4-11-2014

Cancer Screening 2014

Richard C. Wender, MD
Chief Cancer Control Officer, American Cancer Society

Recommended Citation

Wender, MD, Richard C., "Cancer Screening 2014" (2014). *Department of Family & Community Medicine Lectures, Presentations, Workshops.* Paper 24.
http://jdc.jefferson.edu/fmlectures/24

Cancer Screening 2014

Richard C. Wender, MD

Chief Cancer Control Officer

American Cancer Society

Professor, Department of Family and Community Medicine

Thomas Jefferson University

What We'll Cover

1. Breast Cancer

2. Colon Cancer

3. Lung Cancer

4. Prostate Cancer

Breast Cancer

2014

Estimated new cases 232,670

Estimated deaths 40,000

Effect of Three Decades of Screening Mammography on Breast-Cancer Incidence

Archie Bleyer, M.D., and H. Gilbert Welch, M.D., M.P.H.

uality Department, St. Charles
em, Central Oregon, and the
t of Radiation Medicine, Ore-
and Science University, Port-
the University of Texas Medi-
at Houston, Houston (A.B.);
rtmouth Institute for Health
Clinical Practice, Geisel School
e at Dartmouth, Hanover, NH
ddress reprint requests to Dr.
500 NE Neff Rd., Bend, OR
ableyer@gmail.com.

ABSTRACT

BACKGROUND

To reduce mortality, screening must detect life-threatening disease at an earlier, more curable stage. Effective cancer-screening programs therefore both increase the incidence of cancer detected at an early stage and decrease the incidence of cancer presenting at a late stage.

METHODS

We used Surveillance, Epidemiology, and End Results data to examine trends from 1976 through 2008 in the incidence of early-stage breast cancer (ductal carcinoma in situ and localized disease) and late-stage breast cancer (regional and distant disease) among women 40 years of age or older.

RESULTS

The introduction of screening mammography in the United States has been associated with a doubling in the number of cases of early-stage breast cancer that are detected each year, from 112 to 234 cases per 100,000 women — an absolute increase of 122 cases per 100,000 women. Concomitantly, the rate at which women present with late-stage cancer has decreased by 8%, from 102 to 94 cases per 100,000 women — an absolute decrease of 8 cases per 100,000 women. With the assumption of a constant underlying disease burden, only 8 of the 122 additional early-stage cancers diagnosed were expected to progress to advanced disease. After excluding the transient excess incidence associated with hormone-replacement therapy and adjusting for trends in the incidence of breast cancer among women younger than 40 years of age, we estimated that breast cancer was overdiagnosed (i.e., tumors were detected on screening that would never have led to clinical symptoms) in 1.3 million U.S. women in the past 30 years. We estimated that in 2008, breast cancer was overdiagnosed in more than 70,000 women; this accounted for 31% of all breast cancers diagnosed.

CONCLUSIONS

Despite substantial increases in the number of cases of early-stage breast cancer detected, screening mammography has only marginally reduced the rate at which women present with advanced cancer. Although it is not certain which women have

Twenty five year follow-up for breast cancer incidence and mortality of the Canadian National Breast Screening Study: randomised screening trial

OPEN ACCESS

Anthony B Miller *professor emeritus*[1], Claus Wall *data manager*[1], Cornelia J Baines *professor emerita*[1], Ping Sun *statistician*[2], Teresa To *senior scientist*[3], Steven A Narod *professor*[1 2]

[1]Dalla Lana School of Public Health, University of Toronto, Toronto, Ontario M5T 3M7, Canada; [2]Women's College Research Institute, Women's College Hospital, Toronto, Ontario M5G 1N8, Canada; [3]Child Health Evaluative Services, The Hospital for Sick Children, Toronto, Ontario, Canada

Abstract

Objective To compare breast cancer incidence and mortality up to 25 years in women aged 40-59 who did or did not undergo mammography screening.

Design Follow-up of randomised screening trial by centre coordinators, the study's central office, and linkage to cancer registries and vital statistics databases.

Setting 15 screening centres in six Canadian provinces,1980-85 (Nova Scotia, Quebec, Ontario, Manitoba, Alberta, and British Columbia).

Conclusion Annual mammography in women aged 40-59 does not reduce mortality from breast cancer beyond that of physical examination or usual care when adjuvant therapy for breast cancer is freely available. Overall, 22% (106/484) of screen detected invasive breast cancers were over-diagnosed, representing one over-diagnosed breast cancer for every 424 women who received mammography screening in the trial.

Introduction

Regular mammography screening is done to reduce mortality

Review

A Systematic Assessment of Benefits and Risks to Guide Breast Cancer Screening Decisions

Lydia E. Pace, MD, MPH; Nancy L. Keating, MD, MPH

IMPORTANCE Breast cancer is the second leading cause of cancer deaths among US women. Mammography screening may be associated with reduced breast cancer mortality but can also cause harm. Guidelines recommend individualizing screening decisions, particularly for younger women.

OBJECTIVES We reviewed the evidence on the mortality benefit and chief harms of mammography screening and what is known about how to individualize mammography screening decisions, including communicating risks and benefits to patients.

EVIDENCE ACQUISITION We searched MEDLINE from 1960-2014 to describe (1) benefits of mammography, (2) harms of mammography, and (3) individualizing screening decisions and promoting informed decision making. We also manually searched reference lists of key articles retrieved, selected reviews, meta-analyses, and practice recommendations. We rated the level of evidence using the American Heart Association guidelines.

The Mammography Debate –
Understanding the Science, Positions, and Beliefs

- Positions of scientists, journals, and reporters are largely entrenched

- The randomized trial data are flawed and are old

- The ACA was a game changer
  - Linking USPSTF guidelines to coverage

USPSTF 2009 Guideline Change

The USPSTF downgraded their recommendation for mammography screening in women aged 40-49 years from a B to a C

A "C" recommendation indicates that harms and benefits are about equal

"The USPSTF recommends against routine screening mammography in women aged 40 to 49 years."

They Continued:

" ...the decision to start regular, biennial screening mammography before the age of 50 years should be an individual one and take into account patient context, including the patient's values regarding specific benefits and harms."

The USPSTF performed an updated meta-analysis and found:

- 15% mortality reduction among women screened in their 40's

- 14% mortality reduction for women screened in their 50's

Nelson HD, Fu R, et al. Ann Intern Med 2009; 151:703-715 W226-W235

Number Needed To Be <u>Invited</u> To Screening To Save One Life

Age	Number
40-49	1,904
50-59	1,339

Ultimately, the USPSTF concluded that the majority of screening benefit was due to screening women aged 50-74 years. Screening at 40 only contributes to an additional 3% of mortality reduction

The Evolving Evidence for Breast Cancer Screening—Benefits & Harms
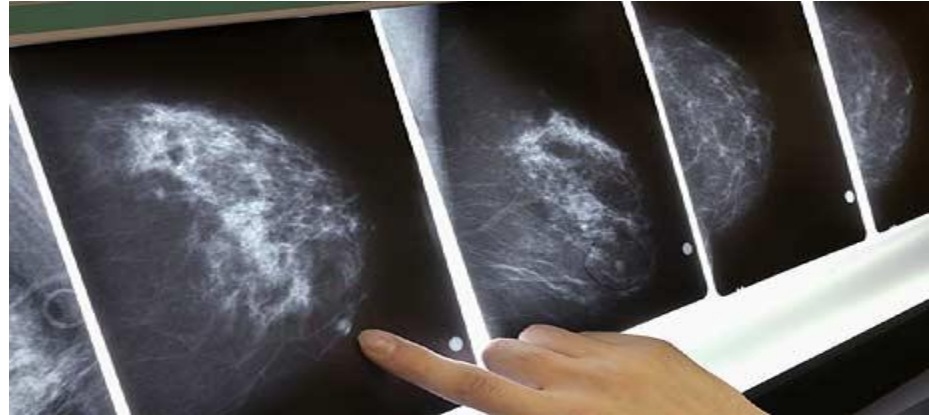
The argument against screening women in their 40s

