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 newly diagnosed breast cancer patients will be found to have additional cancers on preoperative MRI?
   a. 0-5%
   b. 10-30%
   c. 50-70%
   d. 70-90%

   ANSWER: B

   RATIONALE: Additional cancers are found in 13 to 34% of cases, so B is the most correct response.

   REFERENCE:


2. MRI has consistently been shown to lower re-excision rates without increasing mastectomy in which invasive tumor type?
   a. Squamous
   b. Apocrine
   c. Lobular
   d. Medullary

   ANSWER: C
RATIONALE: Invasive lobular has been shown in multiple studies and over time to help significantly decrease re-excision rates without increasing mastectomy rates. Even with ductal cancers, where re-excision rates can be less, mastectomy rates often increase.

REFERENCE:

3. Which is true regarding preoperative localization with radioactive seeds, compared to wire localization?
   a. Seed localization is faster
   b. Fewer images are needed with seed localization
   c. Seeds localization costs less
   d. Surgical approach is more versatile with seeds

   ANSWER: D

RATIONALE: Seed and wire localization are both fast and require about the same number of images. Seeds cost more. However, the surgeon has more opportunity to vary the incision site with seeds than with wires.

REFERENCE:

4. 53-year-old with a 2.2 cm unicentric ER/PR negative HER2-amplified carcinoma with normal axillary ultrasound receives appropriate anti-HER2 directed preoperative systemic therapy. Following therapy mammogram and ultrasound demonstrate only a 3 mm architectural distortion without suspicious microcalcifications and the prior placed clip. What is the approximate likelihood that she will have a pathologic complete response in the primary tumor and sentinel lymph node?
   a. 5% in the breast and lymph nodes
   b. 25% in the breast and lymph nodes
   c. 50+% in the breast and 90+% in the lymph nodes
   d. There is no good available data to answer this question

   ANSWER: C

RATIONALE: There are extensive published reports on the conversion rate from biopsy proved lymph node-positive disease to pathologic negative lymph nodes and the effect on the breast primary tumor at the time of surgery after preoperative systemic therapy. For cases that receive anti-HER2 directed chemotherapy the chance of a complete pathologic response in the breast is in the 40 to 60% range and up to 90% in the lymph nodes.
REFERENCE:


5. **Trials are beginning in Europe to evaluate the potential safety of biopsy alone without surgery or radiotherapy for cases of DCIS. One such trial in the United Kingdom is called the LORIS trial. Which of the following are parameters of the LORIS trial?**
   a. It is a single arm phase 2 study
   b. It is a randomized trial of standard surgery versus active monitoring for patients with less than 1 cm DCIS
   c. It is a randomized trial of standard surgery versus active monitoring for patients with any size low/intermediate grade DCIS
   d. There is no such trial (eliminating surgery for DCIS would be impossible and dangerous)

**ANSWER: C**

**RATIONALE:** Trials have begun in Europe testing observation of biopsy proved low and intermediate grade DCIS – one such trial called the LORIS study is a randomized trial of standard surgery versus active monitoring for patients with any size low/intermediate grade DCIS. The protocol has yearly follow-up mammography with the protocol requirement of biopsy if any lesion develops outside of the initial area of biopsy. If carcinomas identified the patients in the surveillance arm receive standard surgery with and without radiotherapy/endocrine therapy.

REFERENCE:


6. A 61-year-old presents with a 4 cm triple negative breast cancer with an initial ultrasound that demonstrates two abnormal axillary lymph nodes one of which was biopsied and a clip was placed. The patient receives preoperative chemotherapy with AC-Taxol and imaging shows the primary cancer has decreased in size to 1.2 cm with completely normalized fatty replaced lymph nodes. Potential appropriate safe and accurate nodal surgery would include which of the following?
   a. Sentinel lymph node biopsy alone without demonstration of the clip removal in the patient
   b. Sentinel lymph node biopsy with targeted axillary dissection to demonstrate clip removal, and no evidence of metastases
   c. Random sampling of a few axillary lymph nodes
   d. Axillary lymph node dissection in all cases regardless of the presence of metastases or not

**ANSWER: B**

**REFERENCE:**


7. **FES-PET is demonstrating the ability to delineate the effectiveness of which of the following therapeutic treatments?**
a. Her2 targeted therapies
b. Alkylating agents
c. Estrogen targeting therapies
d. Androgen targeting therapies

ANSWER: C

RATIONALE:
FES is radiolabeled estradiol that directly targets the estrogen receptor. It has been shown to be useful in monitoring Fulvestrant effects in breast cancer.

REFERENCE:

8. Why do tumors demonstrate increased uptake of F-18 FACBC?
   a. Increased lipid metabolism
   b. Hypoxia
   c. Proliferation
   d. Angiogenesis

ANSWER: A

RATIONALE:
FACBC (18F-Fluciclovine) is a leucine analog PET/CT radiotracer that depicts amino acid transport into cells. Amino acid transport proteins have been shown to be upregulated in breast malignancies by microarray and immunohistochemical analysis.

REFERENCE:
Ulaner GA et al., Initial results of a prospective clinical trial of 18F-Fluciclovine PET/CT in newly diagnosed invasive ductal and invasive lobular breast cancers. Journal of Nuclear Medicine, in press, 2016.

9. Which imaging modality has shown the potential to identify HER2 positive metastasis when the primary tumor is HER2 negative?
   a. FACBC-PET
   b. Magnavist (Gd-DTPA)
   c. FDG-PET
   d. 89Zr-trastuzumab-PET

ANSWER: D

RATIONALE:
In a proof-of-concept study, it was demonstrated that 89Zr-trastuzumab-PET/CT detected unsuspected HER2-positive metastases in patients with HER2-negative primary breast cancer.
REFERENCE:
Ulaner GA et al., Detection of HER2-positive metastases in patients with HER2-negative primary breast cancer using $^{89}$Zr-DFO-trastuzumab PET/CT, Journal of Nuclear Medicine, in press, 2016.