

VLM Multi-Model Comparison Report

Dataset:

progression_recurrence_survival_1yr_2yr_3yr_4yr_5yr_v1_1

Subtask: died_of_cancer_1_yr

Question:

Based on the provided medical history and cancer evidence, is cancer-related mortality expected within 1 year of treatment initiation?

Correct Answer: No

Model: OpenGVLab/InternVL3_5-8B

middle image from each view: [INCORRECT] <The patient was diagnosed with lung adenocarcinoma, clinical stage T3 N0 M0, indicating a localized tumor without lymph node involvement or distant metastasis. The treatment plan included surgery, which was tentatively scheduled. The patient's overall condition appears stable, with no immediate signs of severe complications or metastatic disease. The patient's age and general health status also suggest a reasonable prognosis for surgical intervention. Given the stage and treatment plan, cancer-related mortality within 1 year of treatment initiation is not expected.> | No

middle axial image: [INCORRECT] <The patient was diagnosed with lung adenocarcinoma, clinical stage T3 N0 M0, indicating a localized tumor without lymph node involvement or distant metastasis. The treatment plan included surgery, which was tentatively scheduled. The patient's overall condition appears stable, with no immediate signs of severe complications or metastatic disease. The patient's age and general health status also suggest a reasonable prognosis for surgical intervention. Given the stage and treatment plan, cancer-related mortality within 1 year of treatment initiation is not expected.> | No

no image: [INCORRECT] <The patient was diagnosed with lung adenocarcinoma, clinical stage T3 N0 M0, indicating a localized tumor without lymph node involvement or distant metastasis. The patient's recent PET and CT scans showed an interval increase in ground-glass nodules and consolidation, suggesting disease progression. However, the patient's overall condition appears stable, with no acute distress or significant symptoms. The treatment plan includes antibiotics and a follow-up CT scan, indicating a cautious approach to managing the disease. Given the stage and the patient's response to treatment, cancer-related mortality within 1 year of treatment initiation is not expected based on the current evidence.> | No

no radiology report: [INCORRECT] <brief reasoning trace with explanation for label selection>: The patient has a diagnosis of malignant neoplasm of the bronchus and lung, with staging indicating T1 N1 M0, which suggests a localized cancer with regional lymph node involvement but no distant metastasis. The treatment appears to involve imaging and possibly

other oncological assessments, but there is no explicit mention of aggressive treatment like chemotherapy or radiotherapy that would typically be associated with a high risk of mortality within a year. The patient's vital signs and other observations do not indicate immediate life-threatening conditions. Therefore, based on the provided timeline and evidence, cancer-related mortality within one year of treatment initiation is not expected. | No |

100 axial images (no timeline): [INCORRECT] <brief reasoning trace with explanation for label selection> | <label> The CT images show multiple metastatic lesions throughout the body, indicating advanced-stage cancer. The presence of widespread metastases typically suggests a poor prognosis, especially if the cancer has not responded well to initial treatments. Given the extensive nature of the disease and the typical aggressive behavior of metastatic cancer, it is reasonable to expect cancer-related mortality within 1 year of treatment initiation. | Yes

Model: OctoMed/OctoMed-7B

middle image from each view: [CORRECT] <think>First, I need to determine whether the patient's cancer-related mortality is expected within one year of treatment initiation based on the provided medical history and imaging findings. The patient is a 61-year-old female diagnosed with left lower lobe adenocarcinoma of the lung. The tumor is T1N0M0 (no nodal involvement or metastasis evident on imaging). She underwent a PET-CT which showed no metastatic disease, and the biopsy confirmed adenocarcinoma. She has a history of DCIS treated with lumpectomy and tamoxifen, and currently is on menopausal hormone therapy. Key factors to consider for prognosis and mortality risk: - Tumor stage: T1N0M0 suggests early-stage lung cancer. - No evidence of nodal involvement or distant metastasis. - She is undergoing lobectomy as planned, which is standard for early-stage lung cancer. - No mention of high-risk features such as positive margins, lymphovascular invasion, or poor differentiation. - She has comorbidities including asthma, hypothyroidism, and a history of Crohn's disease, but these do not directly impact lung cancer prognosis. - The patient is active and has no significant symptoms like weight loss or night sweats, which would suggest more aggressive disease. - The PET-CT showed no FDG avidity outside the primary tumor, indicating no aggressive metastatic spread. - The patient's overall health status appears stable, with no acute distress noted on physical exam. Given these factors, the patient's cancer is localized and she is undergoing curative-intent surgery. The absence of nodal involvement or metastasis suggests a favorable prognosis. The decision to proceed with lobectomy indicates that the tumor is resectable and there is no evidence of advanced disease. Therefore, the likelihood of cancer-related mortality within one year is low. The options are "Yes" or "No" for whether cancer-related mortality is expected within one year. Based on the information, the answer is "No" because the patient has early-stage disease without high-risk features and is undergoing appropriate treatment.</think> <brief reasoning trace with explanation for label selection | <label> </think> <answer>No</answer>

middle axial image: [CORRECT] <think>First, I need to determine whether the patient's cancer-related mortality is expected within one year of treatment initiation based on the provided timeline and medical records. The patient has a diagnosis of left lower lobe adenocarcinoma of the lung, confirmed by biopsy. The tumor is T1N0M0 (no nodal involvement or metastasis evident on imaging). The patient underwent a PET-CT which showed no metastatic disease, and the MRI brain also showed no metastases. The treatment plan includes lobectomy, which is standard for early-stage lung cancer. Key factors to consider for prognosis and mortality risk: - Stage of cancer: T1N0M0, which is early stage. - No evidence of nodal involvement or distant metastasis. - Patient is undergoing surgical resection (lobectomy), which is curative intent. - No mention of high-risk features such as positive margins, lymphovascular invasion, or poor performance status. - Patient has comorbidities (asthma, hypothyroidism, history of Crohn's disease), but these do not directly impact cancer prognosis. - The patient is on menopausal hormone therapy, but this is not directly related to lung cancer mortality. - The

timeline shows the patient is being evaluated and scheduled for surgery, indicating treatment is planned and likely to be initiated soon. Given the early stage and absence of metastatic disease, the prognosis is generally favorable with appropriate treatment. The patient's overall health status and the planned surgical intervention suggest that cancer-related mortality within one year is unlikely. Therefore, based on the provided information, the answer is "No."

</think>
<brief reasoning trace with explanation for label selection | <label> </brief reasoning trace with explanation for label selection | <label> <answer>No</answer> </answer></think>

no image: [CORRECT] <think>First, I need to determine if the patient's cancer-related mortality is expected within one year based on the provided timeline. The key factors to consider include the cancer stage, treatment details, and any evidence of metastasis or recurrence. Looking at the timeline, the patient was diagnosed with left lower lobe adenocarcinoma of the lung. The PET-CT showed a 2.2 cm nodule with SUV max 4.9, indicating metabolic activity consistent with malignancy. There were no signs of nodal involvement or distant metastasis at that time. The patient underwent a CT-guided FNA and core biopsy confirming adenocarcinoma. The patient's history includes DCIS treated with lumpectomy and tamoxifen, but no recurrence. She has a history of smoking and asthma, but no recent symptoms suggesting advanced disease. The tumor was localized (T1) without nodal involvement (N0), and no evidence of metastasis (M0) based on the imaging studies. The treatment plan includes lobectomy, which is standard for early-stage lung cancer. The patient is scheduled for surgery, and there is no indication of aggressive disease progression or poor prognostic factors like high-grade tumors, extensive nodal involvement, or distant metastases. The FRAX score and other factors do not suggest imminent mortality within a year. Given the absence of high-risk features and the current staging (T1N0M0), the likelihood of cancer-related mortality within one year is low. The patient is being managed with curative intent, and the timeline does not show any signs of rapid progression or complications that would lead to death within a year.</think> <brief reasoning trace with explanation for label selection> | <label> The patient's timeline indicates a newly diagnosed T1N0M0 lung adenocarcinoma with no evidence of nodal involvement or metastasis. The PET-CT and MRI findings do not show aggressive disease progression, and the treatment plan includes curative intent surgery (lobectomy). There are no documented signs of rapid progression, metastasis, or high-risk features that would suggest imminent cancer-related mortality within one year. The patient's overall health status and staging support a low likelihood of mortality within this timeframe. </brief reasoning trace with explanation for label selection> | <label> No</label></think> <answer>No</answer>

no radiology report: [CORRECT] <think>First, I carefully examine the provided CT images and the associated timeline data to assess the patient's condition and treatment history. The images show axial CT scans of the chest and pelvis, with no clear evidence of metastatic disease or recurrence. The patient's timeline includes multiple visits and procedures, but no indication of cancer progression or treatment failure is evident. The patient's lung fields appear clear, and there is no visible tumor or abnormality suggesting recurrence. The patient's overall health status, as inferred from the clinical notes, does not indicate any signs of cancer-related mortality risk within the first year. Therefore, based on the available data, the most appropriate answer is "No."</think> <answer>No</answer>

100 axial images (no timeline): [CORRECT] <think>First, I note that the question asks whether cancer-related mortality is expected within 1 year of treatment initiation. This requires me to assess the patient's prognosis based on their timeline and available data. Looking at the provided image, it is a CT scan of the pelvis, showing bony structures, soft tissues, and some metallic implants or hardware. The scan does not provide direct evidence of tumor size, location, or metastasis. There is no visible tumor mass or lymphadenopathy in this image. The presence of hardware suggests prior surgical intervention, possibly for trauma or tumor resection. However, the image alone does not provide sufficient information to determine the stage of cancer, the type of cancer, or the treatment history. Without additional clinical data such as tumor stage, histology, treatment modalities (chemotherapy, radiation, surgery), and

follow-up outcomes, it is impossible to assess the risk of cancer-related mortality within one year. Since the question is based solely on the provided PATIENT_TIMELINE, and no timeline data is given here, I cannot make a definitive judgment. The image does not show any clear signs of advanced disease or metastasis that would strongly suggest a high risk of mortality within a year. Therefore, without further clinical context, the safest and most accurate answer is "No," as there is no evidence in the image to support a high likelihood of cancer-related mortality within one year.</think> <answer>No</answer>

Model: Qwen/Qwen3-VL-8B-Instruct

middle image from each view: [INCORRECT] No | The patient's timeline shows a diagnosis of lung adenocarcinoma with progressive disease (increased ground-glass nodules and consolidation on CT scans) and a clinical stage of T3 N0 M0. However, the timeline does not contain any evidence of treatment initiation (e.g., surgery, chemotherapy, radiation) or any documented events that would indicate cancer-related mortality within 1 year of treatment. The patient's condition is being managed with antibiotics and follow-up imaging, and there is no record of treatment being started or of death occurring. Therefore, based on the provided evidence, cancer-related mortality within 1 year of treatment initiation is not expected.

middle axial image: [INCORRECT] The patient is a 75-year-old male with a newly diagnosed right lower lobe lung adenocarcinoma (clinical stage T3 N0 M0). The timeline shows progressive disease: initial imaging in September 2015 suggested a mass, and subsequent PET-CT scans in November 2015 showed interval increase in ground-glass nodules, consolidation, and FDG uptake, consistent with progressive lung adenocarcinoma. The patient was scheduled for surgery but the plan was deferred due to disease progression. The timeline does not indicate initiation of any cancer treatment (e.g., chemotherapy, radiation, targeted therapy) or surgery. The question asks whether cancer-related mortality is expected within 1 year of treatment initiation. Since no treatment has been initiated, and the disease is progressive with a T3 stage (large tumor) in a 75-year-old patient, the expected mortality within 1 year of treatment initiation is high. However, the timeline does not provide evidence of treatment initiation, so the question is not answerable based on the provided data. The timeline only shows diagnosis and staging, not treatment. Therefore, the correct answer is "No" because the patient has not yet started treatment, and the question is about mortality after treatment initiation, which has not occurred. No

no image: [CORRECT] The patient, a 75-year-old male, was diagnosed with right lower lobe lung adenocarcinoma in October 2015. By November 2015, imaging (CT and PET-CT) showed progressive disease with increasing ground-glass nodules, consolidation, and lymphadenopathy. Despite initial plans for surgery, the tumor board recommended delaying surgery due to disease progression. The patient was started on antibiotics for suspected infection, but imaging continued to show worsening disease. No definitive treatment (e.g., chemotherapy, radiation) was initiated within the timeline, and the patient's condition was described as "concerning for worsening of disease" with no evidence of response to antibiotics. The timeline does not show any curative or disease-modifying treatment being administered within the first year of diagnosis. Given the advanced stage (T3 N0 M0 with progression), lack of effective treatment initiation, and absence of any documented improvement or stabilization, cancer-related mortality within 1 year of treatment initiation is expected. Yes

no radiology report: [CORRECT] The patient's medical timeline indicates a diagnosis of malignant neoplasm of the bronchus and lung (ICD9CM/162.9) in April 2013, with a subsequent clinical staging of cT1N1M0 (AJCC 7th Edition) on May 2, 2013. This staging corresponds to Stage II (T1N1M0) lung cancer. The timeline includes imaging (CT chest, PET-CT) and clinical assessments, but there is no evidence of treatment initiation or any documentation of survival status beyond the timeline provided. The question asks whether cancer-related mortality is expected within 1 year of treatment initiation. Since the timeline does not provide information on

treatment initiation or patient survival, it is impossible to determine if cancer-related mortality is expected within 1 year. The provided evidence does not support a definitive "Yes" or "No" answer. No | No

100 axial images (no timeline): [CORRECT] The provided PATIENT_TIMELINE consists solely of a series of CT scan images showing anatomical structures from the pelvis to the head, with no clinical data, diagnosis, treatment plan, staging, biomarker results, or any mention of cancer. There is no evidence of cancer, nor any indication of cancer-related mortality risk. Therefore, it is not possible to determine if cancer-related mortality is expected within 1 year of treatment initiation based on this timeline. No | No

Model: google/medgemma-1.5-4b-it

middle image from each view: [INCORRECT] <brief reasoning trace with explanation for label selection> | <label> The patient has a history of lung adenocarcinoma diagnosed in May 2013. The tumor is classified as T1N0M0 based on the provided clinical information. The patient underwent lobectomy for the tumor. The patient has a history of asthma and is currently on maintenance therapy. The patient has undergone pulmonary function testing (PFT) with DLCO on May 8, 2013, which is consistent with the need for assessing lung function in a patient with lung cancer. The PFT results are not provided, but the test itself is a standard part of the workup for lung cancer. The patient's clinical status is stable, and there is no mention of disease progression or complications. Therefore, cancer-related mortality within 1 year is not expected. No | Cancer-related mortality is not expected within 1 year of treatment initiation.

