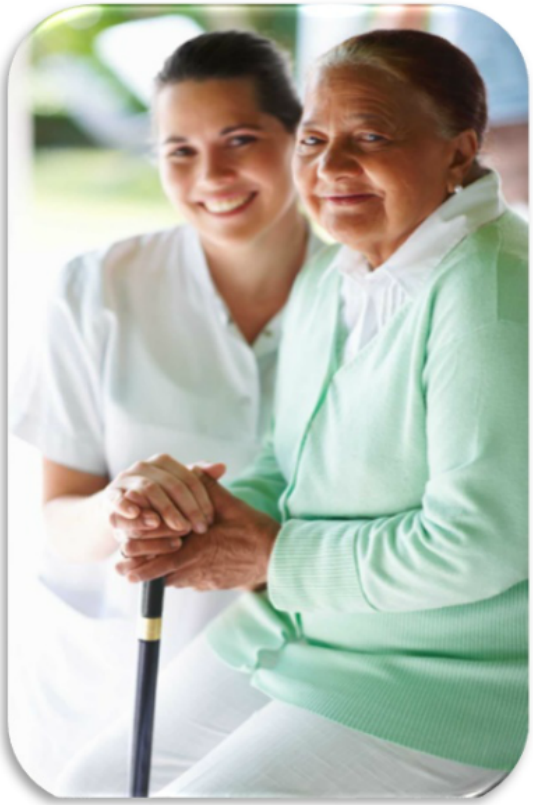
University of South Florida

GERIATRIC WORKFORCE ENHANCEMENT PROGRAM (GWEP)

Learn@Lunch

Geriatric Education Series



Kathryn Hyer, PhD, MPP
Principal Investigator

Providers of Continuing Education

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Cancer Screening in Older Patients

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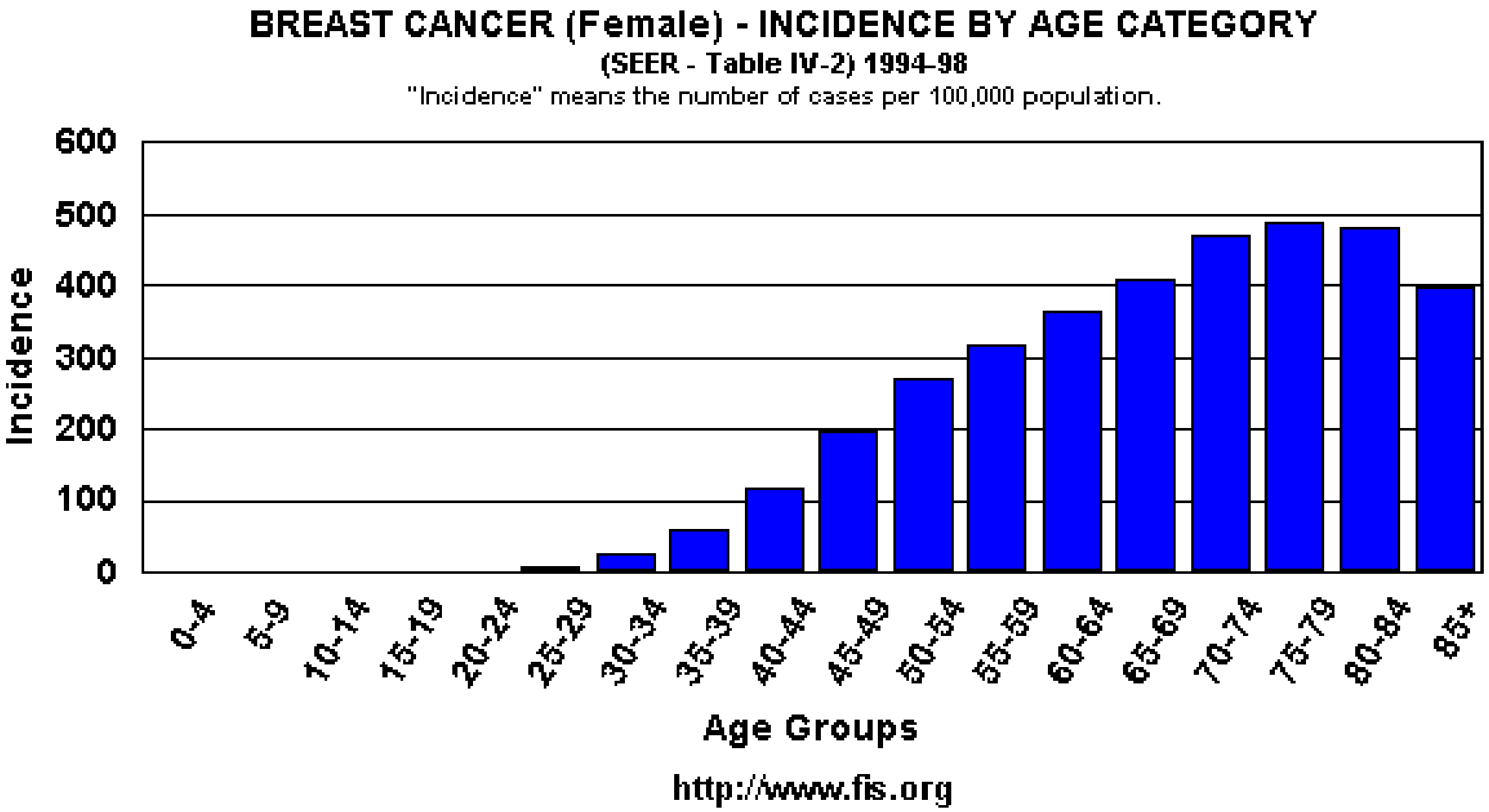
June 30, 2017