- Risk of developing and dying from breast cancer during the decade of the 40s is low

- While the *relative risk* of dying from breast cancer associated with screening in women ages 40-49 is similar to women ages 50-59, *the absolute benefit is lower*

The argument against screening women in their 40s

- The risk of harms (false positives, etc.) is high

- Thus, the balance of benefits and harms indicates a recommendation against routine screening (C rating)

Premature mortality and incidence based mortality from breast cancer, U.S Women

Average Years of Life Lost Per Person Dying of Cancer All Races, Both Sexes, 2006

Cancer Site	Years
Childhood Ages (0-14)	71.0
Testis	36.2
Cervix Uteri	26.1
Hodgkin Lymphoma	23.9
Brain & ONS	22.3
Breast (Female)	18.9
Melanoma of the Skin	18.0
Ovary	17.3
Oral Cavity & Pharynx	17.1
Liver & IBD	16.9
Leukemia	16.4
Corpus & Uterus, NOS	16.2
Esophagus	15.8
Stomach	15.5
Kidney & Renal Pelvis	15.5
All Cancer Sites	15.4
Lung & Bronchus	15.0
Pancreas	14.5
Non-Hodgkin Lymphoma	14.3
Colon & Rectum	14.2
Myeloma	13.7
Urinary Bladder	11.2
Prostate	9.3

Years

- Percent of deaths from breast cancer by age at diagnosis, U.S., 2005-2006
  - < 40   7.7%
  - **40-49   17.8%**
  - 50-59   22.3%
  - 60-69   19.0%
  - 70-79   18.8%
  - 80+   14.5%

Source: SEER Cancer Statistics Review,1975-2006.

Meta-analysis of the RCTs, Women age 39-49
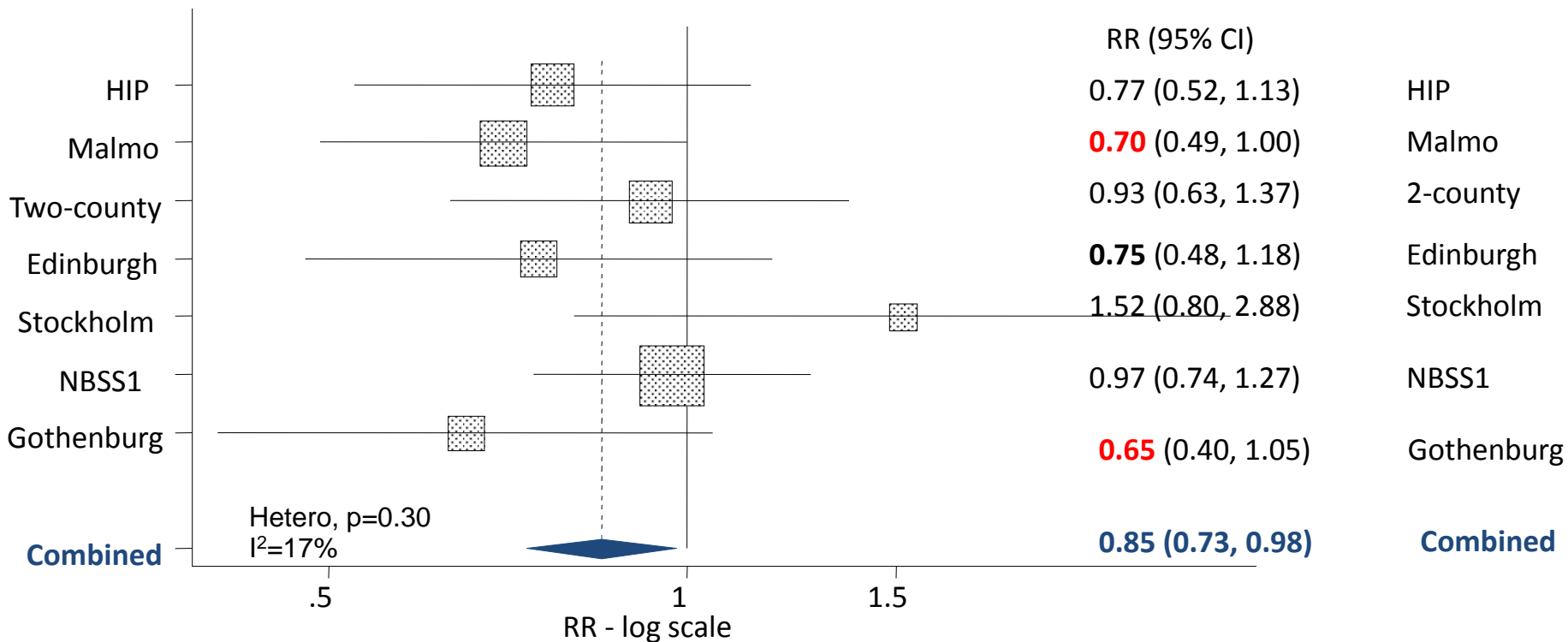
15% reduction in breast cancer mortality
20% reduction without NBSS-1

Evaluation of Service Screening in Sweden

Effectiveness of Population-Based Service Screening With Mammography for Women Ages 40 to 49 Years

- Contemporaneous comparison of breast cancer mortality in Swedish counties offering mammography vs. those not offering mammography

- 1986-2005

- Average follow-up = 16 years

Swedish Mammography In Young Women Cohort

- Screened every 18 to 24 months

- All outcomes in Sweden are recorded in the Swedish County Registry

- Analyzed data both based on invitation and attendance

Helquist BN et.al. Cancer 2010 1

Swedish Results: Before Screening – 1970-1985

	Breast Cancer Deaths	Person-Years
Study Group	607	4.8 million
Control Group	846	6.3 million

RR: 0.94 (CI 0.85-1.05)

No Reduction In Mortality

Swedish Results: Study Period – 1986-2005

	Breast Cancer Deaths	Person-Years
Study Group	803	7.3 million
Control Group	1238	8.8 million

Number needed to screen to save 1 life: 1252

Map of Study and Control Group Areas, and Crude Cumulative Breast Cancer Mortality per 100,000 Person Years

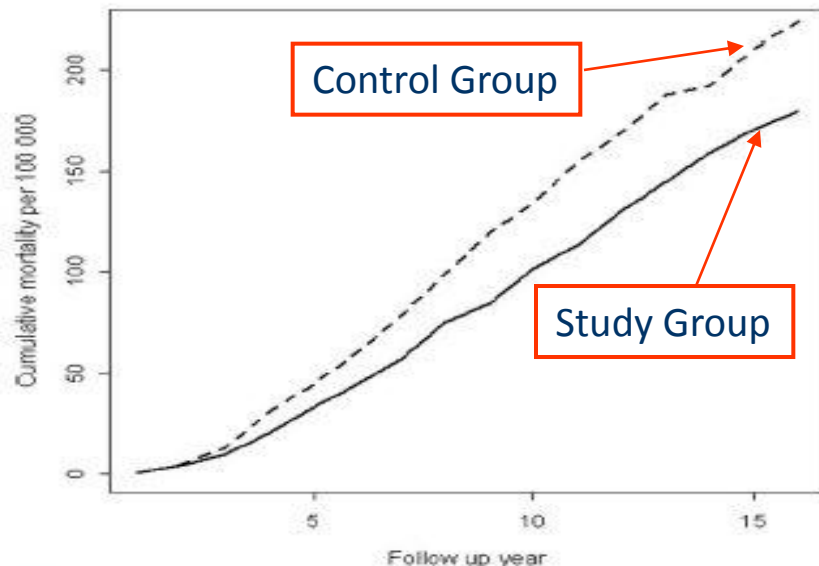**Figure 1.** This is a simplified map of the areas that were included in the study group and the control group.

