MAMMOGRAPHY AND EARLY BREAST CANCER DETECTION

CHAPTER 1

1. The American College of Radiology and the Society of Breast Imaging recommend yearly mammograms starting at what age?
   a. 40
   b. 45
   c. 50
   d. 55

2. The “against routine screening” for women in their 40s came out in what year?
   a. 2002
   b. 2006
   c. 2007
   d. 2009

3. How many women will be diagnosed with breast cancer in their 20s and 30s?
   a. 9,000
   b. 11,000
   c. 13,000
   d. 15,000

4. What percent of breast cancer patients have a positive family history?
   a. 10%
   b. 15%
   c. 20%
   d. 25%

5. What percent of women under 50 want to share in the decision about when to have a mammogram with their physician?
   a. 23%
   b. 49%
   c. 51%
   d. 53%

6. In 2015 how many women died of breast cancer?
   a. 25,000
   b. 30,000
   c. 35,000
   d. 40,000

CHAPTER 2

7. What year was Dr. Robert Eagan’s landmark mammography study done?
   a. 1960
   b. 1962
   c. 1970
   d. 1972

8. How many cells does a micro-tumor 5 years away from being detected contain?
   a. 1 million
   b. 2 million
   c. 2.5 million
   d. 3 million
9. When did the Fisher Theory Trials begin that introduced the lumpectomy and radiation option?
   a. 1960s  
   b. 1970s  
   c. 1980s  
   d. 1990s

10. Biology is the built-in set of instructions at the molecular level that are going to drive the behavior of the tumor.
   a. True  
   b. False

11. With a diagnostic sensitivity of 90%, out of every 100 women undiagnosed with breast cancer how many would be visualized and diagnosed by mammography?
   a. 80  
   b. 85  
   c. 90  
   d. 95

CHAPTER 3

12. Breast conservation surgery was gradually accepted during what timeline?
   a. Late 60s, early 70s  
   b. Late 70s, early 80s  
   c. Late 80s, early 90s  
   d. Late 90s, early 2000s

13. What year did Dr. Samuel Hellman propose the Spectrum Theory?
   a. 1988  
   b. 1992  
   c. 1994  
   d. 1996

14. The death rate increases by ______ per millimeter increase in tumor size.
   a. 1.0%  
   b. 1.3%  
   c. 1.5%  
   d. 1.8%

15. Very few pure tubular cancers are larger than what size?
   a. 1.5 cm  
   b. 2.0 cm  
   c. 2.5 cm  
   d. 3.0 cm

16. Increasing tumor size correlates to what?
   a. Lower grade  
   b. Higher grade  
   c. Surgery required  
   d. Radiation required

17. In 1980 Dr. Laszlo Tabar calculated only ______ in ______ women with cancer discovered on mammography actually had her life saved.
   a. 1, 4  
   b. 1. 5  
   c. 1, 6  
   d. 1, 7
18. Recent estimation of lives saved through screening mammography might be as high as _____ in _____ when women are compliant with annual screening.
   a. 1, 2
   b. 1, 3
   c. 1, 4
   d. 1, 5

19. When it comes to the mechanics of mammography screening, biology takes a back seat to tumor stage.
   a. True
   b. False

CHAPTER 4

20. What cancer did Dr. Higgins discover responded to endocrine manipulation?
   a. Breast
   b. Prostate
   c. Lung
   d. Brain

21. What drug replaced endocrine ablation to treat breast cancer?
   a. Tamoxifen
   b. Amoxicillin
   c. Metformin
   d. Lisinopril

22. How many women were diagnosed with ductal carcinoma in situ in 2015?
   a. 40,000
   b. 50,000
   c. 60,000
   d. 70,000

23. How many women die of breast cancer each year?
   a. 30,000
   b. 40,000
   c. 50,000
   d. 60,000

24. Mammography is not 100% anatomic based.
   a. True
   b. False

25. Grade reflects how _______ cells look under a microscope.
   a. Abnormal
   b. Asymmetrical
   c. Aggressive
   d. Assertive

26. What was the 5-year survival rate for patients with Stage IV prostate cancer in the Commission on Cancer Study?
   a. 39.8%
   b. 60.5%
   c. 79.1%
   d. 89.7%

