per 1000 men

# Screening outcome

## NNI / NND

- NNI = 1410 (1/abs. Risk reduction)
- NND = 48 (1/abs. Risk reduction \* excess incidence)

- NNI = 936 and NND = 33
- A 34% reduction caused by an increase of the absolute risk difference of PC mortality
- Data on year 10-11 after randomisation:
- Rate ratio of 0.62, 38% relative reduction in favor of screening, p=0.003
- Mortality reduction in men actually screened was 0.71, p=0.001, a 29% relative reduction.



# Results

USANZ2012

## Mortality

- Screening arm: 214 PC deaths (3.6%) (0.29%)
- Control arm: 326 PC deaths (7.6%) (0.37%)
- 15.8% of men died
- Rate ratio of PC death: 0.80, a 20% reduction in favor of screening,  $P=0.04$
- Absolute risk reduction 0.71 death per 1000 men

- Screening arm: 299 PC deaths (4.3%) ( an increase of 16%) (0.41%)
- Control arm: 462 PC deaths (8.6%) ( an increase of 29%) (0.52%)
- 19.2% of men died ( an increase of 17.7%)
- Rate ratio of PC death: 0.79, a 21% reduction in favor of screening,  $P= 0.001$
- Absolute risk reduction 1.07 death per 1000 men ( an increase of 34%)

# Conclusions

- Some men can benefit from PSA based screening
- Some men will not benefit, they might be harmed
- PSA based screening needs to be individualised, no population based programs at this point in time
  
- Currently the situation for men remains unchanged:
- Outcome needs to be balanced against number of screens/biopsies and overdiagnosis

# Update

## The 2012 data

- Confirmation of 2009 data, screening reduces prostate cancer mortality (  $p=0.001$ )
- No single center is responsible for the significant PC mortality reduction
- NNI and NND have reduced
- Only 19% of men randomised have died
- Longer follow-up is needed to assess effect of PSA based screening

# USPTF recommendations

- ◆ Mission to provide evidence based recommendations

Grade D for PSA ( moderate to high certainty of no benefit and some harm)

PSA not accurate

Biopsy process morbid

Treatment morbid

Majority don't need treatment



# Consequences of treatment

Major morbidity: < 2%, Mortality < 0.1%



50%



2 – 5%



# Contemporary Issues

- ◆ Increased length of life
- ◆ Increased expectation health service
- ◆ Younger male PSA may be more accurate
- ◆ Less treatment morbidity when younger
- ◆ Increased number on Active Surveillance
- ◆ Reduction in advanced disease ( 25% to 5%)
- ◆ Reduction in death rate



# Prostate Cancer Taskforce

- ◆ Multidisciplinary group ( GP, public, specialists)
- ◆ MoH directed
- ◆ Deliver guidelines on Prostate Cancer
- ◆ Not screening review
  
- ◆ Recommendations late 2012

# Recommendations on PSA testing

- ◆ Not recommend screening
- ◆ Understand issues
- ◆ Review patient age / morbidities
- ◆ Listen to patient issues and respond
- ◆ Identify choice and present evidence
- ◆ Allow reflection
- ◆ Negotiate decision



# If PSA abnormal

- ◆ Refer if DRE abnormal
- ◆ MSU
- ◆ Repeat in 4 – 6 weeks
- ◆ Understand local referral pathway

Refer if remains abnormal

# Conclusion/ What I believe...

- ◆ Screening will diagnose and cure more cancer
- ◆ Potential harms and benefits need discussion
- ◆ Offered to all men with > 10 yr life expectancy
- ◆ Initial screen DRE and PSA, then PSA 1 -3 yrly
- ◆ Selective treatment offered
- ◆ Significant reduction in mortality







