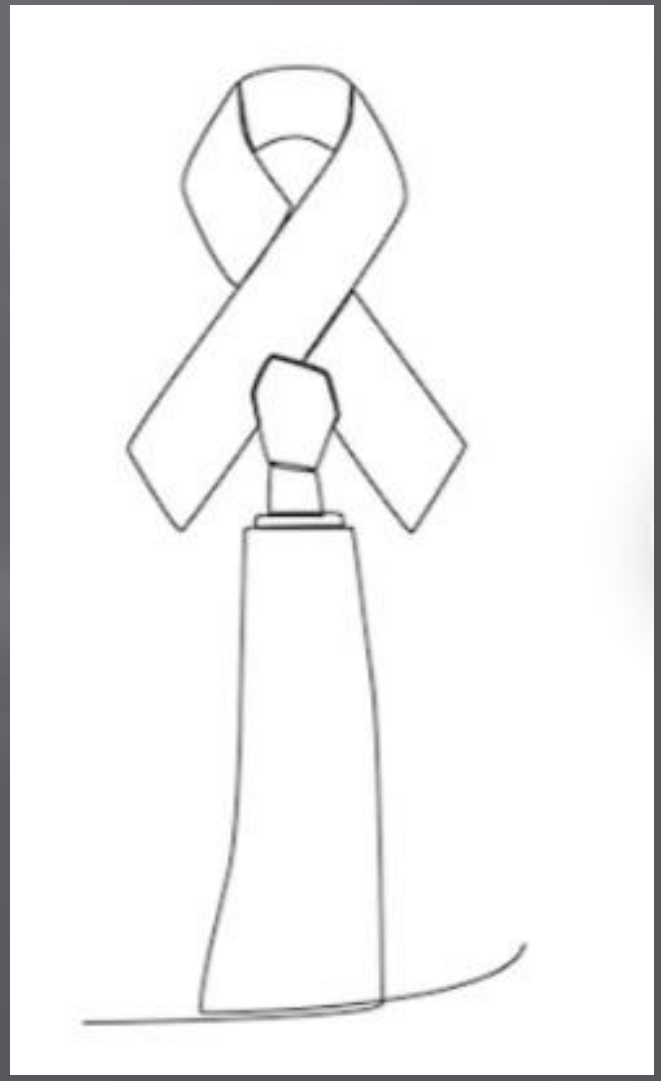
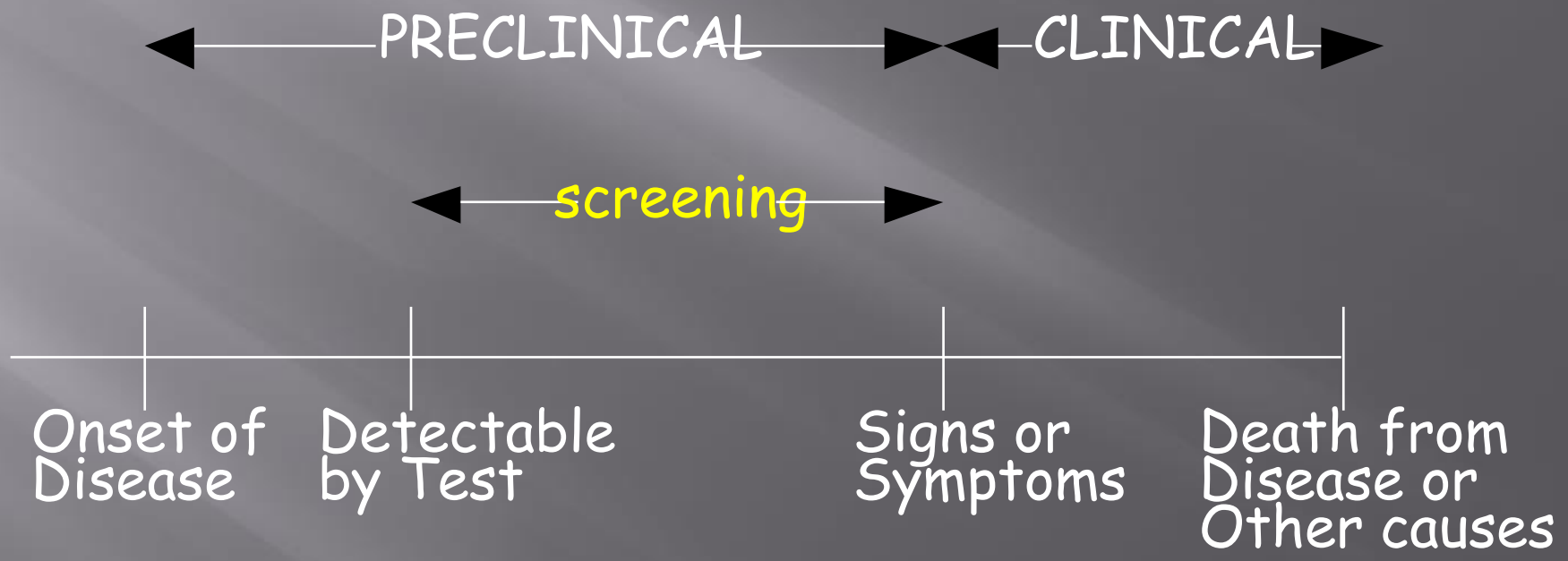
Προσυμπτωματικός έλεγχος συμπαγών νεοπλασιών

Κελιδη Παναγιώτα
Ειδικευομενη Παθολογικης ογκολογιας
Γενικο ΝοσοκομειοΝοσηματων Θωρακος
ΣΩΤΗΡΙΑ"



Principles of Screening

Timeline of Disease

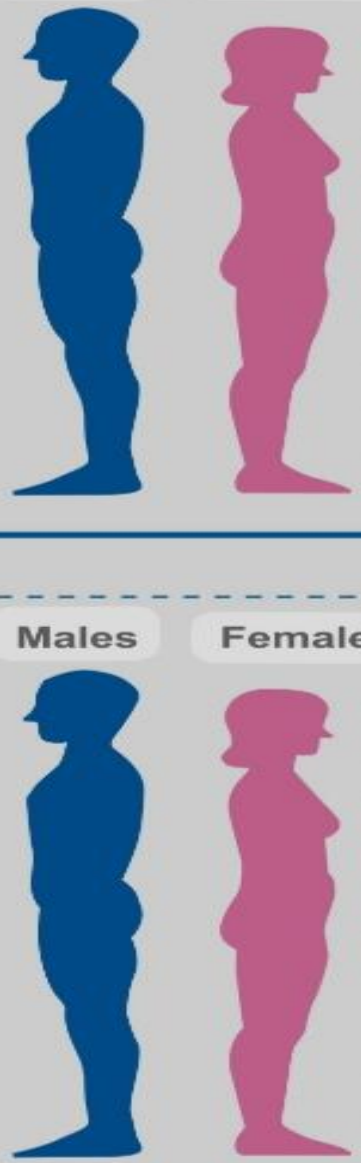


Cancer statistics 2023

Males				Females		
Prostate	288,300	29%		Breast	297,790	31%
Lung & bronchus	117,550	12%		Lung & bronchus	120,790	13%
Colon & rectum	81,860	8%		Colon & rectum	71,160	8%
Urinary bladder	62,420	6%		Uterine corpus	66,200	7%
Melanoma of the skin	58,120	6%		Melanoma of the skin	39,490	4%
Kidney & renal pelvis	52,360	5%		Non-Hodgkin lymphoma	35,670	4%
Non-Hodgkin lymphoma	44,880	4%		Thyroid	31,180	3%
Oral cavity & pharynx	39,290	4%		Pancreas	30,920	3%
Leukemia	35,670	4%		Kidney & renal pelvis	29,440	3%
Pancreas	33,130	3%		Leukemia	23,940	3%
All Sites	**1,010,310**	**100%**		**All Sites**	**948,000**	**100%**

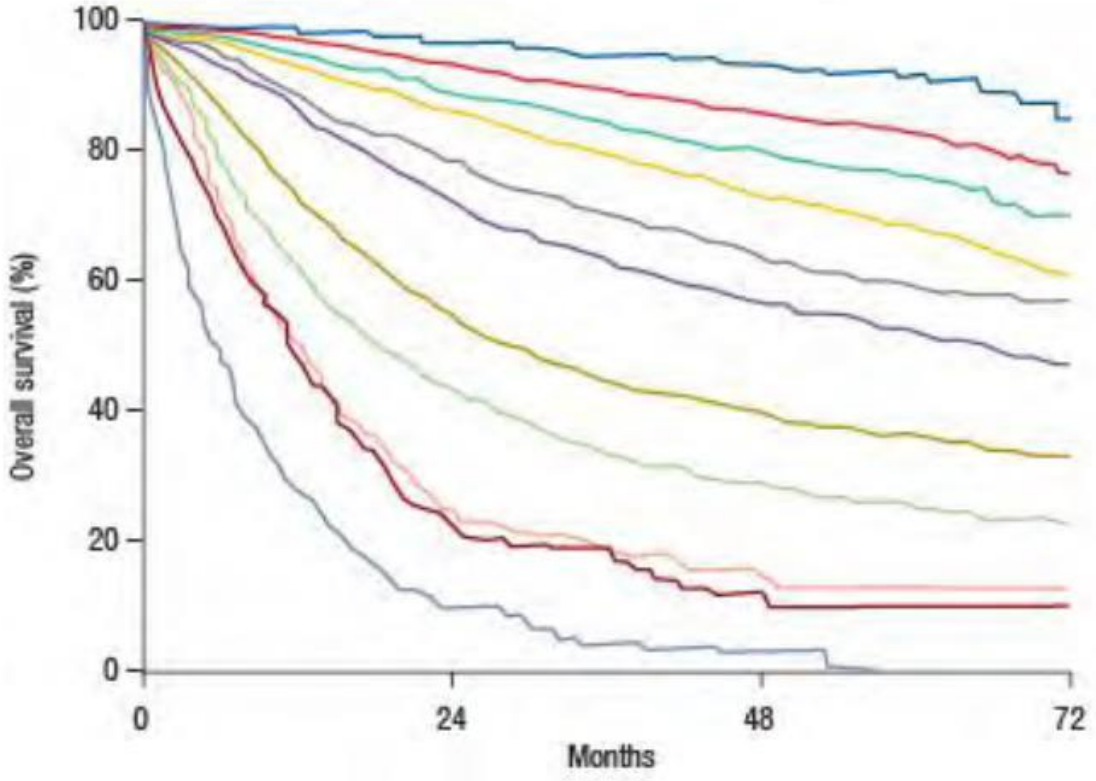
Estimated Deaths

Males				Females		
Lung & bronchus	67,160	21%		Lung & bronchus	59,910	21%
Prostate	34,700	11%		Breast	43,170	15%
Colon & rectum	28,470	9%		Colon & rectum	24,080	8%
Pancreas	26,620	8%		Pancreas	23,930	8%
Liver & intrahepatic bile duct	19,000	6%		Ovary	13,270	5%
Leukemia	13,900	4%		Uterine corpus	13,030	5%
Esophagus	12,920	4%		Liver & intrahepatic bile duct	10,380	4%
Urinary bladder	12,160	4%		Leukemia	9,810	3%
Non-Hodgkin lymphoma	11,780	4%		Non-Hodgkin lymphoma	8,400	3%
Brain & other nervous system	11,020	3%		Brain & other nervous system	7,970	3%
All Sites	**322,080**	**100%**		**All Sites**	**287,740**	**100%**

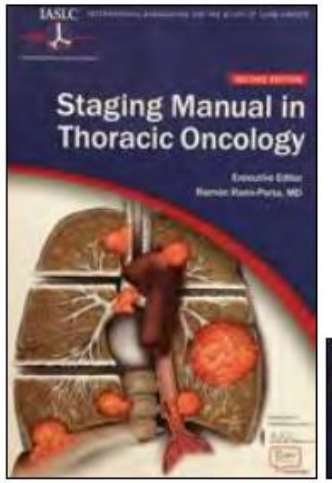


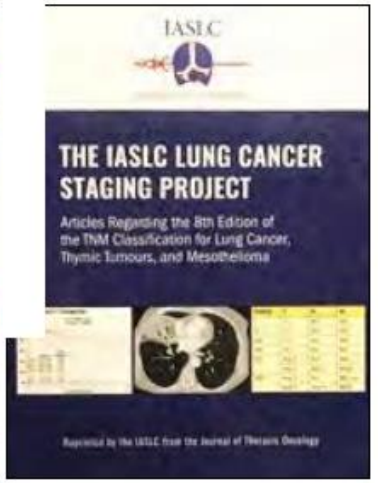
Siegel R, et al. CA Cancer J Clin,

Lung Cancer – every centimeter counts



Staging	60-month overall survival (%)
IA1	92
IA2	83
IA3	77
IB	68
IIA	60
IIB	53
IIIA	36
IIIB	26
IIIC	13
IVA	10
ICB	0





IASLC 8th edition TNM staging manual.

The NEW ENGLAND JOURNAL of MEDICINE

ESTABLISHED IN 1812 AUGUST 4, 2011 VOL. 365 NO. 5

Reduced Lung-Cancer Mortality with Low-Dose Computed Tomographic Screening

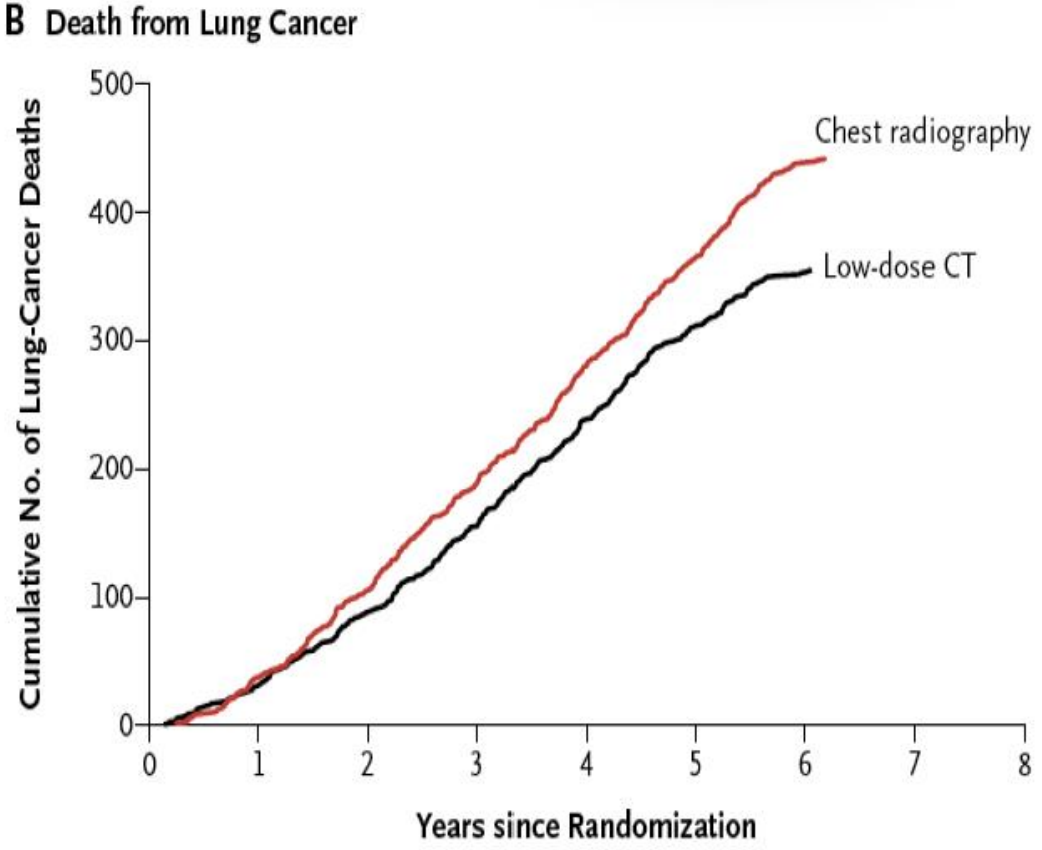
The National Lung Screening Trial Research Team*

National Lung Screening Trial (NLST)

- 53,454 participants
  - Age 55-74
  - 30 pack years
  - Smoked within past 15 years
- Randomised to 3 yearly screening rounds:
  - Low dose CT scans vs. chest X-ray.