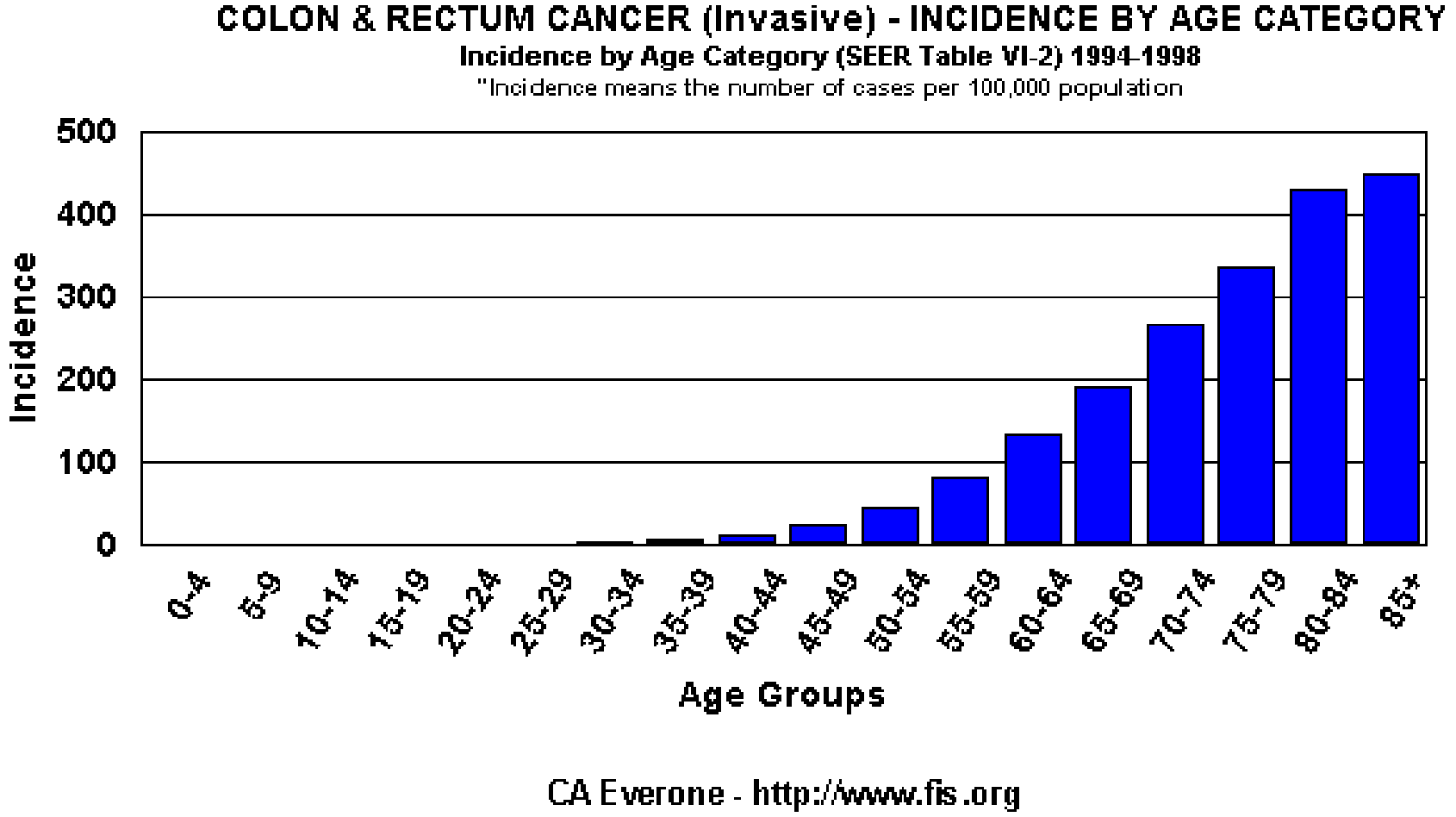
Goals

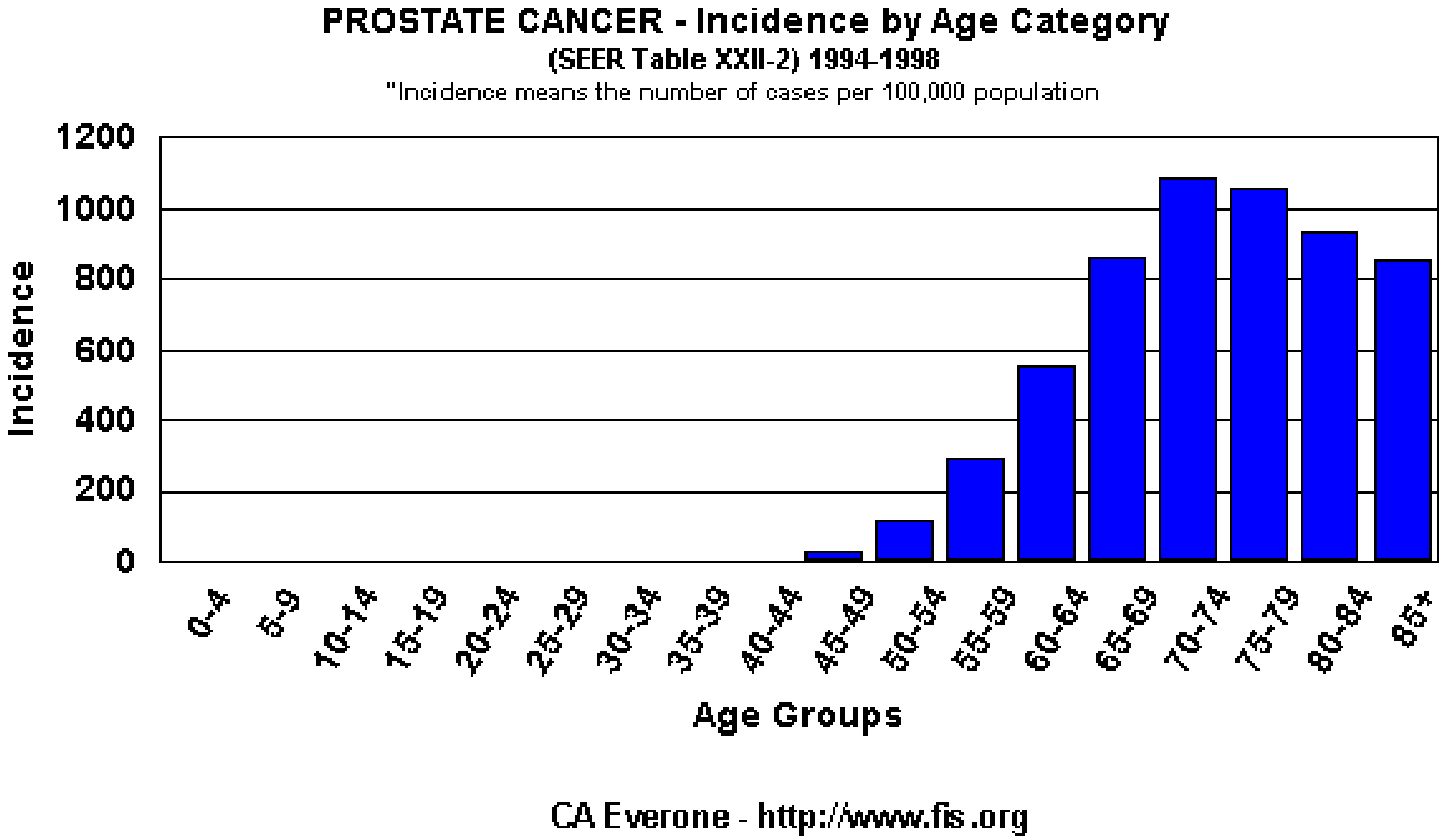
- To understand the evidence supporting cancer screening in older patients
- To understand factors influencing benefits / harms of screening older patients
- To develop an approach for shared decision making in screening
- To understand current cancer screening guidelines for older patients

Case

79 year old woman with hypertension, hyperlipidemia, osteoarthritis reports very good health status with no recent hospitalizations. She lives independently and does not require assistance with ADL's. She has had normal screening to this point and wonders if mammograms should come to an end at her age?


BREAST CANCER (Female) - INCIDENCE BY AGE CATEGORY
(SEER - Table IV-2) 1994-98
"Incidence" means the number of cases per 100,000 population.
Incidence
600
500
400
300
200
100
0
0-4
5-9
10-14
15-19
20-24
25-29
30-34
35-39
40-44
45-49
50-54
55-59
60-64
65-69
70-74
75-79
80-84
85+
Age Groups
http://www.fis.org


COLON & RECTUM CANCER (Invasive) - INCIDENCE BY AGE CATEGORY
Incidence by Age Category (SEER Table VI-2) 1994-1998
"Incidence means the number of cases per 100,000 population
Incidence
500
400
300
200
100
0
0-4
5-9
10-14
15-19
20-24
25-29
30-34
35-39
40-44
45-49
50-54
55-59
60-64
65-69
70-74
75-79
80-84
85+
Age Groups
CA Everone - http://www.fis.org


PROSTATE CANCER - Incidence by Age Category
(SEER Table XXII-2) 1994-1998
"Incidence means the number of cases per 100,000 population
Incidence
1200
1000
800
600
400
200
0
0-4
5-9
10-14
15-19
20-24
25-29
30-34
35-39
40-44
45-49
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55-59
60-64
65-69
70-74
75-79
80-84
85+
Age Groups
CA Everone - http://www.fis.org