middle axial image: [INCORRECT] <brief reasoning trace with explanation for label selection> | <label> The patient has a history of lung adenocarcinoma diagnosed in May 2013. The pathology report confirms adenocarcinoma and provides immunohistochemistry (IHC) results: TTF-1 negative and napsin A positive. The patient underwent a CT-guided biopsy and subsequent lobectomy. The clinical presentation includes a history of asthma and allergies, which are relevant for assessing pulmonary function. The patient underwent pulmonary function testing (PFT) with DLCO on May 8, 2013. The PFT results show a normal DLCO (diffusing capacity of the lungs for carbon monoxide) of 15.5 (normal range is typically 60-100% of predicted). This indicates no significant impairment in gas exchange. The patient's history of asthma and allergies, along with the normal PFT results, suggests that the lung cancer is not significantly impacting her respiratory function. Therefore, cancer-related mortality within 1 year is not expected. No | Yes

no image: [INCORRECT] <brief reasoning trace with explanation for label selection> | <label> The patient has a history of lung adenocarcinoma diagnosed in May 2013. The pathology report confirms adenocarcinoma and IHC results (TTF-1 negative, Bernier A positive) are consistent with lung origin. The clinical staging indicates T1N0M0 disease based on imaging (CT chest, PET-CT, MRI brain) and clinical assessment. The patient is scheduled for lobectomy, which is the standard treatment for early-stage lung cancer like T1N0M0. Therefore, cancer-related mortality within 1 year is not expected. No | Yes

no radiology report: [INCORRECT] The patient has a history of malignant neoplasm of bronchus and lung, unspecified, diagnosed in 2013. The patient has undergone multiple imaging studies including CT chest and PET scan, as well as a chest tube placement and removal. The patient has also had spirometry and bronchodilation responsiveness testing. The patient's BMI is 26.5, which is overweight. The patient's vital signs are within normal limits. The patient has no documented evidence of disease progression or recurrence. The patient has been followed up with imaging and clinical assessments. There is no evidence of metastatic disease or treatment failure. The patient has been managed with asthma medications. The patient has no evidence of active cancer. The patient has a history of malignancy (lung cancer). The patient has undergone multiple imaging studies including CT chest and PET scan, as well

[illegible]

100 axial images (no timeline): [INCORRECT] FINDINGS: - Chest X-ray: No evidence of metastatic disease. - CT Chest: No evidence of metastatic disease. - CT Abdomen/Pelvis: No evidence of metastatic disease. - PET/CT: No evidence of metastatic disease. - Biopsy: Breast

[illegible]

underwent bilateral axillary biopsy. - Clinical History:

Model: *google/medgemma-4b-it*

middle image from each view: [CORRECT] No

middle axial image: [CORRECT] No

no image: [CORRECT] No

no radiology report: [CORRECT] No

100 axial images (no timeline): [CORRECT] The images show a complete and homogeneous opacity within the abdominal cavity, suggesting a well-defined mass. The presence of a mass within the abdominal cavity, along with the imaging characteristics, could be indicative of a tumor. However, without further information about the patient's history, staging, and treatment plan, it is impossible to determine the expected cancer-related mortality within one year. No

Subtask: died_of_cancer_2_yr

Question:

Based on the provided medical history and cancer evidence, is cancer-related mortality expected within 2 years of treatment initiation?

Correct Answer: No

Model: OpenGVLab/InternVL3_5-8B

middle image from each view: [CORRECT] <Based on the provided medical timeline, the patient was diagnosed with a large cell neuroendocrine carcinoma, which is a high-grade malignancy. The staging indicated N2 and T4, suggesting regional lymph node involvement and a large primary tumor. The patient's performance status (ECOG 1) indicates they are ambulatory but have some symptoms. Given the advanced stage and high-grade nature of the tumor, cancer-related mortality within 2 years of treatment initiation is a significant concern. High-grade neuroendocrine carcinomas are aggressive, and the presence of lymph node involvement (N2) and a large tumor (T4) further supports a poorer prognosis.> | Yes

middle axial image: [CORRECT] <Based on the provided medical history, the patient was diagnosed with a large cell neuroendocrine carcinoma of the lung, classified as Stage 3B with N2 involvement and T4 tumor size. The patient's treatment plan involves further testing to determine the extent of the disease, followed by either chemoradiotherapy (CRT) for limited stage disease or combination chemotherapy plus immunotherapy for extensive stage disease. Given the advanced stage and aggressive nature of the tumor, cancer-related mortality within 2 years of treatment initiation is a significant concern. The patient's history of smoking and the presence of lymphadenopathy further support the likelihood of a poor prognosis.> | Yes

no image: [INCORRECT] <brief reasoning trace with explanation for label selection> | <label> The patient was diagnosed with a large cell neuroendocrine carcinoma, which is a high-grade malignancy. The staging indicated as Stage 3B with N2 involvement, suggesting regional lymph node metastasis. The treatment plan discussed includes further testing to determine if the disease is limited or extensive stage, with potential treatment involving chemotherapy and radiation. Given the aggressive nature of the tumor and the stage, cancer-related mortality within 2 years of treatment initiation is a significant concern. The patient's overall health, including comorbidities like atrial fibrillation and hypertension, may also impact prognosis. Therefore, based on the stage and tumor biology, cancer-related mortality is expected within 2 years. | No

no radiology report: [CORRECT] <brief reasoning trace with explanation for label selection>: The patient has a diagnosis of a malignant neoplasm of the bronchus and lung, staged as T1 N1 M0, which indicates a localized cancer with regional lymph node involvement but no distant metastasis. The treatment plan appears to involve imaging and possibly other oncological interventions. Given the stage and typical prognosis for such cancers, cancer-related mortality within 2 years of treatment initiation is not expected based on the staging and treatment context provided. | No

100 axial images (no timeline): [INCORRECT] <brief reasoning trace with explanation for label selection> | <label> The CT images show multiple metastatic lesions throughout the body, indicating advanced-stage cancer. The presence of widespread metastases typically suggests a poorer prognosis and higher likelihood of cancer-related mortality within a short timeframe, such as 2 years from treatment initiation. | Yes

Model: OctoMed/OctoMed-7B

middle image from each view: [INCORRECT] <think>First, I need to determine whether the patient's cancer-related mortality is expected within 2 years of treatment initiation based on the provided medical history and imaging findings. The patient is a 61-year-old female diagnosed with left lower lobe adenocarcinoma of the lung. The tumor is T1N0M0 (no nodal involvement or metastasis evident on imaging). She underwent a PET-CT which showed no metastatic disease, and the biopsy confirmed adenocarcinoma. She has a history of DCIS treated with lumpectomy and tamoxifen, and no recent recurrence. She is currently on menopausal hormone therapy. The key factors to consider for prognosis and mortality risk include: - Tumor stage: T1N0M0 suggests early-stage disease. - No evidence of nodal involvement or distant metastasis. - No significant comorbidities mentioned that would drastically affect survival. - She is active and able to perform moderate exercise. - No mention of aggressive tumor biology or high-risk features beyond the primary tumor. The imaging and pathology findings do not indicate advanced disease or high-risk features that would suggest a high likelihood of mortality within 2 years. The treatment plan includes lobectomy and possibly mediastinal node sampling, which is standard for early-stage lung cancer. The absence of nodal involvement and metastasis on imaging supports a favorable prognosis. Therefore, based on the available data, there is no clear evidence to suggest cancer-related mortality within 2 years of treatment initiation.</think>
<brief reasoning trace with explanation for label selection | <label> </think> <answer> | No </answer>

[illegible]

disease or recurrence. The patient's timeline includes multiple visits and procedures, including imaging and oxygen therapy, but no indication of cancer progression or recurrence is evident. The patient's treatment appears to be stable, with no signs of complications or deterioration. Based on the available data, there is no evidence suggesting cancer-related mortality within 2 years of treatment initiation.</think> <answer>No</answer>

100 axial images (no timeline): [CORRECT] <think>First, I observe the provided image, which is a CT scan slice. The image shows a cross-sectional view of the pelvis, including the bony structures, soft tissues, and some metallic implants or hardware visible bilaterally. The scan does not show the lungs or brain, but rather the pelvic region. This suggests the focus is on the pelvis, possibly related to cancer treatment in that area. Next, I consider the question: "Is cancer-related mortality expected within 2 years of treatment initiation?" This requires knowledge of the patient's cancer type, stage, treatment, and outcomes. However, the image alone does not provide sufficient clinical data such as tumor stage, histology, treatment details, or survival data. The image shows post-treatment changes, but no direct evidence of recurrence or metastasis is visible here. Since the question is about cancer-related mortality within 2 years, I must rely on the patient's timeline data, which is not provided in the image or description. Without clinical details, I cannot definitively conclude whether cancer-related mortality is expected within 2 years. Therefore, based on the lack of sufficient clinical data in the image and timeline, the most appropriate answer is "No," as there is no evidence in the image to suggest cancer-related mortality within 2 years.</think> <answer>No</answer>

Model: Qwen/Qwen3-VL-8B-Instruct

middle image from each view: [INCORRECT] The patient's cancer is diagnosed as a large cell neuroendocrine carcinoma (LCNEC), which is a high-grade malignancy. The clinical stage is described as "Limited stage small cell Lung cancer (Mixed large cell NET)" based on initial imaging, but the pathology report indicates LCNEC. The imaging (CT chest) shows extensive mediastinal lymphadenopathy and left upper lobe consolidation, which is consistent with advanced disease. The patient has a significant 30-year smoking history, a major risk factor for lung cancer. The timeline shows the patient was diagnosed in July 2019 and was immediately referred for oncology evaluation. The plan included PET/CT and thoracentesis to determine if the disease was limited or extensive stage. However, the timeline does not provide evidence of treatment initiation or any subsequent clinical events. The question asks if cancer-related mortality is expected within 2 years of treatment initiation. Since no treatment has been initiated and no follow-up data is provided, it is impossible to determine the expected mortality. The timeline only provides the initial diagnosis and staging, not the outcome or treatment response. No

middle axial image: [INCORRECT] The patient's cancer is diagnosed as "Clinical Limited stage small cell Lung cancer (Mixed large cell NET)" based on imaging and biopsy findings. The stage is cT4N2M0 (AJCC 8th Edition), which corresponds to Stage 3B. The note explicitly states that the patient is "Clinical Limited stage" and that the plan is to proceed with "CRT" (chemoradiation therapy) if the PET/CT and thoracentesis are unremarkable. The note also indicates that the patient is "ECOG 1" (performance status 1), which is favorable. The patient's age is 64, and he has a 30-year smoking history but quit 11.5 years ago. The imaging (CT chest) shows mediastinal lymphadenopathy and left upper lobe consolidation, but no evidence of distant metastases on initial imaging or brain MRI. The plan is to confirm limited stage with further testing before initiating definitive therapy. The prognosis for limited stage SCLC is generally better than extensive stage, and with appropriate treatment, many patients achieve long-term survival. The patient's performance status and lack of distant metastases at initial diagnosis are favorable prognostic factors. Therefore, cancer-related mortality within 2 years of treatment initiation is not expected. No

no image: [CORRECT] The patient has a diagnosis of large cell neuroendocrine carcinoma (LCNEC) of the lung, with clinical stage 3B (cT4N2M0) based on imaging and biopsy findings. The tumor is high-grade (Grade 3), and the patient has a significant smoking history (30 pack-years). While the initial assessment suggests limited-stage disease, the presence of a left pleural effusion and mediastinal lymphadenopathy raises concern for possible extrathoracic spread. The oncology note explicitly states that the patient's disease is "Clinical Limited stage small cell Lung cancer (Mixed large cell NET)" and that further testing (PET/CT and thoracentesis) is needed to confirm limited vs. extensive stage. However, the note also indicates that if the disease is found to be extensive, the patient will be offered combination chemotherapy plus ICI — a regimen typically reserved for advanced disease. Importantly, the note does not indicate that the patient has received definitive treatment yet. The plan is to proceed with CRT if limited stage is confirmed, but the patient's disease is not yet definitively staged. Given the high-grade histology, advanced stage (3B), and the fact that the patient has not yet received definitive treatment, cancer-related mortality within 2 years is highly likely. Additionally, the patient's age (64 years), significant smoking history, and high-grade tumor biology (LCNEC) are all independent predictors of poor prognosis. The absence of brain metastases is a positive factor, but the stage and histology are more critical. Therefore, based on the provided evidence, cancer-related mortality within 2 years is expected. Yes

no radiology report: [CORRECT] The patient's medical timeline indicates a diagnosis of malignant neoplasm of the bronchus and lung (ICD9CM/162.9) in April 2013, with a subsequent clinical staging of cT1N1M0 (AJCC 7th Edition) on May 2, 2013. This staging corresponds to Stage II (T1N1M0) lung cancer. The timeline includes imaging (CT chest, PET-CT) and clinical assessments, but there is no evidence of treatment initiation or any documentation of survival beyond the 2-year mark. The timeline ends with a series of outpatient visits and observations, with no indication of treatment completion or long-term follow-up. Without evidence of treatment initiation or survival data, it is not possible to determine if cancer-related mortality is expected within 2 years. The question asks for a binary "Yes" or "No" based on the provided evidence, and the evidence does not support a definitive "Yes" or "No" conclusion. No | No

100 axial images (no timeline): [CORRECT] The provided PATIENT_TIMELINE consists solely of a series of CT scan images showing anatomical structures from the pelvis to the head, without any accompanying clinical data, pathology reports, treatment plans, staging information, or documented outcomes. There is no evidence of cancer diagnosis, no description of tumor characteristics, no treatment history, and no prognostic information. Therefore, it is impossible to determine whether cancer-related mortality is expected within 2 years of treatment initiation. No | No

Model: google/medgemma-1.5-4b-it

middle image from each view: [INCORRECT] <brief reasoning trace with explanation for label selection> | <label> The patient has a history of lung adenocarcinoma diagnosed in May 2013. The tumor is classified as T1N0M0 based on the provided clinical information. The patient underwent lobectomy for the tumor. The patient has a history of asthma and is currently on inhaled oxygen. The patient has undergone pulmonary function testing (PFT) with DLCO and spirometry with bronchodilation responsiveness. The PFT results show a reduced diffusing capacity (DLCO) of 45% of predicted, which is consistent with the patient's history of asthma and potential underlying lung disease. The spirometry results show a significant improvement in FEV1 after bronchodilator administration, indicating reversible airway obstruction, which is typical for asthma. The patient's clinical presentation and test results do not suggest a high risk of recurrence or mortality within the next two years. No | Yes

middle axial image: [INCORRECT] <brief reasoning trace with explanation for label selection> | <label> The patient has a history of lung adenocarcinoma diagnosed in May 2013. The pathology report confirms adenocarcinoma and provides immunohistochemistry (IHC) results:

TTF-1 negative and Bernier A positive. The patient underwent a lobectomy in May 2013. The clinical stage is T1N0M0 based on the imaging findings (CT chest, PET-CT, MRI brain) and the pathology report. The patient has no evidence of nodal involvement (N0) or distant metastasis (M0). Therefore, the patient's cancer-related mortality is not expected within 2 years of treatment initiation. No | Yes

no image: [INCORRECT] <brief reasoning trace with explanation for label selection> | <label>
The patient has a history of lung adenocarcinoma diagnosed in May 2013. The pathology report confirms adenocarcinoma and IHC results (TTF-1 negative, Bernier A positive) are consistent with lung origin. The clinical staging indicates T1N0M0 disease based on imaging (CT chest, PET-CT, MRI brain) and clinical assessment. The patient is scheduled for lobectomy, which is the standard treatment for early-stage lung cancer like T1N0M0. Therefore, cancer-related mortality within 2 years is not expected. No | Yes

no radiology report: [INCORRECT] The patient has a history of malignant neoplasm of bronchus and lung, unspecified, diagnosed in 2013. The patient has undergone multiple imaging studies including CT chest and PET scan, as well as a chest tube placement and removal. The patient has also had spirometry and bronchodilation responsiveness testing. The patient's BMI is 26.5, which is overweight. The patient's vital signs are within normal limits. The patient has no documented evidence of disease progression or recurrence. The patient has been followed up with imaging and clinical assessments. There is no evidence of metastatic disease or treatment failure. The patient has been managed with asthma medications. The patient has no evidence of active cancer. The patient has a history of malignancy (lung cancer). The patient has undergone multiple imaging studies including CT chest and PET scan, as well as a chest tube placement and removal. The patient has also had spirometry and bronchodilation responsiveness testing. The patient's BMI is 26.5, which is overweight. The patient's vital signs are within normal limits. The patient has no documented evidence of disease progression or recurrence. The patient has been followed up with imaging and clinical assessments. There is no evidence of metastatic disease or treatment failure. The patient has been managed with asthma medications. The patient has no evidence of active cancer. The patient has a history of malignancy (lung cancer). The patient has undergone multiple imaging studies including CT chest and PET scan, as well as a chest tube placement and removal. The patient has also had spirometry and bronchodilation responsiveness testing. The patient's BMI is 26.5, which is overweight. The patient's vital signs are within normal limits. The patient has no documented evidence of disease progression or recurrence. The patient has been followed up with imaging and clinical assessments. There is no evidence of metastatic disease or treatment failure. The patient has been managed with asthma medications. The patient has no evidence of active cancer. The patient has a history of malignancy (lung cancer). The patient has undergone multiple imaging studies including CT chest and PET scan, as well as a chest tube placement and removal. The patient has also had spirometry and bronchodilation responsiveness testing. The patient's BMI is 26.5, which is overweight. The patient's vital signs are within normal limits. The patient has no documented evidence of disease progression or recurrence. The patient has been followed up with imaging and clinical assessments. There is no evidence of metastatic disease or treatment failure. The patient has been managed with asthma medications. The patient has no evidence of active cancer. The patient has a history of malignancy (lung cancer). The patient has undergone multiple imaging studies including CT chest and PET scan, as well as a chest tube placement

[illegible]

Model: google/medgemma-4b-it

middle image from each view: [CORRECT] No

middle axial image: [CORRECT] No

no image: [CORRECT] No

no radiology report: [CORRECT] No

100 axial images (no timeline): **[CORRECT]** The images show a well-defined, homogeneous mass within the pelvis. The surrounding tissues appear normal. There is no evidence of invasion or metastasis. The patient has undergone a complete course of treatment. Based on the provided information, there is no evidence of cancer-related mortality within 2 years of treatment initiation. No

Subtask: died_of_cancer_3_yr

Question:

Based on the provided medical history and cancer evidence, is cancer-related mortality expected within 3 years of treatment initiation?

Correct Answer: No

Model: OpenGVLab/InternVL3_5-8B

middle image from each view: **[INCORRECT]** <brief reasoning trace with explanation for label selection>: The patient has a history of malignant neoplasms in multiple locations within the lungs and trachea, indicating advanced and multifocal disease. The presence of hypermetabolic activity in multiple areas suggests aggressive disease. The treatment plan involves radiation therapy, but the extensive nature of the disease and the multiple sites of involvement suggest a poor prognosis. Given the advanced stage and multifocal nature of the cancer, cancer-related mortality within 3 years of treatment initiation is expected. | <label> Yes

middle axial image: **[INCORRECT]** <brief reasoning trace with explanation for label selection>: The patient has a history of malignant neoplasms in multiple locations within the lungs and trachea, indicating advanced disease. The imaging notes suggest multifocal disease recurrence and hypermetabolic activity, which are concerning for aggressive cancer behavior. Given the advanced stage and multifocal nature of the disease, cancer-related mortality within 3 years of treatment initiation is expected. | <label> Yes

no image: **[CORRECT]** <The patient's medical timeline indicates a diagnosis of malignant neoplasms in multiple locations within the lungs and trachea, with a history of EGFR mutant lung adenocarcinoma and metastatic disease. The PET/CT scan findings suggest multifocal disease recurrence and the presence of new primary lung adenocarcinomas. The treatment plan involves radiation therapy, but the presence of multifocal disease and metastatic involvement typically indicates a poorer prognosis. Given the advanced stage and multifocal nature of the disease, cancer-related mortality within 3 years of treatment initiation is expected.> | <Yes>

no radiology report: **[CORRECT]** <brief reasoning trace with explanation for label selection>: The patient has a diagnosis of malignant neoplasm of the bronchus and lung, with staging indicating T1 N1 M0, which suggests a localized disease with regional lymph node involvement but no distant metastasis. The treatment appears to involve imaging and possibly other interventions, but there is no explicit mention of aggressive treatment like chemotherapy or radiotherapy that might significantly alter prognosis. Given the stage and the absence of distant metastasis, cancer-related mortality within 3 years might not be expected, though individual outcomes can vary. | No

100 axial images (no timeline): **[INCORRECT]** <brief reasoning trace with explanation for label selection> | <label> The CT images show multiple metastatic lesions throughout the body, indicating advanced-stage cancer. Given the widespread nature of the disease and the presence of metastases, cancer-related mortality is often expected within a few years of diagnosis, especially if treatment is not curative. | Yes

Model: OctoMed/OctoMed-7B

middle image from each view: **[CORRECT]** <think>First, I will carefully review the provided patient timeline and medical records to assess the patient's current status, cancer diagnosis,

and treatment plan. The patient is a 61-year-old female with a history of ductal carcinoma in situ (DCIS) treated with lumpectomy and tamoxifen. She now presents with a 2.2-cm left lower lobe pulmonary nodule confirmed as adenocarcinoma of the lung via biopsy. The imaging studies (CT, PET-CT, MRI brain) show no evidence of nodal involvement or distant metastasis. The tumor is classified as T1N0M0 (stage I) based on current imaging and staging criteria. The patient underwent a CT-guided biopsy confirming adenocarcinoma. The PET-CT showed no significant FDG uptake beyond the primary lesion, indicating no obvious nodal or metastatic disease. The MRI brain was negative for metastases. The patient is scheduled for lobectomy with mediastinal node sampling, which is standard for stage I lung cancer to assess nodal status. The tumor board has reviewed the case, and the plan is to proceed with surgery without immediate adjuvant chemotherapy, as the tumor is T1N0M0. The patient's overall health is stable, with no significant comorbidities that would contraindicate surgery. She is active, with no symptoms of weight loss, night sweats, or other systemic signs of advanced disease. The tumor is localized, and there is no evidence of aggressive features such as large size (>3 cm), lymphovascular invasion, or nodal involvement. The biopsy showed pleomorphic nuclei and TTF-1 negative, which is consistent with lung adenocarcinoma but does not indicate a particularly aggressive subtype. Given the current staging (T1N0M0), the prognosis is favorable, and the patient is undergoing curative-intent surgery. There is no indication of cancer-related mortality within 3 years based on the current data. The patient has no history of prior cancer recurrence, and the new lung lesion is localized. The treatment plan is appropriate, and there is no evidence suggesting imminent mortality from cancer. Therefore, based on the provided timeline and clinical data, the answer is "No," cancer-related mortality is not expected within 3 years of treatment initiation.

</think> <brief reasoning trace with explanation for label selection> | <label> - The patient has a T1N0M0 lung adenocarcinoma with no evidence of nodal involvement or metastasis on imaging. - She is scheduled for lobectomy with mediastinal node sampling, which is standard for stage I lung cancer. - There is no indication of aggressive tumor features or systemic symptoms suggesting advanced disease. - The patient is stable, active, and has no comorbidities that would contraindicate surgery. - Based on current staging and treatment plan, the prognosis is favorable, and cancer-related mortality within 3 years is not expected. </think> <answer>No</answer>

middle axial image: [CORRECT] <think>First, I need to determine whether the patient is expected to have cancer-related mortality within 3 years of treatment initiation based on the provided timeline and medical records. Looking at the timeline, the patient was diagnosed with lung adenocarcinoma (T1N0M0) in April 2013. The tumor is described as a 2.2-cm mass in the left lower lobe with spiculated margins but no nodal involvement or distant metastasis on imaging (PET-CT, MRI brain). The staging is clinical T1N0M0, which corresponds to stage I lung cancer. The treatment plan includes lobectomy, which is standard for stage I non-small cell lung cancer (NSCLC) to achieve complete resection. The patient is scheduled for surgery, and there is no indication of metastatic disease or high-risk features that would suggest a poor prognosis. The patient's history includes DCIS treated with lumpectomy and tamoxifen, but no recurrence. She has a history of asthma and allergies but is otherwise active and has no significant comorbidities that would impact survival. Her vital signs and lab values are stable, and she is on appropriate medications. The key factors for prognosis in early-stage lung cancer include tumor size, histology, and nodal status. Here, the tumor is small (2.2 cm), no nodal involvement, and no evidence of metastasis. The patient is a candidate for curative surgery, and the treatment plan aligns with standard guidelines for stage I NSCLC. There is no evidence in the timeline of aggressive tumor biology, such as high-grade features, lymphovascular invasion, or molecular markers indicating poor prognosis. The biopsy showed adenocarcinoma with TTF-1 negative but BRST-2 positive, which is consistent with lung adenocarcinoma but does not inherently indicate a worse outcome. Given the early stage, absence of nodal or metastatic disease, and planned curative surgery, the likelihood of cancer-related mortality within 3 years is low. The patient's overall health and activity level also support a favorable prognosis.

Therefore, based on the provided information, the answer is "No," cancer-related mortality is not expected within 3 years of treatment initiation.</think> <brief reasoning trace with explanation for label selection> | <label> The patient has a T1N0M0 lung adenocarcinoma with no nodal or metastatic involvement. She is scheduled for lobectomy, the standard treatment for stage I NSCLC. The tumor is small (2.2 cm), and there is no evidence of aggressive features or high-risk factors. Her overall health and activity level are stable, and the treatment plan aligns with curative intent. Given these factors, the likelihood of cancer-related mortality within 3 years is low. </brief reasoning trace> <answer>No</answer>

no image: [CORRECT] <think>First, I need to determine if the patient's cancer-related mortality is expected within 3 years of treatment initiation based on the provided timeline and evidence. The key factors to consider include the cancer stage, tumor biology, treatment intent, nodal status, margins, biomarkers, and any documented outcomes. Looking at the timeline, the patient was diagnosed with a 2.2-cm left lower lobe lung adenocarcinoma (T1N0M0) based on CT, PET-CT, and biopsy. The tumor is T1 (≤ 3 cm) with no nodal involvement (N0) and no distant metastasis (M0). The biopsy showed adenocarcinoma with TTF-1 negative and BRST-2 negative but Bernier A positive, which is consistent with lung adenocarcinoma. The patient underwent a CT-guided FNA and core biopsy confirming adenocarcinoma. The PET-CT showed no FDG avidity in the nodule, suggesting low metabolic activity, which is typical for early-stage lung cancer. The MRI brain was negative for metastases, and the patient has no symptoms of metastatic disease. The treatment plan includes a lobectomy, which is standard for stage I non-small cell lung cancer (NSCLC). The tumor board discussion noted that if the tumor is stage I without nodal involvement, adjuvant chemotherapy is not needed. The patient is scheduled for surgery, and the plan is to proceed with lobectomy. Given the T1N0M0 staging, the prognosis is generally favorable. The 5-year survival rate for stage I lung adenocarcinoma is approximately 60-80%, and the risk of mortality within 3 years is relatively low, especially with complete surgical resection. The patient's overall health is good, with no significant comorbidities that would drastically affect survival, except for asthma and hypothyroidism, which are managed. There is no evidence of nodal involvement or metastasis, and the tumor is localized. The presence of small ground-glass nodules and other small nodules is noted but likely unrelated to the primary tumor and may be monitored. The patient's active lifestyle and absence of weight loss or other systemic symptoms further support a better prognosis. Therefore, based on the staging, treatment plan, and absence of high-risk features, the patient's cancer-related mortality is not expected within 3 years of treatment initiation.</think> <brief reasoning trace with explanation for label selection> | <label> "No" | - The patient has a T1N0M0 lung adenocarcinoma, which is early-stage disease with no nodal or metastatic involvement. - The treatment plan includes lobectomy, which is curative intent for stage I NSCLC. - The PET-CT showed no FDG avidity, indicating low metabolic activity, and MRI brain was negative for metastases. - The patient's overall health is stable, with no significant comorbidities affecting survival. - Given the absence of high-risk features and the planned curative surgery, the likelihood of cancer-related mortality within 3 years is low. - The timeline and evidence do not indicate factors that would suggest a high risk of mortality within 3 years.</think> <answer>No</answer>

no radiology report: [INCORRECT] <think>First, I carefully examine the provided CT images and the associated timeline data to assess the patient's condition and treatment history. The images show axial CT scans of the chest and pelvis, with no clear evidence of metastatic disease or recurrence. The patient's timeline includes multiple visits and procedures, including imaging and oxygen therapy, but no indication of cancer progression or recurrence is evident. The patient's treatment appears to be stable, with no signs of complications or deterioration. Based on the available data, there is no evidence to suggest cancer-related mortality within 3 years of treatment initiation.</think> <answer>No</answer>

100 axial images (no timeline): [CORRECT] <think>First, I observe the provided image, which is a CT scan slice. The image shows a cross-sectional view of the pelvis, including the bony

structures, soft tissues, and some metallic implants or hardware visible bilaterally. The scan does not show the lungs or brain, but rather the pelvic region. This suggests the focus is on the pelvis, possibly related to a pelvic malignancy or treatment effects. Next, I consider the question: "Is cancer-related mortality expected within 3 years of treatment initiation?" This requires knowledge of the patient's cancer type, stage, treatment, and outcomes. However, the image alone does not provide direct evidence of cancer stage, type, or treatment response. There is no visible tumor mass, no clear signs of metastasis, and no clinical data provided. Since the question is about cancer-related mortality within 3 years, I must rely on the patient's timeline data, which is not provided here. Without clinical details such as cancer stage, treatment type, or biomarkers, I cannot definitively conclude whether cancer-related mortality is expected within 3 years. Therefore, based solely on the image and lack of patient timeline data, I cannot confirm cancer-related mortality within 3 years. The correct answer must be "No" because there is no evidence in the image or provided timeline to support a "Yes" answer.</think> <answer>No</answer>

Model: Qwen/Qwen3-VL-8B-Instruct

middle image from each view: [CORRECT] The provided PATIENT_TIMELINE documents a patient with a history of EGFR mutant lung adenocarcinoma who underwent a PET/CT scan on 10/14/2018. The radiology report explicitly states that the patient has "multifocal hypermetabolic nodularity" in the left hemithorax, which is "concerning for multifocal disease recurrence." The report further notes that the patient's disease is "increased in number and extent" compared to a prior scan. The patient is described as having "stable disease" on erlotinib prior to this scan, but the current findings indicate progression. The timeline does not contain any evidence of treatment initiation (e.g., radiation therapy or chemotherapy) or any subsequent clinical improvement or stabilization. The patient's cancer is advanced with multifocal recurrence, and the timeline does not indicate any curative or disease-controlling treatment has been initiated or completed. Based on the evidence of multifocal recurrence and the absence of any documented treatment response or disease control, cancer-related mortality is expected within 3 years of treatment initiation. Yes

middle axial image: [INCORRECT] The provided PATIENT_TIMELINE documents a patient with a history of EGFR mutant lung adenocarcinoma, status post thoracic surgery, and metastatic disease. The PET/CT scan from 2018-10-04 shows multifocal hypermetabolic nodularity in the left hemithorax, concerning for recurrence, and new primary lung adenocarcinomas in the right upper and lower lobes. The patient is on erlotinib, but the imaging indicates progression. The timeline does not contain any evidence of cancer-related mortality within 3 years of treatment initiation. The patient is actively being managed with radiation oncology planning and follow-up, indicating ongoing treatment and survival. No | No

no image: [CORRECT] The PET/CT scan on 10/14/2018 reveals multifocal hypermetabolic nodularity in the left hemithorax pleura, suture lines, and fissures, described as "nonspecific but concerning for multifocal disease recurrence." Additionally, there are multiple bilateral pulmonary nodules with increased solid components, presumed new primary lung adenocarcinomas. The patient has a history of EGFR mutant lung adenocarcinoma with prior surgery and erlotinib therapy, and the imaging shows progression with new lesions. The radiology report explicitly states that the hypermetabolic activity is "concerning for multifocal disease recurrence" and that the patient's disease is "not stable." Given the extent of disease, the presence of new primary tumors, and the lack of response to prior targeted therapy, cancer-related mortality within 3 years of treatment initiation is highly likely. Yes

no radiology report: [CORRECT] The patient's medical timeline indicates a diagnosis of malignant neoplasm of the bronchus and lung (ICD9CM/162.9) in April 2013, with a clinical staging of cT1N1M0 (AJCC 7th Edition) on May 2, 2013. This is a Stage II cancer. The timeline includes imaging (CT chest, PET-CT) and a case management visit, suggesting active oncology

care. However, the timeline does not contain any information about the specific treatment modality (e.g., surgery, chemotherapy, radiation) that was initiated, its completion, or its effectiveness. There are no documented outcomes, follow-up scans, or survival data. Without knowledge of the treatment plan, its success, or the patient's subsequent clinical course, it is impossible to determine if cancer-related mortality is expected within 3 years. The provided evidence is insufficient to make a definitive prediction. No

100 axial images (no timeline): [CORRECT] The provided PATIENT_TIMELINE consists solely of a series of CT scan images showing anatomical structures from the pelvis to the head, without any accompanying clinical data, pathology reports, treatment plans, staging information, or documented outcomes. There is no evidence of cancer diagnosis, no description of tumor characteristics, no treatment history, and no prognostic information. Therefore, it is impossible to determine whether cancer-related mortality is expected within 3 years of treatment initiation. No | No

Model: google/medgemma-1.5-4b-it

middle image from each view: [CORRECT] <brief reasoning trace with explanation for label selection> | <label> The patient has a history of lung adenocarcinoma diagnosed in May 2013. The tumor is classified as T1N0M0 based on the provided clinical information. The patient underwent lobectomy for the tumor. The provided timeline includes documentation of a pulmonary function test (PFT) with DLCO performed on May 8, 2013, which is consistent with the need for PFTs in patients with lung cancer. The PFT results are not provided, but the test itself is a standard part of the workup for lung cancer. The question asks about the expected cancer-related mortality within 3 years of treatment initiation. Given the T1 stage, which is considered early-stage lung cancer, the prognosis is generally favorable. The patient has undergone surgery, which is the primary treatment for early-stage lung cancer. While lung cancer can recur, the T1 stage suggests a low risk of recurrence and death within the first three years. Therefore, cancer-related mortality within 3 years is not expected. No | No

middle axial image: [INCORRECT] <brief reasoning trace with explanation for label selection> | <label> The patient has a history of lung adenocarcinoma diagnosed in May 2013. The pathology report confirms adenocarcinoma and provides immunohistochemistry (IHC) results showing TTF-1 negative and Bernier A positive. The patient underwent a lobectomy in May 2013. The clinical stage is T1N0M0 based on the imaging findings (CT chest, PET-CT, MRI brain) and the pathology report. The patient has no evidence of nodal involvement (N0) or distant metastasis (M0). Therefore, the patient is expected to have no cancer-related mortality within 3 years of treatment initiation. No | Yes

no image: [INCORRECT] <brief reasoning trace with explanation for label selection> | <label> The patient has a history of lung adenocarcinoma diagnosed in May 2013. The pathology report confirms adenocarcinoma and IHC results (TTF-1 negative, Bernier A positive) are consistent with lung origin. The clinical staging indicates T1N0M0 disease based on imaging (CT chest, PET-CT, MRI brain) and clinical assessment. The tumor is described as a 2.2-cm mass in the left lower lobe. The patient is scheduled for lobectomy. Given the T1 stage, the risk of recurrence is relatively low, and adjuvant chemotherapy is typically not indicated unless the tumor is larger (T2 or greater) or involves lymph nodes (N1 or greater). Therefore, cancer-related mortality within 3 years is not expected based on the current staging and treatment plan. No | Yes

no radiology report: [INCORRECT] The patient has a history of malignant neoplasm of bronchus and lung, unspecified, diagnosed in 2013. The patient has undergone multiple imaging studies including CT chest and PET scan, as well as a chest tube placement and removal. The patient has also had spirometry and bronchodilation responsiveness testing. The patient's current status is not explicitly stated, but the presence of a malignancy, even if treated,

Subtask: died_of_cancer_4_yr

Question:

Based on the provided medical history and cancer evidence, is cancer-related mortality expected within 4 years of treatment initiation?

Correct Answer: No

Model: OpenGVLab/InternVL3_5-8B

middle image from each view: [CORRECT] <brief reasoning trace with explanation for label selection> | <label> The patient's medical history indicates multiple malignant neoplasms in various parts of the lung and trachea, with evidence of multifocal disease recurrence and hypermetabolic activity on PET/CT scans. The presence of multiple nodules and hypermetabolic activity suggests advanced disease. Additionally, the patient has undergone thoracic surgery and is being managed by Radiation Oncology, indicating aggressive treatment. Given the advanced stage and multifocal nature of the disease, cancer-related mortality within 4 years of treatment initiation is expected. | Yes

middle axial image: [CORRECT] <brief reasoning trace with explanation for label selection> | <label> The patient's medical timeline indicates a diagnosis of malignant neoplasms in multiple locations within the lungs and trachea, with evidence of multifocal disease recurrence. The imaging notes suggest significant disease activity and the need for radiation therapy planning. Given the advanced stage and multifocal nature of the disease, cancer-related mortality within 4 years of treatment initiation is a plausible concern. | Yes

no image: [CORRECT] <The patient's medical timeline indicates a diagnosis of malignant neoplasms in multiple locations within the lungs and trachea, with a history of thoracic surgery and metastatic disease. The PET/CT scan findings suggest multifocal disease recurrence and the presence of new primary lung adenocarcinomas. Given the advanced stage of the disease, multiple sites of malignancy, and the presence of metastatic disease, cancer-related mortality within 4 years of treatment initiation is expected.> | <Yes>

no radiology report: [CORRECT] <brief reasoning trace with explanation for label selection>: The patient has a diagnosis of malignant neoplasm of the bronchus and lung, with staging indicating T1 N1 M0, which suggests a localized disease with regional lymph node involvement but no distant metastasis. The treatment appears to involve imaging and possibly surgical intervention, as indicated by the presence of chest tubes and other supportive care measures. Given the stage and treatment approach, the prognosis might not be extremely poor within 4 years, but there is a significant risk of recurrence or progression, especially with N1 involvement. Therefore, cancer-related mortality within 4 years is a possibility, but not certain. | No

100 axial images (no timeline): [INCORRECT] <brief reasoning trace with explanation for label selection> | <label> The CT images show multiple metastatic lesions throughout the body, indicating advanced-stage cancer. The presence of widespread metastases typically suggests a poor prognosis, especially if the cancer has not responded well to initial treatments. Given the extensive nature of the disease and the typical progression of metastatic cancer, it is reasonable to expect cancer-related mortality within 4 years of treatment initiation. | Yes

Model: OctoMed/OctoMed-7B

middle image from each view: [CORRECT] <think>First, I carefully reviewed the entire patient timeline and medical records provided. The patient is a 61-year-old female with a history of ductal carcinoma in situ (DCIS) treated with lumpectomy and tamoxifen. She now presents with a 2.2-cm left lower lobe pulmonary nodule confirmed as adenocarcinoma via biopsy. The staging workup includes CT, PET-CT, and MRI brain, all showing no nodal involvement or distant metastases. The tumor is classified as T1N0M0 (stage I) based on imaging and clinical evaluation. The patient underwent a CT-guided biopsy confirming adenocarcinoma. The PET-CT showed no significant FDG avidity beyond the primary lesion, indicating no obvious nodal or metastatic disease. The MRI brain was negative for metastases. The patient is scheduled for lobectomy with mediastinal node sampling, and the tumor board has recommended surgery. There is no indication of advanced disease or high-risk features that would suggest a poor prognosis. The patient's overall health is stable, with no significant comorbidities or symptoms other than mild chest discomfort. She is active and has no signs of systemic illness. The treatment plan is curative intent surgery, and there is no evidence of cancer-related mortality risk within 4 years based on current staging and treatment. The tumor is localized, and the patient is a candidate for curative resection. Therefore, based on the provided timeline and clinical data, there is no evidence to suggest cancer-related mortality within 4 years of treatment initiation.</think> <brief reasoning trace with explanation for label selection | <label> <answer>No</answer> </label></think>

middle axial image: [CORRECT] <think>First, I need to determine whether the patient is expected to have cancer-related mortality within 4 years of treatment initiation based on the provided timeline and medical records. Looking at the timeline, the patient was diagnosed with lung adenocarcinoma (T1N0M0) in April 2013. The tumor is described as a 2.2-cm mass in the left lower lobe with spiculated margins but no nodal involvement or distant metastasis on imaging (PET-CT, MRI brain). The staging is clinical T1N0M0, which corresponds to stage I lung cancer. The treatment plan includes lobectomy, which is standard for stage I non-small cell lung cancer (NSCLC) to achieve complete resection. The patient is scheduled for surgery, and there is no indication of metastatic disease or high-risk features that would suggest a poor prognosis. The patient's history includes DCIS treated with lumpectomy and tamoxifen, but no recurrence. She has a history of asthma and allergies but is otherwise active and has no significant comorbidities that would impact survival. Her vital signs and lab values are stable, and she is on appropriate medications. The key factors for prognosis in early-stage lung cancer include tumor size, histology, and nodal status. The tumor is small (2.2 cm), and there is no nodal involvement. Adjuvant chemotherapy is not indicated for stage I unless there are high-risk features, which are not mentioned here. The patient is undergoing surgery, which is curative intent. Given the stage and treatment plan, the prognosis is favorable. The 5-year survival rate for stage I NSCLC is approximately 60-80%, indicating that mortality within 4 years is unlikely if the treatment is successful. Therefore, based on the provided information, there is no evidence to suggest cancer-related mortality within 4 years.</think> <brief reasoning trace with explanation for label selection> | <label> The patient was diagnosed with stage I lung adenocarcinoma (T1N0M0) in April 2013. The tumor is small (2.2 cm) with no nodal involvement or distant metastasis on imaging. She is scheduled for lobectomy, the standard treatment for stage I non-small cell lung cancer (NSCLC), which aims for complete resection. There are no high-risk features or evidence of metastatic disease. The 5-year survival rate for stage I NSCLC is favorable (60-80%), indicating a low likelihood of cancer-related mortality within 4 years if treatment is successful. The patient's overall health and treatment plan support a positive prognosis. </brief reasoning trace> <answer> | <label> <answer> No </answer> </label></answer>

no image: [CORRECT] <think>First, I need to determine if the patient's cancer-related mortality is expected within 4 years of treatment initiation based on the provided timeline and medical evidence. Looking at the timeline, the patient was diagnosed with lung adenocarcinoma (T1N0M0) in April 2013. The tumor is described as a 2.2-cm mass in the left lower lobe with

spiculated margins but no nodal involvement or distant metastasis confirmed by PET-CT and MRI brain. The staging is clinical stage I (T1N0M0) based on imaging and biopsy findings. The patient underwent a CT-guided FNA and core biopsy confirming adenocarcinoma. The tumor abuts the fissure but no nodal involvement was detected. The treatment plan includes lobectomy, which is standard for stage I non-small cell lung cancer (NSCLC). The patient is scheduled for surgery, and the tumor board has recommended lobectomy without immediate adjuvant chemotherapy, indicating the tumor is likely stage I. The patient's history includes DCIS treated with lumpectomy and tamoxifen, but no recurrence. She has asthma and allergies but no significant comorbidities that would contraindicate surgery. Her performance status is good, as she is active and able to exercise. The key factors for prognosis in early-stage lung cancer include tumor size, nodal status, and histology. Since the tumor is T1N0M0, the 5-year survival rate is relatively high (around 60-80% for stage I). However, the question is about mortality within 4 years, which is slightly less than 5 years. There is no evidence of aggressive features such as lymphovascular invasion, high-grade histology, or molecular markers that would suggest a worse prognosis. The tumor is localized, and the patient is undergoing curative-intent surgery. The presence of small ground-glass nodules and other small nodules is noted but likely monitored rather than indicative of metastatic disease. Given the clinical stage, absence of nodal involvement, and planned curative surgery, the likelihood of cancer-related mortality within 4 years is low. The patient's overall health and ability to undergo surgery further support a favorable prognosis. Therefore, based on the provided information, the answer is "No," as there is no evidence suggesting cancer-related mortality within 4 years.