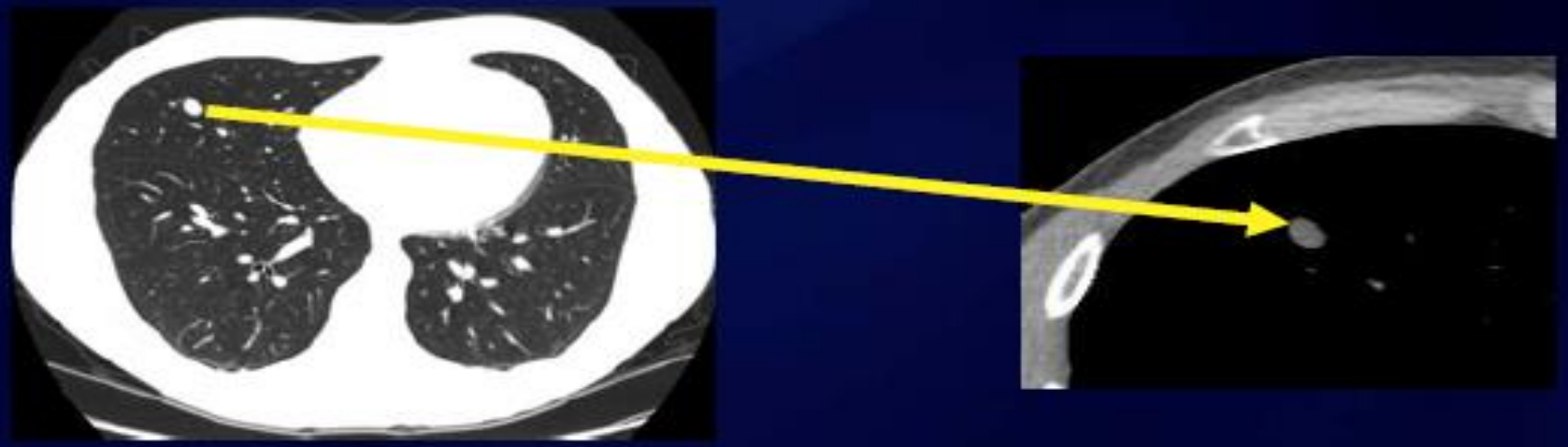
Outcome

- 20% reduction in lung cancer deaths in the CT scan group and
- 6.7% reduction in overall deaths

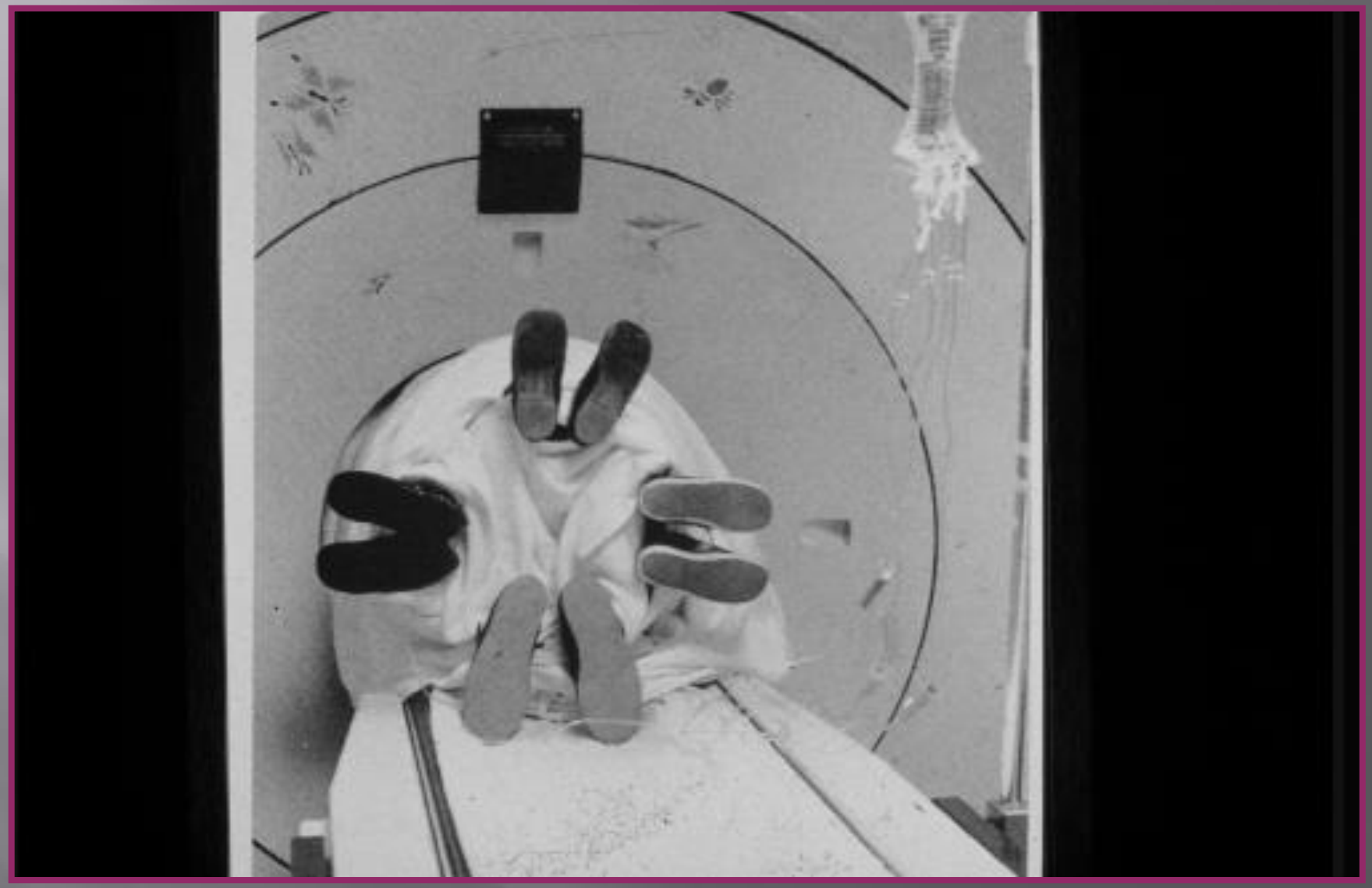


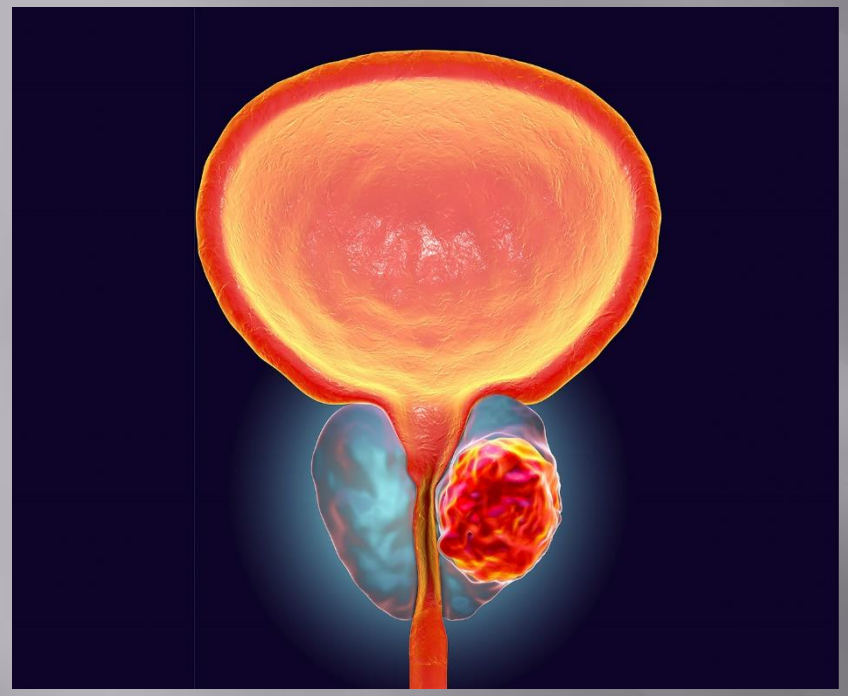
Lung Cancer CT Screening & False Positives

- 40% of NLST subjects had at least one FP over the 3 years
- Uncertainty about best management protocol for FPs
- Among patients with a positive screen who underwent a diagnostic procedure, approximately 1.4% experienced a complication

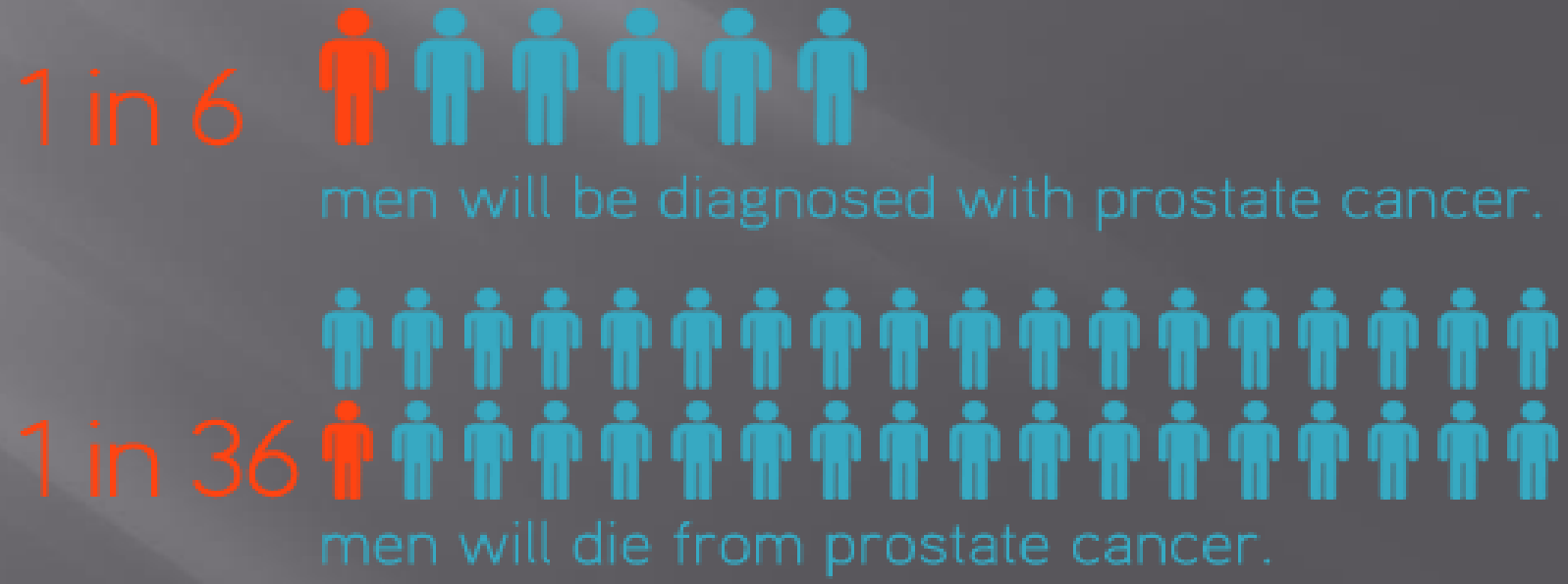


WHO SHOULD WE SCREEN IN CLINICAL PRACTISE?



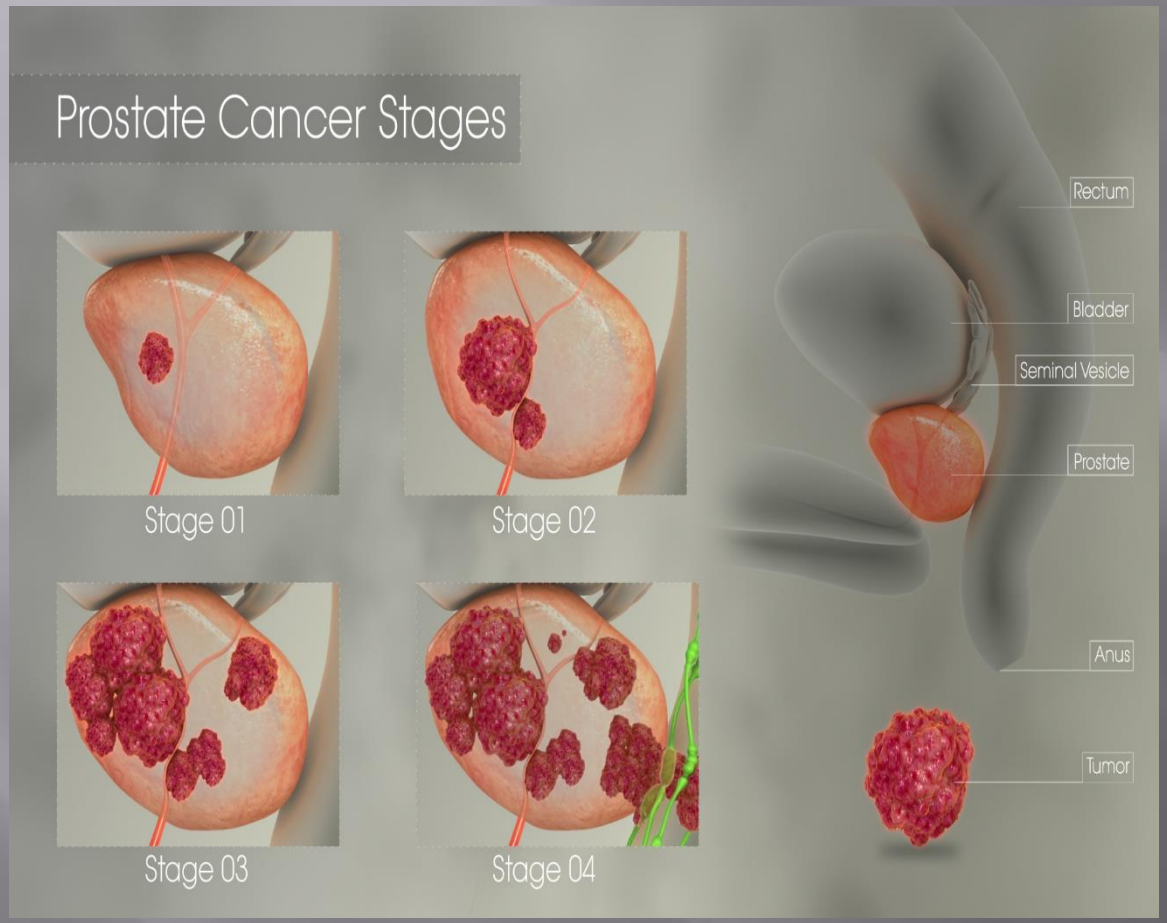


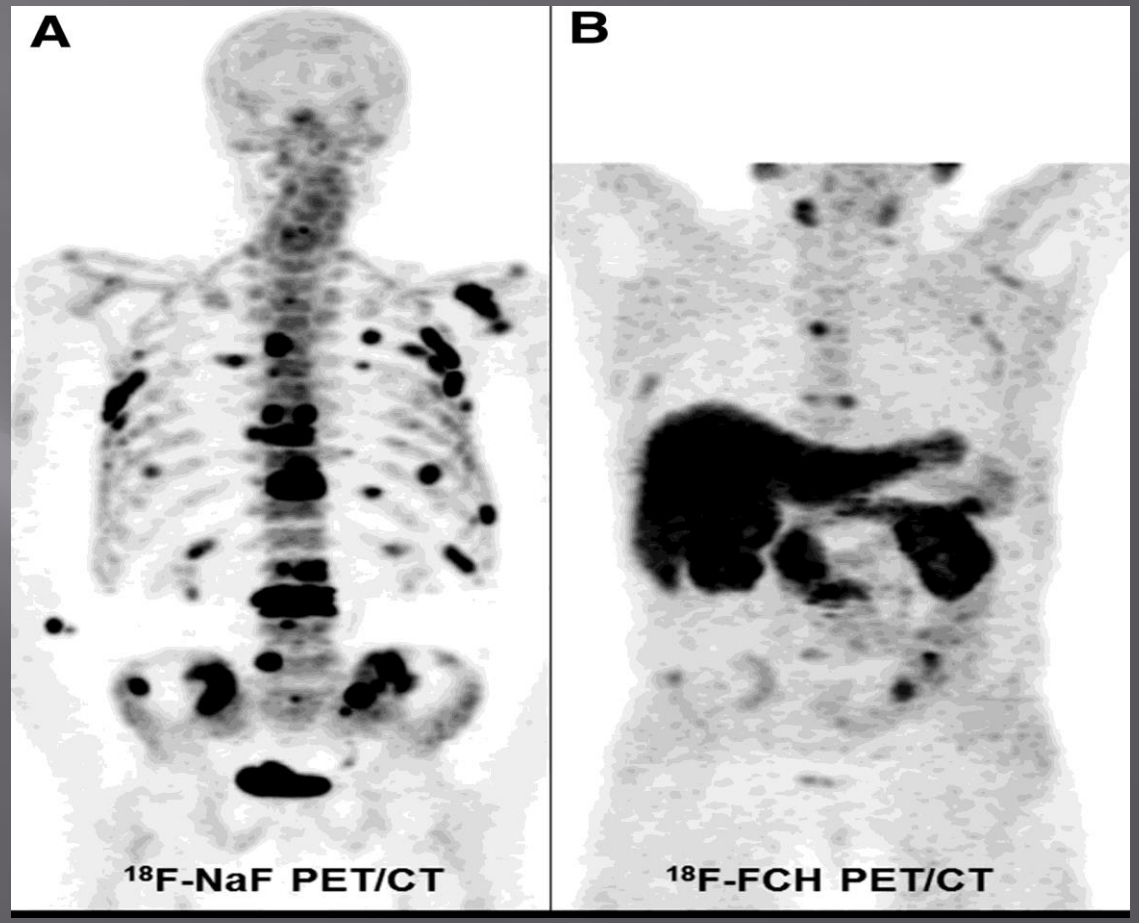
Prostate cancer



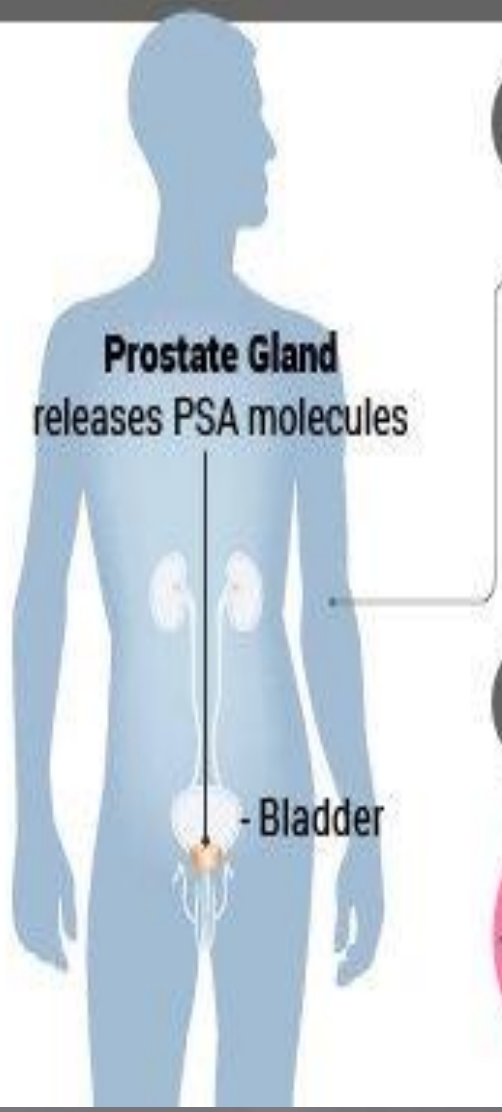
Prostate cancer risk factors

Prostate cancer





Common Procedure | PSA Blood Test



1 A PSA test measures the amount of PSA molecules in a patient's blood

2 It's normal for all men to have some PSA in their blood

3 A high level of PSA can be a sign of prostate cancer, but...

4 It can also be raised for lots of other reasons including...


A urinary or urinary tract infection (UTI)


