Cancer: Past, Present, and Future
Cancer Screening

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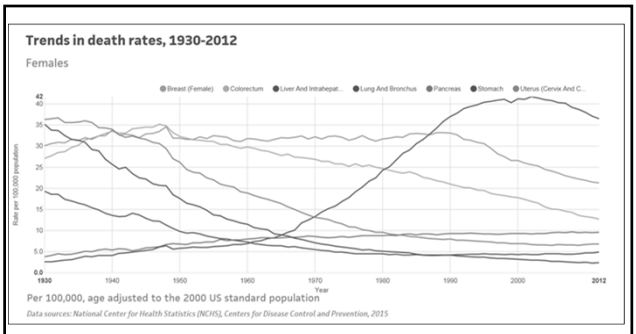
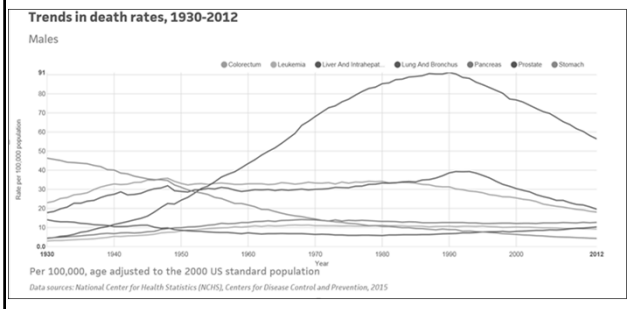




Why Screen For Cancer?

- Screening finds cancer at an early stage, before symptoms appear.
- When cancer is found early, it is usually easier to treat or cure.
- Once symptoms appear, cancer is harder to treat or cure.

What Cancers Do We Screen For?

Type	New Cases 2016
• Breast	246,000
• Colorectal	144,490
• Cervix	12,990
• Prostate	180,890
• Lung	224,390
	808,390*

*48% of all cancers

Different Types of Screening Tests

- Physical exam and history.
- Laboratory tests: tissue, blood, urine, or other body substances.
- Imaging (X-rays, CT Scans, Mammography, etc.)
- Genetic tests: Looking for gene mutations linked to some cancers.

The Patient Protection and Affordable Care Act (2010) US Preventive Services Task Force Recommended Services

- Mammography Screening
- Colorectal Screening
- HPV Testing
- HPV Immunization
- BRCA genetic counseling (High Risk)
- Tobacco Cessation

Barriers to Cancer Screening

- Lack of awareness
- Not recommended by provider
- Inconvenience
- Socioeconomic concerns
- Fear/Discomfort
- Logistical problems

Other Barriers

- Low self worth
- Fatalism
- “Privacy” concerns
- Negative past experiences
- Skepticism re: efficacy
- Skepticism re: financial motives

Eliminating Cancer Treatment Outcome Disparities Requires More

- Strengthen Health Literacy
- Earlier Diagnosis
- Increased Screening and Prevention
- State of the Art Care for All
- Continuing Care After Treatment

Figure 5b. Trends in Female Breast Cancer Death Rates* by Race and Ethnicity, US, 1975-2010

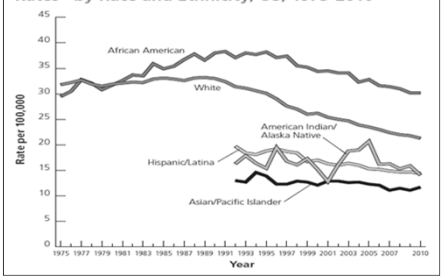


Figure 4.8: Five-year relative breast cancer survival rates based on SEER staging

Summary/SEER Staging Category	Definition (for all types of cancer)	Five-Year Relative Breast Cancer Survival*
Localized	The cancer cells have not spread beyond the organ where they began to grow.	99%
Regionalized	The cancer cells have spread beyond the organ where they began (for example to nearby lymph nodes), but this spread is limited.	84%
Distant	The cancer cells have spread to other parts of the body (metastasis).	26%

Adapted from 2005-2011 SEER data [94].

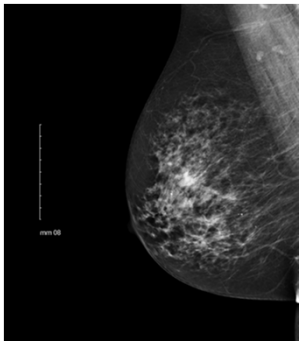
Breast Cancer

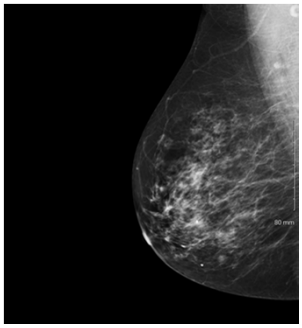
Ages 40 to 44: Start annual breast cancer screening with mammograms.