27. What score did the U.S. Preventative Services Task Force give mammography for women aged 40-49?
   a. A
   b. B
   c. C
   d. D
28. What percent of men with prostate cancer had a normal PSA and digital exam?
   a. 8%
   b. 10%
   c. 12%
   d. 15%

29. Over the past 30 years how many women have been treated for breast cancer that if left alone would not have killed them?
   a. 1,300,000
   b. 1,350,000
   c. 1,400,000
   d. 1,450,000

CHAPTER 5

30. One of the most common criticisms about mammography is that benefits were oversold to the public from the get go.
   a. True
   b. False

31. The breast cancer mortality has been declining in the U.S. since what year?
   a. 1986
   b. 1989
   c. 1990
   d. 1991

32. What is it called when at least one group will receive no intervention/treatment while the “study group” receives the intervention/treatment?
   a. Randomized
   b. Prospective
   c. Controlled
   d. Blinded

33. What is the desired confidence interval (CI) in medical research?
   a. 90%
   b. 93%
   c. 95%
   d. 99%

CHAPTER 6

34. Who developed the first mobile mammography unit?
   a. Dr. Sam Shapiro
   b. Dr. Phillip Strax
   c. Dr. Richard Egan
   d. Dr. Louis Venet

35. The results from the 1971 HIP Study showed a ______ reduction in mortality.
   a. 25%
   b. 30%
   c. 35%
   d. 40%
36. Which countries began international screening trials between 1970 through 1982?
   a. Sweden
   b. Scotland
   c. Canada
   d. All the above

37. What is one of the basic principles in the modern scientific method?
   a. Randomization
   b. Double blinded
   c. Reproducibility
   d. Controlled

38. The Canadians announced the results of their NBSS studies that made headlines worldwide: Mammography related to More Deaths in Young Women.
   a. True
   b. False

CHAPTER 7

39. What physicist stated the CNBSS-1 trial “was far below state of the art, even for this time”?
   a. Dr. Anthony Miller
   b. Dr. Martin Yaffe
   c. Dr. Cornelia Baines
   d. Dr. Laszlo Tabar

40. After Dr. Tabar flunked the first ______ mammograms in a row he bowed out of any involvement in the CNBSS.
   a. 10
   b. 15
   c. 20
   d. 25

41. The absence of what view was a major concern in the CNBSS?
   a. Cranial-caudal
   b. Mediolateral-oblique
   c. Medial-lateral
   d. Latero-medial

42. What percent of mammograms in the CNBSS were judged as poor or completely unacceptable by Dr. Kopans?
   a. 30%
   b. 40%
   c. 50%
   d. 60%

43. After the Swedish Two-County Trial, who was referred to as “the father of screening mammography”?
   a. Dr. Laszlo Tabar
   b. Dr. Martin Yaffe
   c. Dr. Cornelia Baines
   d. Dr. Anthony Miller

CHAPTER 8

44. In the 2011 Swedish Two-County Trial update how many lives were saved for every 1,334 mammograms?
   a. 1
   b. 2
   c. 3
   d. 4

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CHAPTER 9

45. A prime example of “over selling” was the use of relative benefit rather than ___________ benefit.
   a. Patient
   b. Absolute
   c. Community
   d. Consumer

46. Of the controversies that arose from the BCDDP, what premier issue persists today?
   a. Inconclusive findings
   b. Overdiagnosis
   c. Screening age
   d. Screening frequency

47. Which of the following famous women had breast cancer and their diagnosis increased screenings?
   a. Betty Ford
   b. Happy Rockefeller
   c. Nancy Reagan
   d. All the above

48. What is the estimated dollar value of the breast cancer screening industry?
   a. $2 - $3 billion
   b. $4 - $5 billion
   c. $6 - $8 billion
   d. $9 - $10 billion

49. Mammography screening amounts to how much of every healthcare dollar?
   a. 0.1 cents
   b. 0.2 cents
   c. 0.3 cents
   d. 0.4 cents

CHAPTER 10

50. Who is given credit as the “father of the scientific method”?
   a. Marie Curie
   b. Francis Bacon
   c. Louis Pasteur
   d. Thomas Edison