Prostate stimulation


Vigorous exercise


Certain medications

Age-adjusted reference ranges for PSA

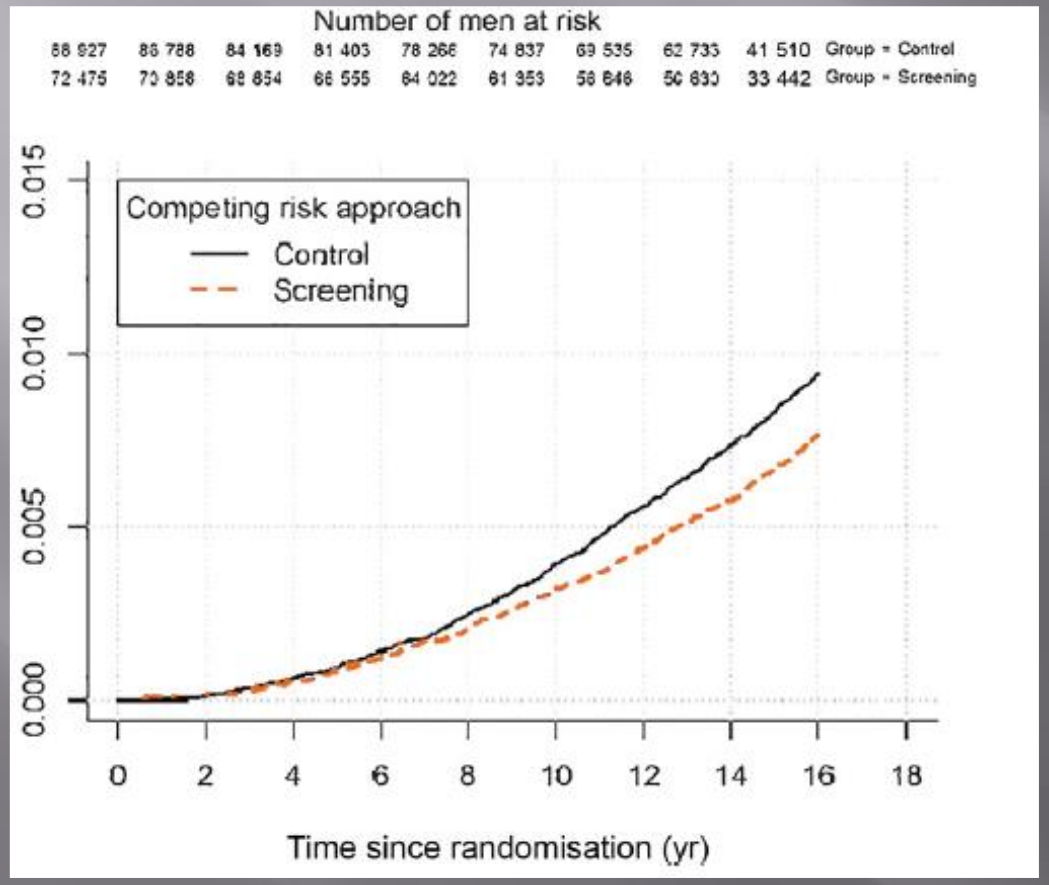
Age (y)	PSA Normal Ranges (ng/mL)
40–49	0–2.5
50–59	0–3.5
60–69	0–4.5
70–79	0–6.5

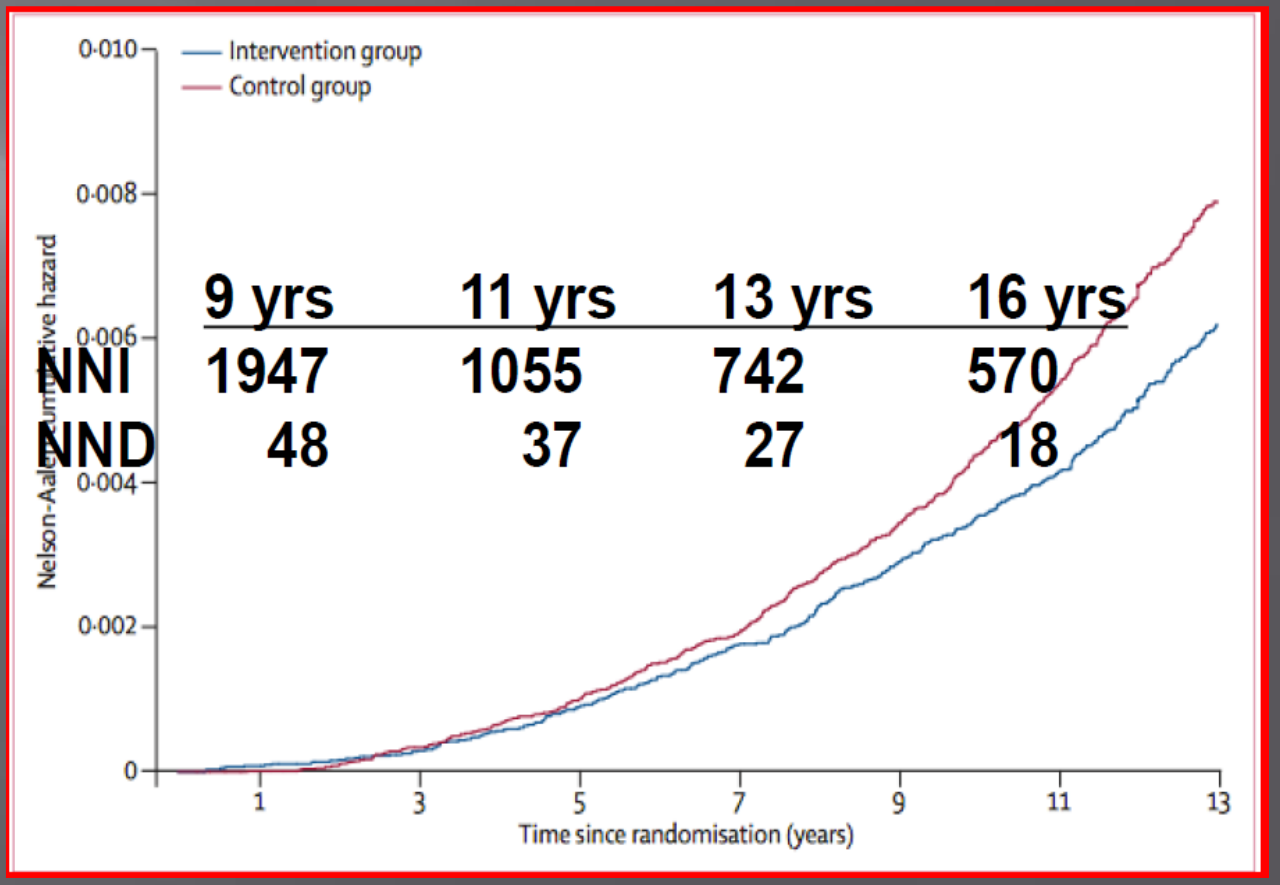
Data from Oesterling JE et al: Serum prostate-specific antigen in a community-based population of healthy men. Establishment of age-specific reference ranges. JAMA 1993;270:860.

- Elevated indicates ***possible*** Carcinoma prostate
  - PSA 4 – 10 indicates 25-35% risk of cancer diagnosis.
  - PSA 10 – 20 indicates 65% risk of cancer diagnosis.
  - PSA > 20 indicates possible metastatic disease.

A 16-yr Follow-up of the European Randomized study of Screening for Prostate Cancer

Hugosson et al *Eur Urol* 76:43-51, 2019





MORBIDITY OF BIOPSY

- RECTAL BLEEDING (1-45 %)
- HAEMATURIA
- LUTS (UP TO 25%)
- HAEMOSPERMIA (UP TO 90%)

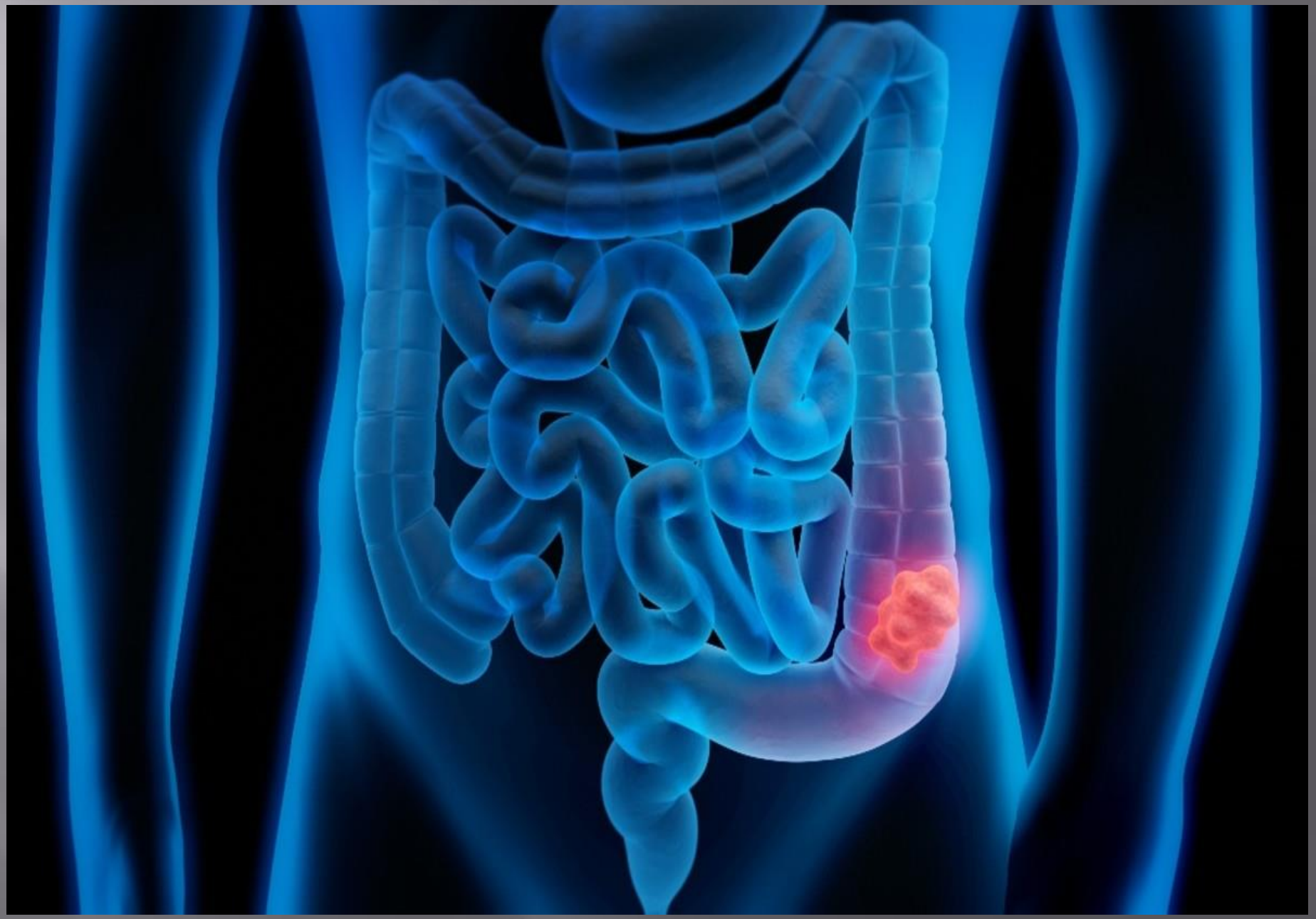
American Urological Association (AUA) recommend <u>against</u> routine screening for the following groups:

- **Any man with a life expectancy less than 10-15 years**
- **Men under 40 years**
- **Men between ages 40 to 54 years at average risk**
- **Men over age 70**

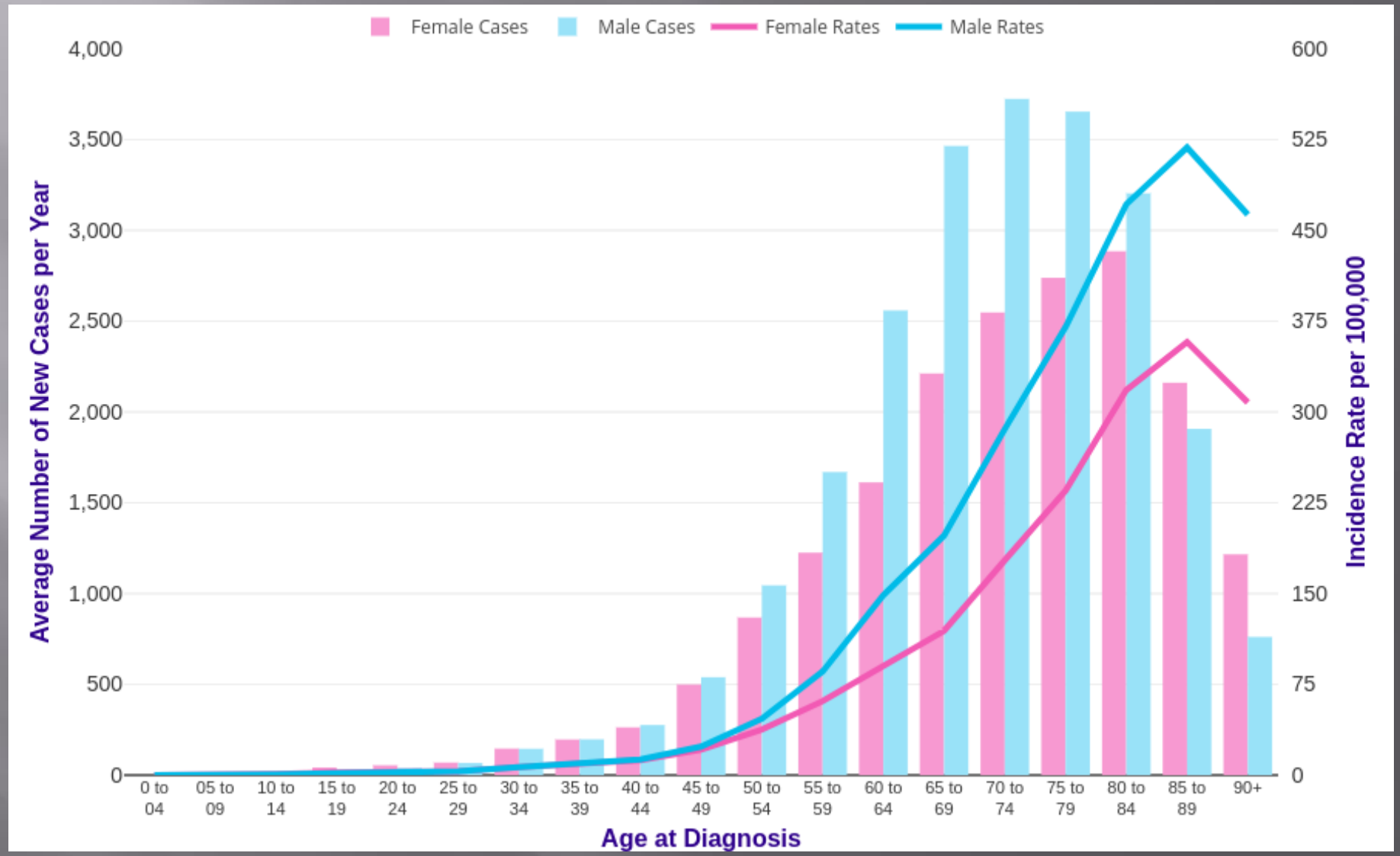
For men 55 to 69 years of age, the AUA advises that the decision to undergo PSA screening involves weighing the benefits and risks. The guidelines strongly recommend the following:

- **A routine screening interval of 2 years or more in those men who have participated in shared decision-making and decided on screening.**

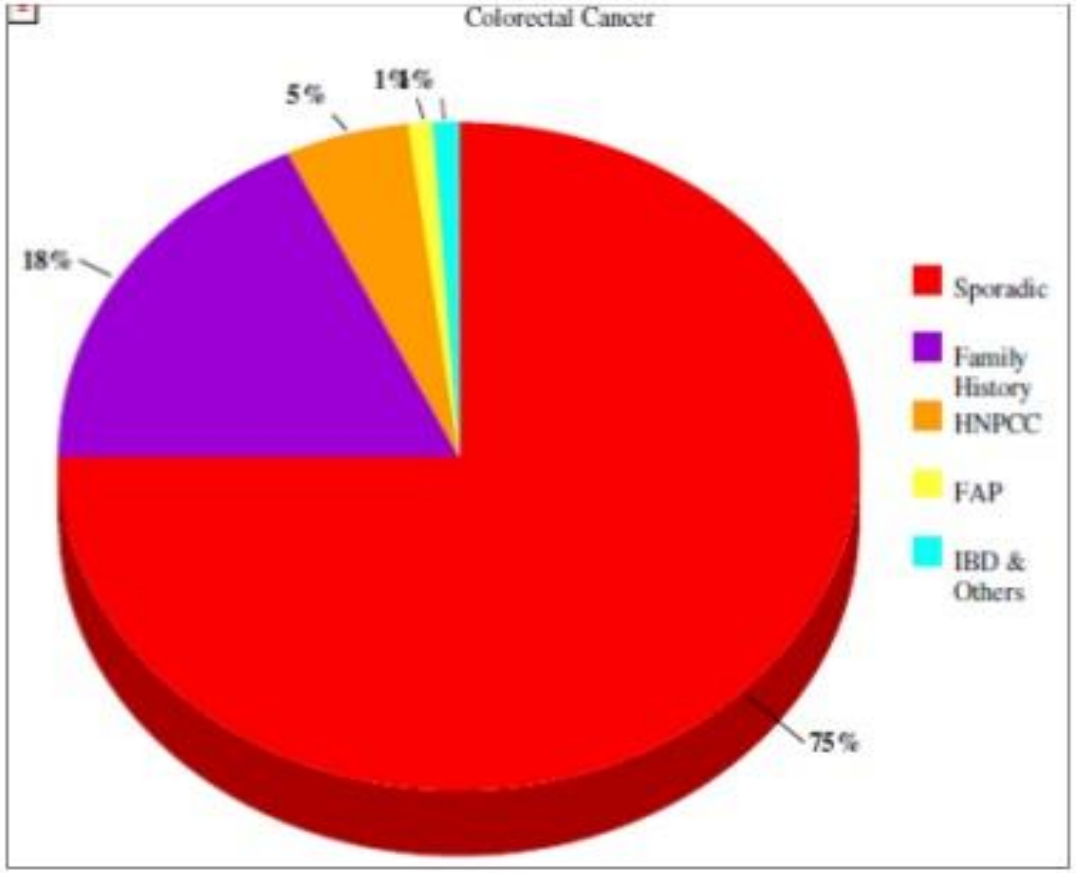
Colon Cancer



Colon Cancer-incidence



Epidemiology of Colorectal Cancer



- **Sporadic** : 70-80%
- **Family** h/o CRC : 15-20%
- **HNPCC** : 4-7%
- **FAP** : 1%
- **IBD & others** : 1%