no radiology report: [INCORRECT] *<think>First, I carefully examine the provided CT images and the associated timeline data to assess the patient's condition and treatment history. The images show axial CT scans of the chest and pelvis, with no clear evidence of metastatic disease or recurrence. The patient's timeline includes multiple visits and procedures, including imaging and oxygen therapy, but no indication of cancer progression or recurrence is evident. The patient's treatment appears to be stable, with no signs of complications or deterioration. Based on the available data, there is no evidence to suggest cancer-related mortality within 4 years of treatment initiation.</think>* **<answer>No</answer>**

100 axial images (no timeline): [CORRECT] *<think>First, I note that the question asks whether cancer-related mortality is expected within 4 years of treatment initiation. This requires me to assess the patient's prognosis based on their timeline and available data. Looking at the image provided, it is a CT scan of the pelvis, showing bony structures, soft tissues, and some metallic implants or hardware. The scan does not provide direct evidence of tumor presence, size, or metastasis. There is no visible tumor mass, no lymphadenopathy, and no obvious bone destruction. The presence of hardware suggests prior surgical intervention, possibly for trauma or reconstruction, but no clear oncologic pathology is visible. Since the image is a single axial slice and does not show any tumor or metastatic disease, I cannot infer cancer-related mortality from this image alone. The question references a patient's timeline, but no timeline data is provided here. Without clinical details such as cancer stage, treatment type, response to therapy, or survival data, I cannot determine if the patient is at high risk of cancer-related*

mortality within 4 years. Therefore, based solely on the image and lack of timeline data, I cannot confirm cancer-related mortality. The correct answer must be based on the absence of evidence in the image and timeline data provided.</think> <answer>No</answer>

Model: Qwen/Qwen3-VL-8B-Instruct

middle image from each view: [CORRECT] The provided PATIENT_TIMELINE documents a patient with a history of EGFR mutant lung adenocarcinoma who underwent a PET/CT scan on 10/14/2018. The radiology report explicitly states that the patient has "multifocal hypermetabolic nodularity" in the left hemithorax, which is "concerning for multifocal disease recurrence." The report further notes that the patient's disease is "increased in number and extent" compared to a prior scan. The patient is described as having "stable disease" on erlotinib prior to this scan, but the current findings indicate progression. The timeline does not contain any evidence of treatment initiation (e.g., radiation therapy or chemotherapy) or any subsequent follow-up that would indicate a change in disease status or treatment response. Given the evidence of multifocal disease recurrence and progression, and the absence of any information suggesting effective treatment or stabilization, cancer-related mortality within 4 years of treatment initiation is expected. Yes

middle axial image: [INCORRECT] The provided PATIENT_TIMELINE documents a patient with a history of EGFR mutant lung adenocarcinoma, status post thoracic surgery, and metastatic disease. The PET/CT scan from 2018-10-04 shows multifocal hypermetabolic nodularity in the left hemithorax, concerning for recurrence, and new primary lung adenocarcinomas in the right upper and lower lobes. The patient is on erlotinib, but the imaging indicates progression. The timeline does not contain any evidence of cancer-related mortality occurring within 4 years of treatment initiation. The patient is actively undergoing treatment planning and surveillance, with no documented death event. Therefore, based on the available evidence, cancer-related mortality is not expected within 4 years. No | No

no image: [CORRECT] The patient has a history of EGFR mutant lung adenocarcinoma with metastatic disease to the pleura, status post VATS wedge resection, and presents with new primary lung adenocarcinomas (RUL and RLL) and multifocal hypermetabolic nodularity in the left hemithorax. The PET/CT report (10/14/2018) indicates multifocal disease recurrence with SUV max values up to 16.0, suggesting aggressive disease. The patient is on erlotinib, but the imaging shows progression or new primaries. The timeline includes radiation therapy planning, indicating active treatment intent. Given the multifocal, recurrent, and metastatic nature of the disease, and the absence of any evidence of disease control or response to treatment, cancer-related mortality within 4 years is highly likely. Yes

no radiology report: [CORRECT] The patient's medical timeline indicates a diagnosis of malignant neoplasm of the bronchus and lung (ICD9CM/162.9) in April 2013, with a clinical staging of cT1N1M0 (AJCC 7th Edition) on May 2, 2013. This is a Stage II cancer. The timeline includes imaging (CT chest, PET-CT) and a case management visit, suggesting active oncology care. However, the timeline does not contain any information about the specific treatment modality (e.g., surgery, chemotherapy, radiation) that was initiated, its completion, or its effectiveness. There are no documented outcomes, follow-up scans, or survival data. Without knowledge of the treatment's success or the patient's subsequent clinical course, it is impossible to determine if cancer-related mortality is expected within 4 years. The provided evidence is insufficient to make a prediction. No

100 axial images (no timeline): [CORRECT] The provided PATIENT_TIMELINE consists solely of a series of CT scan images depicting anatomical structures from the pelvis to the head, without any accompanying clinical data, pathology reports, treatment records, staging information, or prognostic assessments. There is no evidence of cancer diagnosis, tumor characteristics, treatment history, or any documentation that would allow for a determination of

cancer-related mortality risk within 4 years. Therefore, it is not possible to answer the question based on the given information. <brief reasoning trace with explanation for label selection> | No

Model: google/medgemma-1.5-4b-it

middle image from each view: [CORRECT] <brief reasoning trace with explanation for label selection> | <label> The patient has a history of lung adenocarcinoma diagnosed in May 2013. The tumor is classified as T1N0M0 based on the provided clinical information (AJCC staging). The patient has undergone surgery (lobectomy) and is currently on menopausal hormone therapy. The provided timeline includes imaging and pathology results consistent with the diagnosis and staging. There is no mention of disease recurrence, metastasis, or other adverse events. Therefore, cancer-related mortality within 4 years is not expected based on the current information. No | No

middle axial image: [INCORRECT] <brief reasoning trace with explanation for label selection> | <label> The patient has a history of lung adenocarcinoma diagnosed in May 2013. The pathology report confirms adenocarcinoma and provides immunohistochemistry (IHC) results: TTF-1 negative and Bernier A positive. The patient underwent a lobectomy in May 2013. The clinical stage is T1N0M0 based on the imaging findings (CT chest, PET-CT, MRI brain) and the pathology report. The patient has no evidence of nodal involvement (N0) or distant metastasis (M0). Therefore, the patient's cancer-related mortality is not expected within 4 years. No | Yes

no image: [INCORRECT] <brief reasoning trace with explanation for label selection> | <label> The patient has a history of lung adenocarcinoma diagnosed in May 2013. The pathology report confirms adenocarcinoma and IHC results (TTF-1 negative, Bernier A positive) are consistent with lung origin. The clinical staging indicates T1N0M0 disease based on imaging (CT chest, PET-CT, MRI brain) and clinical assessment. The patient underwent a lobectomy for this T1N0M0 lung cancer. The provided timeline includes documentation of the lobectomy procedure on May 3rd, 2013, including chest tube placement and removal details. The patient's clinical status and vital signs on May 3rd, 2013, show a blood pressure of 160/93 mmHg and a heart rate of 87 bpm, which are elevated but not indicative of immediate life-threatening instability. The patient is described as "well-appearing" and "in no acute distress" on the day of surgery. Given the T1N0M0 stage and the successful surgical resection, the expected outcome is survival without cancer-related mortality within the 4-year timeframe following treatment initiation (surgery). No | Yes

no radiology report: [INCORRECT] The patient has a history of malignant neoplasm of bronchus and lung, unspecified, diagnosed in 2013. The patient has undergone multiple imaging studies including CT chest and PET scan, as well as a chest tube placement and removal. The patient has also had spirometry and bronchodilation responsiveness testing. The patient's BMI is 26.5, which is overweight. The patient's vital signs are within normal limits. The patient has no documented evidence of disease progression or recurrence. The patient has been followed up with imaging and clinical assessments. There is no evidence of metastatic disease or treatment failure. The patient has been managed with asthma medications. The patient has no evidence of active cancer. The patient has a history of malignancy (lung cancer). The patient has undergone multiple imaging studies including CT chest and PET scan, as well as a chest tube placement and removal. The patient has also had spirometry and bronchodilation responsiveness testing. The patient's BMI is 26.5, which is overweight. The patient's vital signs are within normal limits. The patient has no documented evidence of disease progression or recurrence. The patient has been followed up with imaging and clinical assessments. There is no evidence of metastatic disease or treatment failure. The patient has been managed with asthma medications. The patient has no evidence of active cancer. The patient has a history of malignancy (lung cancer). The patient has undergone multiple imaging studies including CT chest and PET scan, as well as a chest tube placement and removal. The patient has also had spirometry and bronchodilation responsiveness testing. The patient's BMI

[illegible]

Model: google/medgemma-4b-it

middle image from each view: **[CORRECT]** No

middle axial image: [CORRECT] No

no image: [CORRECT] No

no radiology report: [CORRECT] No

100 axial images (no timeline): [CORRECT] The images show a well-defined, homogeneous mass within the pelvis. The presence of a mass and the lack of any mention of metastasis or other concerning features suggests a potentially curable cancer. The images are consistent with a mass that is likely to be treated and potentially cured. No | No

Subtask: died_of_cancer_5_yr

Question:

Based on the provided medical history and cancer evidence, is cancer-related mortality expected within 5 years of treatment initiation?

Correct Answer: No

Model: OpenGVLab/InternVL3_5-8B

middle image from each view: [CORRECT] <brief reasoning trace with explanation for label selection> | <label> The patient's medical history indicates a diagnosis of malignant neoplasms in multiple locations within the lungs and trachea, with evidence of multifocal disease recurrence. The imaging notes suggest significant hypermetabolic activity, which is concerning for multifocal disease recurrence. Additionally, the patient has undergone thoracic surgery and is being managed by Radiation Oncology, indicating an advanced stage of cancer. Given the extensive disease and the need for ongoing treatment, cancer-related mortality within 5 years of treatment initiation is expected. | Yes

middle axial image: [CORRECT] <brief reasoning trace with explanation for label selection> | <label> The patient's medical timeline indicates a diagnosis of malignant neoplasms in multiple locations within the lungs and trachea, with evidence of multifocal disease recurrence. The imaging notes suggest significant findings concerning for multifocal disease recurrence, including hypermetabolic activity in various regions. The patient has undergone PET/CT scans and radiation therapy planning, indicating an aggressive treatment approach. Given the advanced stage and multifocal nature of the disease, cancer-related mortality within 5 years of treatment initiation is expected. | Yes

no image: [CORRECT] <brief reasoning trace with explanation for label selection> | <label> The patient's medical timeline indicates a diagnosis of malignant neoplasms in multiple locations within the lungs and trachea, with a history of EGFR mutant lung adenocarcinoma and metastatic disease. The PET/CT scan findings suggest multifocal disease recurrence and the presence of multiple bilateral pulmonary nodules, which are concerning for multifocal disease recurrence. The patient has undergone thoracic surgery and is being referred for radiation therapy planning. Given the advanced stage of the disease and the presence of multiple metastatic sites, cancer-related mortality within 5 years of treatment initiation is expected. | Yes

no radiology report: [CORRECT] <brief reasoning trace with explanation for label selection>: The patient has a diagnosis of a malignant neoplasm of the bronchus and lung, staged as T1 N1 M0 according to the 7th edition of the AJCC. This stage typically indicates a localized cancer with regional lymph node involvement but no distant metastasis. The treatment plan appears to involve imaging and possibly other oncological interventions. Given the stage and typical prognosis for such localized cancers with appropriate treatment, cancer-related mortality within 5 years is not expected. | No

100 axial images (no timeline): [INCORRECT] <brief reasoning trace with explanation for label selection> | <label> The CT images show multiple metastatic lesions throughout the body, indicating advanced-stage cancer. Given the widespread nature of the metastases and the lack of specific treatment details suggesting curative intent, cancer-related mortality within 5 years of treatment initiation is expected. | Yes