51. What is it called to observe particular events and draw generalized conclusions from that experience, independent of the powerful biases of the mind?
   a. Deductive reasoning
   b. Inductive reasoning
   c. Abductive reasoning
   d. Critical thinking

52. Who is credited with participating in the first needle-directed surgical excision of a non-palpable mammographic mass?
   a. Dr. Roger Eagan
   b. Dr. Gerald Dodd
   c. Dr. Anthony Miller
   d. Dr. Martin Yaffe

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53. What word was a consistent theme for Dr. Richard Feynmann?
   a. Quality
   b. Bias
   c. Uncertainty
   d. Deduction

CHAPTER 11

54. What year did the results of Study-2 appear in the Journal of Cancer Institutes indicating no benefit to mammography?
   a. 1999
   b. 2000
   c. 2001
   d. 2002

55. In 2000 what organization excluded the CNBSS data from their analysis of screening mammography?
   a. World Health Organization
   b. American College of Radiology
   c. American Cancer Society
   d. Society of Internal Medicine

56. Who was the lead author of the 2003 Mammographic Screening for Breast Cancer?
   a. Dr. Laszlo Tabar
   b. Dr. N. Day
   c. Dr. Suzanne Fletcher
   d. Dr. Anthony Miller

57. What country has one of the highest breast cancer death rates in Europe?
   a. Finland
   b. Sweden
   c. Denmark
   d. Austria

58. How many screening experts, perturbed by the non-scientific criticism of screening mammography, published a letter in the November 2011 issue of Lancet?
   a. 25
   b. 32
   c. 39
   d. 41

CHAPTER 12

59. Over-diagnosis is the detection of disease that will never cause symptoms or death during a patient’s lifetime.
   a. True
   b. False

60. To provide distinction between length bias and overdiagnosis, what is another term for length bias?
   a. Never progressing
   b. Slowly progressing
   c. Quickly progressing
   d. Constantly progressing

61. What was the estimated range of overdiagnosis pouring out of various trials?
   a. 0 – 20%
   b. 0 – 35%
   c. 0 – 42%
   d. 0 – 54%
62. Dr. Puliti found a range of ____ to ____ among the 6 studies that adjusted for lead time and patient risk status.
   a. 1% - 3%
   b. 1% - 5%
   c. 1% - 8%
   d. 1% - 10%

CHAPTER 13

63. At autopsy what percent of women were found to have underdiagnosed invasive breast cancer?
   a. 0.9%
   b. 1.1%
   c. 1.3%
   d. 1.5%

64. According to the Spectrum Theory, which biologic tumors are unlikely to progress to systemic disease until very late in their course?
   a. Biological A
   b. Biological B
   c. Biological C
   d. Biological D

65. Mammography is not forcing overtreatment, rather it is simply moving treatment up earlier than what would have been.
   a. True
   b. False

66. What type cancer is a very well-differentiated invasive ductal cancer, or slow grower?
   a. Ductal carcinoma in situ
   b. Tubular carcinoma
   c. Invasive ductal carcinoma
   d. Medullary carcinoma

67. What is a group of lesions that can mimic invasive cancer yet are completely benign?
   a. Diagnostic lesions
   b. Invasive lesions
   c. Premalignancy lesions
   d. Pathologic lesions

68. What year did the U.S. Preventative Services Task Force announce starting mammography screening at 50 years old, and every 2 years?
   a. 1990
   b. 1991
   c. 1992
   d. 1993

CHAPTER 14

69. What grade is defined as a recommended service with high certainty the net benefit is sustained?
   a. Grade A
   b. Grade B
   c. Grade C
   d. Grade D
70. The Task Force study was one of __________ studies that showed a statistical benefit of screening women in their 40s.
   a. One
   b. Two
   c. Three
   d. Four

71. How many out of every 4 eventual breast cancer victims are denied screening when access is limited to age 50 and older?
   a. 1
   b. 2
   c. 3
   d. 4

72. Living on earth exposes everyone to radiation equivalent to a mammogram every _______ months.
   a. Two
   b. Three
   c. Four
   d. Five

73. After re-visiting the six CISNET models, how many more lives would the most aggressive CISNET model save compared to the model chosen by the Task Force?
   a. 65%
   b. 71%
   c. 75%
   d. 82%