Colon cancer-risk factors

RISK FACTORS

Diet high in
red meats and
processed meats

Physical
inactivity

Obesity
(especially for men)

Smoking
tobacco

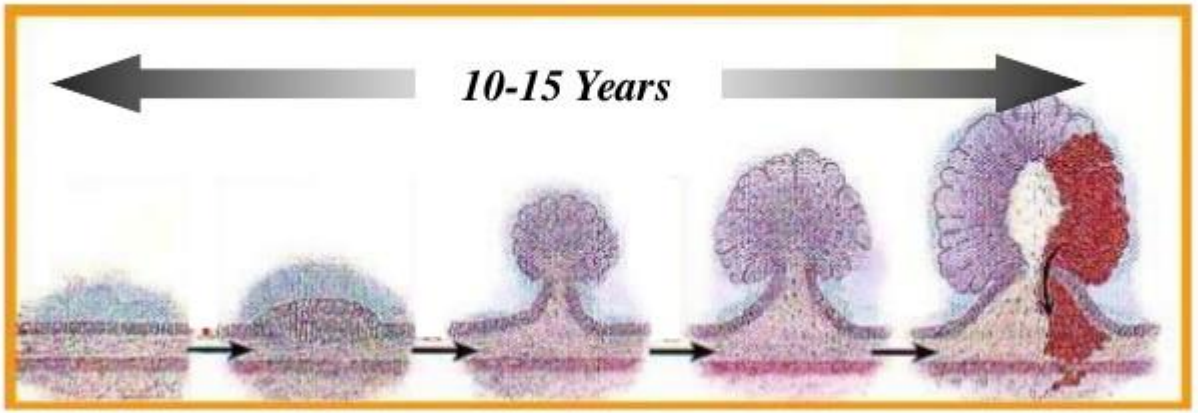
Heavy
alcohol use

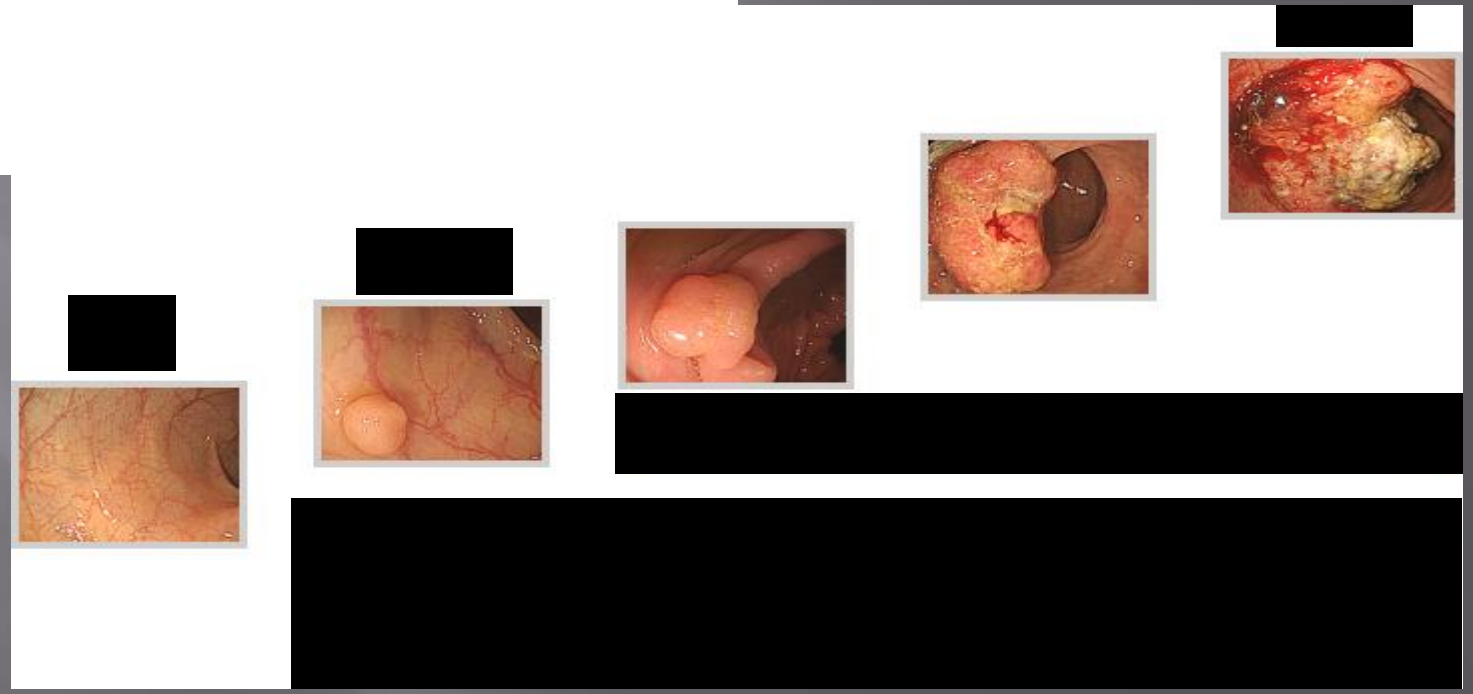
Age
(About 9 in 10 diagnoses
are in people at least
50 years old.)

Racial and
ethnic background
(African Americans have the
highest colorectal cancer
rates of all racial groups in the
United States.)