Model: OctoMed/OctoMed-7B

middle image from each view: [CORRECT] <think>First, I will carefully review the provided patient timeline and medical records to assess the patient's current condition, cancer stage, treatment plan, and any prognostic indicators that might suggest cancer-related mortality within 5 years. The patient is a 61-year-old female with a history of ductal carcinoma in situ (DCIS) of the breast treated with lumpectomy and tamoxifen. She now presents with a 2.2-cm left lower lobe pulmonary nodule diagnosed as adenocarcinoma of the lung. The imaging (CT, PET-CT, MRI brain) shows no evidence of nodal involvement or distant metastasis. The tumor is classified as T1N0M0 (stage I) based on the information provided. The treatment plan includes lobectomy with possible mediastinal node sampling, and the patient is scheduled for surgery. There is no indication of metastatic disease or high-risk features such as large tumor size (>3 cm), nodal involvement, or distant spread. The patient is otherwise active and has no significant comorbidities that would contraindicate surgery. Given the early stage (T1N0M0) and absence of high-risk features, the prognosis is generally favorable with appropriate surgical resection. Adjuvant chemotherapy is not indicated unless the final pathology upstages the disease (e.g., to stage IB or higher). The patient's overall health status and the planned treatment suggest that the cancer is localized and potentially curable. There is no evidence in the timeline or notes indicating aggressive tumor biology, rapid progression, or other factors that would suggest a high risk of cancer-related mortality within 5 years. The patient is being managed with curative intent, and the treatment plan aligns with standard guidelines for early-stage lung adenocarcinoma. Therefore, based on the available information, the patient's cancer-related mortality risk within 5 years is low.</think> <brief reasoning trace with explanation for label selection | <label> The patient has a T1N0M0 lung adenocarcinoma with no evidence of nodal involvement or metastasis. The treatment plan includes lobectomy, which is standard for early-stage disease. There are no high-risk features or indications of aggressive tumor biology. The prognosis is favorable with curative intent, and no evidence suggests cancer-related mortality within 5 years. </brief reasoning trace with explanation for label selection | <label> <answer>No</answer> </label></think>

middle axial image: [CORRECT] <think>First, I need to determine whether the patient is expected to have cancer-related mortality within 5 years based on the provided timeline and medical history. The key factors to consider include the stage of the cancer, tumor biology, treatment intent and completion, margins, nodal status, biomarkers, and any documented outcomes or events. From the timeline, the patient was diagnosed with a 2.2-cm left lower lobe lung adenocarcinoma (T1N0M0) based on CT, PET-CT, and biopsy. The tumor is T1 (≤ 3 cm) with no nodal involvement (N0) and no distant metastasis (M0), as per the imaging and PET-CT findings. The biopsy showed adenocarcinoma with TTF-1 negative and BRST-2 negative but napsin A positive, consistent with lung adenocarcinoma. The patient underwent a CT-guided FNA and core biopsy confirming adenocarcinoma. The PET-CT showed no FDG avidity in the nodule, suggesting low metabolic activity, which is typical for early-stage lung cancer. The MRI brain showed no metastases, and the patient has no symptoms of metastatic disease. The treatment plan includes lobectomy, which is standard for stage I non-small cell lung cancer (NSCLC). The tumor board discussion noted that if the tumor is stage I without nodal involvement, adjuvant chemotherapy would not be needed. The patient is scheduled for lobectomy, and the tumor abuts the fissure but no nodal involvement is documented. The patient has a history of DCIS treated with lumpectomy and tamoxifen, but no recurrence. She has no other significant comorbidities that would contraindicate surgery. Her vital signs and lab values are stable, and she is active. Given the T1N0M0 staging, the prognosis is generally favorable. The 5-year survival rate for stage I lung adenocarcinoma is approximately 60-80%, depending on factors like tumor size and margins. Since the tumor is small (2.2 cm), no nodal involvement, and no evidence of metastasis, the risk of cancer-related mortality within 5 years is low. There is no evidence of aggressive tumor biology, such as high-grade features or positive margins, and no documented recurrence or metastasis. The patient is undergoing curative-intent surgery, and the plan is appropriate for her stage. Therefore, based on the

provided information, the patient is not expected to have cancer-related mortality within 5 years of treatment initiation.</think> <brief reasoning trace with explanation for label selection> | <label> "No" | - The patient has a T1N0M0 lung adenocarcinoma with no nodal involvement or metastasis documented. - She is scheduled for lobectomy, the standard treatment for stage I NSCLC, with no indication of aggressive tumor biology or recurrence. - The 5-year survival rate for stage I lung adenocarcinoma is favorable, and there is no evidence of disease progression or high-risk features in the timeline. - The decision to proceed with lobectomy and absence of nodal or metastatic disease support a low risk of cancer-related mortality within 5 years.</think> <answer>No</answer>

no image: [CORRECT] <think>First, I need to determine if the patient's cancer-related mortality is expected within 5 years based on the provided timeline and medical evidence. The key factors to consider include the cancer stage, tumor biology, treatment intent, nodal status, biomarkers, and any other relevant clinical data. Looking at the timeline, the patient was diagnosed with a 2.2-cm left lower lobe lung adenocarcinoma (T1N0M0) based on CT, PET-CT, and biopsy. The tumor is T1 (≤ 3 cm) with no nodal involvement (N0) and no distant metastasis (M0), as per the imaging and biopsy results. The PET-CT showed no FDG avidity, indicating no active metastatic disease. The MRI brain also showed no metastases. The patient underwent a CT-guided FNA and core biopsy, which confirmed adenocarcinoma. The tumor is T1N0M0, which is stage I. The treatment plan includes lobectomy, and the tumor board discussion noted that if it remains stage I without nodal involvement, adjuvant chemotherapy would not be needed. This aligns with standard guidelines where stage I non-small cell lung cancer (NSCLC) treated with complete resection does not require adjuvant therapy unless there are high-risk features. The patient's history includes DCIS treated with lumpectomy and tamoxifen, but no recurrence. She has a history of asthma and allergies but no recent exacerbations. Her vital signs and lab values are stable, with no signs of systemic illness or weight loss. The physical exam shows no acute distress or signs of metastatic disease. Given the stage (T1N0M0), absence of nodal involvement, and no evidence of metastasis, the prognosis is favorable. The 5-year survival rate for stage I NSCLC is generally high, around 60-80%, depending on specific factors. However, the question is whether cancer-related mortality is expected within 5 years. Since the patient is stage I and undergoing curative-intent surgery, the likelihood of cancer-related death within 5 years is low unless there are high-risk features not mentioned here. The timeline does not indicate any high-risk features such as lymphovascular invasion, positive margins, or molecular markers that would suggest a worse prognosis. The tumor is T1 with no nodal involvement, and the patient is undergoing lobectomy, which is standard treatment. Therefore, based on the provided information, there is no evidence to suggest that cancer-related mortality is expected within 5 years. Thus, the correct answer is "No."</think> <brief reasoning trace with explanation for label selection> | <label> No </label>

no radiology report: [INCORRECT] <think>First, I carefully examine the provided CT images and the associated timeline data to assess the patient's condition and cancer prognosis. The images show axial CT scans of the chest and pelvis, with no clear evidence of metastatic disease or aggressive tumor progression. The patient's timeline includes multiple visits and procedures, but no indication of advanced cancer or recurrence is evident. The patient's treatment appears to be ongoing, with no signs of terminal illness or complications that would suggest imminent mortality. The absence of significant findings on imaging and the lack of clinical deterioration suggest that the patient is stable and likely to survive beyond 5 years post-treatment. Therefore, the answer is "No," cancer-related mortality is not expected within 5 years of treatment initiation.</think> <answer>No</answer>

100 axial images (no timeline): [CORRECT] <think>First, I note that the question asks whether cancer-related mortality is expected within 5 years of treatment initiation. This requires me to assess the patient's prognosis based on their timeline and available data. Looking at the provided image, it is a CT scan of the pelvis, showing bony structures, soft tissues, and some metallic implants or hardware. The scan does not provide direct evidence of tumor presence,

size, or metastasis. There is no visible tumor mass, no lymphadenopathy, and no obvious bone destruction. The presence of hardware suggests prior surgical intervention, possibly for trauma or reconstruction, but no clear oncologic pathology is visible. The question references cancer-related mortality within 5 years, but the image alone does not provide sufficient information to confirm or deny cancer presence, stage, or prognosis. Without additional clinical data such as biopsy results, tumor markers, or treatment records, it is impossible to determine the likelihood of cancer-related mortality solely from this image. Therefore, based on the image alone, I cannot confirm cancer-related mortality within 5 years. The correct answer must be "No" because there is no evidence in the image to support a cancer diagnosis or prognosis indicating mortality within 5 years.</think> <answer>No</answer>

Model: Qwen/Qwen3-VL-8B-Instruct

middle image from each view: [CORRECT] The provided PATIENT_TIMELINE documents a patient with a history of EGFR mutant lung adenocarcinoma who presented with multifocal disease recurrence. The PET/CT scan from 2018-10-04 explicitly states that the patient has "multifocal hypermetabolic nodularity" in the left hemithorax and "multiple bilateral pulmonary nodules" with "increasing solid component" in the right upper and lower lobes, which are "presumed new primary lung adenocarcinomas." The imaging report also notes that the hypermetabolic activity along the pleura and resection margins is "concerning for multifocal disease recurrence" and has increased in number and extent compared to prior scans. This indicates advanced, multifocal, and likely progressive disease. Given the extent of disease and the lack of any evidence of complete response or cure, cancer-related mortality within 5 years of treatment initiation is expected. Yes

middle axial image: [CORRECT] The provided timeline documents a patient with a history of EGFR mutant lung adenocarcinoma, who underwent surgery and has been on erlotinib with stable disease. However, the 2018 PET/CT scan reveals multifocal hypermetabolic nodularity in the left hemithorax, concerning for recurrence, and new primary lung adenocarcinomas in the right upper and lower lobes. The imaging also shows extensive pleural involvement. This indicates advanced, multifocal, and likely metastatic disease. The timeline does not show any evidence of disease control or response to treatment beyond the initial stable disease status. Given the advanced stage, multifocal disease, and lack of evidence of treatment success, cancer-related mortality within 5 years of treatment initiation is expected. Yes

no image: [CORRECT] The PET/CT scan from 2018-10-04 explicitly describes "multifocal hypermetabolic nodularity" in the left hemithorax, including pleura, suture lines, and fissures, with SUV max values up to 16.0, and notes that this activity is "concerning for multifocal disease recurrence." Additionally, the report states that compared to prior imaging, the hypermetabolic nodularity "appears increased in number and extent." The patient has a history of EGFR-mutant lung adenocarcinoma with prior surgery and targeted therapy (erlotinib), and the imaging findings suggest progressive, multifocal disease. The radiation oncology visit on the same day indicates treatment planning is underway, implying active disease requiring intervention. Given the extent of disease, recurrence, and lack of evidence of complete response or remission, cancer-related mortality within 5 years is expected. Yes

no radiology report: [CORRECT] The patient's medical timeline indicates a diagnosis of malignant neoplasm of the bronchus and lung (ICD9CM/162.9) in April 2013, with a subsequent clinical staging of cT1N1M0 (AJCC 7th Edition) on May 2, 2013. This staging corresponds to Stage II (T1N1M0) lung cancer. The timeline includes imaging (CT chest, PET-CT) and clinical assessments, but there is no evidence of treatment initiation, response, or survival data beyond the diagnosis. The question asks whether cancer-related mortality is expected within 5 years of treatment initiation. Since no treatment has been initiated and no survival data is provided, it is impossible to determine the expected mortality. The provided timeline does not contain sufficient information to make a definitive prediction. No

scan of the chest which showed a 2 x 2.1-cm masslike opacity with spiculated margins in the left lower lobe. The patient has undergone a CT scan of the chest which showed a 2 x 2.1-cm masslike opacity with spiculated margins in the left lower lobe. The patient has undergone a CT scan of the chest which showed a 2 x 2.

middle axial image: [INCORRECT] <brief reasoning trace with explanation for label selection>
| <label> The patient has a history of lung adenocarcinoma diagnosed in May 2013. The pathology report confirms adenocarcinoma and provides immunohistochemistry (IHC) results showing TTF-1 negative and Bernier A positive. The patient underwent a lobectomy in May 2013. The clinical stage is T1N0M0 based on the imaging findings (CT chest, PET-CT, MRI brain) and the pathology report. The patient has no evidence of nodal involvement (N0) or distant metastasis (M0). Therefore, the patient is expected to have no cancer-related mortality within 5 years. No | Yes

no image: [INCORRECT] <brief reasoning trace with explanation for label selection> | <label>
The patient has a history of lung adenocarcinoma diagnosed in May 2013. The pathology report confirms adenocarcinoma and IHC results (TTF-1 negative, Bernier A positive) are consistent with lung origin. The initial staging (T1N0M0) suggests a localized tumor. The patient underwent a lobectomy in May 2013. The follow-up imaging (PET-CT and CT chest) in May 2013 showed no evidence of metastatic disease. The patient has undergone surveillance imaging and clinical follow-up since the initial diagnosis and treatment. There is no mention of recurrence or new findings suggestive of cancer progression or metastasis in the provided timeline. Therefore, based on the information available, cancer-related mortality within 5 years is not expected. No
</brief reasoning trace with explanation for label selection> | <label> No

[illegible]

[illegible]

Model: google/medgemma-4b-it

middle image from each view: **[CORRECT]** No

middle axial image: [CORRECT] No

no image: [CORRECT] No

no radiology report: [CORRECT] No

100 axial images (no timeline): [CORRECT] The images show a complete and homogeneous opacity of the entire breast, with no evidence of tumor or metastasis. The images are consistent with a complete response to treatment. Therefore, cancer-related mortality is not expected

within 5 years of treatment initiation. No

Subtask: has_recurrence_1_yr

Question:

Based on the patient's clinical history and current cancer-related evidence, will the patient achieve an initial treatment response but experience cancer recurrence within 1 year of treatment initiation?

Correct Answer: No

Model: OpenGVLab/InternVL3_5-8B

middle image from each view: [INCORRECT] <brief reasoning trace with explanation for label selection> | <label> The patient was diagnosed with a left lung mass, which was later confirmed to be hypermetabolic on PET CT, indicating malignancy. The presence of metastasis to the internal mammary node suggests an advanced stage of cancer. Given the stage and the nature of the tumor, it is likely that the patient would achieve an initial treatment response. However, the presence of metastasis and the aggressive nature of the tumor increase the likelihood of recurrence within a year of treatment initiation. | Yes

middle axial image: [INCORRECT] <brief reasoning trace with explanation for label selection> | <label> The patient was diagnosed with a left lung mass, which was later confirmed to be hypermetabolic on PET CT, indicating malignancy. The presence of metastasis to the internal mammary node and another node in the left cardiophrenic region suggests an advanced stage of cancer. Given the stage and the nature of the tumor, it is likely that the patient would achieve an initial treatment response. However, the presence of metastatic disease and the aggressive nature of the tumor suggest a high likelihood of recurrence within 1 year of treatment initiation. | Yes

no image: [CORRECT] <brief reasoning trace with explanation for label selection> | <label> The patient has a left lung mass with evidence of metastasis to an ipsilateral internal mammary node and another node in the left cardiophrenic region. The PET CT scan shows intense hypermetabolism associated with the mass and the nodes, indicating malignancy. The timeline does not provide information on treatment response or recurrence within 1 year of treatment initiation. However, the presence of metastasis suggests a more advanced stage, which may increase the likelihood of recurrence. Given the lack of explicit evidence of treatment response or recurrence within 1 year, the answer is based on the advanced stage and metastasis noted. | No

no radiology report: [CORRECT] <No> | <No> The provided timeline does not include any specific evidence of cancer diagnosis, treatment response, or recurrence within 1 year of treatment initiation. The entries are primarily related to medical imaging procedures without clear indications of cancer-related findings or outcomes. Therefore, there is insufficient information to determine an initial treatment response or cancer recurrence within the specified timeframe.

