

Breast Cancer Screening Guidelines

Dulcy E. Wolverton, M.D.

Associate Professor of Radiology

University of Colorado School of Medicine

*Breast Cancer in the United States

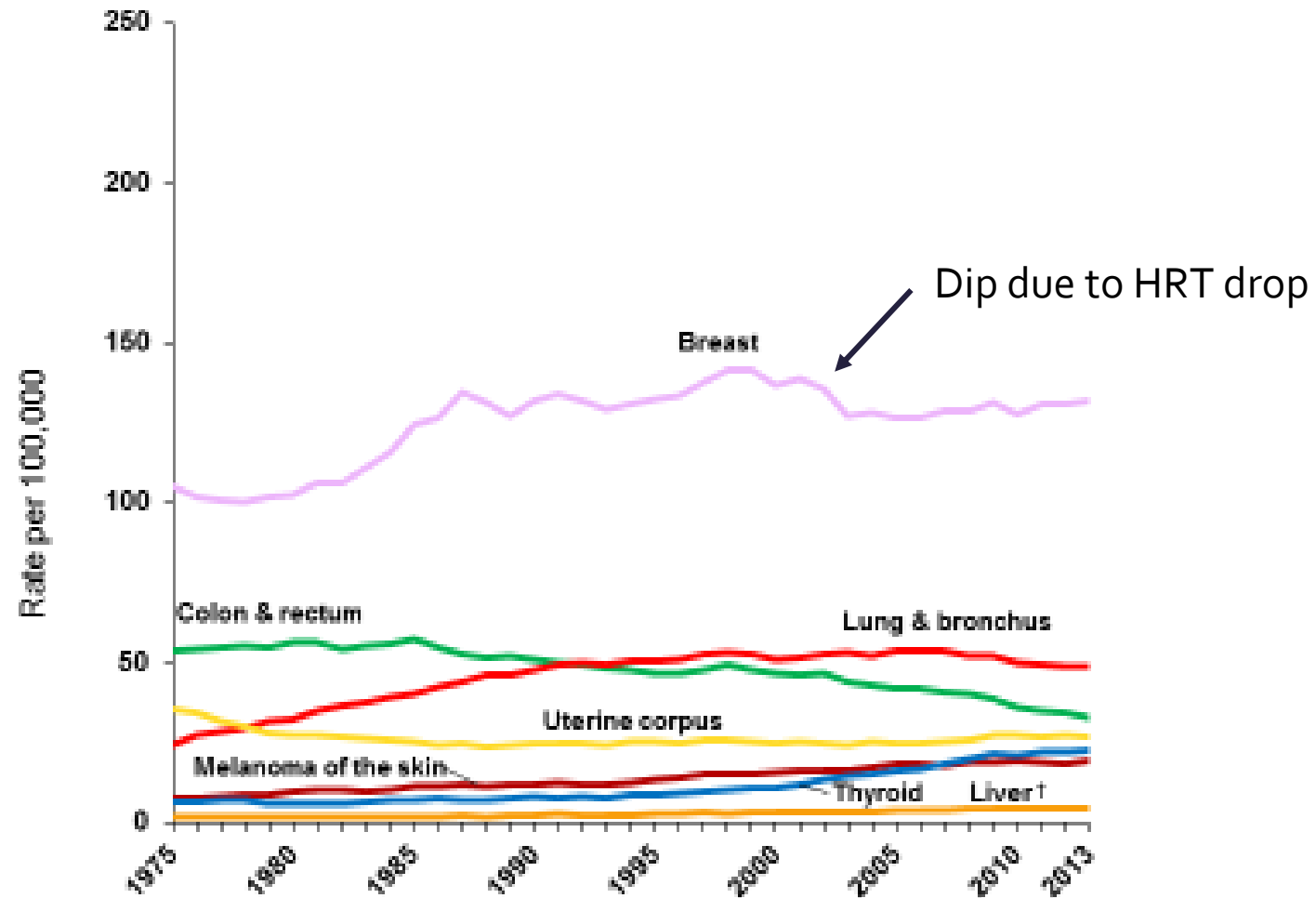
- Most common cancer in women
 - 30% of all cancers diagnosed in 2017 (excluding non-melanoma skin)
- Estimated 252,710 new diagnoses of invasive breast cancer (IBC)
 - Incidence rate increasing 1-2% per year
- Second leading cause of cancer mortality in women (2nd to lung)
 - Estimated 40,610 deaths in 2017, 14% of all cancer deaths