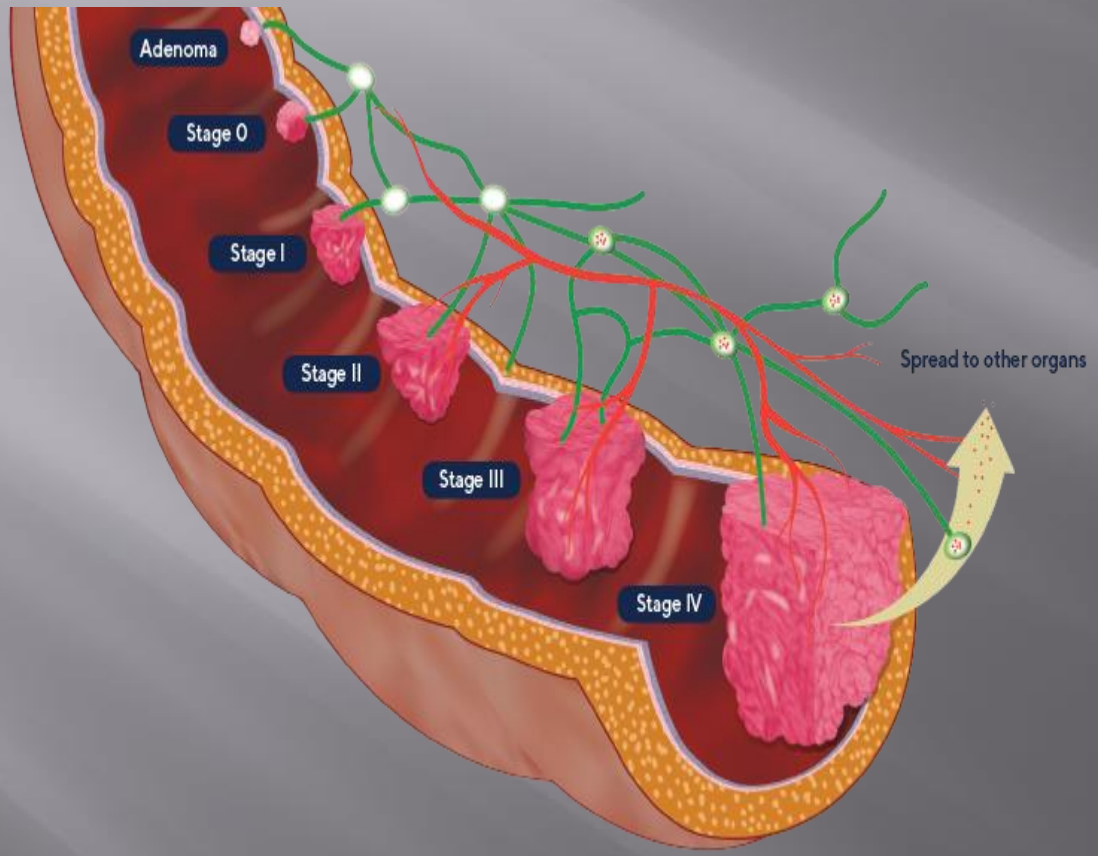
Type 2
diabetes

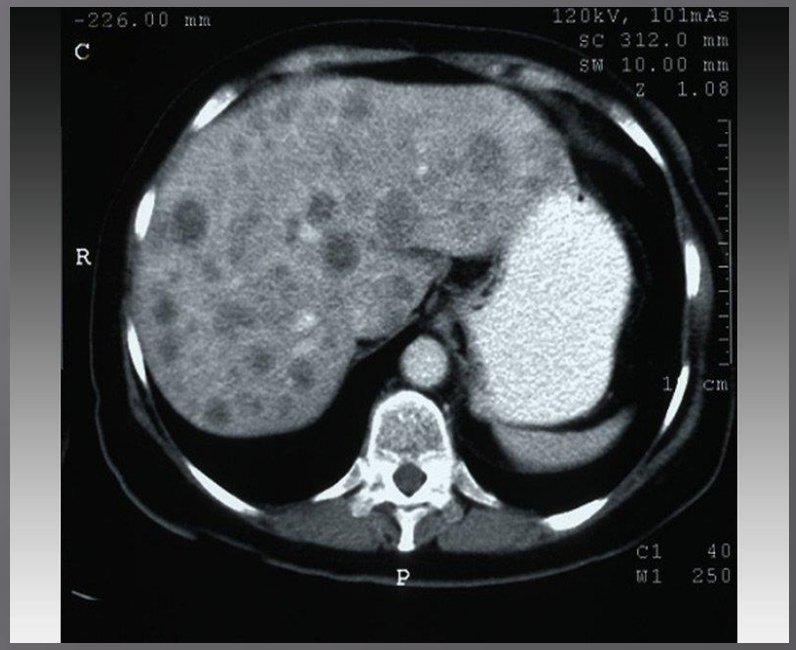
The Adenoma Carcinoma Sequence

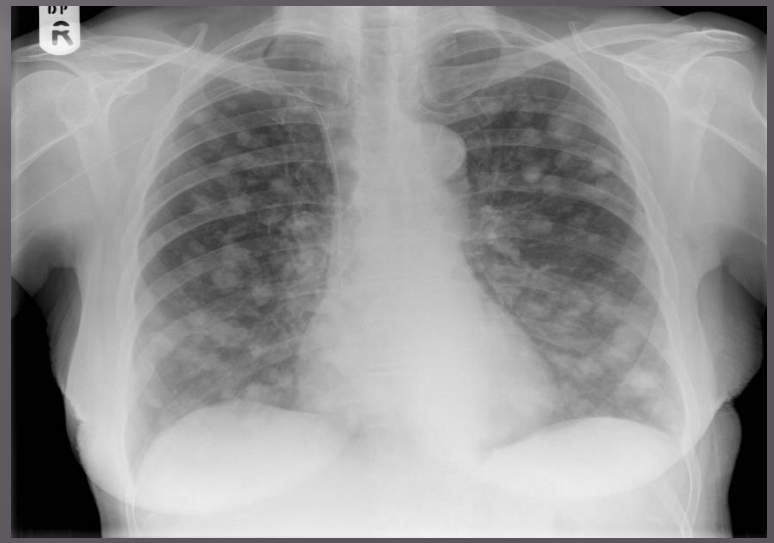


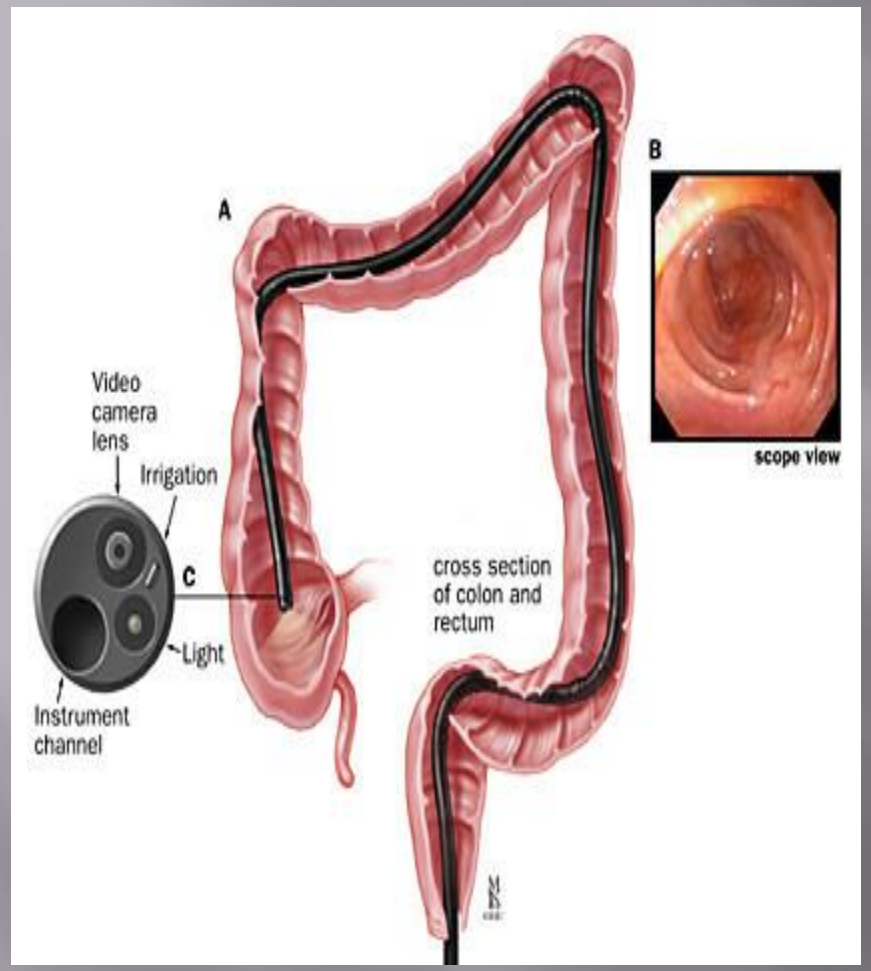


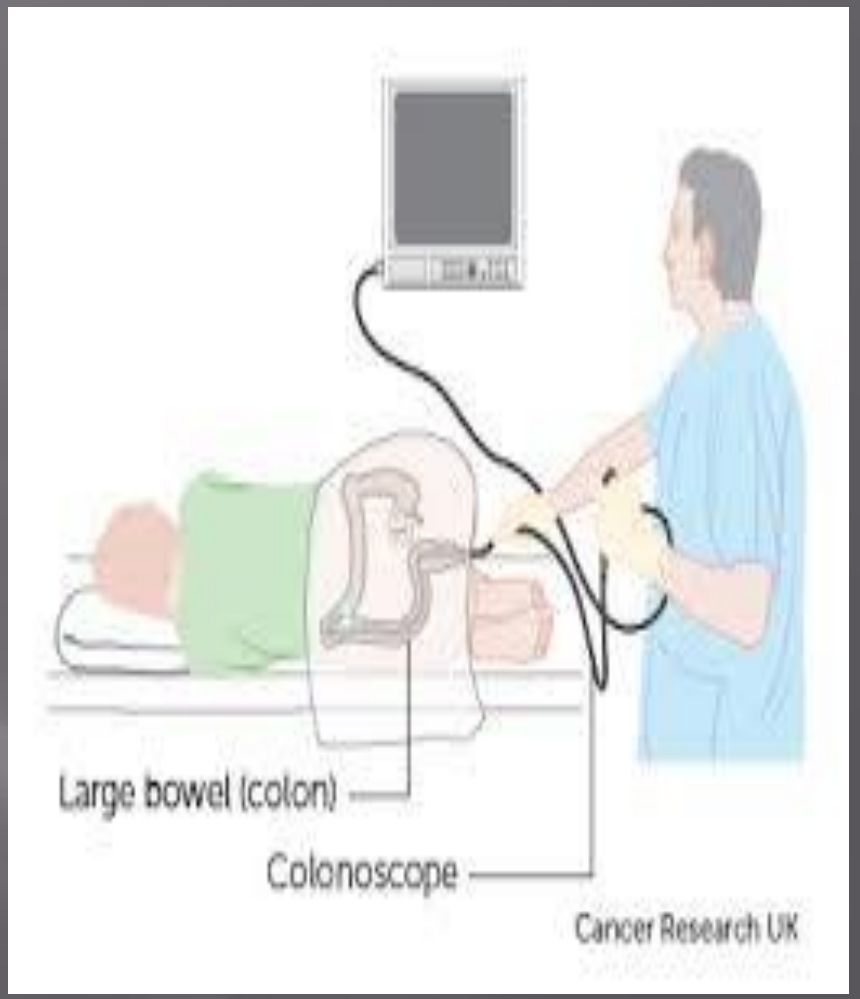
Colon cancer progression



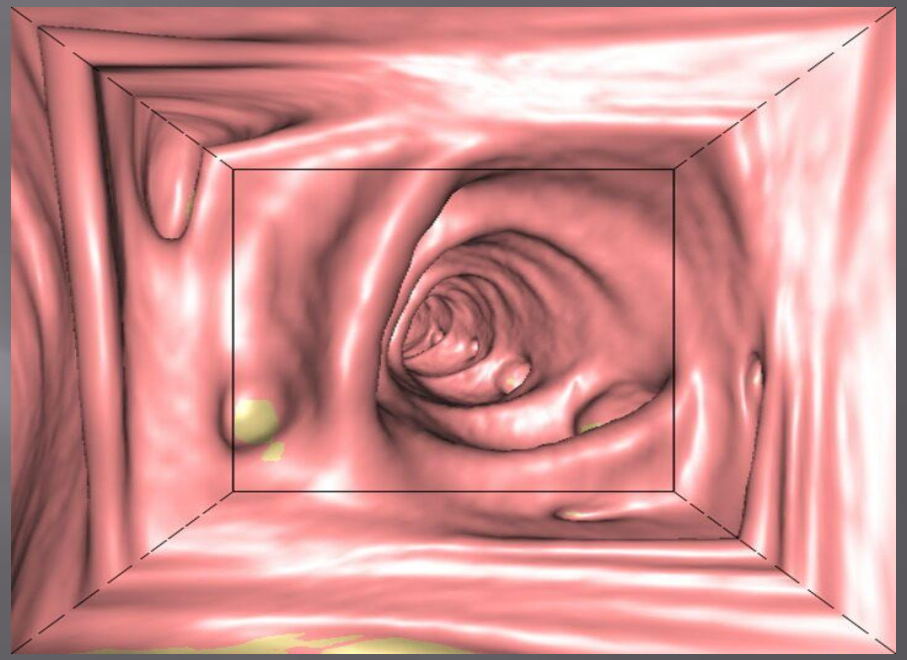


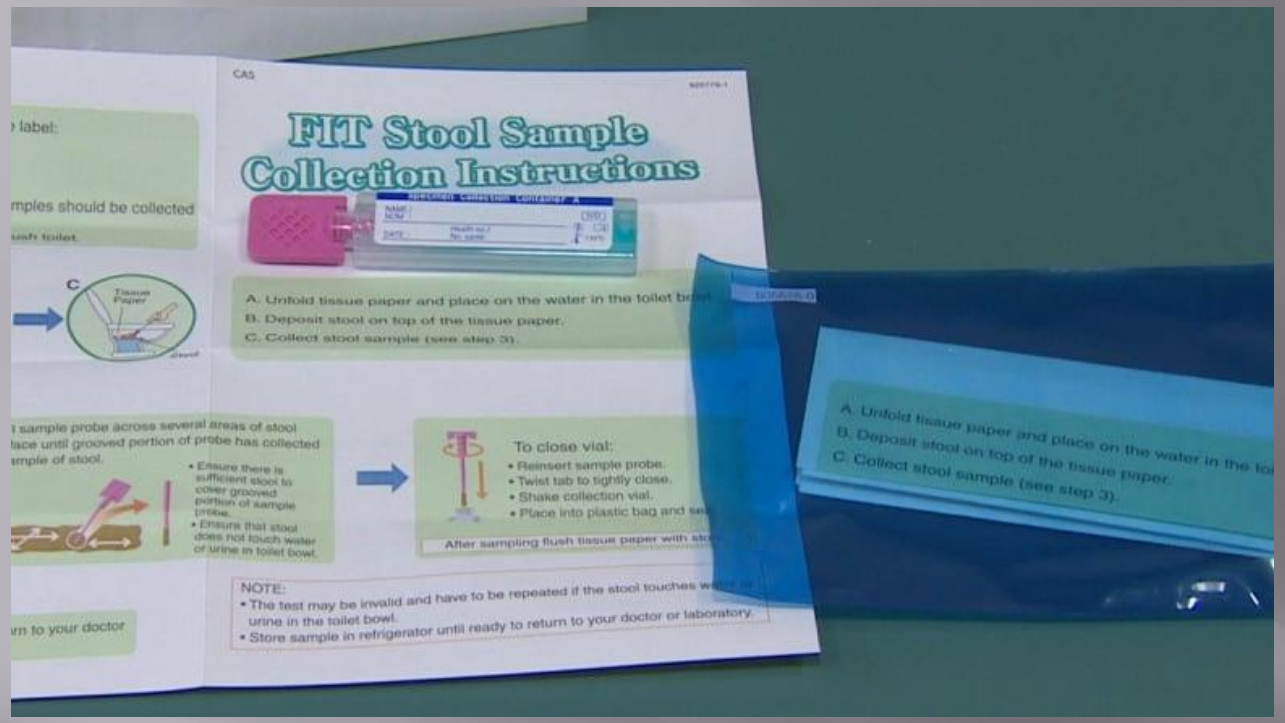


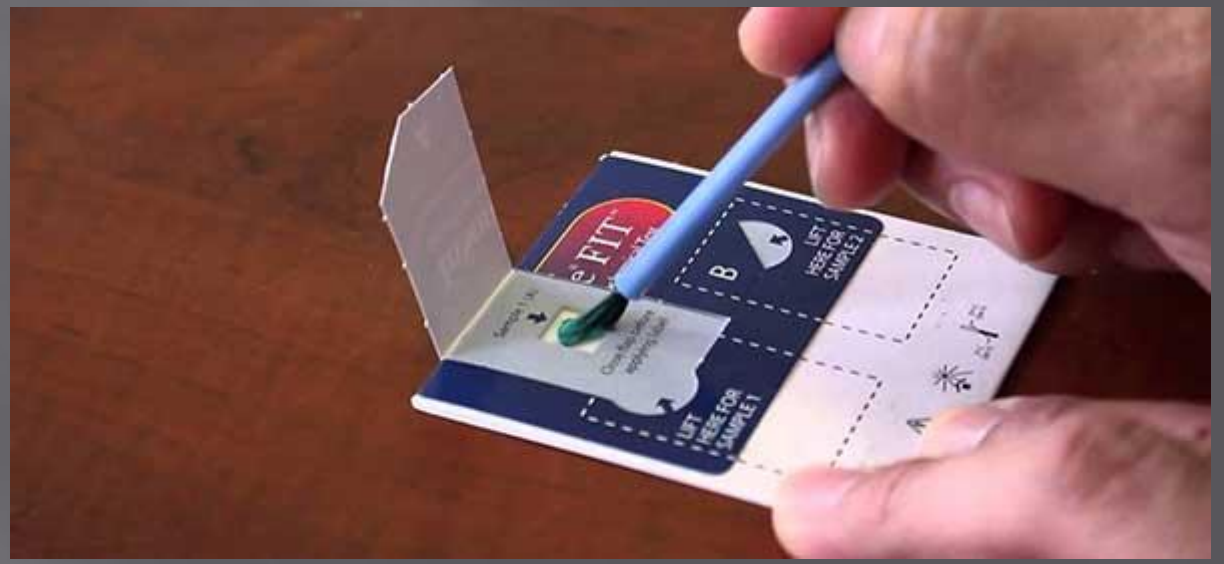

A
B
scope view
Video camera lens
Irrigation
C
Light
Instrument channel
cross section of colon and rectum


Large bowel (colon)
Colonoscope
Cancer Research UK

CT colonography




FIT Stool Sample Collection Instructions
A. Unfold tissue paper and place on the water in the toilet bowl.
B. Deposit stool on top of the tissue paper.
C. Collect stool sample (see step 3).
To close vial:
• Reinsert sample probe.
• Twist tab to tightly close.
• Shake collection vial.
• Place into plastic bag and seal.
NOTE:
• The test may be invalid and have to be repeated if the stool touches water or urine in the toilet bowl.
• Store sample in refrigerator until ready to return to your doctor or laboratory.


FIT
B
LIFT HERE FOR SAMPLE 1
LIFT HERE FOR SAMPLE 1

MONTANA CANCER CONTROL PROGRAMS

FOBT

Fecal Occult Blood Test – Cons

- May miss many polyps and some cancers
- May produce false-positive test results
- May have pre-test dietary limitations
- Should be done annually
- Organized system needed for follow-up
- Colonoscopy needed if abnormal

COLORECTAL CANCER SCREENING GUIDELINES

for people at average risk

Get screened.
Several types of tests can be used. Talk to your doctor about which option is best for you.

No matter which test you choose, the most important thing is to get screened regularly.

Talk to your doctor
about whether you should continue screening. When deciding, take into account your own preferences, overall health, and past screening history.

No longer screen.
People over age 85 should no longer get colorectal cancer screening.

TESTING OPTIONS

- Visual exams such as colonoscopy or CT colonography look at the inside of the colon and rectum for polyps (growths) or cancer.
- Stool-based tests look for signs of cancer in stool and can be done at home. These tests include the fecal immunochemical test (FIT), fecal occult blood test (FOBT), and multi-target stool DNA test.
- All abnormal results on non-colonoscopy screening tests should be followed up with a timely colonoscopy.
- People with a family history of polyps or colorectal cancer, or who have other risk factors, might need to start screening before age 45, be screened more often, and/or get specific tests.

American Cancer Society®

CANCER SCREENING SAVES LIVES. GET SCREENED.

Talk to your doctor about screening, and contact your insurance provider about insurance coverage for screening.
To learn more, **visit cancer.org/get-screened** or call **1-800-227-2345**.

AVERAGE RISK PATIENTS

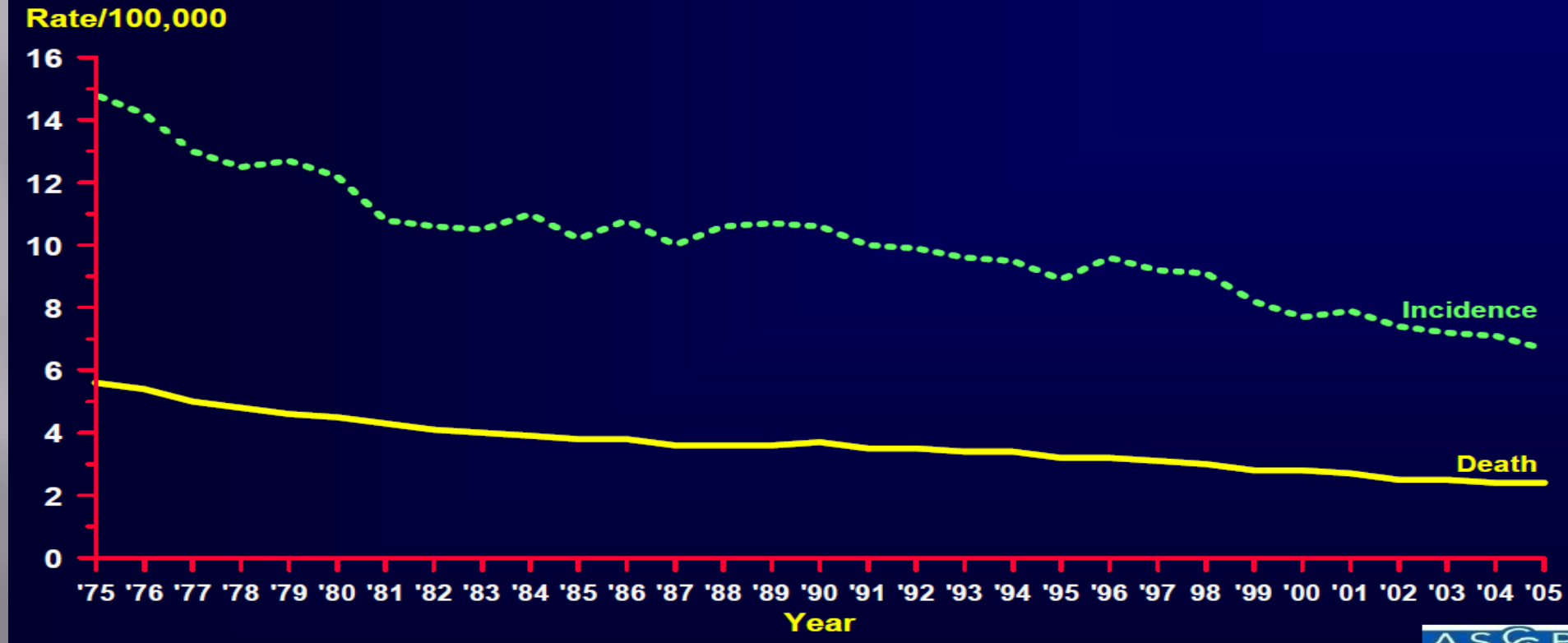
- Colonoscopy every 10 years
- Flex Sigmoidoscopy every 5 years
  - Plus stool test annually
- CT colonography every 5 years
  - Plus stool test annually

USPTF, ACS, CDC

HIGH RISK PATIENTS

- First Colonoscopy
  - At age 40, or 10 years before the youngest case of cancer in the family
  - At age 10-12, for patients in FAP families
  - At age 20, for Lynch syndrome families
  - 8 years after the onset of colitis for inflammatory bowel patients

Cervical Cancer Incidence (SEER) and U.S. Death Rates,* 1975-2005

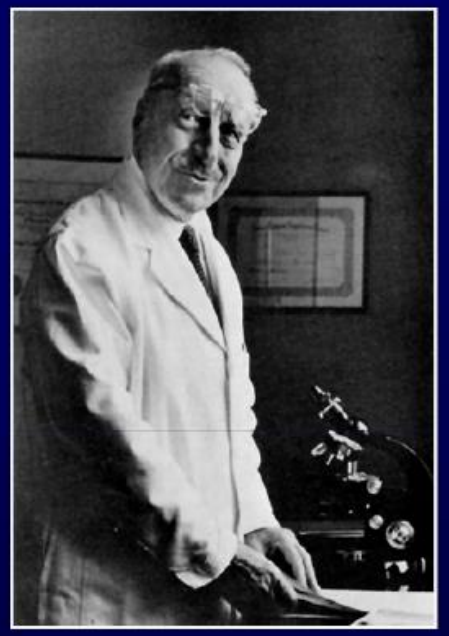


Incidence source: SEER 9 areas (San Francisco, Connecticut, Detroit, Hawaii, Iowa, New Mexico, Seattle, Utah, and Atlanta). Mortality sourc
US Mortality Files, National Center for Health Statistics, CDC.
*Rates are per 100,000 and are age-adjusted to the 2000 US Std Population (19 age groups - Census P25-1130).

ASCCP
AMERICAN SOCIETY FOR COLPOSCOPY AND CERVICAL PATHOLOGY

Cervical cancer prevention:

Where have we been and where are we going?



Widespread introduction of the Pap begins

Conventional Pap smear

LBC

HPV testing

Markers

Vaccine

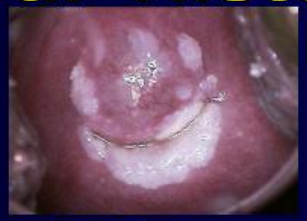
1949

1996

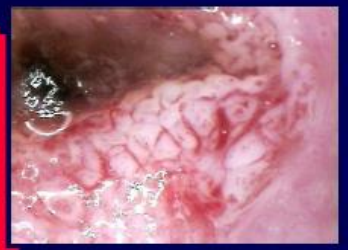
2000's

ASCCP
AMERICAN SOCIETY FOR COLPOSCOPY AND CERVICAL PATHOLOGY

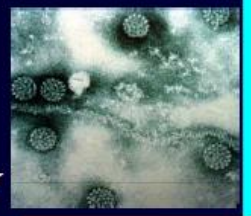
Natural History of Cervical Cancer



CIN 1



Avg. 6-24 mo

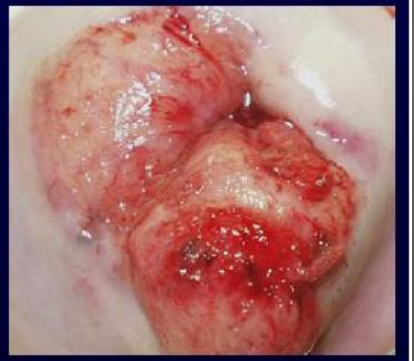


HPV infection

CIN 2,3

Avg. 10-13 yrs

Invasive CA



Avg. 6-12 mo.

HPV disappearance

HPV virus

Being rarely or never screened is the major contributing factor to most cervical cancer deaths today.

New ACS/ASCCP/ASCP Guidelines

When to begin screening

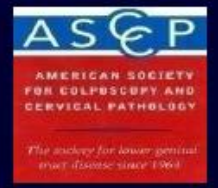
Cervical cancer screening should begin at age 21.

Women < 21 should not be screened regardless of age of sexual onset

- **Guidelines do not apply to special populations – hx of cervical cancer, DES exposure, & immune-compromise**

Saslow, Solomon, Lawson, et al. JLGTD, March 14, 2012 (online)

Saslow, Solomon, Lawson, et al. CA: A Cancer J for Clinicians, March 14, 2012 (online)



Screening for ages 21-29

- Cytology alone every 3 years
- HPV testing “should not be used to screen”
  - Not as a component of cotesting
  - Not as a primary stand-alone screen

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Rationale for Avoiding HPV Tests Among Women Ages 21-29

- Prevalence of carcinogenic HPV approaches 20% in teens and early 20s
- Most carcinogenic HPV infections resolve without intervention
- Identifying carcinogenic HPV that will resolve leads to repeated call-back, anxiety, and interventions without benefit

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Screening For Women Ages 30-64

- Cytology + HPV testing (Cotesting) every 5 years is preferred

- Cytology alone every 3 years is acceptable

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AMERICAN SOCIETY FOR COLPOSCOPY AND CERVICAL PATHOLOGY

Why Not Annual Cotesting?

- High NPV of one cotest means most abnormal screens at 1-3y intervals are transient HPV infection, not precancer
- Potential harms are amplified without benefit

When to Stop Screening

- Stop at age 65 for women with adequate negative prior screening, no CIN2+ within the last 20y.

Definition of adequate negative screening:

- 3 consecutive negative Paps or
- 2 consecutive negative HPV tests
  (Tests within 10 years of stopping; most recent within 5 years.)