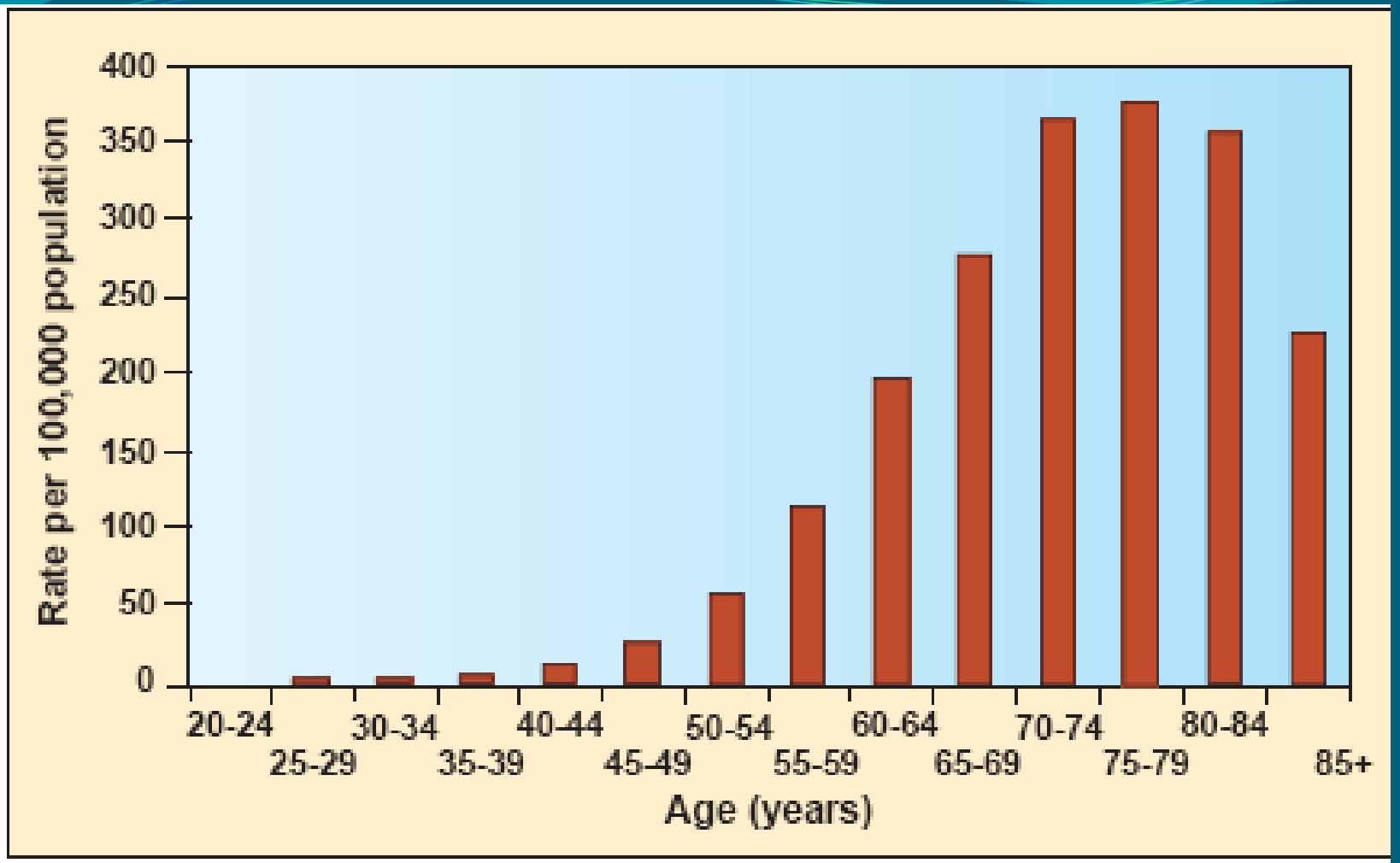


Figure 1: Age-Adjusted Incidence Rates for Lung Cancer—From the National Cancer Institute's Surveillance, Epidemiology, and End Results (SEER) Program, 1997.

The Interaction of Life Expectancy and Natural History of Cancer

Cancer timeline

Life expectancy timeline

Problem of ‘Overdiagnosis’

- When screening finds a cancer that would not otherwise have impacted the patient
- Poses the risk of overtreatment
- A greater problem for slow growing cancers (prostate)
- A greater problem with limited life expectancy

Life Expectancy in U.S.

- Males
  - Age 65 17.8 years
  - Age 70 14.2 years
  - Age 75 11.0 years
  - Age 80 8.2 years
  - Age 85 5.8 years
- Females
  - Age 65 20.3 years
  - Age 70 16.4 years
  - Age 75 12.8 years
  - Age 80 9.6 years
  - Age 85 6.9 years

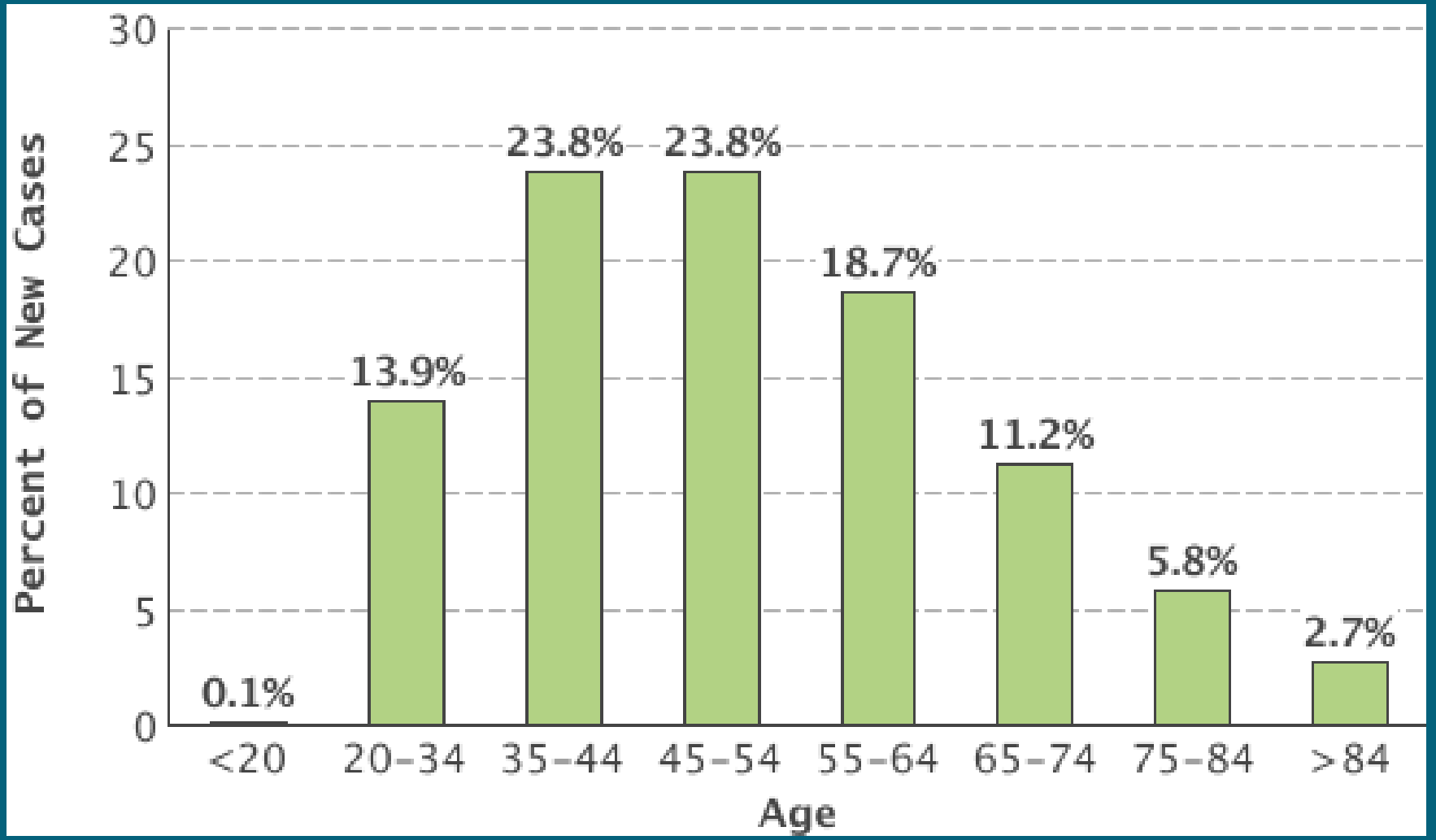
Evidence Supporting Cancer Screening in Older Patients