Figure 2. This chart illustrates the crude cumulative breast cancer mortality per 100,000 person-years. Solid line indicates the study group; dashed line, control group.

RR = 0.74; 95% CI 0.66 − 0.83)

Cancer 2010; published online: 29 SEP 2010

Results from randomized trials are a <u>solid</u> basis for breast cancer screening policy

- Mortality reductions in the trials, *closely parallel the <u>reduction</u> in the risk of being diagnosed with an advanced breast cancer.*

- Those trials that succeeded in downstaging, *also succeeded in reducing breast cancer deaths.*

Two important points:

- Long term follow-up is necessary to measure the full benefit of breast cancer screening
- With long follow-up, the number-needed-to-screen to save one life steadily improves

Table 3

Local End Point Committee Data: Breast Cancer Deaths Avoided and Number of Women Needed to Screen for 7 Years to Prevent One Death according to Follow-up Time

Time between Randomization and Follow-up (y)	RR*	Deaths from Breast Cancer in ASP Group	Expected Deaths in ASP Group†	Deaths Prevented in ASP Group	No. of Women Needed to Screen*
10	0.74 (0.57, 0.98)	206	277	71	922 (515, 4410)
15	0.70 (0.50, 0.97)	284	408	124	526 (351, 1055)
20		324	465	141	464 (316, 871)
25		347	497	150	436 (297, 815)
29		351	509	158	414 (286, 748)

31% fewer deaths After 29 years

* Numbers in parentheses are 95% confidence intervals.

† Expected deaths if the ASP had the same mortality rate as the PSP, calculated by dividing the observed deaths by the RR (eg, at 10 years, 206/0.7435 = 277 expected deaths).

Number Needed to Screen (NNS) vs. Number Needed to Invite (NNI) to Avoid One Breast Cancer Death

Age Group	Swedish data (NNS)[1]	USPSTF (NNI)[2]
Overall	**464**	**1224**
40-49	726	1,904
50-59	260	1,339
60-69	198	377

[1] Number Needed to Screen (NNS) Every 2 Years (40-49—18 mos.) for a Period of Ten Years, with 20 Years of Follow-up, to Save One Life.

[2] Number Needed to Invite (NNI), estimated from randomized trial data with variable screening intervals, variable screening rounds, different rates of adherence and non-compliance, and variable periods of follow-up (14 yrs.)

Adjusted absolute risk estimates of the number needed to screen to save one life based on UK Review Standard*

Source	No. needed to screen/invite(original)*	No. needed to screen (adjusted)
UK review (2012)	180	180
USPSTF, depending on age (2009)	377-1904	193
Nordic Cochrane Review (2011)	2000†	257
EUROSCREEN (2012)	90	64-96

* Original estimates are adjusted to the same scenario used in the UK Independent Review, i.e., the impact of screening UK women ages 50-51 every 3 years for 20 years on mortality in women ages 55-79.

Adverse Effects and Harms

- False positive findings

- Anxiety

- Overdiagnosis

False Positive and Patient Recall in Mammography Screening

The USPTF labeled all women with an initial abnormal mammogram who were found to not have cancer as "false positives" – 100 out of 1000 women screened

False Positives and Patient Recall- An Analysis of the 100 Recalls

- 56 out of 100 will have additional views and a mammogram and will be found to be normal

- 25 out of 100 will have a 6 month follow-up

**False Positives and Patient Recall-
An Analysis of the 100 Recalls**

- 19 (1.9% of the 1000) will have a biopsy
- 6 of 19 (32%) will have cancer. An excellent yield
- Biopsies of a palpable lump: only 15% have cancer

US women's attitudes to false positive mammography results and detection of ductal carcinoma in situ: cross sectional survey

Lisa M Schwartz, Steven Woloshin, Harold C Sox, Baruch Fischhoff, H Gilbert Welch

Abstract

Objective To determine women's attitudes to and knowledge of both false positive mammography results and the detection of ductal carcinoma in situ after screening mammography.

Design Cross sectional survey.

Setting United States.

Participants 479 women aged 18-97 years who did not report a history of breast cancer.

positive result (n = 76) expressed the same high tolerance: 39% would tolerate 10 000 or more false positives. 62% of women did not want to take false positive results into account when deciding about screening. Only 8% of women thought that mammography could harm a woman without breast cancer, and 94% doubted the possibility of non-progressive breast cancers. Few had heard about ductal carcinoma in situ, a cancer that may not progress, but when informed, 60% of women wanted

Correspondence to:
L M Schwartz
lisa.schwartz@
dartmouth.edu

Schwartz & Colleagues found:

- Women had high awareness of false positives from mammography

- Women were highly tolerant of false positives
  - 63% felt 500 FP per life saved was reasonable
  - 37% felt 10,000 FP per life saved was reasonable

Schwartz & Colleagues found:

– Women who had had experienced a FP result had the same level of tolerance as women who had not had experienced a FP

– *63% did not regard false positives as an important factor in decisions about screening*

Over Diagnosis:
The Hottest Topic In Cancer Screening

Lack of consistent definition and methods of measurement causes confusion.

Over Diagnosis Definitions

- Three potential definitions:
  - A cancer with no biologic potential to cause harm
  - A cancer that is very unlikely to cause harm within the predicted life expectancy of the individual
  - Any cancer case where the individual dies before the cancer causes harm

Measuring Over Diagnosis

- Excess number of cancers detected in the screening arm compared to the control arm
  - Effective screening should detect more cancers earlier than no screening
  - Cancers detected through usual care should catch-up with time
  - If there is over-diagnosis the usual care group will never catch up

Measuring Over-Diagnosis

- The natural history of cancers may be longer than we suspected

- Usual care group may take many years to catch up

Measuring Over-Diagnosis

- Some usual care patients, who would have developed the target cancer, will die of another cause before the cancer is diagnosed

- 15 to 20 years of measurement are needed to accurately measure over-diagnosis

- In the meantime, some women in usual care will get screened which may falsely lower the estimate of over diagnosis

Overdiagnosis

- Estimates of overdiagnosis of screen detected breast tumors range from 0 - > 50%, with some claiming that it is _the_ major harm of screening

- **Reality:** To estimate overdiagnosis, we must examine incidence rates over time, **and adjust for:**
  - Pre-existing trend of increasing incidence
  - Lead time

Overdiagnosis Estimates Based on Adjustment for Incidence Trends and Lead-time
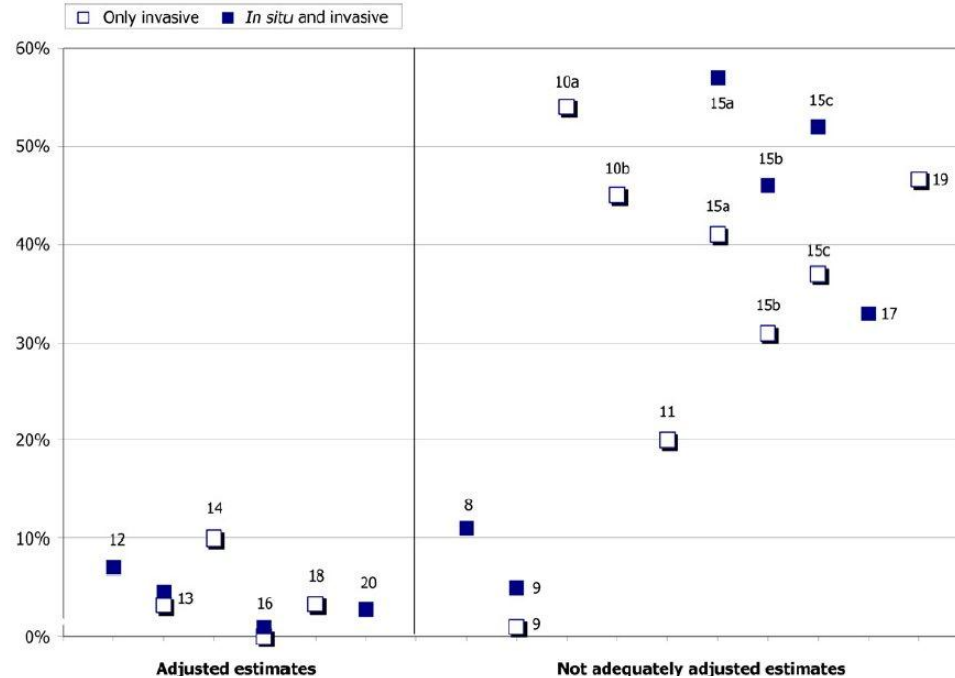
Puliti, et al. JMS 2012:19(1)

Are there harms from <u>not</u> screening?

- A study of 1977 women aged 40-49 diagnosed with breast cancer compared the tumor characteristics, treatment regimens used, and long-term outcome of women with *symptomatic versus women with mammographically detected breast cancer.*

Radiology 2012;262:797-806.)

Are there harms from <u>not</u> screening?

- **Women with symptomatically detected breast cancer had:**
  - A higher rate of mastectomy (47% vs. 25%)
  - Larger average tumor size (3.02 vs. 1.63 cm)
  - Significantly worse disease survival

Is there a role for ultrasound screening in women with significant breast density?

- 2809 women with heterogeneously dense breasts in at least one quadrant were recruited to undergo both mammography and ultrasound, with the exams delivered in a randomized order

Performance of Screening With Combined Mammography and Ultrasound vs. Mammography or Ultrasound Alone

	Sensitivity
Mammography plus Ultrasound	77.5%
Mammography alone	50%

Berg W, et al. JAMA 2008;299:18

Screening with mammography and ultrasound improves the detection of cancer, but at significant increase in false positives

- The positive predictive value of biopsy recommendation after full diagnostic workup was:

- Mammography: **22.6%** (95% CI, 14.2%-33%)

- Ultrasound: **8.9%** (95% CI, 5.6%-13.3%)

- Combination: **11.2%** (95% CI. 7.8%-15.6%)

Berg W, et al. JAMA 2008;299:18

Breast Cancer Screening Guidelines: More Agreement Than Disagreement

Every Guideline Recommends That

- All women 50 and older should have a mammogram every 1 to 2 years, until life expectancy becomes limited

- All women ages 40-49 should be offered a mammogram with or without shared decision making

- <u>Corollary</u>: Accepting a refusal <u>without</u> discussion is NOT recommended

Best Estimates of Over-Diagnosis of Breast Cancer

- 1-3% for invasive cancer

- 15-25% for DCIS
  - Ductal Carcinoma In Situ is a pre-cancerous condition that is currently treated just like cancer

Reducing Over Diagnosis of Breast Cancer and Particularly DCIS

- New approaches to genetic profiling and to treatment options hold potential to reduce overtreatment

And for those who argue that the impact is not big enough or fast enough…….*one more example*

Cancer Mortality Rates in Denmark, by Major Cancer, Women
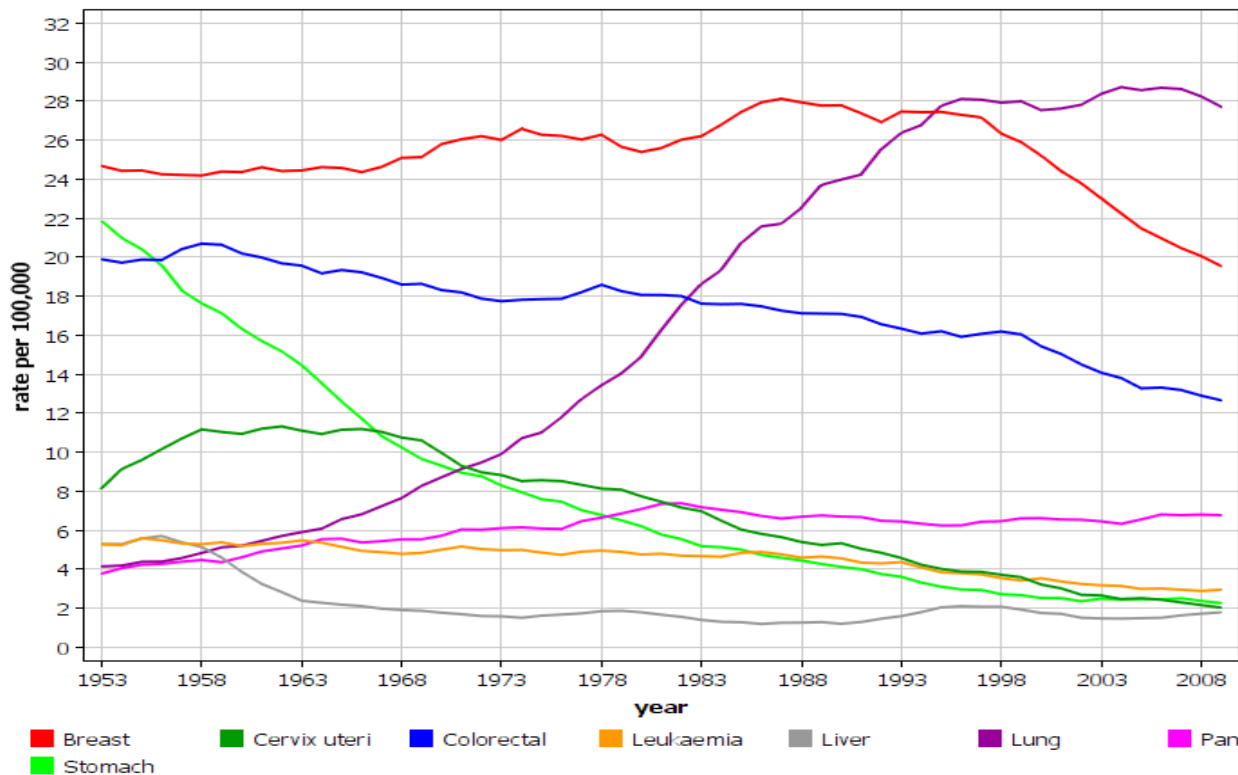
Colon Cancer