100 axial images (no timeline): [INCORRECT] <brief reasoning trace with explanation for label selection> | <label> The CT images show evidence of metastatic disease throughout multiple slices, indicating advanced cancer. The presence of lesions in various organs suggests a high tumor burden. Given the advanced stage and extensive spread, it is likely that the patient will experience cancer recurrence within a year despite initial treatment response. | Yes

Model: OctoMed/OctoMed-7B

middle image from each view: [CORRECT] <think>First, I carefully reviewed the entire patient timeline provided to understand the clinical course and cancer-related evidence. The patient was diagnosed with a left lingular lung mass in February 2013, which was further evaluated with CT scans and confirmed to be a suspicious mass. A biopsy was performed, and the PET-CT scan in April 2013 showed intense hypermetabolism in the left lung mass and additional hypermetabolic lymph nodes in the left internal mammary chain and left anterior costophrenic angle, indicating metastatic disease. This suggests that the cancer had already spread to regional lymph nodes at the time of diagnosis. The question asks whether the patient achieved an initial treatment response but experienced cancer recurrence within 1 year of treatment initiation. However, the timeline does not provide any information about the initiation of treatment or subsequent treatment response. The last documented event is a CT-guided biopsy of the internal mammary lymph node on April 17, 2013, which was successful but no further treatment details or outcomes are mentioned. There is no evidence in the timeline of any treatment response or recurrence within the first year. The timeline ends in March 2013 with the PET-CT scan, and no follow-up treatment or recurrence data is provided. Since the timeline lacks any information about treatment initiation, response, or recurrence within the first year, it is impossible to determine whether the patient achieved an initial treatment response followed by recurrence within 1 year. Therefore, based solely on the provided patient timeline, there is no evidence to support either "Yes" or "No" to the question. The correct answer must be "No" because the timeline does not provide the necessary evidence to confirm the scenario described in the question.</think> <brief reasoning trace with explanation for label selection> | <label> The patient's timeline shows a left lingular lung mass diagnosed in February 2013, with PET-CT in April 2013 confirming hypermetabolic metastatic lymph nodes. However, there is no documented evidence of treatment initiation, response, or recurrence within the first year. The timeline ends with a biopsy procedure in April 2013 and no subsequent treatment or recurrence data. Therefore, the question cannot be answered based on the provided information. </answer>No</answer></think>

middle axial image: [CORRECT] <think>First, I need to determine if the patient will achieve an initial treatment response but experience cancer recurrence within 1 year of treatment initiation. The key here is to look for evidence of initial response followed by recurrence within that timeframe. Looking at the timeline, the patient was diagnosed with a left lingular mass in February 2013. A CT scan on March 28, 2013, showed a 5.0 cm mass. Then, a CT-guided biopsy was performed on March 31, 2013, confirming the mass and possibly indicating malignancy. The PET-CT on April 9, 2013, showed hypermetabolic activity in the mass and new FDG-avid lymph nodes in the left internal mammary chain and left cardiophrenic angle, suggesting metastatic spread. The patient underwent a biopsy of the internal mammary lymph node on April 17, 2013, which confirmed metastatic disease. This indicates that the cancer had already spread to lymph nodes at that point. Given that the patient had a confirmed malignant mass with lymph node involvement at the time of diagnosis and biopsy, and considering the aggressive nature of lung cancer with lymph node metastases, it is likely that the patient underwent some form of treatment (though the exact treatment is not detailed here). However, the timeline does not show any treatment initiation or response assessment beyond the biopsy and staging. The question is whether the patient achieved an initial treatment response but then had recurrence within a year. Since the timeline does not include any treatment details or follow-up imaging showing response followed by recurrence within a year, there is no evidence to support that scenario. The available data shows the presence of a primary mass and metastatic lymph nodes at diagnosis, but no subsequent treatment or recurrence data within the first year. Therefore, based solely on the provided timeline, there is no indication of initial treatment response followed by recurrence within one year. The timeline only documents the diagnostic process and staging, not treatment outcomes or recurrence.</think> <brief reasoning trace with explanation for label selection> | <label> The patient's timeline documents the diagnosis of a left lingular mass with subsequent imaging and biopsy confirming malignancy

and metastatic lymph node involvement. There is no evidence of treatment initiation or response assessment, nor any indication of recurrence within the first year. The timeline focuses on diagnostic and staging procedures without subsequent treatment or recurrence data. Therefore, there is no basis to conclude an initial treatment response followed by recurrence within one year. <answer>No</answer></think>

no image: [CORRECT] <think>First, I need to determine if the patient achieved an initial treatment response but experienced cancer recurrence within 1 year of treatment initiation. The key points to consider are the timeline of events, the nature of the cancer, treatments administered, and any evidence of recurrence. Looking at the patient's timeline: - The patient was diagnosed with a left lingular mass in February 2013 based on CT scans. - A CT-guided biopsy was performed on March 31, 2013, confirming the presence of a lung mass. - A PET-CT scan on April 9, 2013, showed the mass and indicated possible metastases to an internal mammary lymph node and another node in the left cardiophrenic region. - A biopsy of the internal mammary lymph node was done on April 17, 2013, confirming metastatic disease. The timeline shows that the patient was diagnosed and underwent staging procedures in early 2013. There is no mention of any treatment initiated after these diagnostic steps. The question is about whether the patient achieved an initial treatment response but then had recurrence within a year. Since the timeline only goes up to April 2013, and there is no evidence of treatment (such as surgery, chemotherapy, or radiation) being administered after the biopsy and staging, it is impossible to assess any treatment response or subsequent recurrence within a year. The patient's cancer was identified and staged, but no treatment was documented in the timeline provided. Therefore, without any treatment data, I cannot confirm an initial response or recurrence. The correct answer is "No" because there is no evidence of treatment initiation or response in the timeline.</think> <brief reasoning trace with explanation for label selection> | <label> The patient's timeline documents the diagnosis and staging of a left lingular lung mass with suspected metastases to lymph nodes but does not include any information about treatment initiation. Without evidence of treatment (e.g., surgery, chemotherapy, radiation), it is impossible to assess an initial treatment response or recurrence. The timeline ends in April 2013, with no subsequent events indicating treatment or recurrence. Thus, the correct answer is "No." </label></think> <answer>No</answer>

no radiology report: [CORRECT] <think>To determine whether the patient will achieve an initial treatment response but experience cancer recurrence within 1 year of treatment initiation, I must carefully analyze the provided patient timeline and clinical data. The timeline includes imaging studies from 2013, such as CT scans of the abdomen, pelvis, and chest, as well as MR imaging of the head. These studies likely reflect the patient's cancer progression, treatment response, and recurrence status. However, the timeline does not explicitly mention any clinical outcomes, treatment details, or recurrence events. Without additional information such as pathology reports, treatment modalities, or documented recurrence within 1 year, it is impossible to definitively conclude whether the patient experienced an initial response followed by recurrence. Therefore, based solely on the provided timeline, I cannot confirm recurrence within 1 year. The correct answer is "No."</think> <answer>No</answer>

100 axial images (no timeline): [CORRECT] <think>First, I note that the question asks whether the patient will achieve an initial treatment response but experience cancer recurrence within 1 year of treatment initiation. This requires me to evaluate the patient's clinical course, including treatment response and recurrence timing. Looking at the provided image, it is a CT scan showing axial slices of the head and neck region. The scan shows bony structures, soft tissues, and air spaces. However, the image alone does not provide direct evidence of treatment response or recurrence timing. There is no visible tumor, no post-treatment changes, no evidence of recurrence, or any other clinical data that would indicate recurrence within 1 year. Since the question is based on the patient's clinical history and current cancer-related evidence, and the image does not provide such evidence, I must rely solely on the timeline data provided. The timeline data is not visible in the image, so I cannot infer recurrence or response

from this image alone. Therefore, without additional clinical data or timeline information, I cannot confirm whether the patient achieved an initial treatment response followed by recurrence within 1 year. The image does not provide sufficient evidence to answer "Yes" or "No" definitively. However, the question explicitly asks for a choice between "Yes" or "No" based on the patient's clinical history and current evidence. Since the image does not provide such evidence, I must conclude that the answer cannot be determined from the image alone. But the question expects a choice, so I must select based on the most likely scenario given the lack of evidence. Given the lack of evidence in the image and the question's phrasing, I must choose the most neutral or cautious answer. Since the image does not show recurrence or response, and the question is about a future event, I cannot confirm recurrence within 1 year. Therefore, the answer is "No." </think> <answer>No</answer>

Model: Qwen/Qwen3-VL-8B-Instruct

middle image from each view: [CORRECT] The patient's timeline shows a left lung mass diagnosed in March 2013, with subsequent imaging (CT and PET) confirming it is a malignant tumor with metastases to the left internal mammary lymph node and left cardiophrenic angle node. The PET scan on 04/09/2013 shows intense hypermetabolism in the primary lung mass and the metastatic nodes, indicating active disease. The timeline does not contain any documentation of treatment initiation, response, or recurrence. Therefore, there is no evidence to support the claim that the patient achieved an initial treatment response or experienced recurrence within 1 year of treatment initiation. No | No

middle axial image: [CORRECT] The patient's timeline shows a solitary left lung mass (lingular) diagnosed in March 2013, with subsequent imaging and biopsy confirming it as lung cancer. A PET-CT scan in April 2013 revealed intense hypermetabolism in the lung mass and new, FDG-avid lymph nodes in the left internal mammary chain and left cardiophrenic angle, which are suspicious for metastases. The timeline does not contain any documentation of treatment initiation, response assessment, or recurrence events. Therefore, there is no evidence to support that the patient achieved an initial treatment response or experienced recurrence within 1 year of treatment initiation. No | No

no image: [CORRECT] The patient's timeline shows a large left lung mass (5.0–6.4 cm) identified in March 2013, followed by biopsy and staging. PET/CT in April 2013 revealed intense hypermetabolism in the lung mass and new FDG-avid lymph nodes (internal mammary and cardiophrenic), consistent with metastatic disease. No evidence of distant metastases was found at that time. However, the timeline does not include any documentation of treatment initiation, response assessment, or recurrence within 1 year. Since no treatment is recorded, and no post-treatment imaging or clinical follow-up is provided to confirm an initial response or recurrence, the question cannot be answered based on available evidence. But per the rules: we must select from "Yes" or "No" based on the timeline. The timeline does not show any treatment response or recurrence. The only evidence is pre-treatment staging showing metastatic disease. Since treatment initiation is not documented, we cannot confirm an initial response or recurrence within 1 year. However, the question is phrased as a binary choice. Given that the patient has metastatic disease at baseline and no treatment is recorded, the most accurate answer based on available evidence is that recurrence within 1 year cannot be confirmed — but the question implies a binary outcome. Since the timeline does not show any treatment or response, and recurrence is not documented, we must select the option that best fits the evidence. Given the absence of treatment initiation or response documentation, and the lack of evidence for recurrence, the safest answer is "No" — because recurrence is not documented, and no treatment response is shown. <brief reasoning trace with explanation for label selection> | No

no radiology report: [CORRECT] The provided PATIENT_TIMELINE contains imaging studies (CT and MR scans) from 2013, but it lacks any explicit documentation of the patient's cancer

diagnosis, treatment initiation, treatment response, or any evidence of recurrence within 1 year of treatment. There is no information regarding the clinical history, treatment intent, or outcomes. Therefore, it is impossible to determine whether the patient achieved an initial treatment response or experienced recurrence within the specified timeframe based solely on the given data. No | No

100 axial images (no timeline): [CORRECT] The provided PATIENT_TIMELINE consists solely of a series of CT scan images that sequentially scan from the lower extremities up through the abdomen, pelvis, thorax, and finally the head and neck. There is no clinical history, no documentation of cancer diagnosis, no treatment plan, no evidence of initial treatment response, and no information regarding cancer recurrence. The images show anatomical structures without any explicit pathological findings or clinical context to determine treatment response or recurrence. Therefore, it is impossible to determine whether the patient will achieve an initial treatment response or experience recurrence within 1 year based on the given evidence. No | No

Model: google/medgemma-1.5-4b-it

middle image from each view: [INCORRECT] <brief reasoning trace with explanation for label selection> | <label> The patient has a history of lung cancer, specifically a mass in the lingula of the left lung. The patient has undergone multiple imaging studies including CT scans and PET CT scans. The PET CT scan shows hypermetabolic activity in the left lung mass and also in a left internal mammary lymph node, suggesting metastasis. The patient has also undergone a biopsy of the internal mammary lymph node. The question asks if the patient will achieve an initial treatment response but experience cancer recurrence within 1 year of treatment initiation. Given the evidence of metastatic disease (lung mass and internal mammary lymph node), the patient is likely to experience cancer recurrence within 1 year. No | Yes

[illegible]

no image: [INCORRECT] <brief reasoning trace with explanation for label selection> <label>
The patient has a known primary lung cancer (left lingula mass) diagnosed in 2013. The patient underwent a CT scan on 2013-02-22 showing a 5.0 cm mass in the left hemithorax. The patient underwent a CT scan on 2013-02-22 showing a 4.9 x 5.4 x 6.7 cm mass in the lingula. The patient underwent a CT scan on 2013-03-28 showing the mass in the lingula is not significantly changed in size compared to 2013-02-22. The patient underwent a PET CT scan on 2013-04-09 showing intense hypermetabolism (SUV max of 18.21) associated with the large lesion in the left lung (4.6 x 5.3 cm) and also showing hypermetabolic lesions in an ipsilateral internal mammary node (7 x 13 mm) and another node in the left anterior costophrenic region (2 x 0.8 cm). The patient underwent a CT guided biopsy of the left internal mammary lymph node on 2013-04-17. The patient has evidence of metastatic disease (left internal mammary node and left anterior costophrenic node) confirmed by PET CT and biopsy. The patient has a history of lung cancer and has evidence of metastatic disease. The patient has not yet received any treatment for the lung cancer. The question asks if the patient will achieve an initial treatment response but experience cancer recurrence within 1 year of treatment initiation. Given the evidence of metastatic disease (at least 2 sites confirmed by PET CT and biopsy), the patient has advanced cancer. Treatment for metastatic lung cancer typically involves systemic therapy (chemotherapy, targeted therapy, immunotherapy) or potentially radiation therapy. Systemic therapy aims to treat cancer throughout the body. Recurrence within 1 year is a common outcome for patients with metastatic cancer, especially if they are not receiving curative-intent therapy. Therefore, the patient is likely to receive initial treatment (e.g., chemotherapy) but is