- Did randomized clinical trials include older patients?
- If so, were the benefits of screening similar for older patients?
- Guidelines for breast, colorectal, prostate, and lung cancer screening

Cervical Cancer Screening

- Pap smears generally stop at age 65 **if prior adequate screening**
- **Adequate screening**
  - **3 normal pap smears in past 10 years, most recent within 5 years**
  - **2 normal co-tests in past 10 years, most recent within 5 years**
- **Consider screening beyond 65 if**
  - **DES exposure**
  - **Immunocompromised**
- **Patients s/p hysterectomy for cancer / dysplasia**
  - **Surveillance for 20 years after surgery**

Cervical Cancer Incidence - SEER



Mammography (meta analysis of RCT's for breast cancer)

Age, *years*	Mortality rate in the control group per 100,000 person-years (95% CI)[*]	Breast cancer mortality reduction RR (95% CI)[†]	Deaths prevented with screening over 10 years (95% CI)
Long case accrual			
39-49	34 (26 to 44)	0.88 (0.73 to 1.003)	4.1 (-0.1 to 9.3)
50-59	54 (50 to 58)	0.86 (0.68 to 0.97)	7.7 (1.6 to 17.2)
60-69	65 (52 to 81)	0.67 (0.54 to 0.83)	21.3 (10.7 to 31.7)
70-74	62 (48 to 80)	0.80 (0.51 to 1.28)	12.5 (-17.2 to 32.1)

Mammography Screening Beyond 75?

- Breast cancer incidence remains high
- Screening mammography performance improves (fatty infiltration of breasts) leads to less call backs, false positive biopsies
- Risk of over diagnosis increases with age and increasing comorbidity
- Time lag before screening benefits realized about 10 years

Guideline recommendations about screening mammography in older women

USPSTF guidelines	ACS guidelines	ACR guidelines	AGS guidelines
Offer biennial screening to women aged 50–74 years. Evidence is insufficient to recommend for or against screening in women >74 years of age. “I” statement*. The Task Force encourages more research on the topic.	Offer screening to women aged ≥45 years and continue as long as a woman is in good health and has life expectancy of ≥10 years.	Offer annual screening to women aged ≥40 years and continue as long as a woman is in good health.	Offer screening to women aged ≤85 years who have life expectancy of ≥5 years and for healthy women aged ≥85 years who have excellent functional status or who feel strongly about the benefits of screening (no screening frequency specified).

Mammography Screening Rates in Older Women

Mammogram in past 2 years, NHIS

- 40-49 59.6
- 50-64 71.4
- 65-74 75.3
- 75+ 56.5

Mammogram in past 2 years (Medicare-SEER)

- 80-84 24%
- 85-89 23%

Fecal Occult Blood Testing

RCTs	Age	Male	Female	Screening	Follow-Up
Nottingham	**45-74**	48%	52%	Biennial	11.7 yrs
Funen	**45-75**	49.6%	50.4%	Biennial	17 yrs
Goteborg	**60-64**	NR	NR	Biennial	15.75 yrs
Minnesota	**50-80**	48%	52%	Ann+Bien	18 yrs

Minnesota FOBT Trial

Annual Screening and CRC mortality

Age	RR
<60	0.82
60-69	0.58
>=70	0.47

Flexible Sigmoidoscopy Trials

- Norway study of flex sig (ages 50-64)
  - Single screening
  - 27% lower CRC mortality
- SCORE trial (ages 55-64)
  - Single screening
  - 22% CRC mortality reduction NS
- UK trial (ages 55-64)
  - Single screening
  - 31% reduction in mortality

Flexible Sigmoidoscopy Trials

- PLCO
  - Two screenings 3-5 years apart
  - Ages 55-74
  - Overall 26% reduction in colorectal cancer mortality

Greater reduction in mortality for older patients

	RR (mortality)
55-64	0.84
65-74	0.65

Colonoscopy Screening

- No randomized trials for colonoscopy
- Some evidence that persons aged 60 and older have higher rates of complications (perforation, bleeding, diverticulitis, hospitalization)
- Risks of screening colonoscopy may be more related to health status and comorbidity than age
- Likely to be 10 year time frame to benefit from screening

Colon screening guidelines

Population	Recommendation	Grade (What's This?)
Adults, beginning at age 50 years and continuing until age 75 years	The USPSTF recommends screening for colorectal cancer using fecal occult blood testing, sigmoidoscopy, or colonoscopy in adults, beginning at age 50 years and continuing until age 75 years. The risks and benefits of these screening methods vary.	A
Adults age 76 to 85 years	The USPSTF recommends against routine screening for colorectal cancer in adults 76 to 85 years of age. There may be considerations that support colorectal cancer screening in an individual patient.	C
Adults older than age 85 years	The USPSTF recommends against screening for colorectal cancer in adults older than age 85 years.	D

- ACP recommends screening ages 50-75
- ACS/NCCN/ACG don't provide age cut off

Colon Screening Rates for Older Patients

2010 NHIS ages 76-84

- 64% recently tested
- 13% tested but not recently
  - (6% reported MD recommendation)
- 23% never tested
  - (9% reported MD recommendation)

Lung Cancer Screening

- National Lung Screening Trial
- Ages 55-74
- 30 pack year history of smoking
- Three annual screenings with low dose non contrast chest CT
- 20% reduction in lung cancer mortality

Table Harms Vs Benefits

The table below shows the trade-offs of low-radiation-dose CT screening for lung cancer:

Potential Benefits	Potential Harms
Mortality benefits • 20% relative decrease in lung cancer death (from 1.66% to 1.33%, or 3 fewer deaths per 1,000 screened) • 7% relative reduction in all-cause mortality	Harms related to test characteristics • Radiation exposure from screening CT • False reassurance (aggressive cancers may develop in intervals between screening examinations) • Overdiagnosis of clinically insignificant cancers (15% to 20% of tumors detected)
Psychosocial benefits and behavioral changes • Reassurance if normal CT • Teachable moment for smoking cessation	Harms related to findings of test • False positives and other incidental findings • Potential harms from downstream evaluation of findings

Source: Adapted from: Wiener R, et al. *Am J Resp Crit Care Med.* 2015;192:881-891

USPSTF Recommendation: Lung Cancer Screening – December 2013

- The USPSTF recommends annual screening for lung cancer with low-dose computed tomography (LDCT) in adults aged **55 to 80 years** who have a **30 pack-year smoking history** and **currently smoke or have quit within the past 15 years**.