<u>2014</u>

Estimated new cases   136,830

Estimated deaths   50,310

Colon Cancer Screening: A Public Health Success Story

- Colon cancer mortality has dropped over 40% from its peak

- Colon cancer incidence dropped 30% between 2000 and 2010

- Colon cancer incidence is rising in younger people and in other countries

Trends in Colorectal Cancer Incidence Trends* by Age and Sex, 2001-2010

Ages 0-49

Ages 50-64

Ages 65+

Rate per 100,000

Legend: ━━ Male ━━ Female

Trends in Colorectal Cancer Mortality Rates by Sex and Race/Ethnicity, US, 1975-2010
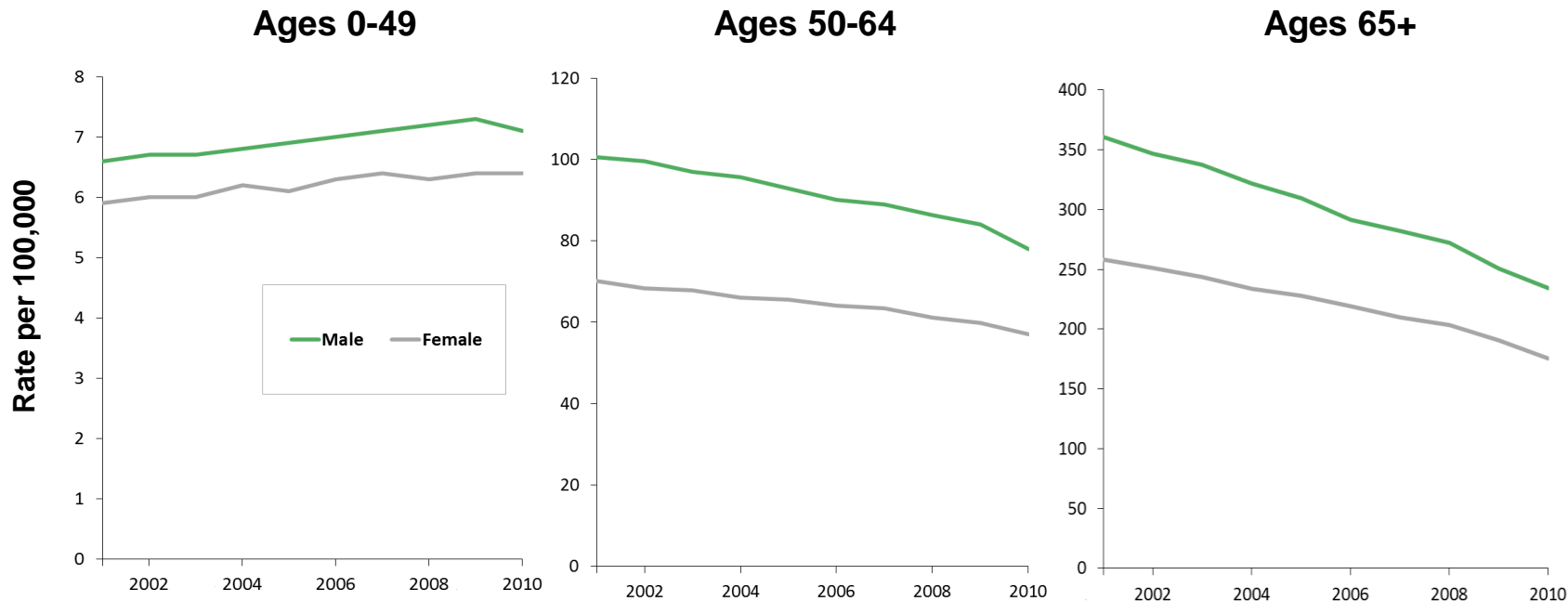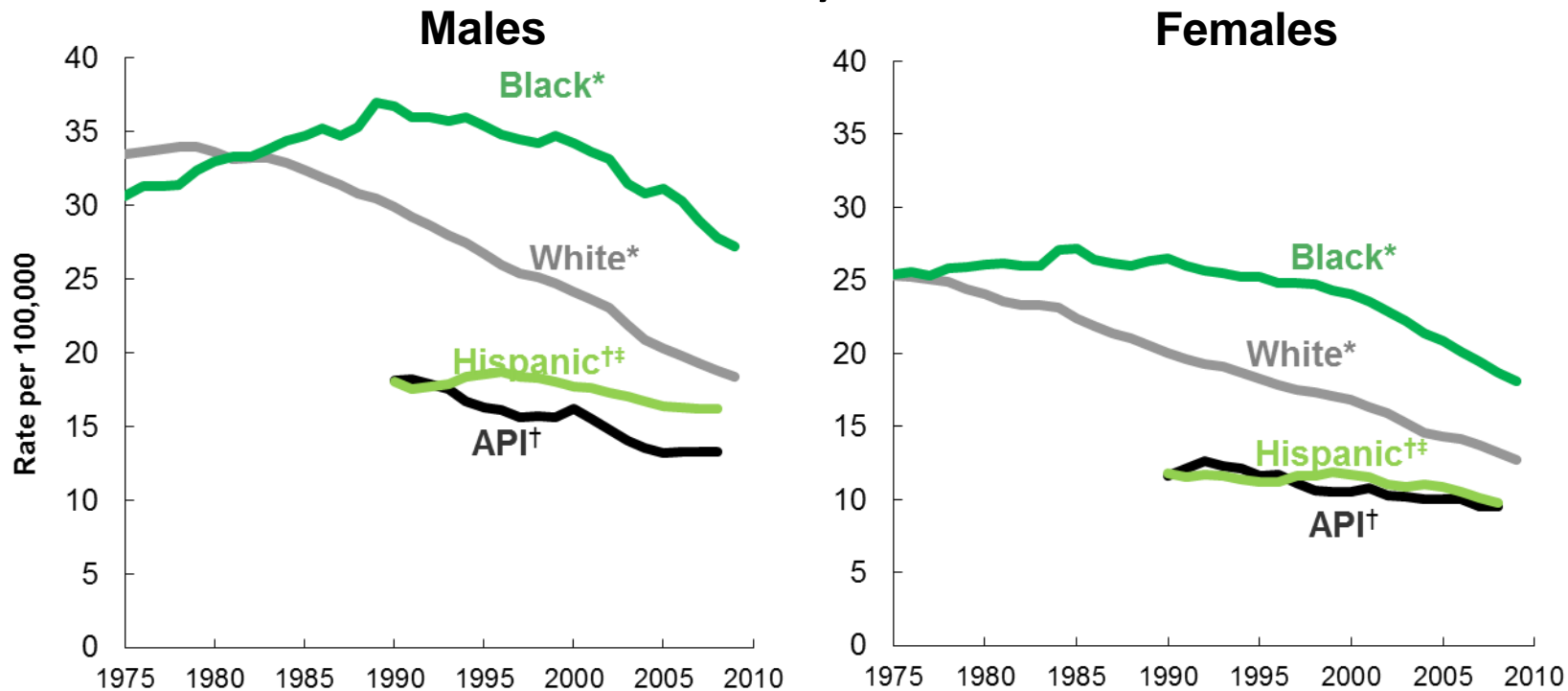
API indicates Asian/Pacific Islander. Trends for American Indian/Alaska Natives are not shown due to sparse data. Rates are per 100,000 and age adjusted to the 2000 US standard population. *Rates are two-year moving averages. †Rates are three-year moving averages. ‡Persons of Hispanic origin may be of any race; rates exclude deaths from CT, DC, LA, ME, MD, MN, MS, NH, NY, ND, OK, SC, VT, and VA due to incomplete ethnicity data.
Source: National Center for Health Statistics, Centers for Disease Control and Prevention, as provided by the Surveillance, Epidemiology, and End Results Program, National Cancer Institute.

Colorectal Cancer Incidence

Sedentary life-styles, increase in red meat consumption and obesity increase risk for colorectal cancer

World Cancer Report 2014
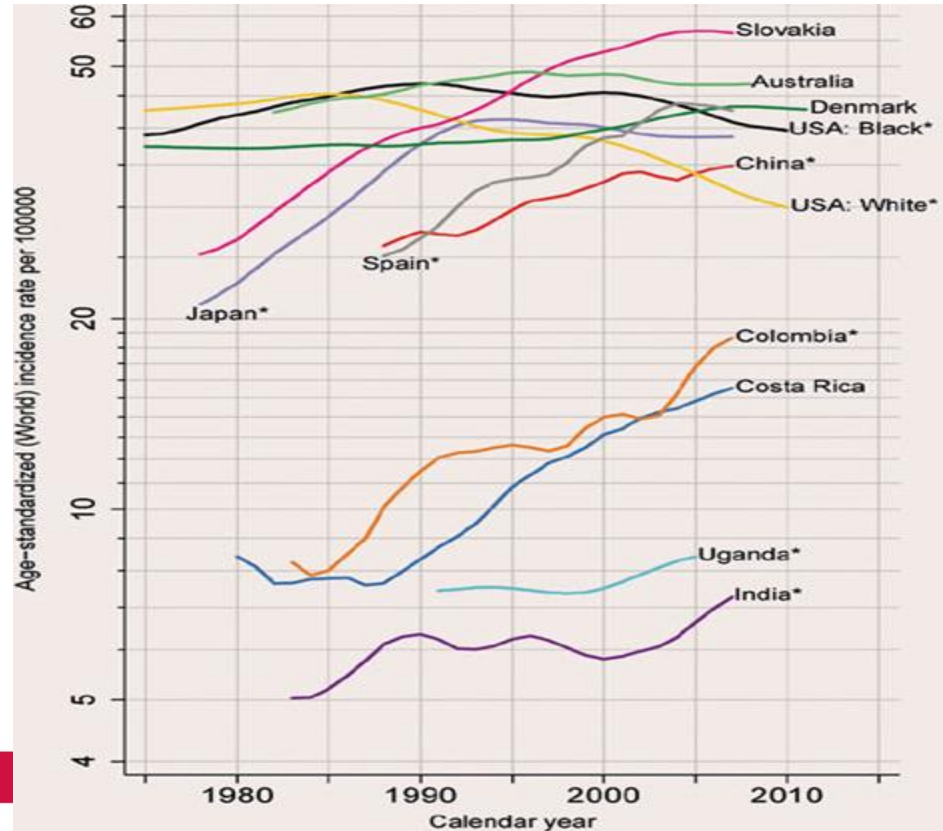
Chart 5.5.2. Age-standardized (World) incidence rates per 100 000 by year in selected populations, for colorectal cancer in men, circa 1975–2012.