The Lifetime Probability of Developing Cancer for Females, 2011-2013

Site	Risk
All sites*	1 in 3
Breast	1 in 8
Lung & bronchus	1 in 17
Colon & rectum	1 in 24
Uterine corpus	1 in 36
Melanoma of the skin†	1 in 44
Non-Hodgkin lymphoma	1 in 54
Thyroid	1 in 57
Pancreas	1 in 66
Ovary	1 in 78
Leukemia	1 in 81

*All sites exclude basal cell and squamous cell skin cancers and in situ cancers except urinary bladder. †Statistic for non-Hispanic whites.
Source: DevCan: Probability of Developing or Dying of Cancer Software, Version 6.7.4 Statistical Research and Applications Branch, National Cancer Institute, 2016.

Trends in Cancer Incidence Rates* Among Females, US, 1975-2013



*Age-adjusted to the 2000 US standard population and adjusted for delays in reporting. †includes the intrahepatic bile duct.
Source: Surveillance, Epidemiology, and End Results (SEER) Program, National Cancer Institute, 2016.

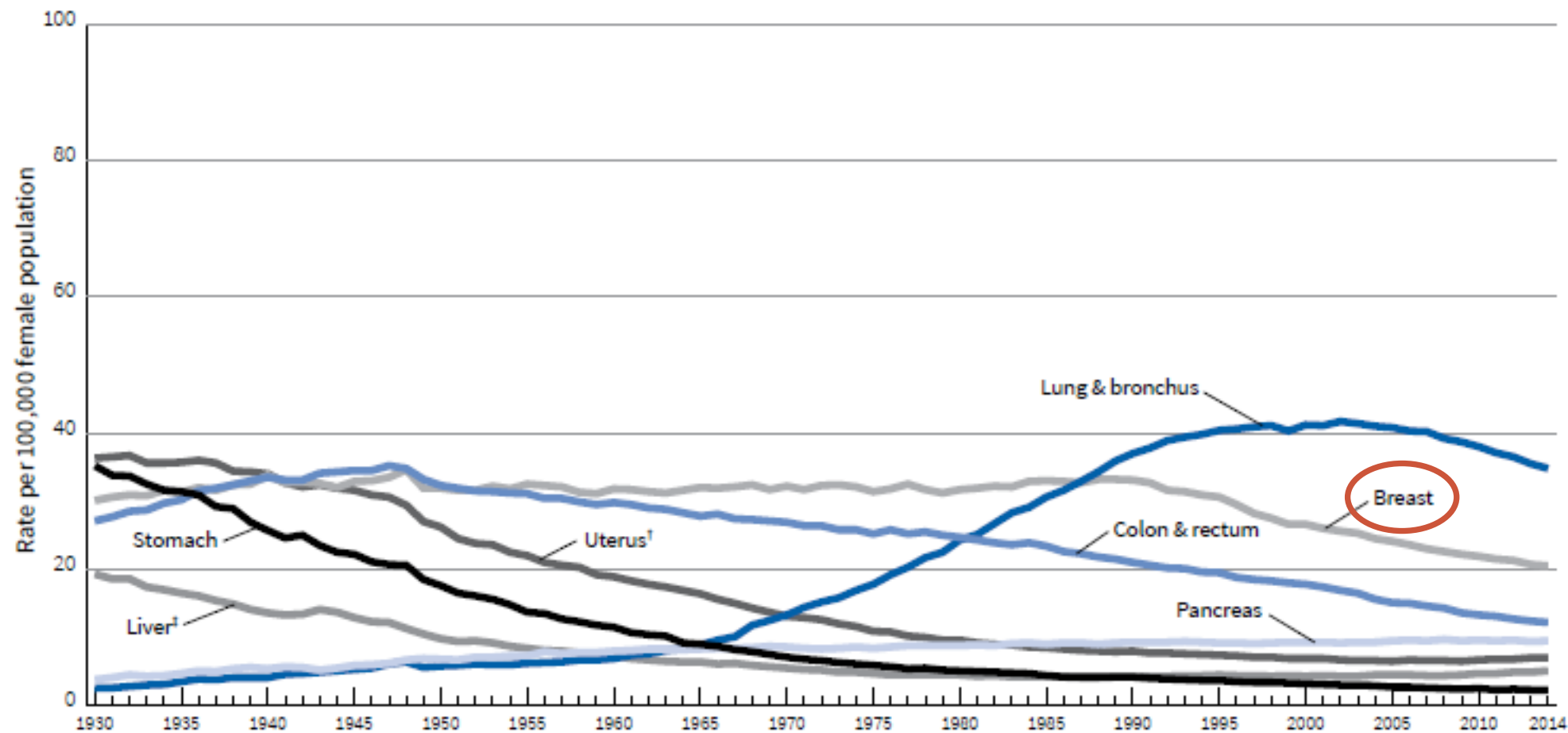
Breast Cancer Screening

- Screening mammography reduces breast cancer mortality
 - Periodic screening allows detection of preclinical breast cancers
 - *Most RCTs demonstrate 20-30% mortality reductions
 - In women invited to screen, hence includes women never screened
 - True benefit ranges from 38-49% in participating women
- Active screening in the United States began in the 1980s
 - **Death rate has decreased 38% between 1989 and 2014

*Eby PR, Radiologic Clinics of North America 2017; 55(3):441-56.

**American Cancer Society, Cancer Facts & Figures, 2017

Figure 2. Trends in Age-adjusted Cancer Death Rates* by Site, Females, US, 1930-2014



*Per 100,000, age adjusted to the 2000 US standard population. †Uterus refers to uterine cervix and uterine corpus combined. ‡The mortality rate for liver cancer is increasing.

Note: Due to changes in ICD coding, numerator information has changed over time. Rates for cancer of the liver, lung and bronchus, uterus, and colon and rectum are affected by these coding changes.

Source: US Mortality Volumes 1930 to 1959, US Mortality Data 1960 to 2014, National Center for Health Statistics, Centers for Disease Control and Prevention.

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Breast Cancer Screening Guidelines

- Different guidelines developed for women at average risk