ASCCP
AMERICAN SOCIETY FOR COLPOSCOPY AND CERVICAL PATHOLOGY
The society for lower genital tract disease since 1964

Vaccine Recommendations

- **HPV vaccine is recommended for routine vaccination at age 11 or 12 years. (Vaccination can be started at age 9).**

- **People who have already been infected with one or more HPV types can still get protection from other HPV types in the vaccine.**

FDA-approved HPV Vaccines

Vaccine	Coverage (HPV types)	Gender and age range
Cervarix (bivalent HPV vaccine)*	HPV 16 and 18	Females, 9-25 y
Gardasil (quadrivalent HPV vaccine)	HPV 6, 11 (genital warts), 16, and 18	Males and females, 9-26 y
Gardasil 9 (9-valent HPV vaccine)	HPV 6, 11 (genital warts), 16, 18, 31, 33, 45, 52, and 58	Males and females, 9-26 y

HPV Vaccine Dosing Schedules Based on Age

Age (males and females)	Doses	Schedule
9-14 y*	2-dose series†	Dose 1: 0 mo Dose 2: 6-12 mo
15-26 y	3-dose series	Dose 1: 0 mo Dose 2: 1-2 mo Dose 3: 6 mo





CMT
Jennie Garth:
LITTLE BIT

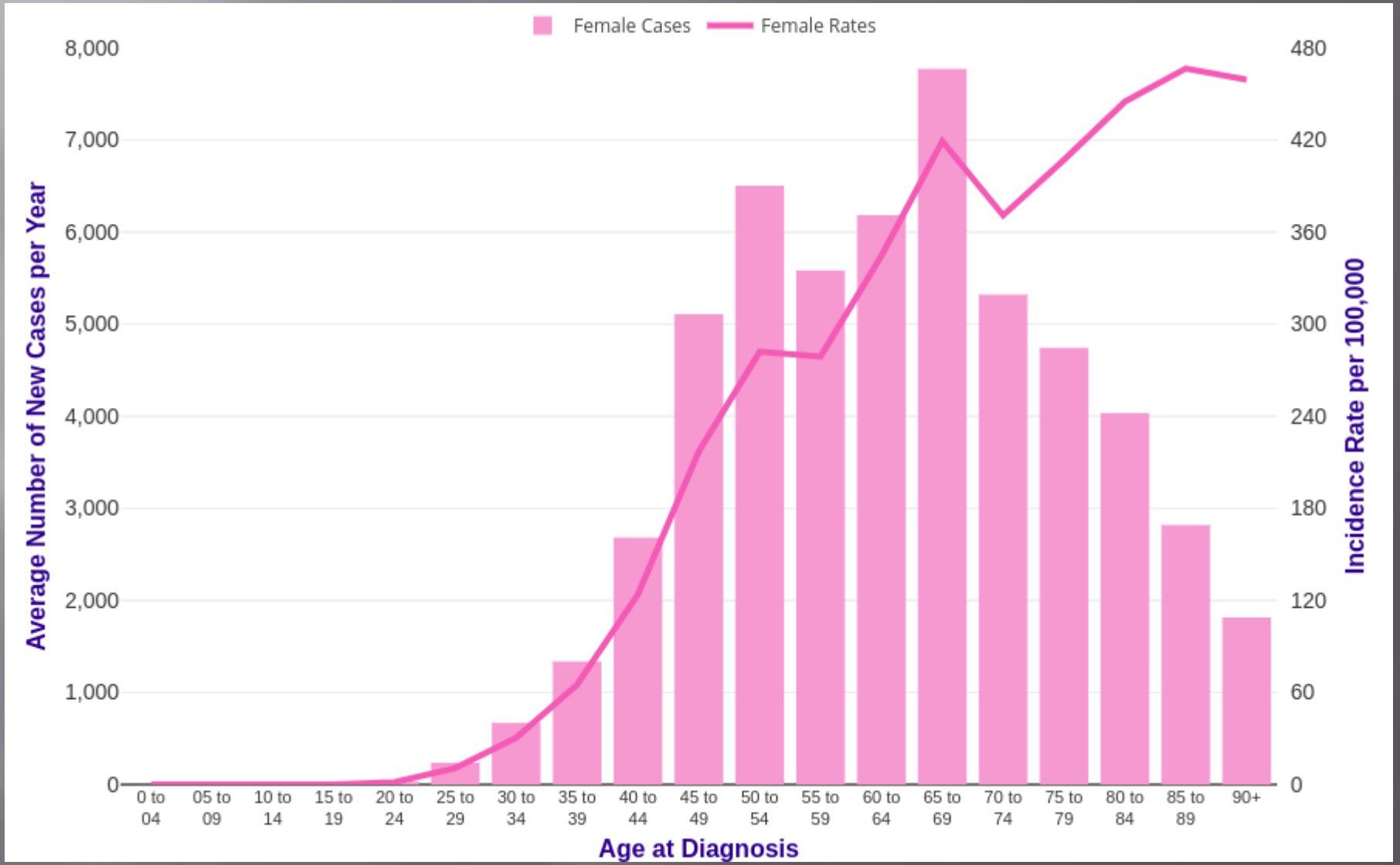




1 in 8

Approximately one in eight women will develop invasive breast cancer in her lifetime

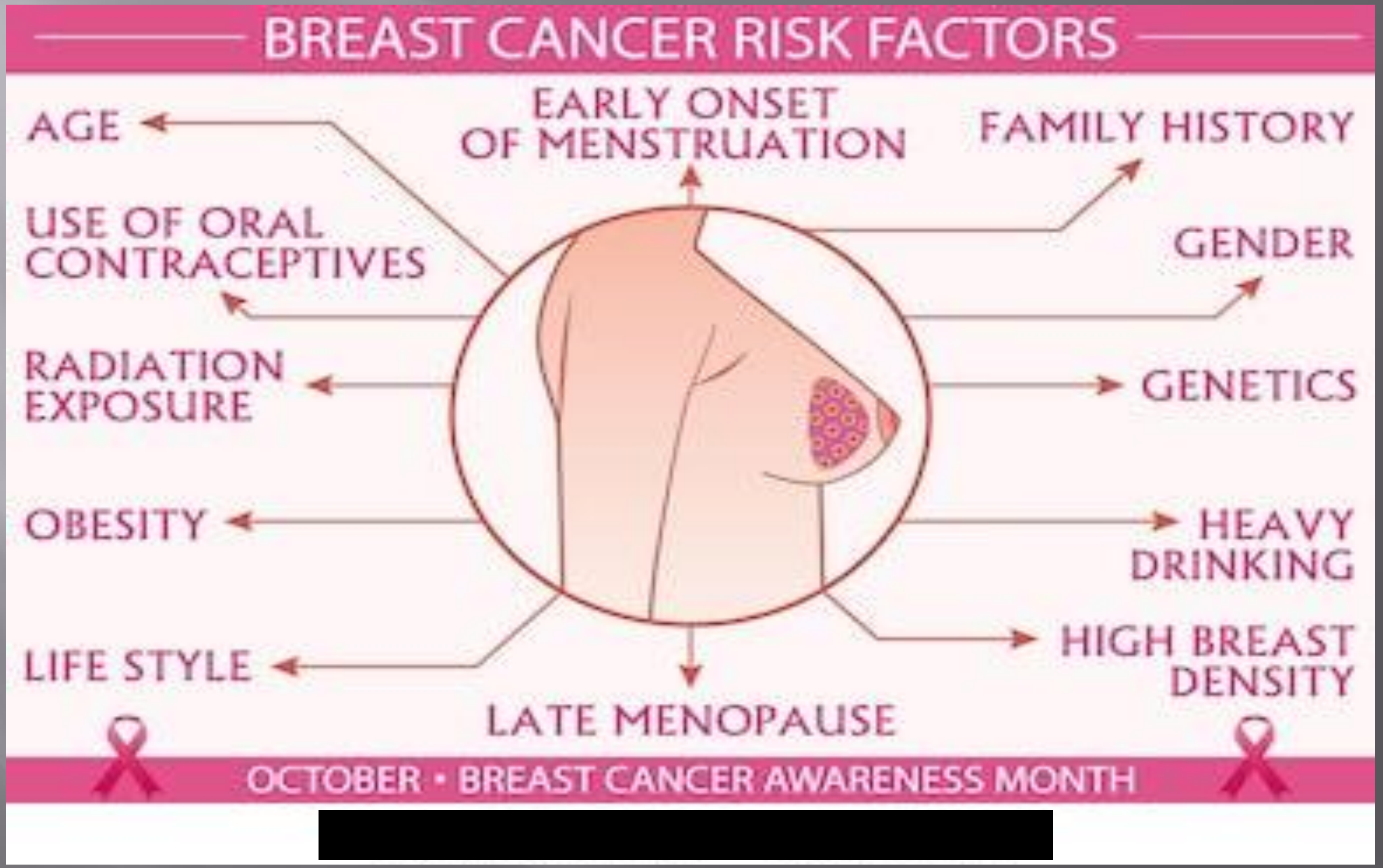
Breast cancer-incidence

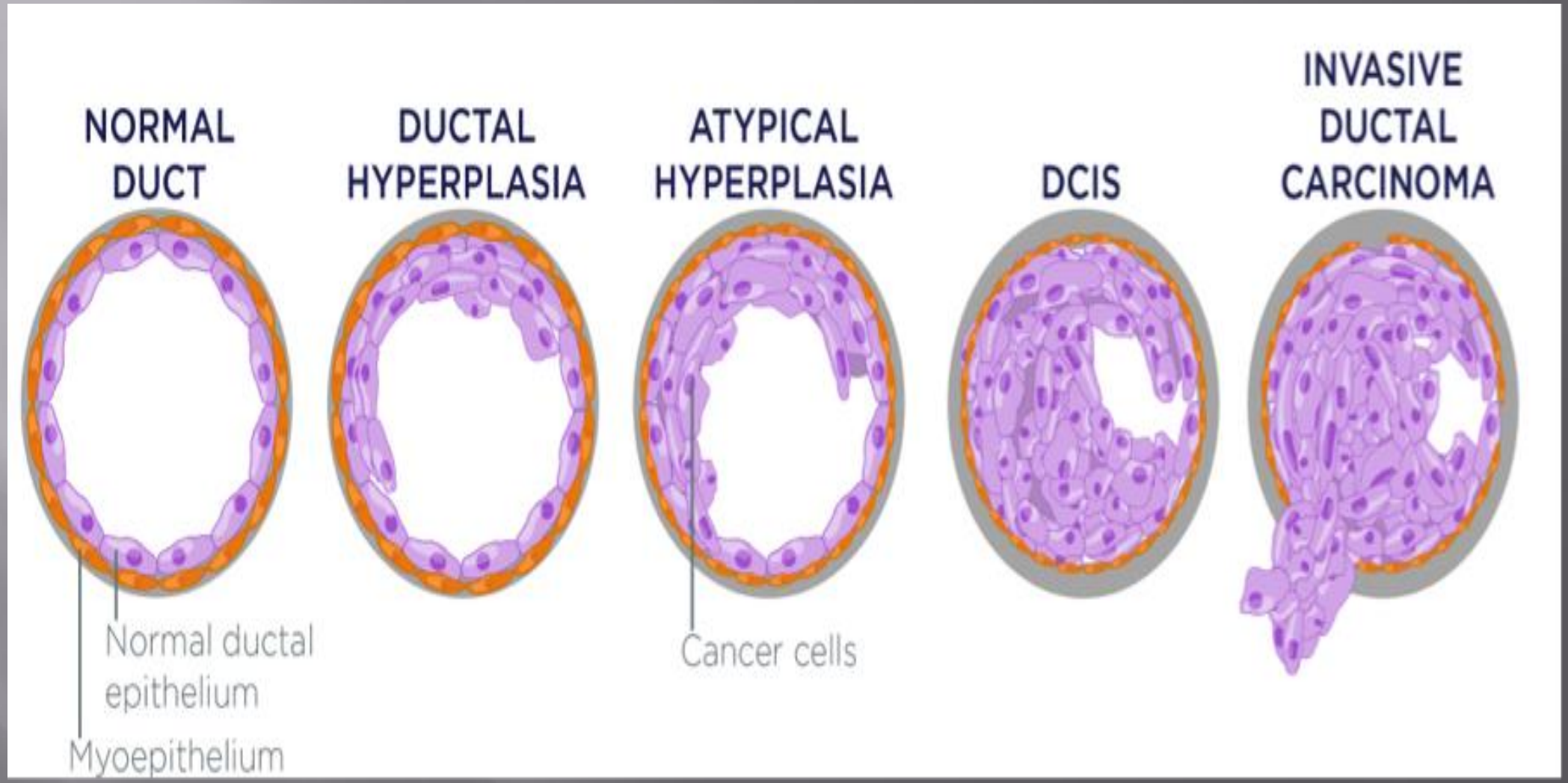


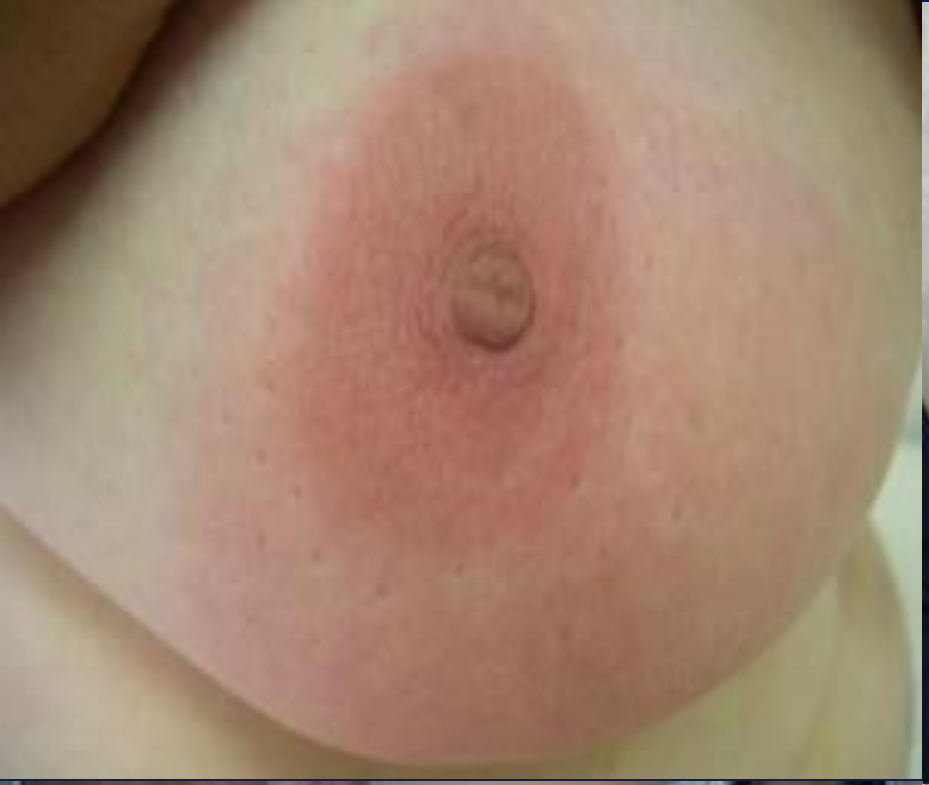
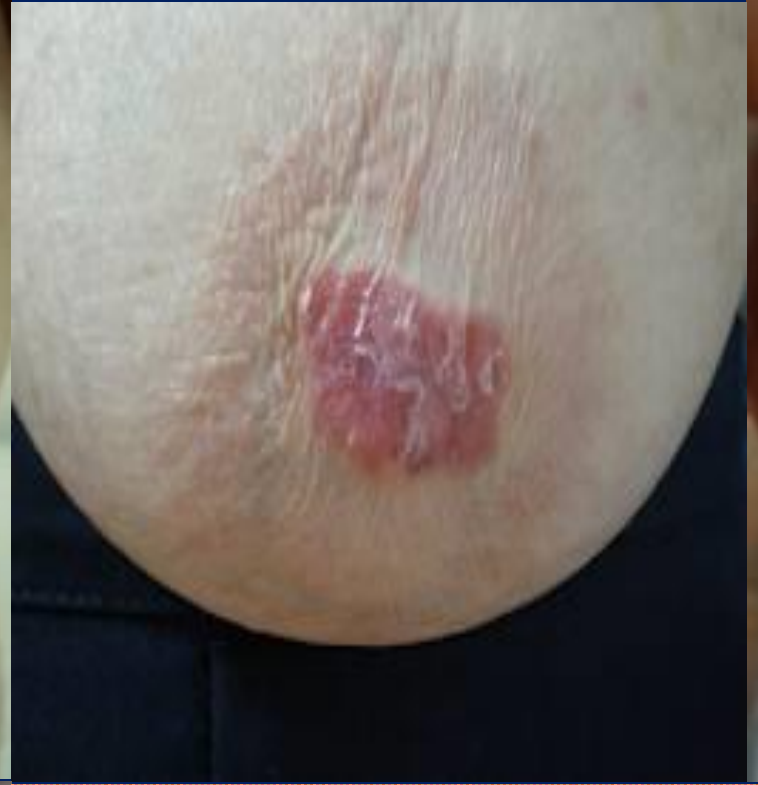
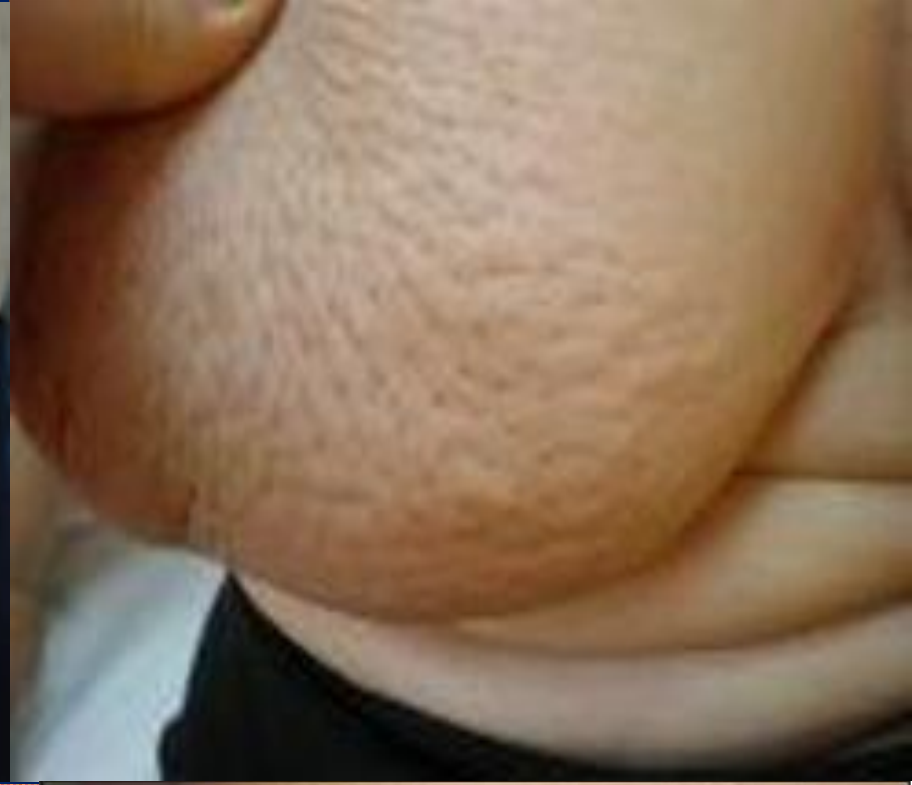
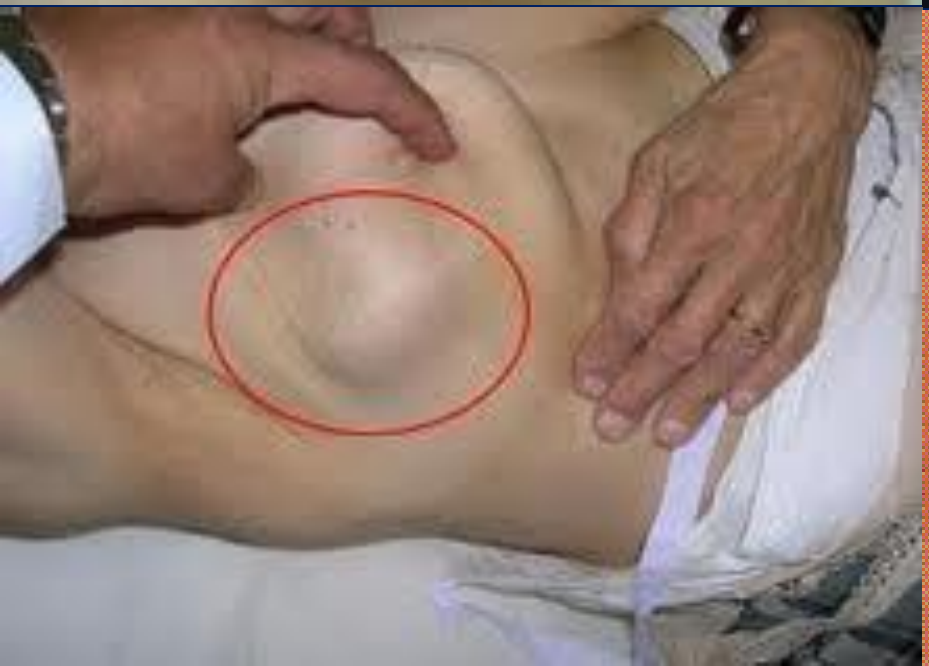
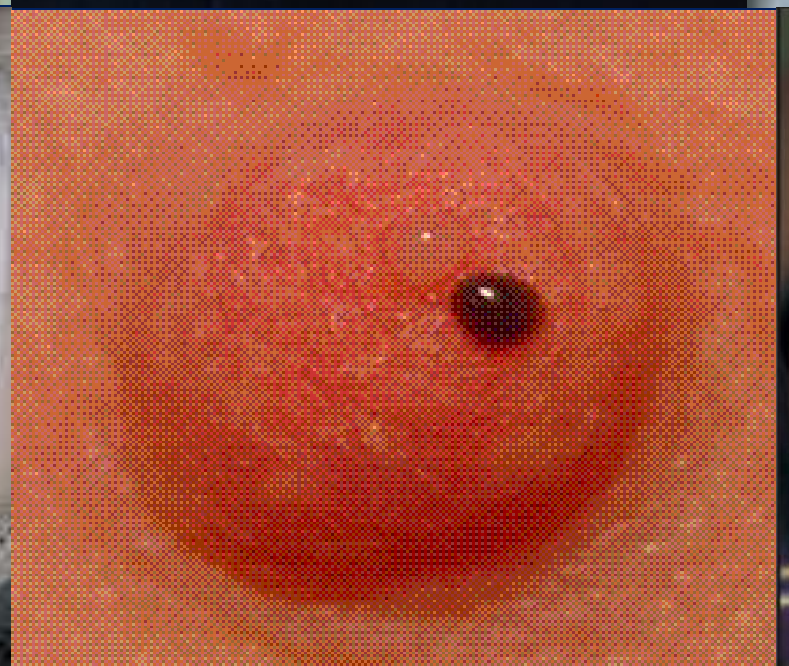
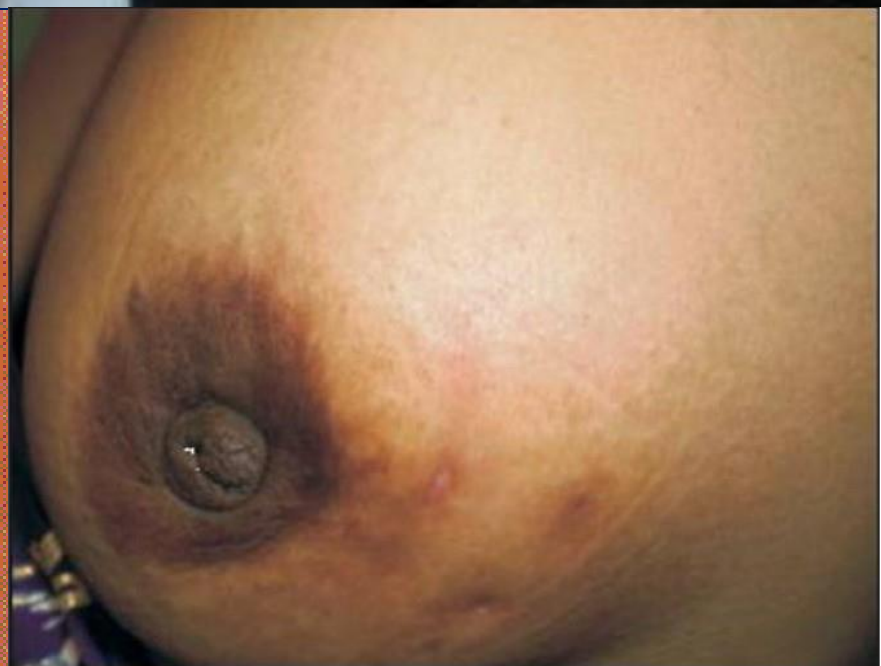
7,500/year