Increasing Decline in Colorectal Cancer Death Rates, 1970-2010

Decline per decade: 3%   11%   15%   25%
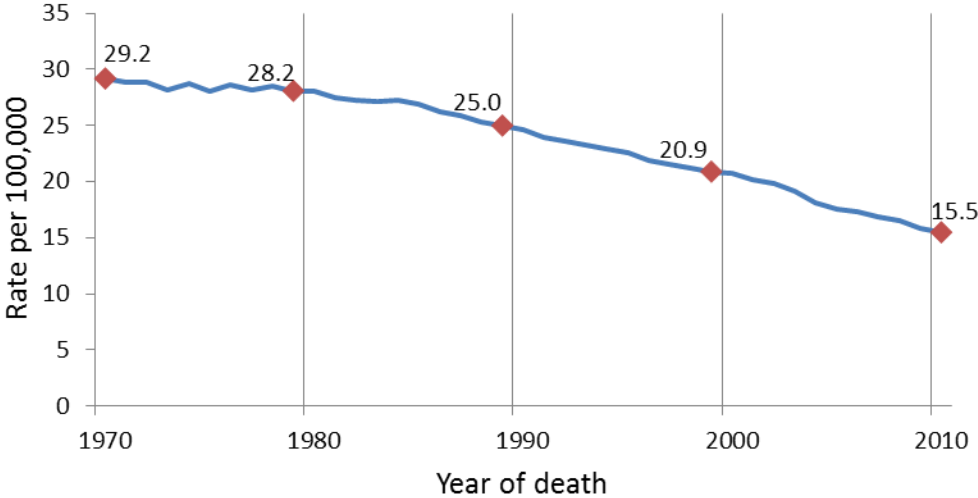
Seven Basic Truths of Colon Cancer Screening

1. If you <u>only</u> offer colonoscopy you can achieve very good <u>but not spectacular</u> screening rates

Stool Blood Testing – A Critical Part of ANU CRC Screening Strategy

- Even if you recommend colonoscopy for all, some people won't get one or can't get one. Using colonoscopy exclusively will, inevitably, lead to a screening gap

Evaluating Test Strategies for Colorectal Cancer Screening

Zauber and her team conducted a decision analysis using microsimulation models

Zauber AG et.al. Ann of Int Med. 2008, 149; 659-669

- Number of life-years gained is essentially identical regardless of screening strategy used:
  - Sensitive guaiac FOBT annually
  - Fecal Immunochemical Test (FIT) annually
  - Flexible sigmoidoscopy every 5 years with mid-interval sensitive FOBT
  - Colonoscopy every 10 years

  ASSUMING 100% ADHERENCE

Fecal Immunochemical Tests (FIT's) Should Replace Guaiac FOBT

- FIT's
  - Demonstrate superior sensitivity and specificity
  - Are specific for colon blood and are unaffected by diet or medications
  - Some can be developed by automated readers
  - Some improve patient participation in screening

Allison JE, et.al. J Natl Cancer Inst. 2007; 191:1-9
Cole SR, et.al. J Med Screen. 2003; 10:117-122

FIT's available in the US

Name	Manufacturer
InSure	Enterix, Quest Company
Hemoccult-ICT	Breckman-Coulter
Instant-View	Alpha Scientific Designs
MonoHaem	Chemicon International
Clearview Ultra-FOB	Wampole Laboratory
Fit-Chek	Polymedco
Hemosure One Step	WHPM, Inc.
Magstream Hem Sp	Fujirebio, Inc.

Many Patients Prefer FOBT

- Diverse sample of 323 adults given detailed side-by-side description of FOBT and colonoscopy (DeBourcy et al. 2007)
  - 53% preferred FOBT
  - Almost half felt very strongly about their preference

Many Patients Prefer FOBT

- 212 patients at 4 health centers rated different screening options with different attributes(Hawley et al. 2008)
  - 37% preferred colonoscopy
  - 31% preferred FOBT
- Nationally representative sample of 2068 VA patients given brief descriptions of each screening mode (Powell et al. 2009)
  - 37% preferred colonoscopy
  - 29% preferred FOBT

Many Patients Prefer FOBT

Randomized clinical trial in which 997 patients in the San Francisco PH care system received different recommendations for screening (Inadomi et al. 2012)

- – Colonoscopy recommended: 38% completed screening
- – FOBT recommended: 67% completed screening
- – Colonoscopy or FOBT: 69% completed screening

Many patients may forgo screening if they are not offered an alternative to colonoscopy

Seven Basic Truths of Colon Cancer Screening

2. If you <u>only</u> offer screening to patients who are coming to a primary care office, you can achieve very good <u>but not spectacular</u> screening rates

Population Management is Vital

- Every practice must have a system to assess screening gaps and conduct population outreach by letter or by phone

Seven Basic Truths of Colon Cancer Screening

3. If you give out FIT or FOBT tests but do not track whether the patient returns the test and prompt them to do so, return rates will be poor

Seven Basic Truths of Colon Cancer Screening

4. If you ask a patient to schedule their colonoscopy but do not schedule it before they leave the office, only about one half of them will call and schedule

Seven Basic Truths of Colon Cancer Screening

5. If you are "screening" patients with a stool blood test at the time of a rectal exam, it's time to stop. This method doesn't work.

Seven Basic Truths of Colon Cancer Screening

6. The quality of colonoscopy varies dramatically … and this has a major impact on outcomes

Interval Cancer: Why?