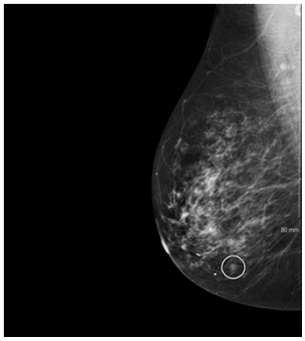
Ages 45 to 54: Mammograms every year.

55 and older: Every 2 years, or continue yearly screening.

Screening continues as long as a woman is expected to live 10 more years or longer.







Breast Cancer
Survival by Stage

Stage	5 Year Survival
0	100%
I	100%
II	93%
III	72%
IV	22%

	Percentage of women 40 and older who had a mammogram in the past 2 years
Asian (non-Hispanic)	67%
Black (non-Hispanic)	66%
White (non-Hispanic)	66%
American Indian and Alaska Native	63%
Hispanic	62%

Adapted from American Cancer Society materials [6].

Colorectal Cancer
"Red Flag" Symptoms

- Change in bowel movement
- Blood in stool
- Unexplained anemia

Colon Cancer

- 2nd Leading Cause of Cancer Death in US
- Death rate is dropping due to screening
- Only 58% of people aged 50-75 were screening in 2013
- New Goal: "80% by 18"

“80% by 18”

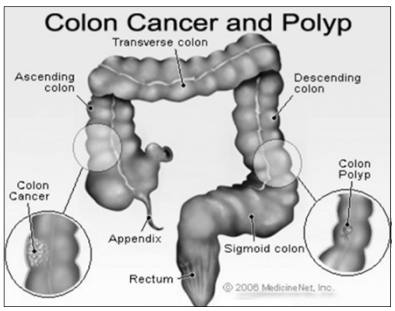
Reaching this goal would:

- Reduce the rate of new colon cancer cases by 17%
- Reduce the death rate by 19% by 2020

277,000 new cancers would have been detected and 203,000 lives saved

Colon and Rectal Cancer and Polyps

- Starting at age 50, both men and women should follow one of these testing plans:

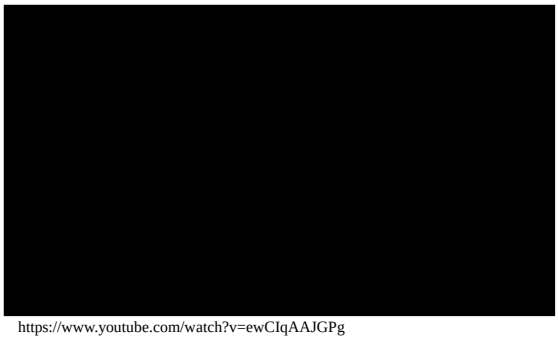


Tests that find Polyps and Cancer

- Flexible sigmoidoscopy every 5 years,
- Colonoscopy every 10 years, or
- Double-contrast barium enema every 5 years,
- CT colonography (virtual colonoscopy) every 5 years.

Tests That Mostly Find Cancer

- Yearly fecal occult blood test (FOBT), or
- Yearly fecal immunochemical test (FIT), or
- Stool DNA test every 3 years.



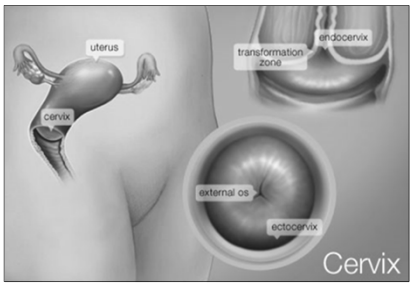
https://www.youtube.com/watch?v=ewCIqAAJGPg

National Colorectal Cancer Roundtable (NCCRT)

- 100 member organization
- Funded by American Cancer Society and CDC
- 700 committed organizations

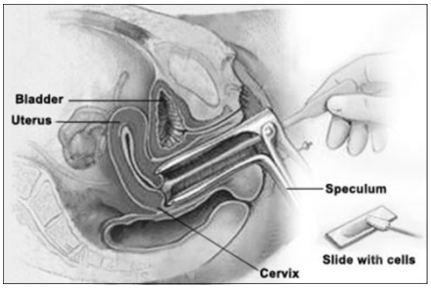
Goal: 80% of age eligible Americans up to date with colorectal screening by end of 2018.