Hereditary breast cancer:

10%


BREAST CANCER RISK FACTORS
AGE
EARLY ONSET OF MENSTRUATION
FAMILY HISTORY
USE OF ORAL CONTRACEPTIVES
GENDER
RADIATION EXPOSURE
GENETICS
OBESITY
HEAVY DRINKING
LIFE STYLE
HIGH BREAST DENSITY
LATE MENOPAUSE
OCTOBER • BREAST CANCER AWARENESS MONTH


NORMAL DUCT
DUCTAL HYPERPLASIA
ATYPICAL HYPERPLASIA
DCIS
INVASIVE DUCTAL CARCINOMA
Normal ductal epithelium
Myoepithelium
Cancer cells

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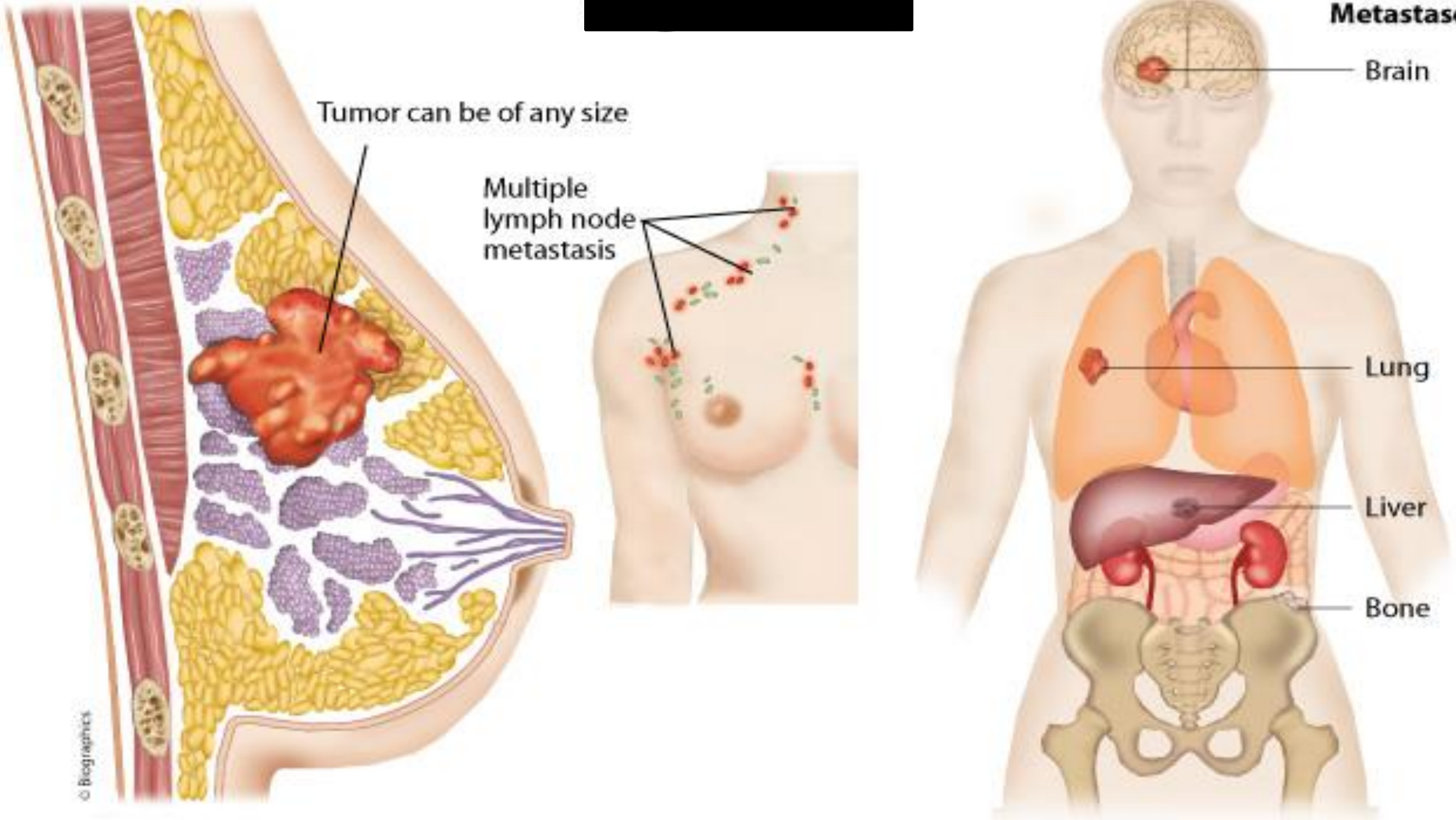
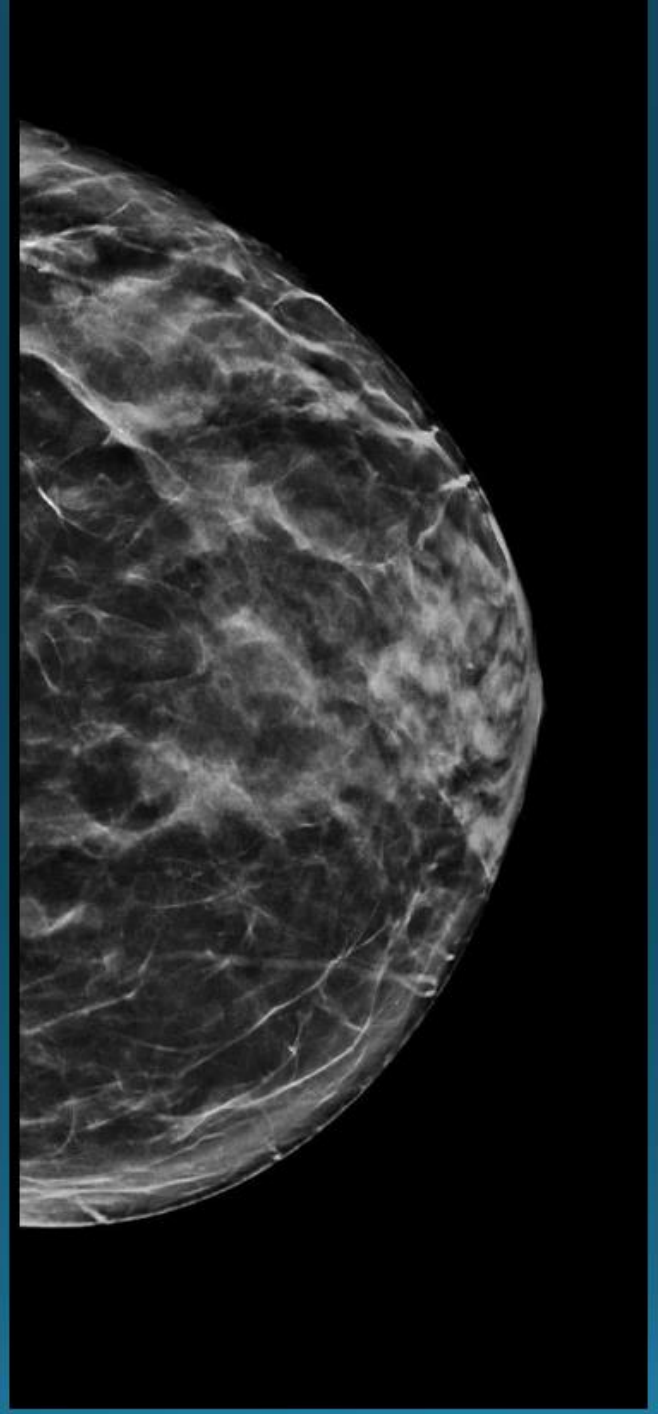

Tumor can be of any size
Multiple lymph node metastasis
Metastases
Brain
Lung
Liver
Bone

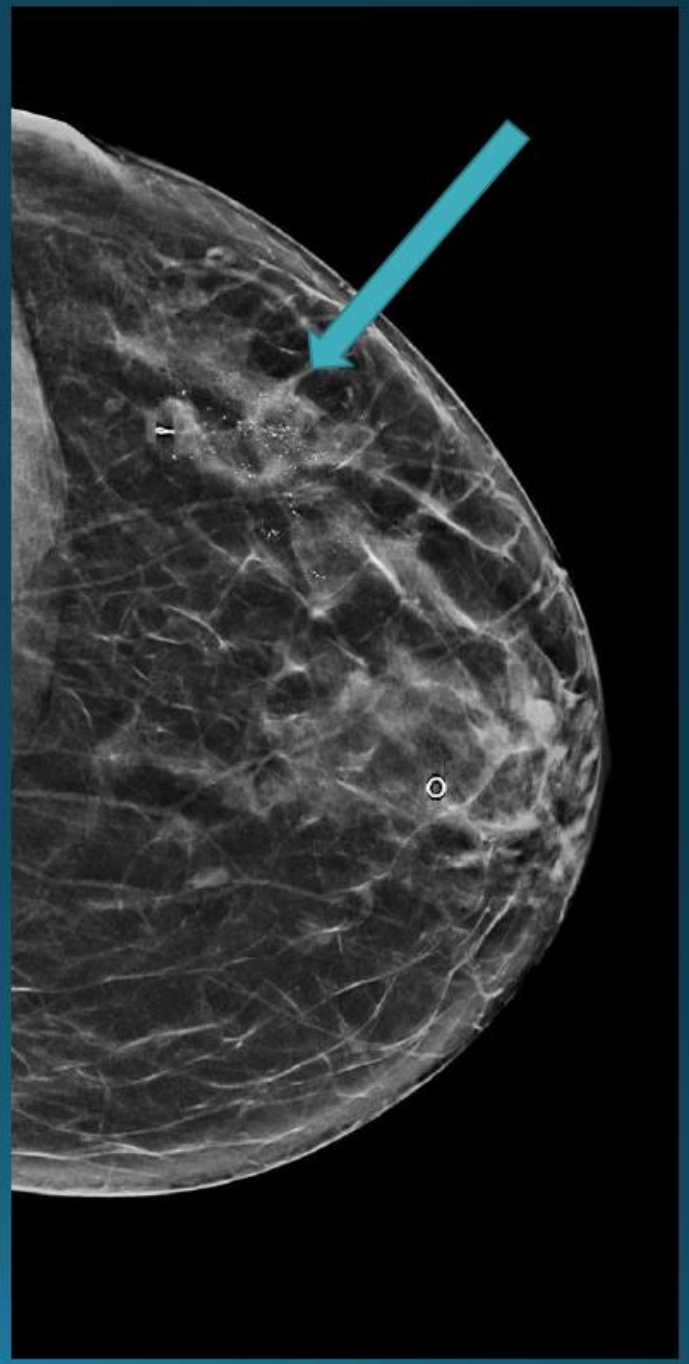
5 year survival by stage[3]

- Stage 1 breast cancer 5 year survival : 95%
- Stage 2 and 3 breast cancer 5 year survival : 81%
- Stage 4 breast cancer 5 year survival : 24%

- Fewer late stage cancers diagnosed
- Screening mammography has been shown to reduce breast cancer mortality by 20 – 50%

18months





- Review of the early mammography RCTs
- Reduction of breast cancer mortality about 20% (invited)
- Overdiagnosis rate: 11% (invited), 19% (attending)

- If 10,000 women aged 50 are invited to screening for 20 years:
  - 43 breast cancer deaths prevented
  - 129 women overdiagnosed and overtreated

Reduction in breast cancer deaths

Benefit of screening

- In age group 40–49: 16% relative risk reduction

  0.049% absolute risk reduction

- 2057 women needs to be screened regularly to prevent one breast cancer death

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- In age group 50–74: 23% relative risk reduction

  0.13% absolute risk reduction

- 760 women needs to be screened regularly to prevent one breast cancer death

- The effect of screening is lower in younger women:
  - Lower prevalence
  - Lower sensitivity of mammography (dense breasts)

- In Europe: 50–69 år

Gotzsche, PC, Nielsen, M. Screening for breast cancer with mammography. Cochrane database of systematic reviews (2011)

IARC Working Group for Screening. NEJM (2015)

Nationella riktlinjer för screening, Socialstyrelsen (2017)

MRI of the Breast

- PROS
- More sensitive than ultrasound
- More sensitive than mammogram
- More sensitive than physical exam
- Better in younger pts (dense tissue)