GROVER
Permission obtained from ol Sept 17, 2004 to place in public domain

- New, fast growing lesions
- Incomplete removal (19-27%)
- Missed lesions
  - Up to 17% of polyps > 1cm are missed!
  - Less protection in proximal colon

Percent of Colonoscopies where Biopsy Was Taken (and Findings on Biopsy) for Colonoscopists Who Performed ≥30 Colonoscopies between 7/1/2006--3/31/2012 in Average Risk Clients 50+ Years of Age Who Reported No Bleeding in the CRF CRC Screening Program, MD

Y-axis: Percent of colonoscopies with biopsy; findings on biopsy denoted within bar (neoplasia, hyperplastic, or no neoplasia/hyperplastic finding)

X-axis values: 44, 47, 113, 34, 53, 38, 74, 38, 42, 70, 80, 202, 88, 31, 90, 179, 31, 32, 31, 254, 154, 31, 45, 100, 34, 5598, 35, 73, 80, 58, 76, 36, 52, 50, 30, 33, 52, 72, 35, 33, 77, 134, 79, 548, 225, 55, 30, 52, 91, 45

Individual Colonoscopists
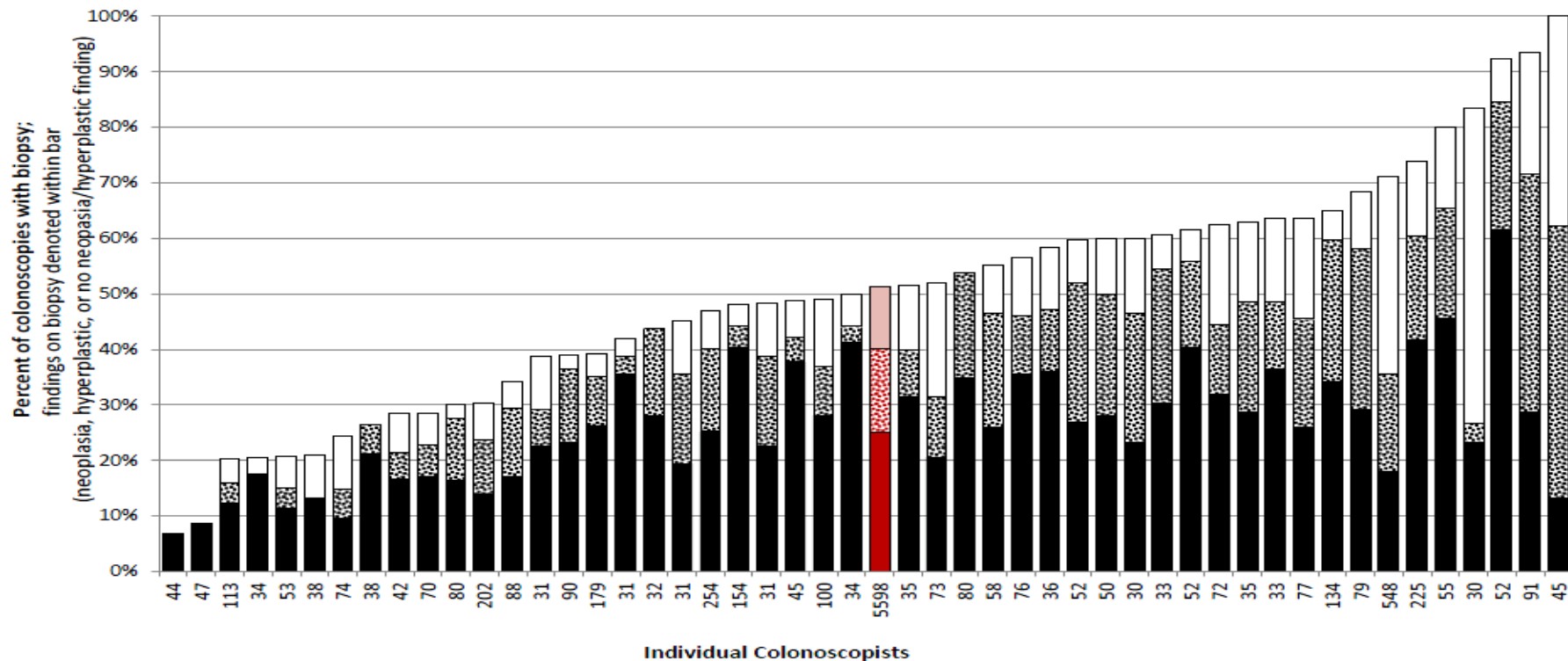
The **number** on the X axis represents the number of colonoscopies performed by the endoscopist from which these results were derived.

(5,598 were done statewide and the bar represents the statewide percentages for Maryland)

21

■ Neoplasia (adenocarcinoma, suspected cancer, or adenoma)   ▓ Hyperplastic polyp   ☐ Biopsy with no neoplasia/hyperplastic finding

Seven Basic Truths of Colon Cancer Screening

7. Surveillance guidelines are not being followed, leading to some over-testing and some under-testing

Recommendations for Adenoma Surveillance

Category	Next examination
1-2 tubular adenomas < 10 mm	5-10 years
> 3 tubular adenomas < 10 mm	3 years
> 10 adenomas	< 3 years
Any adenoma with villous features	3 years
Any adenoma with high grade dysplasia	3 years
Sessile adenoma with piecemeal excision	2-6 months

Lieberman DA, et al. Gastroenterology 2012;143:844–857

Recommendations for Adenoma Surveillance After First Surveillance Colonoscopy

Baseline Colonoscopy	First Surveillance	Interval for 2nd Surveillance (y)
Low risk adenoma (LRA)	HRA	3
	LRA	5
	No adenoma	10
High risk adenoma (HRA)	HRA	3
	LRA	5
	No adenoma	5

Lieberman DA, et al. Gastroenterology 2012;143:844–857

Surveillance Recommendations Serrated Polyps

Category	Surveillance interval
Hyperplastic polyp	No surveillance, unless multiple, large and proximally located
Sessile serrated adenoma/polyp (SSA/P) without cytological dysplasia	q5 years if < 3 lesions, all <1 cm size; q3 years if ≥ 3 lesions, or any ≥1 cm size
SSA/P with cytological dysplasia Traditional serrated adenoma (TSA)	q3 years, after ensuring complete resection Same as SSPD
Suspected Type I hyperplastic polyposis (serrated adenomatous polyposis)	q1-3 years, with resection of polyps >5 mm vs. surgery

Rex et al. Am J Gastroenterol 2012;107:1315-1329

Screening Older Patients

Screening Frail Elderly Patients for Colorectal Cancer

- American Geriatrics Society recommends individualized health screening decisions for older patients

- US Preventive Services Task Force recommends that the decision to screen people 76-85 years old should be individualized (not routine), and discouraged in those > 85 years old

Screening Frail Elderly Patients for Colorectal Cancer

- ACS does not currently address CRC screening in the elderly, but they will likely recommend individualized decision-making in the future, as they do with their breast and prostate cancer screening guidelines

Age-Related Risk of Colonoscopy

Adapted from Warren JL et al. Ann Int Med 2009;150:849-57.
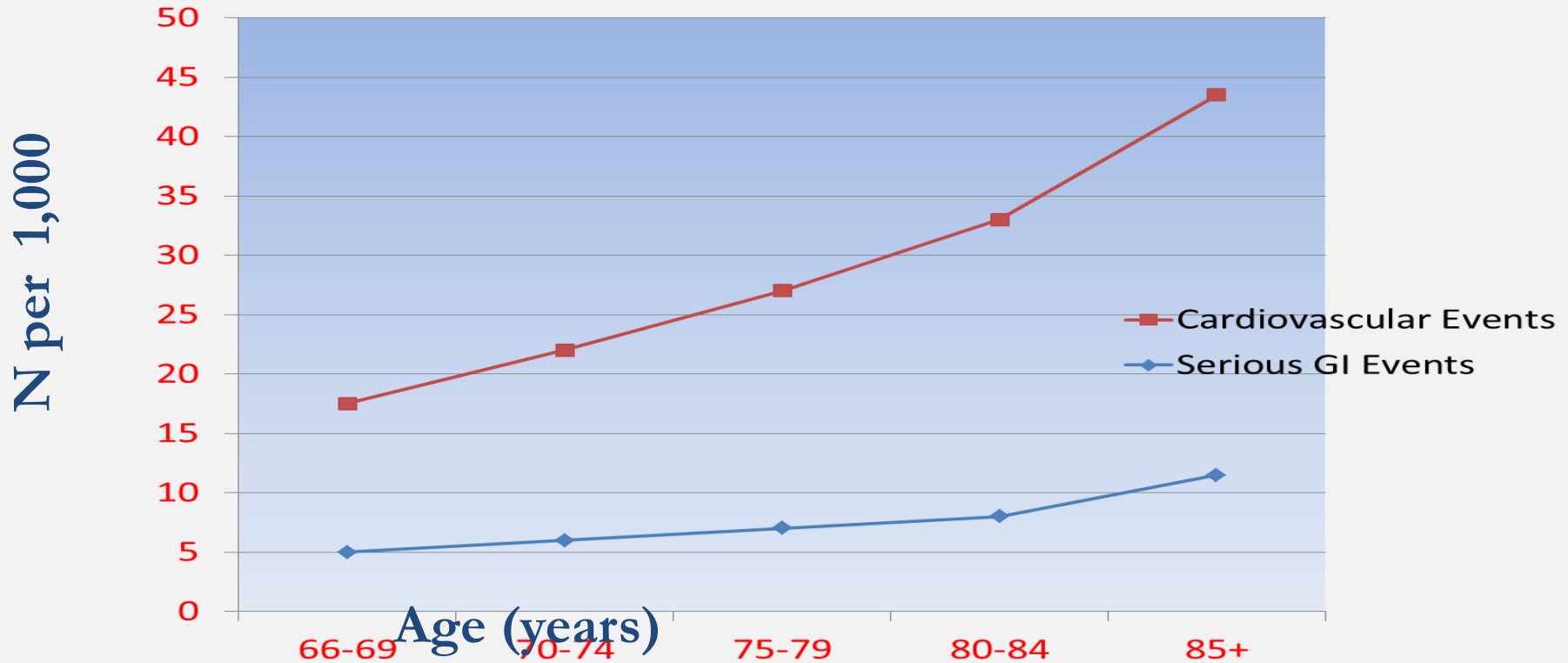
An Opportunity to Substantially Eliminate Colon Cancer as a Major Public Health Problem