74. Hendrick and Helvie concluded U.S. women 30-39 years old starting annual screening mammograms from age 40-84 would save how many more lives?
   a. 50,230
   b. 72,891
   c. 84,629
   d. 99,829

75. Breast cancers discovered on self-exam are skewed toward what stages?
   a. Stage 0 – stage I
   b. Stage I – stage II
   c. Stage II – stage III
   d. Stage III – stage IV

CHAPTER 15

76. The average tumor size discovered by screening mammography hovers around what size?
   a. 1.0 cm
   b. 1.5 cm
   c. 1.6 cm
   d. 1.9 cm

77. The Pan-Canadian Study by Dr. Coldman and colleagues demonstrated what percent mortality reduction among screened women?
   a. 20%
   b. 30%
   c. 40%
   d. 50%
CHAPTER 16

78. Statistical analysis is growing exponentially fueled by what?
   a. Scientists
   b. Mammography technology
   c. Software development
   d. Randomized trials

79. What does evidence-based medicine do?
   a. Ranks the evidence
   b. Risk adjusts evidence
   c. Determines bias of evidence
   d. Patterns the evidence

80. What is the first step in the scientific method?
   a. Statistical analysis
   b. Decrease bias
   c. Reproducibility
   d. Compile data

81. What percent of scientific trials were ever replicated?
   a. 25%
   b. 33%
   c. 44%
   d. 46%

82. Which of the following are examples of observational studies?
   a. Case-controlled studies
   b. Cohort studies
   c. Detection studies
   d. All the above

83. What was the breast cancer reduction mortality for 40-49-year-old women who were screened in the massive Screening of Younger Women Trial?
   a. 15%
   b. 20%
   c. 23%
   d. 29%

CHAPTER 17

84. All absolute risk calculations are __________ unless they are framed within a duration of time.
   a. Ignored
   b. Meaningless
   c. Significant
   d. Uncertain

85. What percent of women are routinely called back for more testing after a screening mammogram?
   a. 1 – 3%
   b. 4 – 6%
   c. 5 -10%
   d. 12 – 14%
86. Over the course of _____ years, more than half the women in mammographic screening programs will experience a call-back?
   a. 5  
   b. 8  
   c. 10  
   d. 12  

87. One of the benefits of 3-D mammography is a reduction in the call-back rate.
   a. True  
   b. False  

88. What is the possibility of cancer for Level 4 patients that are biopsied?
   a. 5 – 8%  
   b. 9 – 12%  
   c. 15 – 20%  
   d. 20 – 25%  

89. Today, where do image guided core biopsies occur?
   a. Hospital  
   b. Office  
   c. Surgical center  
   d. None of the above  

CHAPTER 18

90. Throughout the years, what organization continues to recommend annual screening starting at age 40?
   a. American Cancer Society  
   b. American College of Radiology  
   c. American College of Pathology  
   d. American Medical Association  

91. The American Cancer Society’s recommendation for annual screening at 40 started in what year?
   a. 1995  
   b. 1997  
   c. 1998  
   d. 1999  

92. The new 2015 American Cancer Society updated guidelines recommended annual screening to begin at what age?
   a. 40  
   b. 43  
   c. 45  
   d. 48  

93. At what age does the new 2015 American Cancer guidelines recommend screening every 2 years?
   a. 50  
   b. 53  
   c. 55  
   d. 60  

94. After adopting the Institute of Medicine’s protocol, the American Cancer Society invited review by how many external expert advisors prior to publishing their recommendations?
   a. 17  
   b. 21  
   c. 23  
   d. 26

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CHAPTER 19

95. What is a term that ranges from lumps and pain to microscopic findings?
   a. Atypical hyperplasia
   b. In situ carcinoma
   c. Fibrocystic disease
   d. Atypical lobular hyperplasia

96. Today, most pathologists make further distinction by dividing fibrocystic disease into how many categories?
   a. 2
   b. 3
   c. 4
   d. 5

97. Proliferative disease usually had a ______ fold risk of developing breast cancer.
   a. 2
   b. 4
   c. 5
   d. 6

98. How many benign breast biopsies are done each year?
   a. 500,000
   b. 750,000
   c. 1,000,000
   d. 1,500,000

99. What is the likelihood that atypical ductal hyperplasia (ADH) will upgrade to more serious pathology?
   a. 2 – 4%
   b. 5 – 7%
   c. 10 – 20%
   d. 25 – 30%

100. Atypical hyperplasia (AH) and family history elevate the risk of cancer ______ fold.
    a. 5
    b. 6
    c. 8
    d. 9

101. Nearly all atypical hyperplasia (AH) lesions are estrogen receptor positive.
    a. True
    b. False

102. What was the reduction of breast cancer for patients in the first chemoprevention trial with atypical ductal hyperplasia (ADH)?
    a. 52%
    b. 64%
    c. 73%
    d. 86%

103. What pathology stain distinguishes ductal lesions from lobular lesions?
    a. Methylene blue
    b. MART-1
    c. Masson’s trichrome stain
    d. e-cadherin
104. Ductal carcinoma in situ (DCIS) does not mean ________.  
   a. Invasive  
   b. Aggressive  
   c. Systemic  
   d. Small  

105. Chemotherapy is not reliable in its ability to eradicate what?  
   a. Lobular carcinoma in situ  
   b. Ductal carcinoma in situ  
   c. Medullary carcinoma  
   d. Papillary carcinoma  

106. What are small star-shaped masses that can look like invasive cancer on mammography, but are not?  
   a. Radial scars  
   b. Inflammation  
   c. Fibrocystic disease  
   d. Ductal tumors  

CHAPTER 20  

107. What two drugs are FDA approved to lower the risk of breast cancer?  
   a. Tamoxifen, raloxifene  
   b. Tamoxifen, accutane  
   c. Tamoxifen, acebutolol  
   d. Tamoxifen, aspirin  

108. What percent of MRI-detected cancers would not have been found if even liberal interpretations of the guidelines were followed?  
   a. 30%  
   b. 42%  
   c. 50%  
   d. 60%  

109. What percent of breast cancer deaths occur in unscreened women?  
   a. 54%  
   b. 68%  
   c. 71%  
   d. 78%  

110. What percentage of breast cancers are addressed by focusing on the most common risks?  
   a. 5%  
   b. 15%  
   c. 20%  
   d. 25%  

CHAPTER 21  

111. In 2015, the 17-year follow-up for the AGE trial demonstrated a statistically significant reduction in mortality of what percent?  
   a. 15%  
   b. 25%  
   c. 30%  
   d. 35%
CHAPTER 22

112. If cancer was palpated within ________ months of a negative mammogram, it was considered a “miss”.
   a. 12 months
   b. 18 months
   c. 24 months
   d. 36 months

113. Using 12-month follow-up date from the DMIST study, what was the sensitivity for digital mammography?
   a. 50%
   b. 60%
   c. 70%
   d. 80%

CHAPTER 23

114. What was the first state to pass legislation to cover ultrasound screening for dense breast?
   a. Texas
   b. Connecticut
   c. Michigan
   d. Florida

115. The number of additional cancers discovered by ultrasound after a negative mammogram ranged from _____ to _____ per 1,000.
   a. 1.21 to 2.31
   b. 2.41 to 2.61
   c. 2.71 to 4.61
   d. 4.81 to 5.21

116. The American College of Radiology divides breast density into how many categories?
   a. 2
   b. 3
   c. 4
   d. 5

CHAPTER 24

117. MRI detects those cancers that are large enough to see on mammography, but are embedded in areas of dense tissue.
   a. True
   b. False

118. In general populations undergoing routine screening with mammography, interval cancers number around what percent of the total?
   a. 5-9%
   b. 10 – 15%
   c. 20-25%
   d. 26-30%
CHAPTER 25

119. Considering all the evidence, the impact of screening mammography appears to be ________ than what was seen in historical trials?
   a. Less
   b. Greater
   c. Different
   d. Similar

CHAPTER 26

120. What is the mortality reduction for high risk patients adding an MRI scan after a negative mammogram and negative ultrasound?
   a. 4-5 per 1,000
   b. 9-11 per 1,000
   c. 12-20 per 1,000
   d. 22-36 per 1,000