

LIVE! | LUNCH REVIEW SESSION 6:
Breast Cancer, Lung Cancer and Neuro-Oncology

MODERATOR: Robert S. Siegel, MD

FACULTY PANEL: Nancy Davidson, MD
Mark Gilbert, MD
Claudine Isaacs, MD
Bruce E. Johnson, MD

HEMATOLOGY ONCOLOGY
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Our Moderator and Faculty Panel

 <p>Robert S. Siegel, MD HEMCO Best Practices Course Director Professor of Medicine The George Washington University Associate Center Director for Education and Training GW Cancer Center</p>	 <p>Nancy Davidson, MD SVP and Director, Clinical Research Division Fred Hutchinson Cancer Research Center</p>	 <p>Mark Gilbert, MD Physician Bethesda, MD Affiliation</p>	 <p>Claudine Isaacs, MD Professor of Medicine Georgetown University</p>	 <p>Bruce E. Johnson, MD Chief Clinical Research Officer Dana-Farber Cancer Institute</p>
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LUNCH REVIEW SESSION 6:
Breast Cancer, Lung Cancer and Neuro-Oncology

As a reminder

- We will review "board-type" questions that will prepare you for the Board Review Exam
- You will have the opportunity to ask questions directly to our Faculty Expert Panel
- We encourage you to use the chat, audience polling and Q&A features during this session
- Please ask you to submit your questions through the [Q&A feature only](#)
- Earn Points and Win Prizes by participating in this session! We will announce the leader board winners during the Lunch Review Sessions each day

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Using the Polling and Q&A features

Polling Feature

Q&A Feature

Select your answer when prompted during this session

Place your cursor on the Polling or Q&A buttons to activate this tool on your screen

After you type in a question, please click the **SUBMIT** button

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**MOCK QUESTIONS:
LET'S PRACTICE!**

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MOCK QUESTION

What is your attendee type for this conference?

- A. Physician
- B. Medical Fellow | Resident
- C. Nurse or Nurse Practitioner
- D. Pharmacist
- E. Other Healthcare Provider
- F. Industry Life Sciences Representative

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MOCK QUESTION

What type of books do you like to read on your spare time?

- A. Biography
- B. Mystery
- C. Medical Journals | Periodicals
- D. Action/Adventure
- E. Business | Economics
- F. Other



**Audience Polling
Knowledge Check**

LET'S GO!

Lunch Review Session 6

1. Adjuvant Therapy for Breast Cancer
(Davidson)

40 year old premenopausal woman who has undergone breast conservation therapy for a 2.1 cm IDC, 0/3 sentinel nodes, with positive ER and PR, negative HER-2, and Oncotype RS 12.

For adjuvant systemic therapy you recommend:

- A. Adjuvant TC chemo followed by tamoxifen
- B. Anastrozole
- C. Anastrozole plus palbociclib
- D. Tamoxifen
- E. Tamoxifen plus palbociclib



2. Adjuvant Therapy for Breast Cancer
(Davidson)

The patient in question 1 will see you for routine follow-up after completion of radiation and any chemotherapy.

What is the preferred follow-up algorithm for asymptomatic survivors of early breast cancer?

- A. Regular history and physical exam (H&P)
- B. H&P and annual mammography
- C. H&P, annual mammography, CBC, chemistry panel
- D. H&P, annual mammography, CBC, chemistry panel, CEA, CA2729
- E. Testing as in response 4 plus annual PET/CAT



3. Small Cell Lung Cancer
(Johnson)

A 50-year-old patient visits a primary care physician for an annual visit and the physician elicits a history of ongoing cigarette smoking. When the doctor suggests the patient undergo counseling for smoking cessation with pharmacological support, the patient states that most people who smoke are unable to eventually quit and is not anxious to stop. The physician reviews the patterns of cigarette smoking in the United States.



3. Small Cell Lung Cancer
(Johnson)

The following statement is true:

- A. Most patients who start smoking by their twenties are unable to stop smoking
- B. The rates of cigarette smoking are higher in individuals with higher socioeconomic status
- C. The rates of cigarette smoking are similar in non-Hispanic whites and blacks
- D. The rates of cigarette smoking are higher in Hispanic populations than in Non-Hispanics populations
- E. The smoking rates are relatively similar across the United States



4. Non-Small Cell Lung Cancer
(Johnson)

A 59-yo current male smoker presented with a cough. Chest CT scan and PET show FDG avid 3 cm right upper lobe mass and enlarged right sided adenopathy but no distant mets. Endobronchial ultrasound identified enlarged lymph nodes and biopsy of the nodes showed an adenocarcinoma (Stage III).



4. Non-Small Cell Lung Cancer
(Johnson)

Randomized studies show the patient should be treated with:

- A. Paclitaxel/carbo plus 74 Gy chest RT
- B. Paclitaxel/carbo/cetuximab plus 60 Gy chest RT
- C. Pemetrexed/cisplatin plus 60 Gy chest RT followed by atezolizumab
- D. Paclitaxel/carboplatin plus 60 Gy chest RT followed by durvalumab
- E. Paclitaxel/carboplatin plus 60 Gy chest RT followed by nivolumab



5. Metastatic Breast Cancer
(Isaacs)

A 62-year-old female who completed 5 years of adjuvant anastrozole for a T2N0M0 breast cancer 3 years ago presents to her PCP with a 2-month history of back pain controlled with ibuprofen. An MRI of her thoracic and lumbar spine showed extensive osseous metastatic disease with no evidence of cord compression. A CT scan showed two suspicious appearing pulmonary nodules the largest of which was 1.2 cm, and a 2.5 cm adrenal mass. A bone scan was positive in several areas including the thoracic, and lumbar spine, sternum as well as the pelvis. Her PS is 0.



5. Metastatic Breast Cancer
(Isaacs)

What is the next best step?

- A. Start therapy with an aromatase inhibitor and a CDK4/6 inhibitor
- B. Start Zolendronic acid
- C. Obtain a biopsy of the bone lesion
- D. Obtain a biopsy of the adrenal mass
- E. Obtain a biopsy of the lung mass



6. Metastatic Breast Cancer
(Isaacs)

A core biopsy of the adrenal mass confirmed metastatic carcinoma, favoring breast origin, ER 80% PR 60% and HER2 negative (IHC 0).

Which of the following is the most appropriate therapy?

- A. Aromatase inhibitor and zolendronic acid
- B. Paclitaxel and zolendronic acid
- C. Radiation therapy to the spine, aromatase inhibitor, CDK4/6 inhibitor and zolendronic acid
- D. Aromatase inhibitor, CDK4/6 inhibitor, and zolendronic acid
- E. Tamoxifen, aromatase inhibitor, CDK4/6 inhibitor, and zolendronic acid



7. Neuro-Oncology
(Gilbert)

Case History 1

A 72 year old otherwise healthy woman complains of mild headache and occasional disorientation. Neuroimaging reveals a 4 cm enhancing mass in the left frontal lobe with moderate edema. A gross total tumor resection confirms glioblastoma, MGMT promoter methylated and IDH wt (not mutated). Post-operatively, her Karnofsky Performance Status is 100%.



7. Neuro-Oncology
(Gilbert)

Question 7A: The following statement(s) are true:

- A. The patient's prognosis is likely improved because of the extent of resection and her age
- B. The patient's prognosis is likely improved because of the extent of resection, her KPS and IDH mutational status.
- C. The patient's prognosis is likely improved because of the extent of resection, her KPS and MGMT methylation status
- D. Prognosis is mainly driven by age



7. Neuro-Oncology
(Gilbert)

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7. Neuro-Oncology
(Gilbert)

Question 7B: The optimal treatment for this patient based on tumor and patient characteristics would be:

- A. Supportive care since she is elderly
- B. Radiation only because the 2005 paper by Stupp et al only included patients up to age 70
- C. Standard chemoradiation (60 Gy over 6 weeks with daily temozolomide)
- D. Hypofractionated chemoradiation (40 Gy over 3 weeks with daily temozolomide)
- E. Single dose stereotactic radiosurgery



7. Neuro-Oncology
(Gilbert)

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7. Neuro-Oncology
(Gilbert)

Question 7C: The following statements about malignant gliomas are true

- A. IDH mutational status can be accurately and definitively determined by immunohistochemical staining
- B. Grade IV gliomas, although now separated by IDH mutation status, have the same prognosis
- C. The histologic determination of a grade III glioma now requires additional molecular data to establish a final diagnosis
- D. A and B
- E. B and C
- F. All of the above



8. Adjuvant Therapy for Breast Cancer
(Davidson)

A 47 year old premenopausal woman with a 1.5 cm low grade ER-positive ductal carcinoma in situ sees you for recommendations about management.

What do you recommend?

- A. Excision with sentinel node biopsy followed by XRT followed by tamoxifen
- B. Excision with sentinel node biopsy followed by XRT followed by raloxifene
- C. Excision followed by XRT followed by tamoxifen
- D. Excision followed by XRT followed by anastrozole
- E. Mastectomy followed by XRT followed by tamoxifen



9. Adjuvant Therapy for Breast Cancer
(Davidson)

Side effects of aromatase inhibitors include all of these except:

- A. Thromboembolic events
- B. Hot flashes
- C. Arthralgias
- D. Osteopenia/osteoporosis
- E. Vaginal dryness



10. Small Cell Lung Cancer
(Johnson)

A woman has smoked one package of cigarettes per day for 40 years and quit 5 years ago. She visits an internist and asks if there is anything, she can do now to reduce his change of dying from lung cancer. The internist recommends a CT scan of the chest.

The CT scan can reduce her chances of dying from lung cancer by the following amount

- A. The chance of dying from lung cancer is not changed
- B. The risk of dying from lung cancer is reduced by 10%
- C. The risk of dying from lung cancer is reduced by 20%
- D. The risk of dying from lung cancer is reduced by 35%
- E. The risk of dying from lung cancer is reduced by 50



11. Non-Small Cell Lung Cancer
(Johnson)

A 53-year-old smoker presented with adenocarcinoma of the lung with mets to the liver. The characterization of his tumor showed it did not have mutations of EGFR or rearrangements of ALK. PD-L1 staining showed that 10% of his tumor cells stained positive.

The patient should be treated with:

- A. Pemetrexed carboplatin
- B. Pemetrexed carboplatin bevacizumab.
- C. Pemetrexed carboplatin pembrolizumab
- D. Pembrolizumab
- E. Nivolumab



12. Metastatic Breast Cancer
(Isaacs)

A 58-year-old otherwise healthy female was diagnosed 2 years ago with a T2N1M0 ER, PR, and HER2 negative (TNBC) breast cancer and underwent bilateral mastectomy, chest wall radiation therapy and adjuvant chemotherapy with dose dense AC x 4 followed by dose dense Taxol x 4. She now presents with persistent cough and a CT scan reveals 3 liver lesions (largest 2.5 cm), numerous pulmonary nodules, and bone metastases. Biopsy of one of the liver lesions reveals metastatic TNBC.



12. Metastatic Breast Cancer
(Isaacs)

Which of the following is the most appropriate therapy?

- A. Begin carboplatin and gemcitabine
- B. PDL1 testing ordered and reveals 0% of tumor infiltrating immune cells stain positive. Begin atezolizumab with nab-paclitaxel
- C. PDL1 testing ordered and reveals 1% of tumor infiltrating immune cells stain positive. Begin atezolizumab with nab-paclitaxel
- D. PDL1 testing ordered and reveals 3% of tumor infiltrating immune cells stain positive. Begin carboplatin and gemcitabine



13. Metastatic Breast Cancer
(Isaacs)

A 66-year-old female was diagnosed with a node positive ER-positive, PR-positive, and HER2 negative breast cancer 10 years ago. She underwent mastectomy, adjuvant chemotherapy, and radiation therapy. She took anastrozole for 2 years but stopped due to toxicity. About 2 years ago, she presented bone and pleural based metastases and biopsy confirmed metastatic breast cancer that was ER+, PR+ and HER2 negative. She received anastrozole, palbociclib and denosumab and had stable disease for 23 months. She then developed disease progression with increasing bone mets and mediastinal adenopathy. You obtain a liquid biopsy which reveals an ESR1 mutation but no other mutations.



13. Metastatic Breast Cancer
(Isaacs)

Which of the following is the most appropriate treatment option?

- A. Fulvestrant and alpelisib
- B. Letrozole and a CDK4/6 inhibitor
- C. Combination chemotherapy
- D. Fulvestrant
- E. Exemestane and everolimus



14. Neuro-Oncology
(Gilbert)

Case History

A 45 year-old man has a focal seizure that leads to an imaging study that reveals a left frontal lobe tumor. A complete resection was performed that revealed an oligodendroglioma grade III by histopathology.



14. Neuro-Oncology
(Gilbert)

Question 14A: Which of the following are correct?

- A. No further pathologic evaluation is required because the tumor had the classical findings of a "fried egg nucleus" and "chicken-wire" vasculature.
- B. IDH staining alone as DNA sequencing is not cost effective
- C. Testing for 1p 19q LOH
- D. DNA sequencing for IDH if IHC is negative
- E. B and C
- F. C and D



14. Neuro-Oncology
(Gilbert)

Question 14B: What is the appropriate management for this patient?

- A. Observation since there was a gross total resection
- B. Radiation to the local area around the tumor cavity
- C. Whole brain radiotherapy
- D. Regional radiation followed by adjuvant chemotherapy



15. Adjuvant Therapy for Breast Cancer
(Davidson)

The preferred agent for adjuvant therapy for postmenopausal women with early breast cancer (as opposed to maintenance of bone health) in US is:

- A. Denosumab
- B. Zoledronic acid
- C. Alendronate
- D. Clodronate



16. Non-Small Cell Lung Cancer
(Johnson)

A 62-year-old never smoker presented with adenocarcinoma of the lung with shortness of breath with minimal exertion because of airway obstruction and had mets to the bone and liver. A next generation sequencing panel was ordered. The patient was urgently started on pemetrexed, carboplatin and pembrolizumab urgently of the shortness of breath. The tumor was sent for a next generation sequencing panel which showed a RET rearrangement. The patient had a good response but progressed after 8 months on treatment while on maintenance pemetrexed and pembrolizumab.



16. Non-Small Cell Lung Cancer
(Johnson)

The patient should be treated with:

- A. Entrectinib
- B. Capmatinib
- C. Trametinib
- D. Selpercatinib
- E. Nivolumab



17. Non-Small Cell Lung Cancer
(Johnson)

A 50-year-old woman presents with cough and shortness of breath. Chest and abdominal computerized tomography show a left hilar mass, partial atelectasis of the left upper lobe, and liver metastases. A liver biopsy shows an adenocarcinoma. The genomic testing shows an ALK rearrangement.

Evidence from randomized trials show that most effective initial therapy should be:

- A. Crizotinib
- B. Alectinib
- C. Pemetrexed cisplatin
- D. Ceritinib
- E. Afatinib



18. Metastatic Breast Cancer
(Isaacs)

Which of the following is correct?

- A. Denosumab is associated with a higher incidence of osteonecrosis of the jaw than zoledronate
- B. Denosumab is associated with a higher incidence of flu-like symptoms than zoledronate
- C. Patients treated with denosumab have a longer overall survival than patients treated with zoledronate.
- D. Zoledronate is associated with a lower incidence of renal dysfunction than denosumab
- E. Patients treated with zoledronate have a longer overall survival than patients treated with denosumab.



19. Metastatic Breast Cancer
(Isaacs)

A 45-year-old premenopausal female presents to your office with newly diagnosed cT2N1 right sided breast cancer. The biopsy of the breast reveals a poorly differentiated ER 50%, PR 20%, HER2 IHC2+ FISH HER2:CEP17 ratio of 2.2. She is asymptomatic. Her routine labs are unremarkable aside for an elevated AST of 60 and ALT of 93. CT scan reveals 3 hepatic lesions the largest of which is 2.4 cm. There are no other areas of concern and the bone scan shows increased uptake in several ribs. A biopsy of the liver is consistent with a breast primary and shows a grade 3, ER 40%, PR 30%, HER2 IHC2+ FISH HER2:CEP17 ratio of 2.2.



19. Metastatic Breast Cancer
(Isaacs)

Which of the following is the most appropriate treatment option?

- A. Mastectomy followed by radiation therapy then docetaxel, trastuzumab and pertuzumab
- B. Docetaxel, trastuzumab and pertuzumab
- C. Ovarian functional suppression (OFS), anastrozole, and a CDK4/6 inhibitor
- D. Ado-trastuzumab emtansine
- E. Paclitaxel and trastuzumab



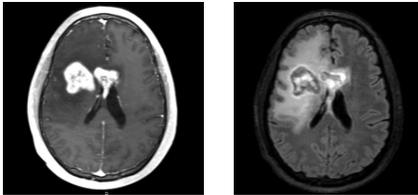
20. Neuro-Oncology
(Gilbert)

Case History

A 32 year old woman with right frontal grade 4 IDH mutated, MGMT methylated glioma. She underwent subtotal resection, followed by Radiation therapy and Temozolomide. The follow up MRI after three months of radiation treatment shows increased area of T1 post contrast enhancing and increased signal at T2 FLAIR (upper row images, from left to right). Her neurological examination is stable. The neuro-oncologist decided to go ahead with Temozolomide treatment (lower row images show same sequences at follow up scan after 3 months interval from previous one). What would you conclude as being the most likely scenario?

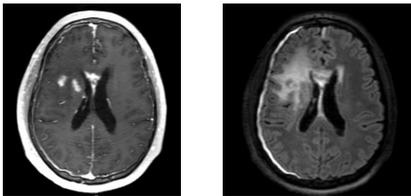


20. Neuro-Oncology
(Gilbert)



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20. Neuro-Oncology
(Gilbert)



Upper row at 3 months after radiation treatment and lower row at 3 months follow up while on adjunctive Temozolomide. On the left T1 sequences post contrast and on the right T2 FLAIR

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20. Neuro-Oncology
(Gilbert)

This scenario is most consistent with:

- A. Surgery induced changes
- B. Pseudo-progression
- C. Fluctuations during treatment therefore you should always wait the end of the adjunctive treatment and related number of scans before reaching a conclusion regarding treatment efficacy
- D. She is an extraordinary case and you could not draw any conclusion

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21. Adjuvant Therapy for Breast Cancer
(Davidson)

70 year old with a history of osteoporosis presents with a palpable lump. Mammography and ultrasound revealed a 2 cm mass. Biopsy was significant for a grade 2, strongly estrogen/progesterone receptor positive, HER2 negative invasive lobular carcinoma. She undergoes partial mastectomy/sentinel lymph node biopsy; pathology revealed a 2.1cm, node negative invasive lobular carcinoma. Recurrence score is 18. She has plans to undergo radiation therapy. She has normal kidney function and good IV access.



21. Adjuvant Therapy for Breast Cancer
(Davidson)

You recommend:

- A. Chemotherapy followed by endocrine therapy and bone modifying agent
- B. Endocrine therapy with an aromatase inhibitor and zoledronic acid
- C. Endocrine therapy with an aromatase inhibitor and denosumab because it is superior to zoledronic acid with regards to breast cancer specific survival
- D. No systemic therapy.



22. Adjuvant Therapy for Breast Cancer
(Davidson)

A 55-year-old post-menopausal woman has a 3 cm right breast mass. Bx - positive for hormone sensitive breast cancer. She underwent a partial mastectomy. Pathology reveals invasive ductal cancer, Grade 2, ER (90%), PR positive 5%, her 2 was not overexpressed, two of 3 sentinel LN contain metastatic tumor. No ECE, oncotype 19.

You now recommend:

- A. XRT, then Anastrozole
- B. XRT + Anastrozole + Palbociclib
- C. TC chemotherapy, followed by Anastrozole
- D. AC x 4 doses, then Taxotere x 4 doses, then XRT, then Anastrozole
- E. TC chemo then XRT



23. Adjuvant Therapy for Breast Cancer
(Davidson)

A 60 year old woman undergoes lumpectomy, sentinel localization and definitive radiation for treatment of a T2N0 ER/PR positive HER-2 negative breast cancer and begins letrozole adjuvant endocrine therapy.

What follow-up algorithm for laboratory and imaging evaluation is appropriate for her in absence of symptoms?

- A. Routine history and physical exam with CBC, CMP, CEA, CA2729 and annual mammography
- B. Algorithm as in A with annual bone scan and chest Xray
- C. Algorithm as in A with annual PET-CAT
- D. Routine history and physical exam with annual mammography



24. Small Cell Lung Cancer
(Johnson)

A patient presents with a productive cough and hemoptysis. Imaging reveals a right upper lobe mass, mediastinal adenopathy, and liver metastases. A liver biopsy reveals small cell lung cancer.

The findings from randomized trials show the patient should be treated with:

- A. Etoposide and cisplatin
- B. Etoposide and carboplatin
- C. Etoposide, carboplatin and nivolumab
- D. Etoposide, carboplatin and atezolizumab
- E. Etoposide carboplatin and bevacizumab



25. Neuro-Oncology
(Gilbert)

Case History

A 56 year old woman was found to have stage 4 breast cancer. Systemic chemotherapy demonstrates an imaging response that has been stable for 12 months. She complains of headaches and an MRI reveals multiple (>10) enhancing lesions in both cerebral hemispheres.



25. Neuro-Oncology
(Gilbert)

Question 25A: What would be the next treatment plan?

- A. Prognosis is too poor and palliative care would optimize the quality of life for the remaining life expectancy
- B. Whole brain radiotherapy potentially coupled with a chemotherapy agent that cross BBB as brain metastases takes the lead in the management plan over systemic disease, being the main prognostic factor of survival
- C. It is likely that brain metastases have the same genomic profile of the tumor of origin so there is no need to address specifically the brain metastases apart from steroids if edema is present.
- D. Stereotactic radiosurgery of brain metastases associated with continuing chemotherapy agent targeted to the original tumor that has been controlled



25. Neuro-Oncology
(Gilbert)

Case History

A 56 year old woman was found to have stage 4 breast cancer. Systemic chemotherapy demonstrates an imaging response that has been stable for 12 months. She complains of headaches and an MRI reveals multiple (>10) enhancing lesions in both cerebral hemispheres.



25. Neuro-Oncology
(Gilbert)

Question 25B:
Which of the following is true about whole brain radiation therapy?

- A. Hippocampal sparing whole brain radiation improves neurocognitive outcomes but compromises survival.
- B. Hippocampal sparing whole brain radiation requires extra planning but improves survival
- C. Hippocampal sparing whole brain radiation slows the rate of neurocognitive decline but does not improve survival.
- D. Hippocampal sparing whole brain radiation requires a proton beam facility



26. Neuro-Oncology
(Gilbert)

Case History

A 75 year old man is seen because of mental status changes and an imaging study demonstrates a diffusely enhancing subcortical mass with increased diffusion, but minimal mass effect. The imaging findings are thought to be most consistent with primary CNS lymphoma.



26. Neuro-Oncology
(Gilbert)

Which of the following statements are true?

- A. The patient should be immediately be placed on corticosteroids.
- B. The patient should be considered for a gross total tumor resection.
- C. Ophthalmologic and CSF evaluation should only be done if the tumor is confirmed to be a primary CNS lymphoma
- D. A and B
- E. All of the above
- F. None of the above



THANK YOU