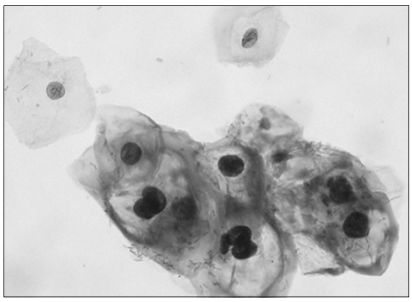
Most important organized public health campaign in the history of cancer control.



Cervical Cancer (PAP Smear)

- Cervical cancer screening starting at age 21.
- Women ages 21 to 29: Pap test every 3 years. HPV testing.
- Women ages 30 to 65: Pap test plus an HPV test every 5 years.
- Exception: Women over age 65 who have had regular cervical cancer testing in the past 10 years with normal results should not be tested for cervical cancer.
- Women with a history of serious cervical pre-cancer should continue to be tested for at least 20 years after that diagnosis, even if testing goes past age 65.





Typical PAP “Smear”

Cervix Cancer
Survival by Stage

Stage	5 Year Survival
Stage 0	5 year survival
Stage IA, IB	93%
Stage IIA, IIB	90-83%
Stage IIIA, IIIB	63-58%
Stage IIIA, IIIB	35-32%
Stage IV	15%

Cervical Cancer

- All women vaccinated against HPV should still follow the screening recommendations for their age groups.
- Following complete hysterectomy for reasons not related to cancer and no history of cervical cancer or serious pre-cancer, no testing needed.

Endometrial (uterine) Cancer

At menopause, all women should know the risks and symptoms of endometrial cancer.

Women should report any unexpected vaginal bleeding or spotting to their doctors.

- Screening Tests Carry Some Relative Risks.
  - False-positive test results are possible.
  - False-negative test result are possible.

Finding the cancer early may not necessarily help the person live longer.

Prostate Cancer

Starting at age 50, men should talk to a doctor about pros and cons of testing.

African Americans or men with a father or brother who had prostate cancer before age 65, should have this talk with a doctor starting at age 45.

Testing should include PSA blood test with or without a rectal exam.

Cautionary tale of active surveillance in intermediate-risk patients: Overall and cause-specific survival in the Sunny brook experience.

OS and CSS for IR and LR pts on AS.

	IR(95% CI)	LR(95% CI)	HR(95% CI)	P value
OS				
10 year	68.4% (61.5-76.2%)	83.6% (79.3-88.2%)	2.08 (1.49-2.89)	<0.0001
15 year	50.3% (40.9-61.8%)	68.8% (61.7-76.7%)		
CSS				
10 year	95.5% (91.9-99.3%)	98.2% (96.3-100%)	3.75 (1.37-10.28)	0.01
15 year	88.5% (81.2-96.5%)	96.3% (92.4-100%)		

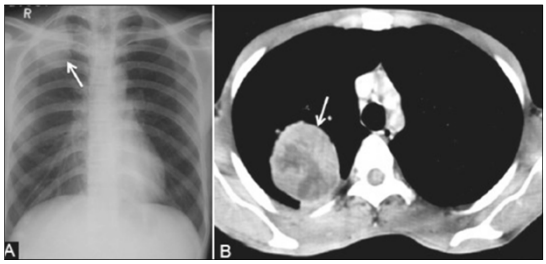
2015 Genitourinary Cancer Symposium

Lung Cancer

Screening not recommended for people who are at average risk. Screening is only for those at high risk of lung cancer due to cigarette smoking.

- 55 to 74 years old
- In good health
- At least a 30 pack-year smoking history.
- Either still smoking or quit within the last 15 years.

Fig1 : 5mm lung cancer detected by CT scan



Lung Cancer
Survival by Stage

Stage	5 Year Survival
IA	49%
IB	45%
IIA, IIB	30%
IIIA	14%
IIIB	5%
IV	1%

Conclusions

- Goal: Detect cancer before there are symptoms.
- Screening for major types of cancer saves lives.
- There are various screening methods.
- Cure is more likely if cancer is detected early.
- Treatment side effects are less if the cancer is found early.
- Cancer screening is underutilized.

Cancer Prevention Tactics

- Stay away from all tobacco.
- Get to and stay at a healthy weight.
- Regular physical activity.
- Eat healthy with plenty of fruit and vegetables.
- Limit alcohol intake.
- Protect your skin.
- Know yourself, your family history, and your risks.
- Get regular check-ups and cancer screening tests.

Lung Cancer Survival By Stage

Stage	5 Year Survival
I A	49%
I B	45%
II A, II B	30%
III A	14%
III B	5%
IV	1%