- Screening should be discontinued once a person has not smoked for 15 years or develops a health problem that substantially limits life expectancy or the ability or willingness to have curative lung surgery.

http://www.uspreventiveservicestaskforce.org/

Lung Cancer Screening Guidelines and Recommendations

Organization	Groups eligible for screening	Year
American Academy of Family Practice[1]	Evidence is insufficient to recommend for or against screening.	2013
American Association for Thoracic Surgery[2]	1. Age 55 to 79 years with ≥ 30 pack year smoking history. 2. Long-term lung cancer survivors who have completed 4 years of surveillance without recurrence and who can tolerate lung cancer treatment following screening to detect second primary lung cancer until the age of 79. 3. Age 50 to 79 years with a 20 pack year smoking history and additional comorbidity that produces a cumulative risk of developing lung cancer ≥ 5% in 5 years.	2012
American Cancer Society[3]	Age 55 to 74 years with ≥ 30 pack year smoking history, who either currently smoke or have quit within the past 15 years, and who are in relatively good health.	2013
American College of Chest Physicians[4]	Age 55 to 74 years with ≥ 30 pack year smoking history, who either currently smoke or have quit within the past 15 years.	2013
American College of Chest Physicians and American Society of Clinical Oncology[5]	Age 55 to 74 years with ≥ 30 pack year smoking history, who either currently smoke or have quit within the past 15 years.	2012
American Lung Association[6]	Age 55 to 74 years with ≥ 30 pack year smoking history and no history of lung cancer.	2012
National Comprehensive Cancer Network[7]	1. Age 55 to74 years with ≥ 30 pack year smoking history and smoking cessation < 15 years. 2. Age ≥ 50 years and ≥ 20 pack year smoking history and 1 additional risk factor (other than secondhand smoke exposure).[b]	2012
U.S. Preventive Services Task Force[8]	Age 55 to 80 years with ≥ 30 pack year smoking history and smoking cessation < 15 years.	2013

[a]A pack year is smoking an average of one pack of cigarettes per day for one year. For example, a person could have a 30 pack year history by smoking one pack a day for 30 years or two packs a day for 15 years.

[b]Additional risk factors include cancer history, lung disease history, family history of lung cancer, radon exposure, occupational exposure, and history of chronic obstructive pulmonary disease or pulmonary fibrosis. Cancers with increased risk of developing new primary lung cancer include survivors of lung cancer, lymphomas, cancer of the head and neck, and smoking-related cancers. Occupational exposures identified as carcinogens targeting the lungs include silica, cadmium, asbestos, arsenic, beryllium, chromium (VI), diesel fumes, and nickel.

Lung cancer screening rates

NHIS 2010 and 2015

Smokers eligible for screening who reported lung screening in past 12 months

- 2010 3.3%
- 2015 3.9%

Does Prostate Cancer Screening Reduce Mortality?

American Study (PLCO Trial)

- 76, 000 men randomized
- PSA / DRE versus usual care
- Screening found more cancers (12%)
- No difference in prostate cancer mortality
- 50% of control group got some screening

MOFFITT CANCER CENTER

Does Prostate Cancer Screening Save Lives?

European Trial (ERSPC Trial)

- 180,000 men randomized PSA vs. usual care
- Screening found more cancers (70%)
- 21% lower prostate cancer mortality

MOFFITT CANCER CENTER

USPSTF Prostate Screening Recommendations

Population	Recommendation	Grade
Men ages 55 to 69 years	The USPSTF recommends that clinicians inform men ages 55 to 69 years about the potential benefits and harms of prostate-specific antigen (PSA)–based screening for prostate cancer.	C
Men age 70 years and older	The USPSTF recommends against PSA-based screening for prostate cancer in men age 70 years and older.	D

Other Screening Guidelines

American Cancer Society

- Men should make informed decision about screening
- Age 50 and are expected to live at least 10 more years.

American Urological Association

- Discuss risks and benefits of screening
- Consider screening men aged 55-69

American College of Physicians

- Discuss risks and benefits of screening
- Consider screening men aged 50-69

PSA Screening Rates (NHIS)

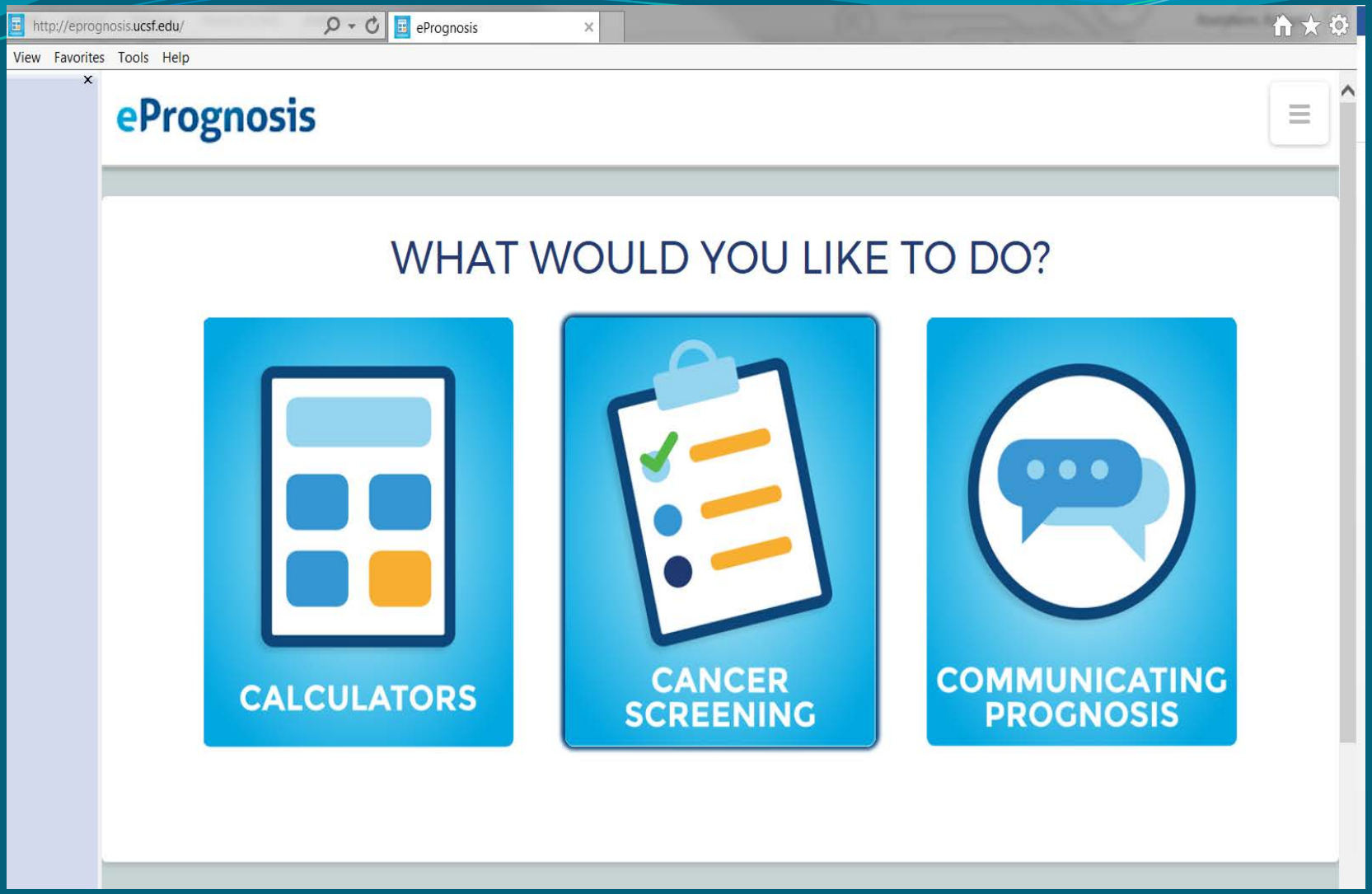
Age	2005	2008	2010	2013
50-74	36%	39%	37%	30%
75+	43%	50%	43%	36%

Refining Life Expectancy Estimates

- Consider comorbid health conditions
- Breast screening – modeling benefits and harms with comorbidity
  - No comorbid conditions – screen to age 76
  - Severe comorbid conditions (COPD, dementia, CHF, CKD)– screen to age 66