- American College of Radiology (ACR)
- American Cancer Society (ACS)
- United States Preventative Services Task Force (USPSTF)
- Multiple additional specialty guidelines

Breast Cancer Screening Guidelines

- American College of Radiology (ACR)
 - Most recent guidelines issued in 2013
 - Annual screening mammography beginning at age 40
 - Frequency based on sojourn time estimated at 18 months in women <50
 - *CISNET modeling predicts 39.6% mortality reduction (40-84)
 - Continue screening until expected lifespan is <5-7 years

Breast Cancer Screening Guidelines

- American Cancer Society (ACS)
 - 2003 guidelines updated in 2015
 - Women aged 40-44 should be given the opportunity to begin annual screening
 - Women aged 45-54 should be screened annually
 - Women aged 55+ may begin transitioning to biennial screening
 - Continue screening until expected lifespan is < 10 years

Breast Cancer Screening Guidelines

- United States Preventative Services Task Force (USPSTF)
 - 2016 updated guidelines
 - Women aged 40-49: may begin biennial screening
 - If they place a higher value on potential benefits than harms
 - Women aged 50-74: biennial screening mammography
 - Results in 23.2% reduction in mortality
 - Women aged 75+: insufficient evidence for recommendation

Comparison of Breast Cancer Screening Guidelines (January 2016)

Recommended	ACOG	ACR/SBI	ACS	AMA	NCCN	USPSTF
Age to Start Mammograms	40	40	45 Individual choice 40-44	40	40	50
Age to Stop Mammograms	Annual as long as woman is in good health	When life expectancy is <5-7 years	When life expectancy <10 years	When life expectancy <10 years	Upper age limit not established	74
Interval	Annual	Annual	Annual 45-54; 1-2 years 55+	Annual	Annual	2 years

High-Risk Breast Cancer Screening

- Strong family history of breast cancer:
 - One or more 1st degree relatives
 - Initial annual mammographic screening 7-10 years before index case
- Calculated breast cancer risk $\geq 20\%$ (e.g., Tyrer-Cuzick)
 - Add contrast-enhanced screening breast MRI
- BRCA1/2 mutation
 - Begin annual breast MRI screening at 25-30 years old
 - Add annual mammography at age 30
- Mantle radiation between 10-30 years old
 - Begin annual mammography* and breast MRI 8 years after exposure

* Not <25 y