Thank you for completing this SAM activity. Below you will find correct responses, rationales, and references for the SAM questions. Collective results of the SAM activities will be posted online within 4 weeks following the Symposium so that you can compare your responses to those of your peers. Attendees will receive an email when the SAM results are available.

When you complete the online CME claim form for the Symposium you must indicate that you completed this activity in order to receive SAM credit for this session. Your SAM certificate will be available in your SBI Education Portal after claiming CME credit for the Symposium. Instructions on claiming CME will be sent by email to all attendees after the Symposium concludes.

1. **Approximately what percent of all the years of life (YOL) lost to breast cancer are from women diagnosed in their 40s (40-49 years old)?**
   - a. 10%
   - b. 20%
   - c. 30%
   - d. 40%

   **ANSWER: C**

   **RATIONALE:** Approximately 30% of all years of life lost to breast cancer are for women who were diagnosed in their 40s. In one older study from 1977 (1), one-third of all YOL lost were from women diagnosed in their 40s, and in a more recent study from 2015 (2), women in their 40s accounted for about 28% of YOL lost to breast cancer.

   **REFERENCE:**

2. **In a cohort of 1,000 women aged 40-74, approximately how many more years of life would be saved by annual screening mammography compared with biennial screening?**
   - a. 10% more years of life saved by annual screening
   - b. 20% more years of life saved by annual screening
   - c. 30% more years of life saved by annual screening
   - d. 40% more years of life saved by annual screening
ANSWER: D

RATIONALE: 1,000 women aged 50-74 gain an average of 116 years of life due to earlier detection and treatment of breast cancer. The same 1,000 women beginning screening at age 40 gain 160 years of life on average. 160 YOL represents a 38% increase over 116 YOL (1).

REFERENCE:

3. On average, how frequently would a woman be subjected to a benign breast biopsy if she begins annual screening at age 40?
   a. Once every 10-15 years
   b. Once every 40-45 years
   c. Once every 100-105 years
   d. Once every 140-145 years

ANSWER: D

RATIONALE: At the time the American Cancer Society published its updated 2015 mammography screening guidelines, a separate comprehensive study on the benefits and harms of screening was published in the same issue of JAMA (1). In this study, Myers et al report that a woman who begins annual screening at age 40 has a cumulative 7% chance of undergoing a benign biopsy over 10 years. Hence, the same woman would have a 0.7% or 0.007 chance of a benign biopsy each year. This can be converted to a measure of years between benign biopsies by inverting 0.007 (i.e., 1/0.007 = 142.9). Therefore, a woman beginning annual screening at age 40 will experience a benign biopsy once every 143 years.

REFERENCE:

4. When comparing combination screening mammography with tomosynthesis to digital mammography alone, which of the following is true regarding the combination exam?
   a. It has a higher false positive rate
   b. It has a higher false negative rate
   c. It has a lower false positive rate
   d. It has a lower true positive rate

ANSWER: C

RATIONALE: Tomosynthesis based screening has been shown to have a lower recall rate than FFDM alone and so tomosynthesis based screening offers a lower false positive rate than FFDM screening. Tomosynthesis also finds more cancers than FFDM alone therefore tomosynthesis has a higher true positive rate than FFDM.

REFERENCE:


5. Which of the following is FALSE?
   a. Tomosynthesis increases DCIS detection over digital mammography
   b. A tomosynthesis view is approximately the same radiation dose as a 2D mammogram
   c. Evaluation of calcifications is better with magnification views than tomosynthesis
   d. Recalls from tomosynthesis based screening require additional views typically

ANSWER: D

REFERENCE:


6. Which of the following is considered to be one of the primary reasons that tomosynthesis has higher detection of cancer over digital mammography?
   a. Improved conspicuity of fat in lesions
   b. Better evaluation of calcifications on synthetic mammography
   c. Reduced number of cancers that are obscured by overlapping tissue
   d. Improved ability to see multiple masses

ANSWER: C

REFERENCE:

7. What percent of women of mammographic age have dense breasts?
   a. 60%
   b. 50%
   c. 40%
   d. 30%

   **ANSWER: C**

   **RATIONALE:** 60% of women in their 40s have dense breasts as do 50% of women in their 50s and 30% of women over 60, but overall 40% of women over the age of 40 have dense breasts.

   **REFERENCE:**


8. What is the expected increase in cancer detection when ultrasound is added to standard digital mammography?
   a. 0.3 per 1000
   b. 1-2 per 1000
   c. 2-4 per 1000
   d. 7-10 per 1000

   **ANSWER: C**

   **RATIONALE:** Clinical breast examination adds detection of 0.3 cancers per 1000 women screened. Tomosynthesis adds detection of 1-2 cancers per 1000 women screened. Contrast-enhanced mammography, molecular breast imaging, and MRI add detection of 7-10 cancers per 1000 women screened. Ultrasound using automated devices or technologists performing hand-held screening yields another 2 to 2.5 cancers per 1000 women screened and physician-performed handheld ultrasound yields another 3-4 cancers per 1000 screened.