Refining Life Expectancy Estimates

- The 'Lee Index' based on Health and Retirement Study
  - Age and gender
  - Comorbid conditions (diabetes, cancer, COPD, CHF)
  - Current tobacco use
  - BMI < 25
  - ADL difficulties (bathing, managing finances, walking several blocks, pushing / pulling large objects)
  - Validated with mortality measured by national death index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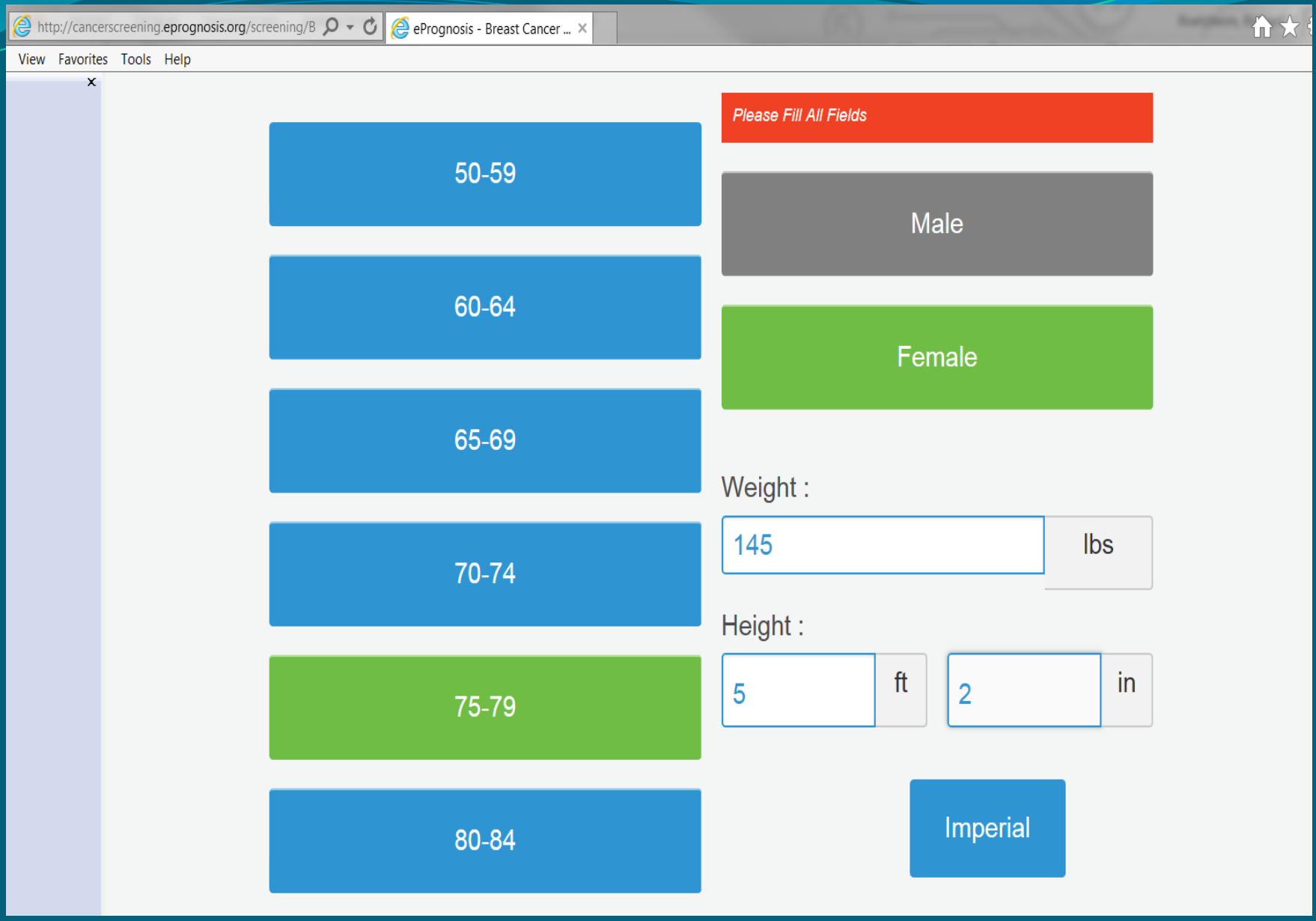
WHAT WOULD YOU LIKE TO DO?
CALCULATORS
CANCER SCREENING
COMMUNICATING PROGNOSIS

Case

- 79 year old woman with hypertension, hyperlipidemia, osteoarthritis. Very good health status and no recent hospitalizations. Lives independently and does not require assistance with ADL's. She has had normal screening to this point and wonders if mammograms should come to an end at her age?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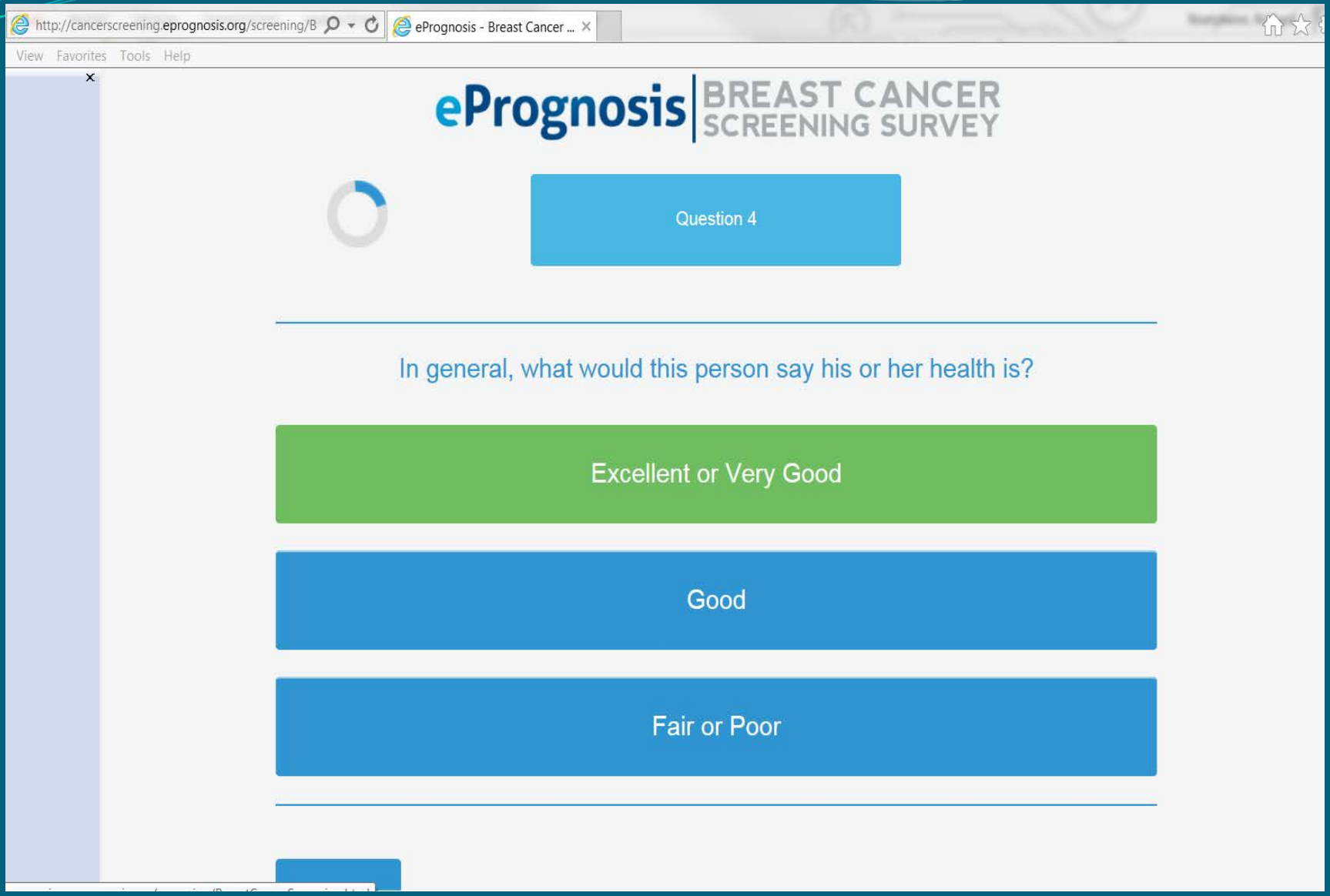
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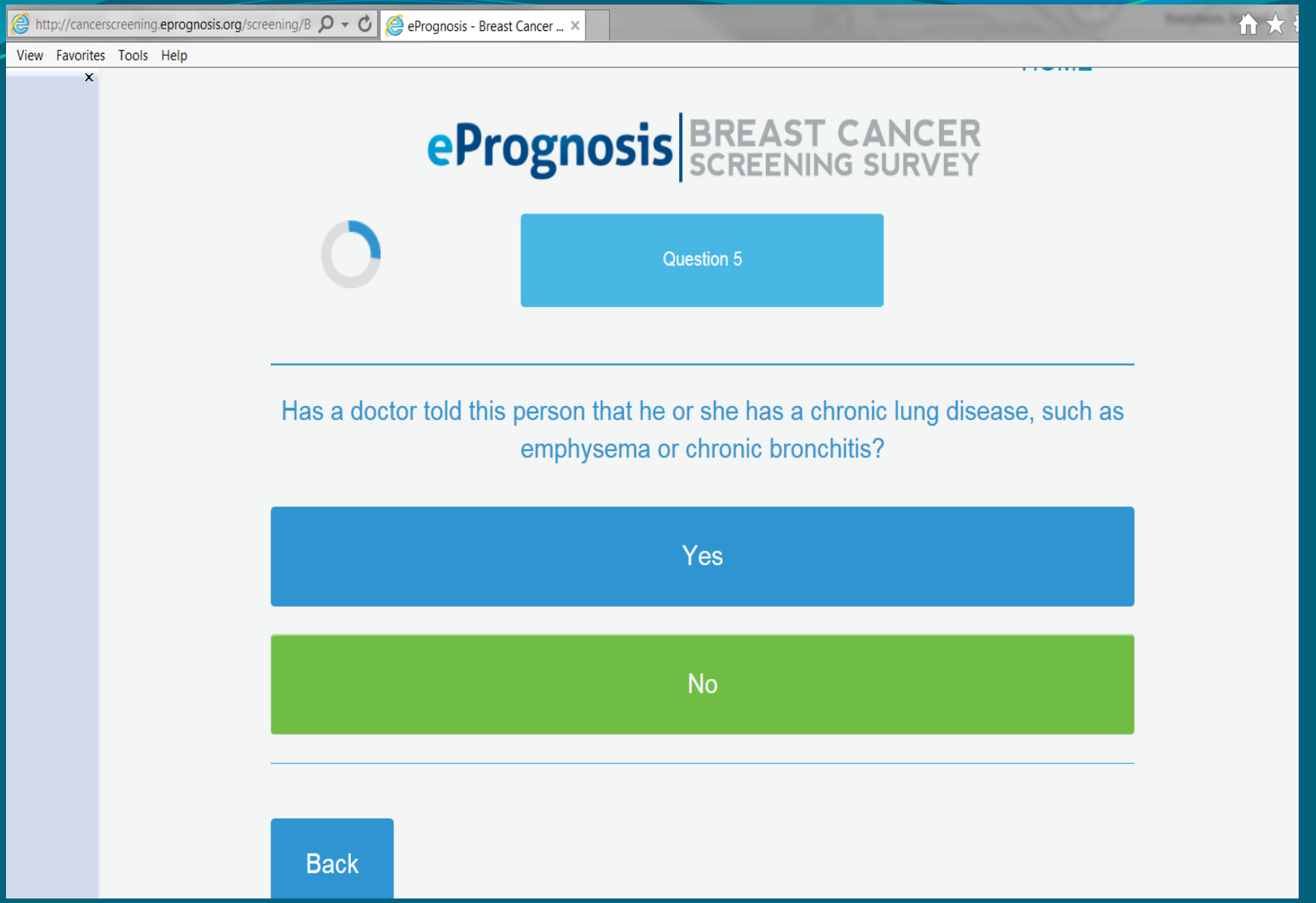
BREAST CANCER SCREENING SURVEY
Question 4
In general, what would this person say his or her health is?
Excellent or Very Good
Good
Fair or Poor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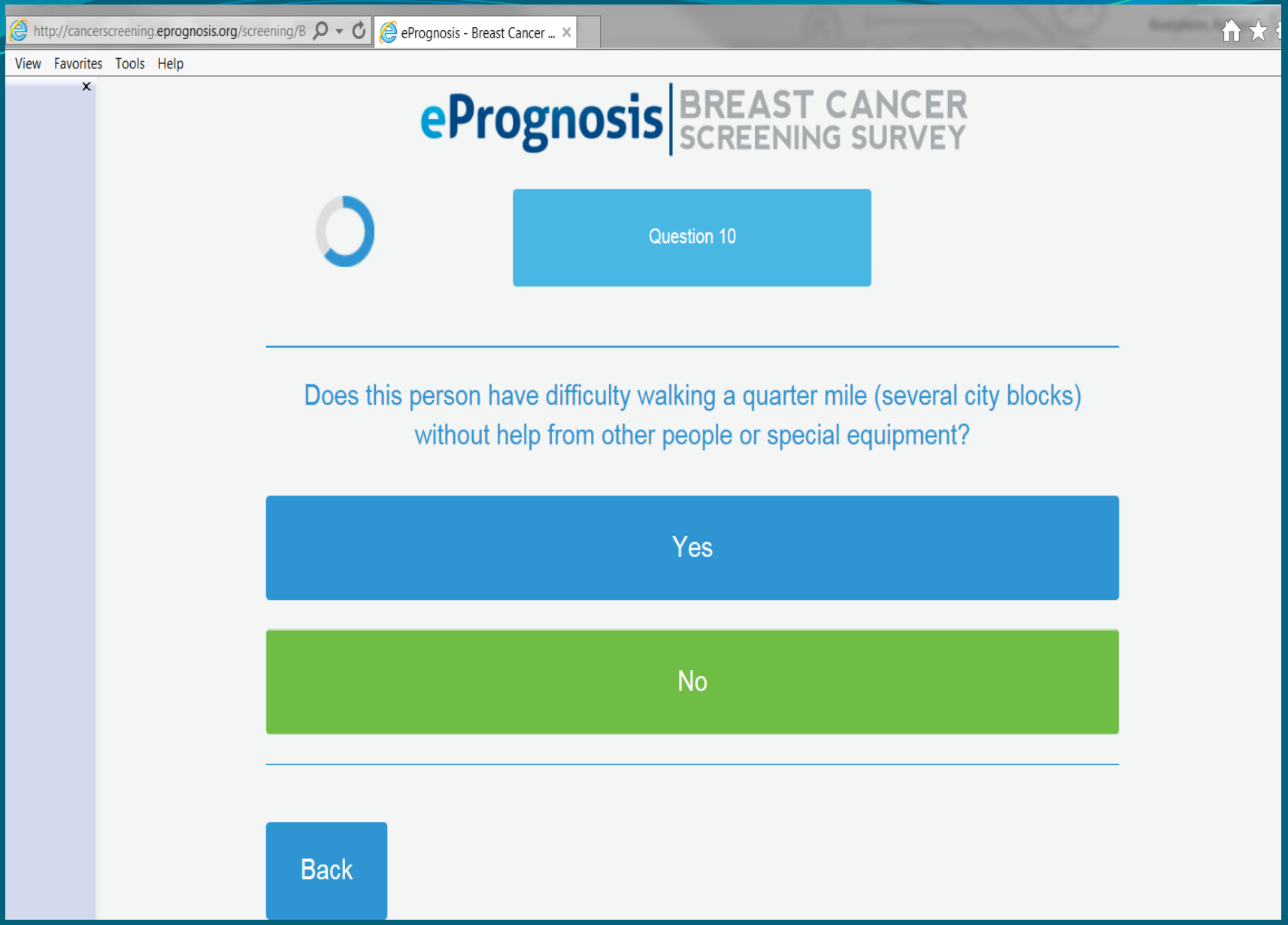
BREAST CANCER SCREENING SURVEY
Question 5
Has a doctor told this person that he or she has a chronic lung disease, such as emphysema or chronic bronchitis?
Yes
No
Back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BREAST CANCER SCREENING SURVEY
Question 10
Does this person have difficulty walking a quarter mile (several city blocks) without help from other people or special equipment?
Yes
No
Back