- Over 80 organizations from all sectors of public life have signed a pledge to achieve the goal of having 80% of all eligible adults up to date with CRC screening by the end of 2018

We have A Symbol

We Have A Month

(…March)

We Have A Plan

Time for Coordinated PUSH

80% Colon Cancer Screening Rate By 2018

......I Can See It!!!

Lung Cancer

2014

Estimated New Cases   224,210

Estimated deaths   159,260

American Cancer Society Lung Cancer Screening Guidelines

Richard Wender, MD[1]; Elizabeth T. H. Fontham, MPH, DrPH[2]; Ermilo Barrera, Jr, MD[3];
Graham A. Colditz, MD, DrPH[4]; Timothy R. Church, PhD[5]; David S. Ettinger, MD[6]; Ruth Etzioni, PhD[7];
Christopher R. Flowers, MD[8]; G. Scott Gazelle, MD, MPH, PhD[9]; Douglas K. Kelsey, MD, PhD[10];
Samuel J. LaMonte, MD[11]; James S. Michaelson, PhD[12]; Kevin C. Oeffinger, MD[13]; Ya-Chen Tina Shih, PhD[14];
Daniel C. Sullivan, MD[15]; William Travis, MD[16]; Louise Walter, MD[17]; Andrew M. D. Wolf, MD[18];
Otis W. Brawley, MD[19]; Robert A. Smith, PhD[20]

National Lung Screening Trial

53,000 current or ex-smokers (≥ 30 pack-year) ages 55-74

Randomly Assigned
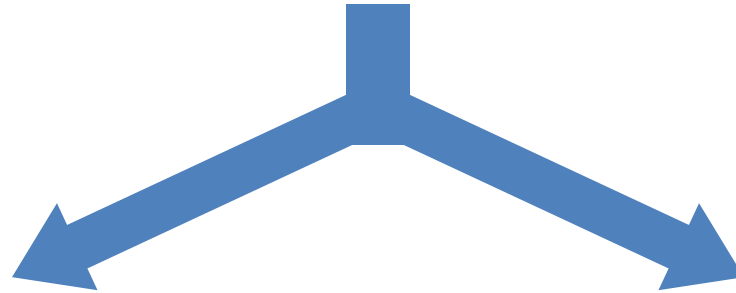
Low dose helical (spiral) CT   Chest X-Ray

NLST – Preliminary Results

20% fewer lung cancer deaths in spiral CT group

Results were <u>highly</u> statistically significant

…. And That's Not All

7% reduction in all cause mortality in CT group!

A 20% reduction in lung cancer death rate would prevent 30,000 lung cancer deaths every year!

That's equivalent to wiping out all deaths from prostate cancer in men, or …

…<u>all</u> deaths from cervix cancer, uterine cancer, and ovarian cancer in women… …combined

Major Complication Associated With Invasive Diagnostic Procedure Following Positive Low-Dose CT Screen

Category	% with major complications
Did not result in cancer diagnosis	0.06
Did result in cancer diagnosis	11.2

16 participants in low-dose CT group (10 of whom had lung cancer) and 10 in the radiography group (all of whom had lung cancer) died within 60 days after an invasive diagnostic procedure

The ACS Guideline

"Clinicians with access to high volume, high quality lung cancer screening and treatment centers should initiate a discussion about screening with apparently healthy patients aged 55 to 74 years who have at least a   30 pack/year smoking history and who currently smoke or have just quit within the past 15 years."

"A process of informed and shared decision making … should occur before any decision is made to initiate lung cancer screening."

"Smoking cessation counseling remains a high priority for clinical attention in current smokers."

"Where risk seems to approximate or exceed the NLST eligibility criteria in one category but not another, clinicians should consider offering the chance to screen."

Coverage for Low Dose C-T Screening is a Reality

- USPSTF B recommendation requires coverage by most commercial plans

- CMS currently considering coverage

Prostate cancer

2014

Estimated new cases   233,000

Estimated deaths   29,480

Some Prostate Cancer Facts

From 2006-2010:

- The median age at diagnosis was 66 y.o.
- 0.6% diagnosed between 35-44
- 9.6% between 45-54
- 32.3% between 55-64
- 35.8% between 65-74
- 17.7% between 75-84

Some Prostate Cancer Facts

From 2006-2010:

- The median age at death for Prostate Cancer: 80 y.o.

- 1.6% between 45-54

- 8.3% between 55-64

- 20% between 65-74

- 37.6% between 75-84

Survival for men diagnosed with distant disease is not great: 27.9% at 5 years

Prostate Cancer Screening and Co-Morbidities

The PLCO study showed no benefit from inviting men to be screened for prostate cancer.

Analysis of PLCO stratified by co-morbidities may guide targeted screening

In 10 years f/u of PLCO, 9,565 deaths occurred, 164 from prostate cancer

60% of these patients had minimal or no co-morbidity

Prostate Cancer Deaths in PLCO Men With No or Minimal Co-Morbidity

Intervention group: 22

Control group: 38

RR: 0.56 (p = 0.03)

Active Surveillance in Prostate Cancer Treatment

Recurrence risk and expected years to live

Active Surveillance

Very low risk
Low risk ≥10 years

- PSA every 3 months
- DRE every 6 months
- Prostate biopsy at least every 12 months

Low risk with <10 years
Intermediate risk with <10 years

- PSA every 6 months
- DRE every 6 months

NCCN Guidelines – Prostate Cancer www.nccn.org

When To Begin Treatment

- Rising Gleason score
- Increasing cancer volume on biopsies
- Doubling of PSA in <3 years

Prostate Cancer Take Home Points

1. Abandoning PSA screening will lead to an increase in stage of diagnosis and more prostate cancer deaths

2. More men die from prostate cancer than from colon cancer but the median age of death is 6 years older

"A man who chooses to be screened might place a higher value on <u>avoiding death from prostate cancer</u>, and might be willing to risk injury to urinary, sexual or bowel function."

"A man who chooses not to be screened might place a higher value on avoiding the potential harms of screening and treatment, such as anxiety or the risk of injury to urinary, sexual or bowel function, and might be willing to accept a higher risk of dying from prostate cancer prematurely."

The Department of Family and Community Medicine - 40 years of excellence in education , research, clinical care…….and cancer screening