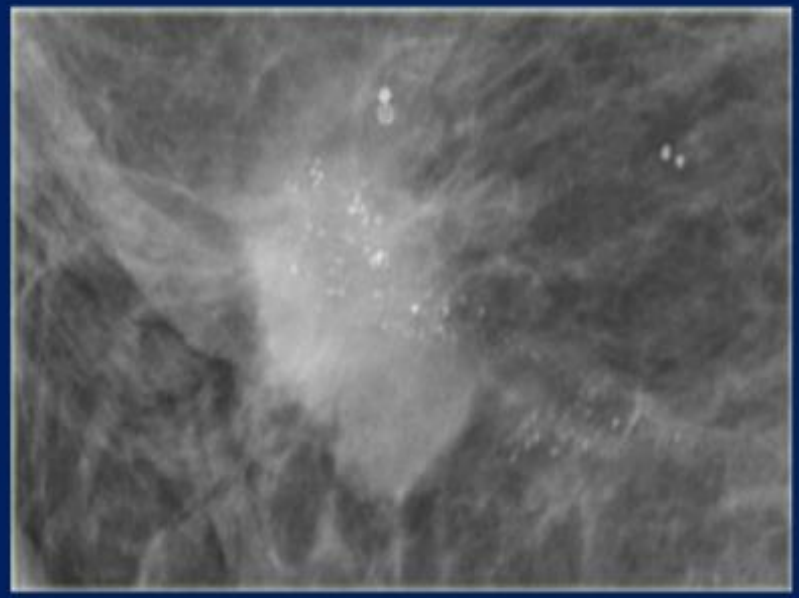
- CONS
- More Expensive (much more!)
- Claustrophobia
- False Positives
- Leads to many more biopsies
- Leads to more mastectomies

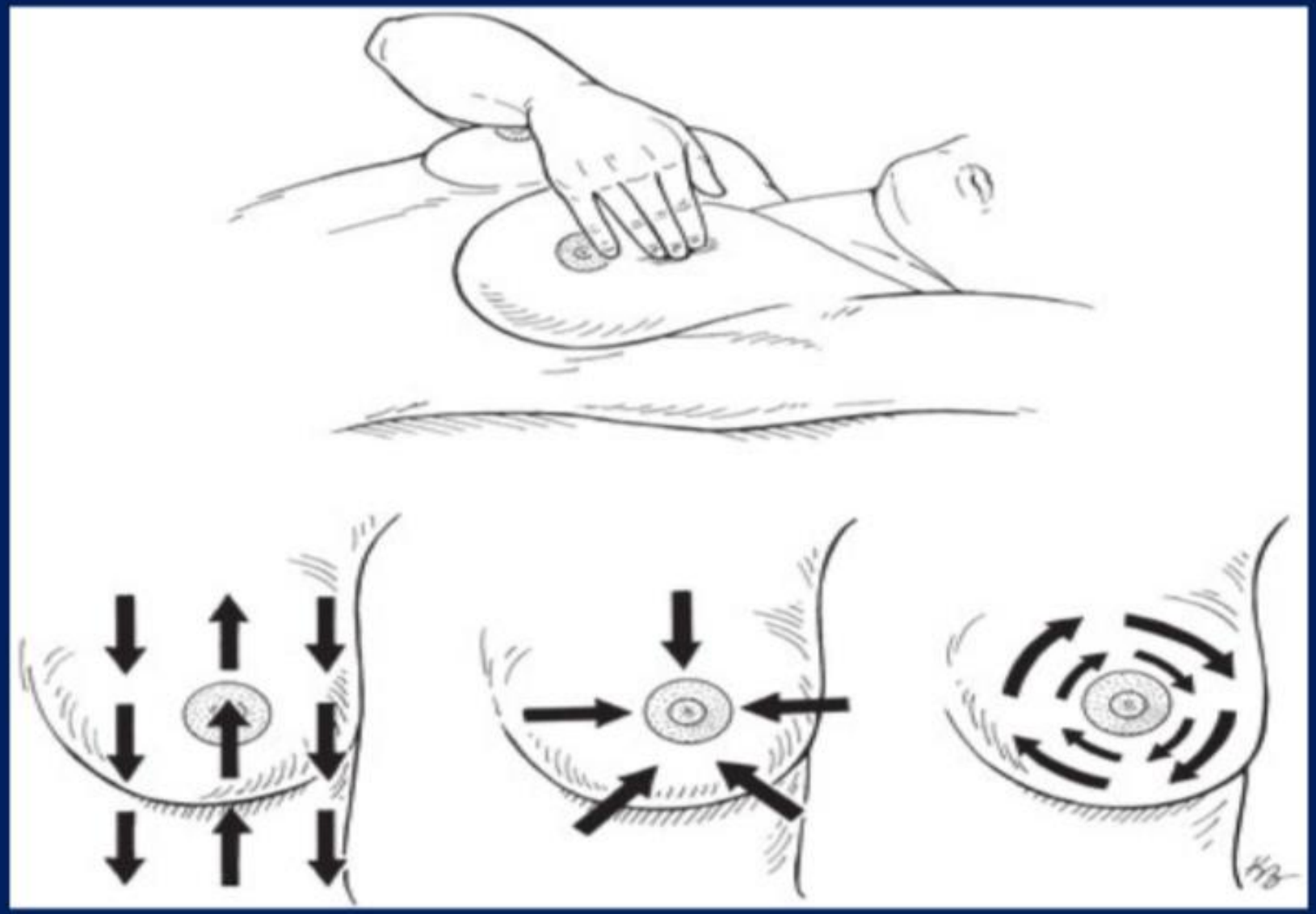
J Am Col Surg Oct 2009

Ultrasound

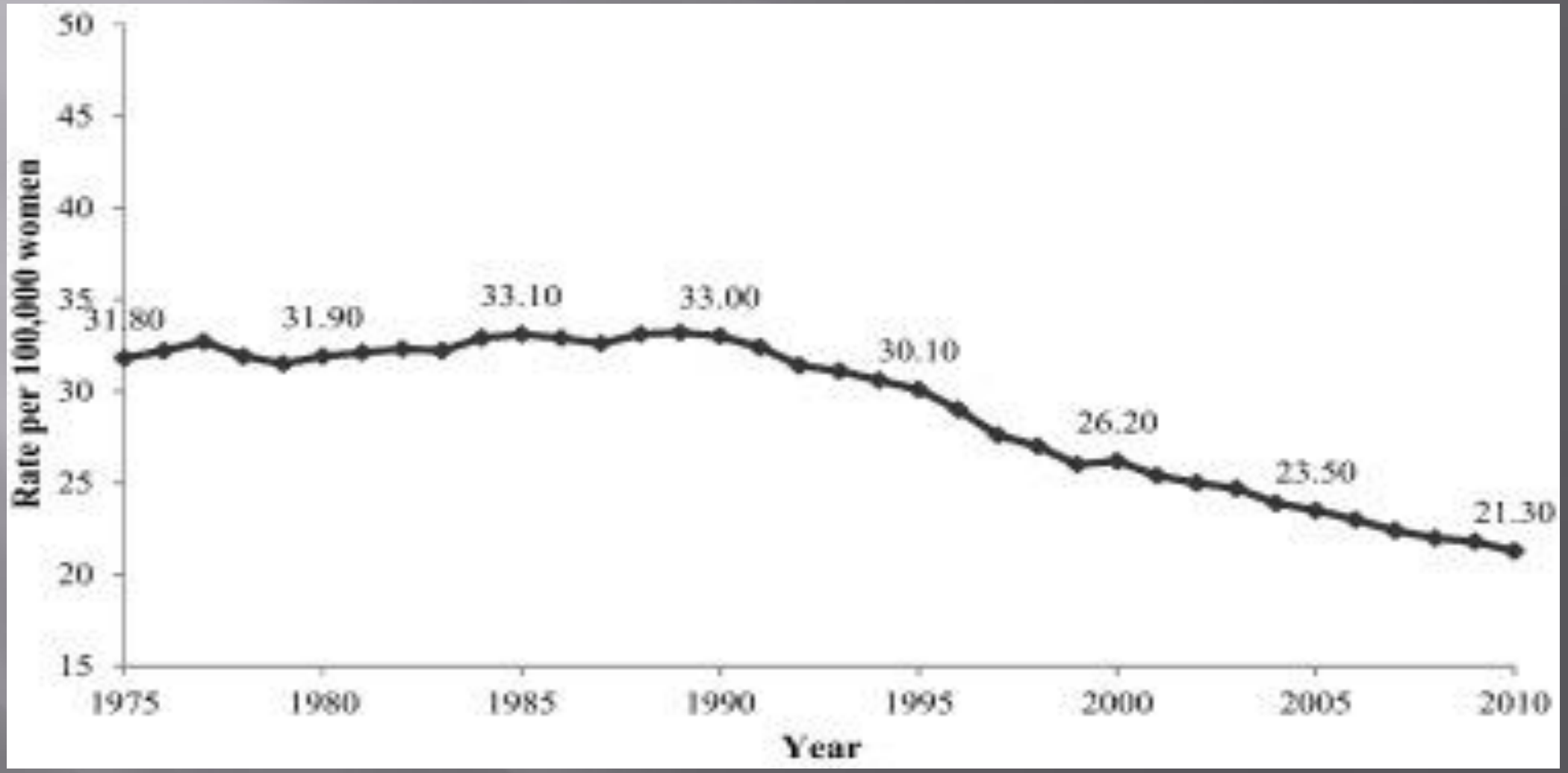
Diagnosis

Calcifications





Breast cancer mortality



Gail Model

National Cancer Institute http://www.cancer.gov/bcrisktool/Default.aspx

Breast Cancer Risk Assessment Tool NATIONAL CANCER INSTITUTE

Calculate Risk for New Patient

More Information

Credits

Questions:

For a brief explanation of the following questions click the ?

- What is the age of your patient? (select)
  The program calculates risk for patients 35 or older. ?
- What was the patient's age at time of first menstrual period? ? (select)
- What was patient's age at first live birth of a child? ? (select)
- How many of patient's first-degree relatives—mother and/or sister(s)—have had breast cancer? ? (select)
- Has the patient ever had a breast biopsy? ? (select)

Explanation

Question 1:

What is the age of your patient?

The program calculates risk for patients 35 or older.

Explanation:
The risk of developing breast cancer increases with age. The great majority of breast cancer cases occur in women older than age 50. Cancer changes develop slowly over time from normal, to premalignant, to cancerous and invasive stages. For this reason, breast cancer is more common among older women.

Return to top

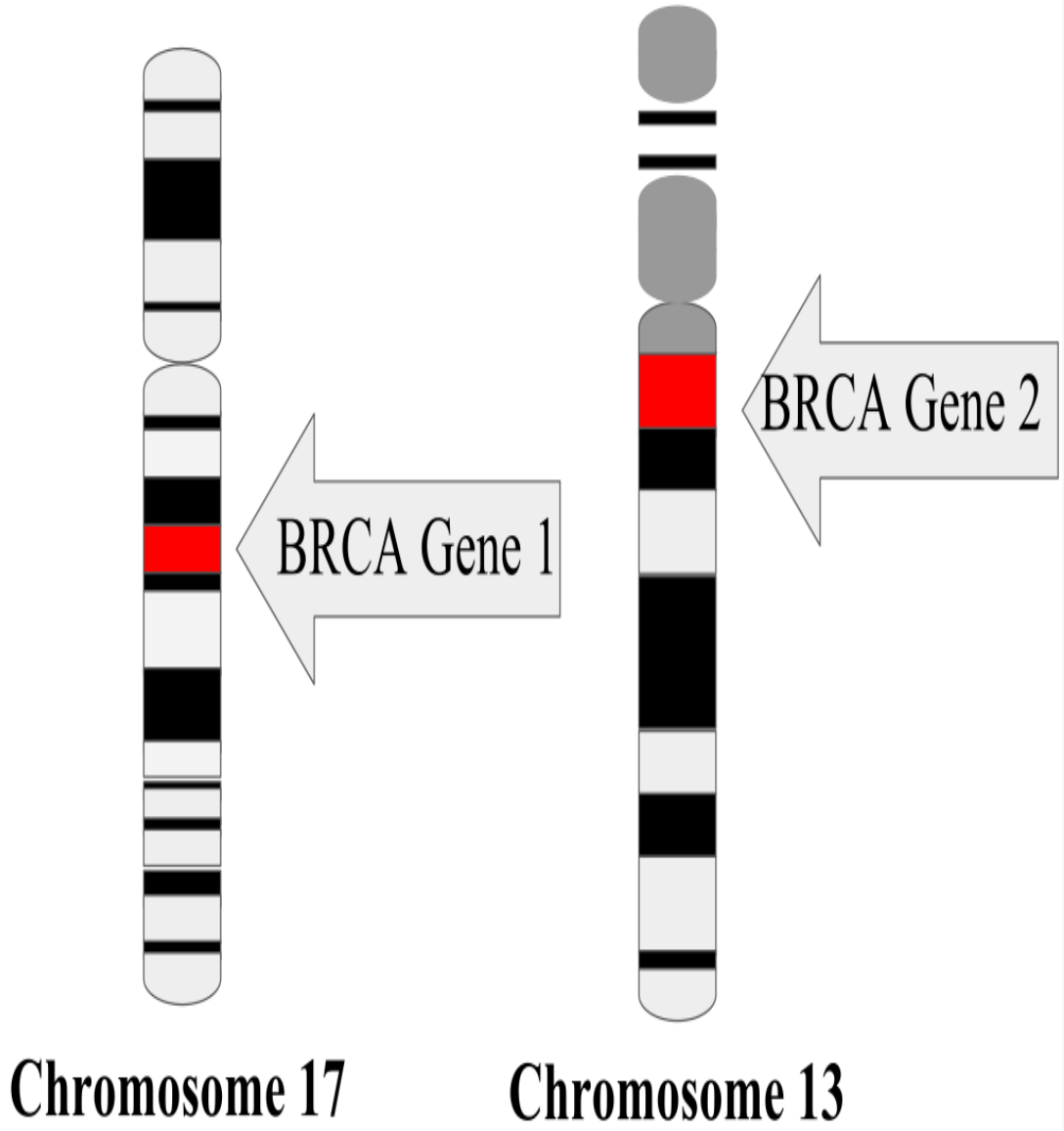
Question 2:

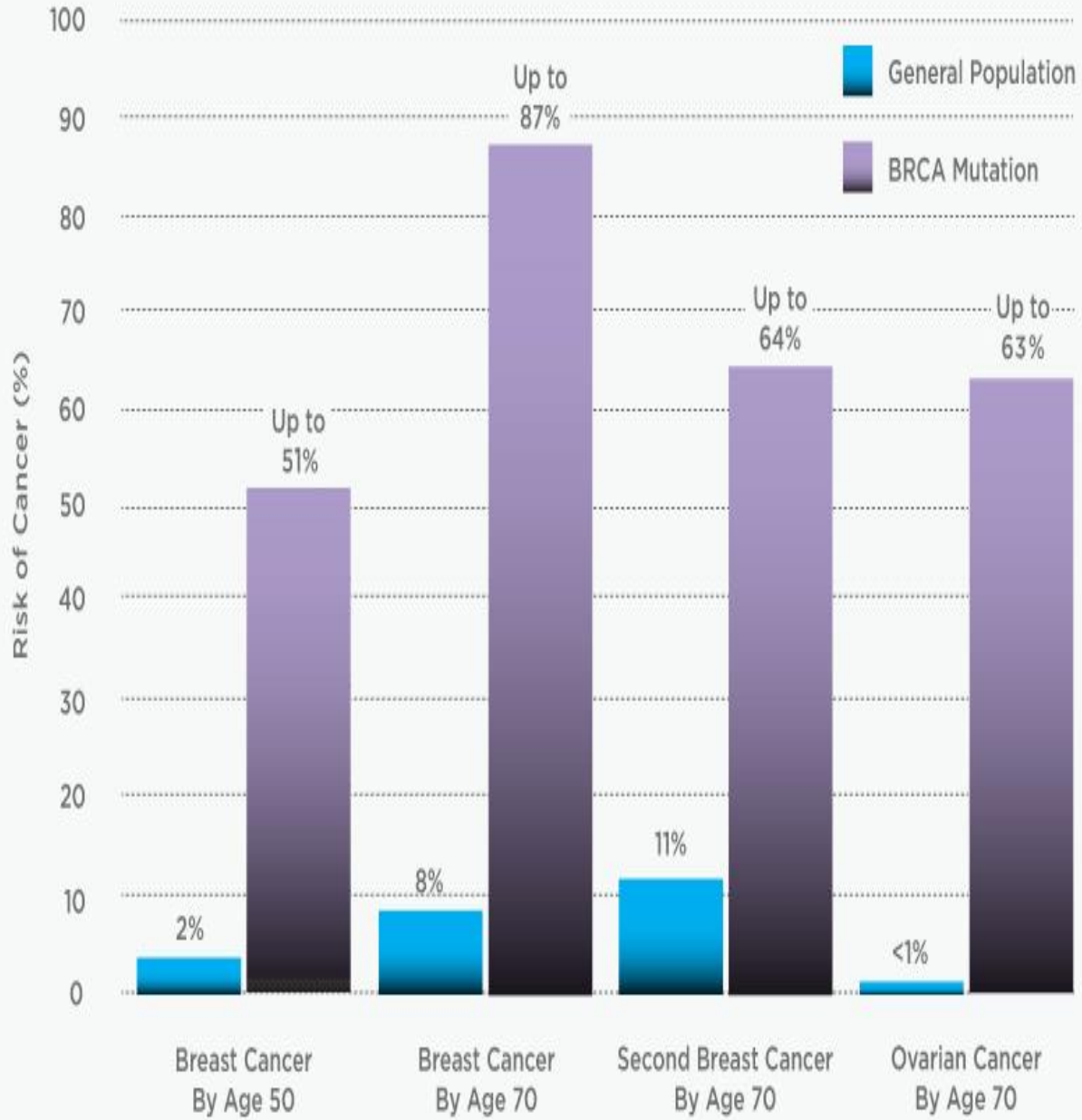
What was the patient's age at time of first menstrual period?

Explanation:
Women who had their first menstrual period before age 12 have a slightly increased risk of breast cancer. The levels of the female hormone estrogen change with the menstrual cycle. Women who start menstruating at a very young age have a slight increase in breast cancer risk that may be linked to this longer lifetime exposure to estrogen.

ARIZONA TELEMEDICINE PROGRAM

BRCA Mutations





ΕΥΧΑΡΙΣΤΩ ΠΟΛΎ!