http://cancerscreening.eprognosis.org/a1y/

a1y | ePrognosis

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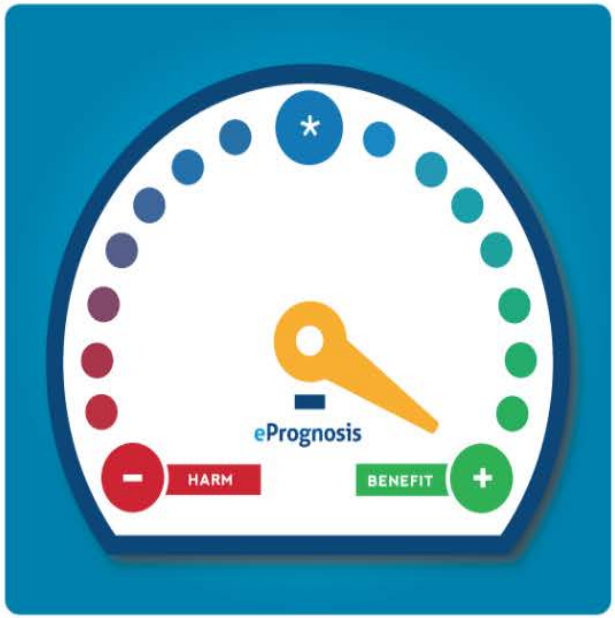
HOME ABOUT SURVEY FEEDBACK GET INVOLVED TERMS



RESULTS

SCREENING FOR BREAST CANCER IS MORE LIKELY TO HELP THIS PERSON THAN TO HARM THEM.

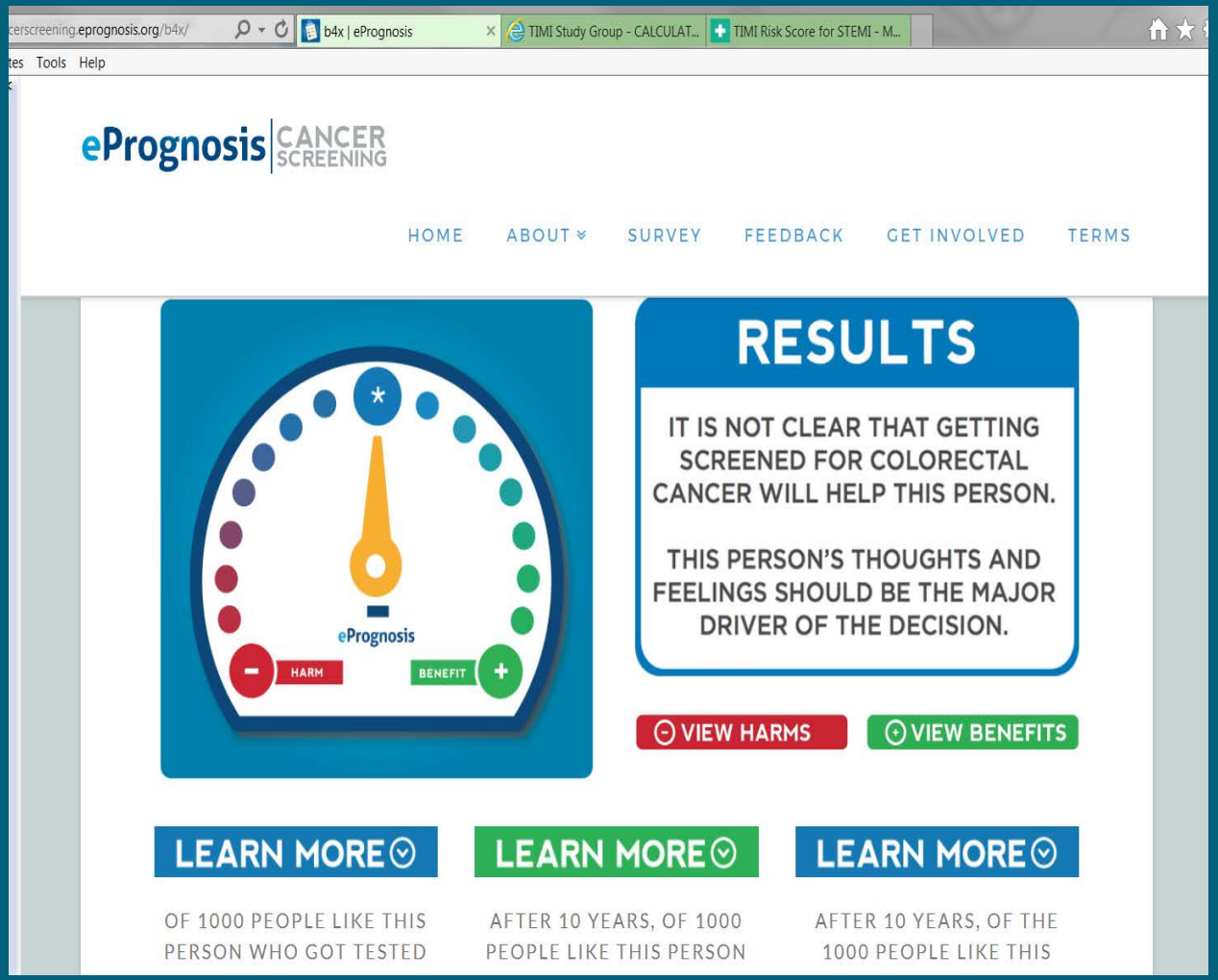
THUS, SCREENING WOULD GENERALLY BE RECOMMENDED.

VIEW HARMS VIEW BENEFITS

LEARN MORE LEARN MORE LEARN MORE

Case 2 – Colon Screening

- 75 year old woman with Alzheimer's dementia
  - Trouble with finances but no physical limitations
- History of heart disease (s/p MI and CABG)
- Former smoker



Stopping Cancer Screening A Difficult Conversation?

- Physicians are often uncomfortable having this discussion
- Fear of patients getting upset
- Concepts may be difficult to explain
- Some tips to help the conversation
  - Bring up the idea ahead of time that cancer screening will come to an end
  - Explain that at some point the 'burdens' of screening outweigh the benefits

Take Home Points

- **Routine** screening stops at ages…
  - 65 Cervical
  - 70 Prostate
  - 75 Breast/colon/lung
- For the next decade (ages 75-85) consider shared decision making taking into account life expectancy, comorbid conditions, and patient values
- Screening beyond age 85 would be difficult to justify
- Consider validated tools (‘eprognosis’) to guide decision making

Questions???

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