   **REFERENCE:**

   Berg WA, Mendelson EB. Technologist-performed handheld screening breast US imaging: how is it
performed and what are the outcomes to date? *Radiology* 2014; 272:12-27


9. Which of the following have been demonstrated when screening ultrasound is added to mammography in women with dense breasts?
   a. Reduction in late-stage disease
   b. Reduction in interval cancer rate
   c. Reduction in breast cancer mortality

**ANSWER: B**

**RATIONALE:** Increased detection of node-negative invasive breast cancers has been observed, but a reduction in stage IIB or higher disease has not yet been shown: answer A has not been shown directly. Mortality reduction has only been studied for mammography to date, so answer C is not correct. The J-START trial has demonstrated a reduction in interval cancers among women randomized to receive screening ultrasound.

**REFERENCE:**

10. Which of the following is NOT felt to be one of the primary causes of the increasing cost of cancer care in the United States?
   a. The excessive utilization of screening examinations
   b. The rising number of cancer cases in the aging population
   c. The inappropriate use of imaging studies, particularly PET
   d. The cost of drugs used to treat cancer and its side effects

**ANSWER: A**

**RATIONALE:** Kelly and Smith cited the increasing number of cancer cases due to the aging population, the inappropriate use of imaging studies (predominantly PET), and increased drug costs with no relation to whether drugs are targeted or to their effectiveness as the top three causes of rising costs in cancer care.

**REFERENCE:**

11. Who can make a proposal to change the Current Procedural Terminology (CPT)?
   a. Medical specialty societies
b. Physicians

c. Third Party Payers

d. Vendors

e. All of the above

ANSWER: E

REFERENCE:

12. In the absence of the PALS Act, what frequency of screening mammograms does the Patient Protection and Affordable Care Act (PPACA) require Medicare and commercial health insurance plans to cover at no cost to the consumer?
   a. Annually beginning at age 40
   b. Annually between ages 40 and 54 and annually or biennially beginning at age 55
   c. Biennially between ages 50 and 74
   d. Coverage for screening mammograms is not required in PPACA

ANSWER: C

RATIONALE: Without the PALS Act, Medicare and commercial health insurance plans are only required to cover preventative services graded A or B by the United States Preventive Services Task Force, in this case biennial screening for women age 50-74.

REFERENCE:
http://www.uspreventiveservicestaskforce.org/Page/Name/recommendations

13. For an average 40-year old woman, the risk of breast cancer in the coming year is about:
   a. 1 in 2,000
   b. 1 in 1,000
   c. 1 in 500
   d. 1 in 250

ANSWER: B

RATIONALE:
The absolute 1-year risk of breast cancer at age 40 is approximately 8-9 per 10,000, so slightly less than 1 in 1,000. In looking at risk in 1, 5, and 10-year age groups, the ACS Guideline Development Group (GDG) concluded that risk in the early 40s was more similar to that in the late 30s, while risk at ages 45-49 was more similar to risk in the early 50s. This led the GDG to recommend that all women should have an opportunity to make a decision about beginning screening at age 40, but that all women should be undergoing annual screening at age 45.
14. Which risk factor associated with a diagnosis of an advanced breast cancer among women screened biennially vs. annually led the ACS to recommend annual screening before age 55?
   a. Premenopausal status
   b. Age
   c. Density
   d. Age and Density

   ANSWER: A

   RATIONALE:
The ACS requested that Breast Cancer Surveillance Consortium investigators reanalyze prior published studies to compare annual vs. biennial screening using shorter intervals as proxies for the time between last screening mammogram. While the findings did not show a strong association between age, the screening interval, and the risk of being diagnosed with an advanced breast cancer, an association between the screening interval and menopausal status was statistically significant, with pre-menopausal women having a greater risk of being diagnosed with an advanced breast cancer if they were screened biennially vs. annually.

REFERENCE:

15. The ACS recommends that women should continue breast cancer screening as long as they are in good health and can expect to live at least 10 more years. At what age does the median life-expectancy fall below 10 years?
   a. Between 70-74
   b. Between 75-79
   c. Between 80-84
   d. Between 85-89

   ANSWER: B

   RATIONALE:
Just before age 80, the median expected longevity falls below 10 years. This doesn’t mean that screening should stop in the late 70s, only that less than half of women can expect to live, on average, 10 or more years. The new ACS guideline stresses that many older women are in good health and can expect to live longer than 10 years, and thus should be judged as likely to benefit from continuing regular screening.

REFERENCE: