









Thyroid Transcription Factor-1 (TTF-1)

- Adenocarcinoma TTF-1 positive
- Squamous cell carcinoma TTF-1 negative and p63 positive
- TTF-1 helps distinguish primary lung adenocarcinoma from metastatic adenocarcinoma



#### Biomarkers

- Predictive biomarkers (predicts response to treatment)
  - Epidermal growth factor receptor (EGFR)
  - Anaplastic lymphoma kinase (ALK)
- Prognostic biomarker (patient survival)
  - KRAS
    - KRAS mutational status is prognostic of survival
    - Currently not targeted therapy for KRAS positive patients







#### Obstructive Pneumonitis

• Combination of atelectasis, bronchiectasis with mucous plugging, and parenchymal inflammation that develops distal to an obstructing endobronchial lesion.









Available at <a href="https://www.acr.org/-/media/ACR/Files/RADS/Lung-RADS/Lung-RADS-2022.pdf">https://www.acr.org/-/media/ACR/Files/RADS/Lung-RADS/Lung-RADS-2022.pdf</a>.





























| Lun | g |
|-----|---|
|-----|---|

| Lung Quiz 1  | Data Item        | Value        |  |
|--|------------------|--------------|--|
| <ul> <li>2/4/23 CT/PET: 4.5 cm mass in right middle and upper<br/>lung lobe, most likely malignant, with tumor associated</li> </ul>   | Clinical T       | cT2b (4-5cm) |  |
| obstructive pneumonitis in the upper lobe. No<br>lymphadenopathy or metastasis observed.   | Clinical N       | cN0          |  |
| • 2/21/23 Right middle and upper lung lobectomies:   | Clinical M       | cN0          |  |
| <ul> <li>Moderately differentiated squamous cell carcinoma, 4.5<br/>cm, of upper and middle lobes obliterates the fissure.</li> </ul>  | Clinical Stage   | 2A           |  |
| <ul> <li>No evidence of any mass lesions within the bronchial tree.<br/>Tumor is confined within the lung parenchyma with no<br/>invasion of the visceral pleura.</li> </ul> | Pathologic T     | pT2b         |  |
| <ul> <li>Margins clear.</li> <li>Number of LNs examined= 21</li> </ul>   | Pathologic N     | pN1          |  |
| • Number of LNs involved= 1 (10R).   | Pathologic M     | cM1b         |  |
| <ul> <li>Lymph nodes examined: 4R, 8R, 10R, 11R, 12R, 13R,<br/>subcarinal.</li> </ul>  | Pathologic Stage | 4B           |  |
| <ul> <li>2/29/23 MRI of the brain shows metastasis in parietal<br/>lobe</li> </ul>   |                  | 27           |  |





| Scenario 3  |              |       |              |       |
|---|--------------|-------|--------------|-------|
| • A patient with SOB and suspected pleurisy   | Data<br>Item | Value | Data<br>Item | Value |
| presented for a CT of the chest. The CT scan of the chest and abdomen showed a right lung upper lobe                                    | сТ           | cT2a  | рТ           | cT2a  |
| mass, measuring less than 3cm, highly suspicious for malignancy.  | cT<br>Suffix |       | pT<br>Suffix |       |
| Also noted, was a massive right sided pleural effusion, obstructive pneumonitis, and atelect of the entire right lung                   | cN           | cN0   | рN           | cN0   |
| of the entire right long.   | сM           |       | рМ           |       |
| No lymphadenopathy or organomegaly. Additional staging work-up was negative.  | cStage       | pM1a  | pStage       | pM1a  |
| • A thoracentesis of the pleural effusion confirmed metastatic adenocarcinoma. The patient was treated with chemotherapy and radiation. | pM1a         |       |              |       |

|                     |                    |        | Let        | ′s Pl        | ay l               | Lung | Jeo | pardy | ۰! |
|---------------------|--------------------|--------|------------|--------------|--------------------|------|-----|-------|----|
| EDIBLE<br>HTME TIME | BOOKS<br>IN GERMAN | 3.44.8 | CHOP CHOP! | THEY SAID IT | THEY WERE<br>RIGHT |      |     |       |    |
| \$200               | \$200              | \$200  | \$200      | \$200        | NIGHT<br>\$200     |      |     |       |    |
| \$400               | \$400              | \$400  | \$400      | \$400        | \$400              |      |     |       |    |
| \$600               | \$600              | \$600  | \$600      | \$600        | \$600              |      |     |       |    |
| \$800               | \$800              | \$800  | \$800      | \$800        | \$800              |      |     |       |    |
| \$1000              | \$1000             | \$1000 | \$1000     | \$1000       | \$1000             |      |     |       |    |
| 21000               | \$1000             | \$1000 |            |              | \$1000             |      |     |       |    |





#### 2. The answer is: Pathologic Grade 3

- 1. Patient with lung biopsy revealing a poorly differentiated squamous cell carcinoma, patient with liver and bone metastasis seen on scans.
- 2. Patient with lung biopsy revealing a poorly differentiated squamous cell carcinoma, patient with suspected hilar node metastasis seen on scans, proceeded to treatment with Keytruda.
- 3. Patient with lung biopsy revealing a poorly differentiated squamous cell carcinoma, patient had resection of the primary tumor with anaplastic squamous cell carcinoma identified.
- 4. Patient with lung biopsy revealing a poorly differentiated squamous cell carcinoma, patient with liver and bone metastasis seen on scans, liver biopsy showed moderately differentiated squamous cell carcinoma.

Jeopardy-2



## 3. The answer is.... Lung Separate tumor nodules - 1

| Code | Description   |
|------|---|
| 0    | No separate tumor nodules; single tumor only  |
|      | Separate tumor nodules of same histologic type not identified/not present                                   |
|      | Intrapulmonary metastasis not identified/not present  |
|      | Multiple nodules described as multiple foci of adenocarcinoma in situ or minimally invasive adenocarcinoma  |
| 1    | Separate tumor nodules of same histologic type in ipsilateral lung, same lobe                               |
| 2    | Separate tumor nodules of same histologic type in ipsilateral lung, different lobe                          |
| 3    | Separate tumor nodules of same histologic type in ipsilateral lung, same AND different lobes                |
| 4    | Separate tumor nodules of same histologic type in ipsilateral lung, unknown if same or<br>different lobe(s) |
| 7    | Multiple nodules or foci of tumor present, not classifiable based on Notes 3 and 4                          |
| 8    | Not applicable: Information not collected for this case   |
|      | (If this item is required by your standard setter, use of code 8 will result in an edit error.)             |
| 9    | Not documented in medical record  |
|      | Primary tumor is in situ  |
|      | Separate Tumor Nodules not assessed or unknown if assessed Jeopardy-3                                       |



### 3. Lung Separate tumor nodules 1

- Patient presents for screening lung CT 2 nodules are identified in the RUL, resection revealed synchronous primary tumors (lepidic adenocarcinoma and acinar adenocarcinoma)
- Patient presents for screening lung CT 1 nodule identified in the RUL and one in the RLL, biopsies revealed synchronous primary tumors (lepidic adenocarcinoma and acinar adenocarcinoma)
- 3. Patient presents for screening lung CT 2 nodules are identified in the RUL, biopsy of the larger tumor revealed adenocarcinoma
- Patient presents for screening lung CT 1 nodule identified in the RUL and one in the RLL, biopsy of the RUL tumor revealed adenocarcinoma

Jeopardy-3

Lung







### 4. Tumor Size Summary 008

- 1. Patient with new lung nodules seen on CT chest in the RUL, 3 nodules measured as 8 cm, 4 cm and 2 cm, patient placed on Keytruda
- 2. Patient with new lung nodules seen on CT chest in the RUL, 2 nodules 8 mm and 6 mm, wedge resection performed with both nodules removed, pathology states 7 mm and 5 mm.
- 3. Patient with new lung nodules seen on CT chest in the RUL, one nodule was between 7 and 9 mm; the other was between 6 and 8 mm, patient given radiation.
- 4. Patient with new lung nodules seen on CT chest in the RUL, patient taken to surgery and had a right upper lobectomy, tumor size 8 cm and 1.4 cm.

Jeopardy-4













8. Histology: 8257/3 (minimally invasive mucinous adenocarcinoma)

1. Patient with a single tumor in the RUL: Biopsy report identifies a probable minimally invasive mucinous carcinoma; resection confirms mucinous carcinoma.

2. Patient with a single tumor in the RUL: Pathology report identifies a mucinous carcinoma and minimally invasive mucinous carcinoma.

3. Patient with a single tumor in the RUL: Pathology report identifies a mucinous adenocarcinoma with a minimally invasive pattern

4. Patient with a single tumor in the RUL: Pathology report identifies a minimally invasive adenocarcinoma and a mucinous adenocarcinoma.

Jeopardy-8

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| Lung Equivalent Terms and Definitions<br>C340-C343, C348, C349<br>(Excludes lymphoma and leukemia M9590 – M9992 and Kaposi sarcoma M9140)   |   |  |  |  |  |
|---|---|--|--|--|--|
| Specific or NOS Histology Term and<br>Code  | Synonym of Specific or<br>NOS   | Subtype/variant of NOS and Code  |  |  |  |
| Adenocarcinoma \$140<br>Note 1: Mucinous adenocarcinoma for lung<br>only is coded as follows:<br>• \$253/3* when<br>• Behavior unknown/not documented<br>(use staging form to determine<br>behavior when available)<br>• Invasive<br>• \$257/3* when<br>• Microinvasive<br>• Minimally invasive<br>• \$253/2* when<br>• Preinvasive<br>• In situ<br>Note 2: Non-mucinous adenocarcinoma for<br>lung only is coded as follows:<br>• \$256/3* when<br>• Microinvasive<br>• Microinvasive<br>• Microinvasive<br>• Microinvasive<br>• Microinvasive<br>• Microinvasive<br>• Microinvasive<br>• Microinvasive<br>• Microinvasive<br>• Minimally invasive | Adenocarcinoma NOS<br>Adenocarcinoma in situ<br>8140/2<br>Adenocarcinoma invasive<br>8140/3<br>Adenocarcinoma, non-<br>mucinous, NOS<br>Minimally invasive<br>adenocarcinoma 8140/3 | Acinar adenocarcinoma/adenocarcinoma, acinar<br>predominant (for lung only) 8551*<br>Adenoid cystic/adenocystic carcinoma 8200<br>Colloid adenocarcinoma 8480<br>Enteric adenocarcinoma/pulmonary intestinal-type<br>adenocarcinoma 8144<br>Fetal adenocarcinoma/adenocarcinoma, lepidic<br>predominant 8250/3*<br>Mucinous carcinoma/adenocarcinoma<br>(for lung only)<br>in situ 8253/3*<br>minimally invasive 8257/3*<br>microinvasive 8257/3*<br>preinvasive 8253/2*<br>Micropapillary adenocarcinoma/adenocarcinoma,<br>micropapillary predominant 8265<br>Mixed invasive mucinous and<br>non-mucinous adenocarcinoma 8254* |  |  |  |

# 9. Summary Stage 2018-3 Regional to Lymph Nodes

1. Patient presents with cough, Chest CT revealed a RUL mass and atelectasis extending to the hilar region.

2. Patient presents with cough, Chest CT revealed a RUL mass with invasion of the parietal pleura

3. Patient presents with cough, Chest CT revealed a RUL mass and superior vena cava syndrome.

4. Patient presents with cough, Chest CT revealed no evidence of tumor in the lungs, but malignant cells in the bronchial washings.

Jeopardy-9

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### Summary Stage Notes

- Note 6: Separate ipsilateral tumor nodules of the same histopathological type (intrapulmonary metastases) are coded either regional (code 2) for same lobe or distant (code 7) for different ipsilateral lobe or contralateral lung.
- Note 7: "Vocal cord paralysis," "superior vena cava syndrome," and "compression of the trachea or the esophagus" are classified as mediastinal lymph node involvement (code 3) unless there is a statement of involvement by direct extension from the primary tumor.
- Note 8: Most pleural and pericardial effusions with lung cancer are due to tumor. In a few patients, however, multiple cytopathological examinations of pleural and/or pericardial fluid are negative for tumor, and the fluid is nonbloody and is not an exudate. Where these elements and clinical judgment dictate that the effusion is not related to the tumor, the effusion should be excluded as a staging element.
- Note 9: Occult carcinoma occurs when tumor is proven by the presence of malignant cells or bronchial washings, but there is no other evidence of the tumor. These cases are coded as unknown (code 9).

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