[illegible]

[illegible]

Model: google/medgemma-4b-it

middle image from each view: [CORRECT] The patient was diagnosed with lung cancer in 2013. Subsequent imaging and biopsy confirmed the presence of a lung mass and metastasis to an internal mammary lymph node. The patient underwent a biopsy of the internal mammary lymph node. The biopsy was successful. Based on the information provided, the patient has a confirmed diagnosis of lung cancer with metastasis. The patient has undergone a biopsy of the lymph node. The biopsy was successful. Given the presence of metastasis, it is likely that the patient will experience cancer recurrence within 1 year of treatment initiation. <No>

middle axial image: [INCORRECT] The patient's initial CT scan in February 2013 revealed a 5 cm mass in the lingula of the left lung. Subsequent PET/CT in April 2013 showed hypermetabolic activity in the lung mass and a suspicious lymph node in the internal mammary chain. A biopsy of the lymph node was performed in March 2013, and the pathology report confirmed metastasis. The patient's clinical history indicates a diagnosis of lung cancer with metastasis. Given the presence of metastasis, the patient is likely to experience cancer recurrence within 1 year of treatment initiation. <Yes>

no image: [INCORRECT] The patient was diagnosed with lung cancer in 2013. The patient underwent a CT-guided biopsy of the left lung mass and the internal mammary lymph node. The biopsy revealed metastatic disease. The patient is currently undergoing treatment for lung cancer. Based on the patient's clinical history and current cancer-related evidence, the patient will experience cancer recurrence within 1 year of treatment initiation. <Yes>

no radiology report: [CORRECT] The provided timeline does not contain information about the patient's cancer history, treatment response, or recurrence within 1 year of treatment initiation. Therefore, it is impossible to answer the question based on the given information.
Final Answer: No

[illegible]

[illegible]

Subtask: has_recurrence_2_yr

Question:

Based on the patient's clinical history and current cancer-related evidence, will the patient achieve an initial treatment response but experience cancer recurrence within 2 years of treatment initiation?

Correct Answer: No

Model: OpenGVLab/InternVL3_5-8B

middle image from each view: **[INCORRECT]** <brief reasoning trace with explanation for label selection> | <label> The patient was diagnosed with a left lung mass, which was later confirmed to be hypermetabolic on PET CT, indicating malignancy. The presence of metastasis to the internal mammary node suggests an advanced stage of cancer. Given the stage and the nature of the tumor, it is likely that the patient would achieve an initial treatment response. However, the presence of metastasis and the aggressive nature of the tumor suggest a high likelihood of recurrence within 2 years of treatment initiation. | Yes

middle axial image: **[INCORRECT]** <brief reasoning trace with explanation for label selection> | <label> The patient was diagnosed with a left lung mass, which was later confirmed to be hypermetabolic on PET CT, indicating malignancy. The presence of metastasis to the internal mammary node and another node in the left cardiophrenic region suggests an advanced stage of cancer. Given the stage and the nature of the tumor, it is likely that the patient will experience cancer recurrence within 2 years of treatment initiation, despite an initial treatment response. | Yes

no image: **[INCORRECT]** <brief reasoning trace with explanation for label selection> | <label> The patient was diagnosed with a left lung mass, which was later confirmed to be hypermetabolic on PET CT, indicating malignancy. The presence of metastasis to the internal mammary node and another node in the left cardiophrenic region suggests an advanced stage of cancer. The timeline shows that the patient underwent a biopsy and further imaging, but there is no explicit evidence of an initial treatment response or recurrence within 2 years of treatment initiation in the provided timeline. The absence of documented treatment outcomes or follow-up imaging within 2 years makes it difficult to definitively predict recurrence based on the given information. | <label> No

no radiology report: **[CORRECT]** <No> | <No> The provided timeline does not include any specific evidence of cancer diagnosis, treatment response, or recurrence within 2 years of treatment initiation. The entries are mostly related to medical imaging procedures without clear indications of cancer-related findings or outcomes. Therefore, there is insufficient information to determine an initial treatment response or cancer recurrence within the specified timeframe.

100 axial images (no timeline): **[INCORRECT]** <brief reasoning trace with explanation for label selection> | <label> The CT images show evidence of metastatic disease throughout multiple slices, indicating advanced cancer. The presence of lesions in various organs suggests a high likelihood of recurrence post-treatment, especially if initial treatment achieves a partial response but not a complete response. Given the extensive spread, it is plausible that the patient might experience recurrence within 2 years. | Yes

Model: OctoMed/OctoMed-7B

middle image from each view: [CORRECT] <think>First, I carefully reviewed the entire patient timeline provided to understand the clinical course and cancer-related evidence. The patient was diagnosed with a left lingular lung mass in February 2013, which was further evaluated with CT scans and confirmed as a suspicious lesion. A biopsy was performed, and the PET-CT scan in April 2013 showed intense hypermetabolism in the lung mass and additional hypermetabolic lymph nodes in the left internal mammary chain and left anterior costophrenic region, indicating metastatic disease. This suggests that the cancer had already spread to regional lymph nodes at the time of diagnosis. The question asks whether the patient would achieve an initial treatment response but experience cancer recurrence within 2 years. Based on the timeline, there is no mention of any treatment initiation or response assessment. The timeline ends in April 2013 with the lymph node biopsy, but no subsequent treatment details or follow-up imaging to assess response or recurrence are provided. Without evidence of treatment or recurrence data, it is impossible to determine if the patient had an initial response followed by recurrence within 2 years. Therefore, since the timeline does not include any treatment or recurrence information, the correct answer is "No" because the necessary clinical data to support such a conclusion is absent.</think> <brief reasoning trace with explanation for label selection> | <label> The patient's timeline shows a left lingular lung mass diagnosed in February 2013, with subsequent imaging confirming metastatic spread to regional lymph nodes. However, there is no mention of treatment initiation, response assessment, or recurrence data within the provided timeline. Without evidence of treatment or recurrence, it is impossible to conclude whether the patient achieved an initial treatment response followed by recurrence within 2 years. Therefore, the correct answer is "No" because the necessary clinical data is absent.</label></think><answer>No</answer></think>

middle axial image: [CORRECT] <think>First, I need to determine if the patient will achieve an initial treatment response but experience cancer recurrence within 2 years of treatment initiation. The key factors to consider are the stage of the cancer, tumor biology, treatment intent and completeness, margins, nodal status, biomarkers, and any documented outcomes from the timeline. Looking at the timeline, the patient was diagnosed with a left lingular lung mass in February 2013. The CT scans show a large mass measuring up to 5.1 cm x 5.5 cm x 6.4 cm. The PET scan on April 9, 2013, indicates intense hypermetabolism of the mass with SUV max 18.21, suggesting high metabolic activity consistent with malignancy. Additionally, there are hypermetabolic lymph nodes in the left internal mammary chain and left anterior costophrenic region, which are suspicious for metastases. The biopsy of the lung mass and the lymph node confirmed malignancy, but the exact histology is not specified here. However, the presence of FDG-avid lymph nodes suggests metastatic spread. The patient underwent CT-guided biopsies of the lung mass and the lymph node, confirming the diagnosis. The timeline does not mention any treatment initiation such as surgery, chemotherapy, or radiation. The last entry is on March 15, 2013, with a CT-guided biopsy of the lymph node, but no subsequent treatment is documented. Without treatment, the cancer would likely progress. Since there is no evidence of treatment initiation, the patient has not yet undergone any therapy. Therefore, it is impossible to assess an initial treatment response or recurrence within 2 years because treatment has not started. The timeline only shows diagnostic imaging and biopsies, not treatment. Thus, based on the provided timeline, the patient has not received any treatment, so the question about initial treatment response and recurrence within 2 years cannot be answered affirmatively. The correct answer is "No" because there is no treatment to evaluate.</think> <brief reasoning trace with explanation for label selection> | <label> The patient's timeline shows diagnostic imaging and biopsies but no evidence of treatment initiation. Without treatment, an initial response or recurrence cannot be assessed. Therefore, the answer is "No."</label></think><answer>No</answer>

no image: [CORRECT] <think>First, I need to determine if the patient achieved an initial treatment response but experienced cancer recurrence within 2 years of treatment initiation. The key points to look for are: 1. ****Initial Treatment Response****: This would be indicated by a

reduction in tumor size or other signs of effective therapy. 2. ****Recurrence within 2 years****: Evidence of the cancer coming back after initial treatment. Looking at the timeline: - The patient was diagnosed with a left lingular mass in February 2013 (based on CT scans). - A biopsy was performed on March 31, 2013, confirming lung cancer. - The PET-CT on April 9, 2013, showed a hypermetabolic mass in the left lung with new FDG-avid lymph nodes (internal mammary and cardiophrenic), indicating metastatic disease. - The CT-guided biopsy of the lymph node on April 17, 2013, confirmed metastasis. There is no mention of any treatment (like surgery, chemotherapy, or radiation) being initiated after the biopsy. The timeline only shows diagnostic procedures and follow-up imaging but no therapeutic interventions. Without treatment, there is no initial response to evaluate. Since the patient's cancer was found to have metastasized at the time of diagnosis (as per the PET-CT), and no treatment was administered, there is no evidence of an initial treatment response. Therefore, the premise of the question (achieving an initial treatment response) does not apply. Hence, the answer is "No" because there is no treatment to assess a response, and the cancer was already advanced at diagnosis.

<brief reasoning trace with explanation for label selection> | <label> The patient's clinical timeline shows a diagnosis of a left lingular mass in February 2013, followed by imaging confirming metastatic disease (FDG-avid lymph nodes) in April 2013. No treatment (e.g., surgery, chemotherapy, radiation) is documented in the timeline. Without treatment, there is no basis to assess an initial treatment response. Additionally, the cancer was already metastatic at diagnosis, and recurrence cannot be evaluated without prior treatment. Thus, the patient did not achieve an initial treatment response, and the question's premise does not apply.

<answer>No</answer></think>

no radiology report: [INCORRECT] <think>To determine whether the patient will achieve an initial treatment response but experience cancer recurrence within 2 years of treatment initiation, I must carefully analyze the provided patient timeline and clinical data. The timeline includes imaging studies from 2013, such as CT scans of the abdomen, pelvis, and chest, as well as MR imaging of the head. These studies likely reflect the patient's cancer progression or response to treatment. However, the timeline does not explicitly mention any recurrence events or treatment outcomes. Without documented evidence of recurrence within 2 years, I cannot definitively conclude that the patient experienced recurrence. Therefore, based on the available information, I must select the most appropriate option.

<answer>Yes</answer>

100 axial images (no timeline): [CORRECT] <think>First, I note that the question asks whether the patient will achieve an initial treatment response but experience cancer recurrence within 2 years of treatment initiation. This requires me to evaluate the patient's clinical course, including treatment response, recurrence timing, and any documented evidence of recurrence within the first 2 years. Looking at the provided image, it is a CT scan showing axial slices of the head and neck region. The scan shows bony structures, soft tissues, and air spaces. However, the image alone does not provide direct evidence of treatment response or recurrence timing. There is no visible tumor, no post-treatment changes, no recurrence signs, or any other clinical data that can be interpreted from this single image. Since the question is about the patient's clinical history and treatment response, and the image does not provide any such clinical data, I must rely solely on the PATIENT_TIMELINE provided. The PATIENT_TIMELINE is not included in the image or the question prompt. Therefore, I cannot make a definitive judgment based on the image alone. Given that the question is asking about a clinical outcome (treatment response and recurrence within 2 years), and the image does not provide any clinical data or evidence to support or refute this, I must conclude that the information is insufficient to answer definitively. However, the question requires me to choose between "Yes" or "No" based on the PATIENT_TIMELINE, which is not provided here. Without the PATIENT_TIMELINE, I cannot confirm or deny recurrence within 2 years. Therefore, the correct answer must be based on the absence of sufficient data. However, since the question expects a choice, and the image does not show any recurrence or treatment response, the most cautious and evidence-based answer would be "No" unless the PATIENT_TIMELINE explicitly states recurrence within 2 years. But

since the PATIENT_TIMELINE is not provided, I cannot definitively answer "Yes" or "No". However, the question implies that the PATIENT_TIMELINE is known. Given that the image does not show any recurrence or treatment response, and assuming the PATIENT_TIMELINE does not indicate recurrence within 2 years, the answer would be "No".</think>
<answer>No</answer>

Model: Qwen/Qwen3-VL-8B-Instruct

middle image from each view: [CORRECT] The patient's timeline shows a left lung mass diagnosed in March 2013, with subsequent imaging (CT and PET) confirming it is a malignancy with metastases to the internal mammary lymph nodes and the left cardiophrenic angle. The PET scan on April 9, 2013, shows intense hypermetabolism in the primary lung mass and the metastatic nodes, indicating active disease. The timeline does not contain any documentation of treatment initiation, response, or follow-up scans that would indicate a treatment response or recurrence. Therefore, based on the provided evidence, it is not possible to determine if the patient achieved an initial treatment response or experienced recurrence within 2 years. No

middle axial image: [CORRECT] The provided PATIENT_TIMELINE documents a solitary left lung mass (lingular) diagnosed in 2013, with subsequent imaging and biopsy confirming malignancy. The timeline includes a PET-CT scan (April 2013) that identified the primary lung mass and two FDG-avid lymph nodes (internal mammary and cardiophrenic angle) as suspicious for metastases. The timeline also includes a CT-guided biopsy of the internal mammary lymph node (April 2013) to confirm metastatic disease. However, the timeline contains no information regarding any treatment initiated for this cancer, nor any documentation of a treatment response (e.g., tumor shrinkage, stabilization, or progression). Furthermore, there is no evidence of cancer recurrence within 2 years of any treatment initiation, as no treatment initiation date is provided and no follow-up imaging or clinical notes documenting recurrence are present. Since the patient has not received treatment (as no treatment is documented) and there is no evidence of recurrence (as no treatment initiation or recurrence event is documented), the question of whether the patient will achieve an initial treatment response but experience recurrence within 2 years cannot be answered based on the provided timeline. The correct label is "No" because the timeline does not support the premise of the question — there is no evidence of treatment initiation, no evidence of a treatment response, and no evidence of recurrence. No | No

no image: [CORRECT] No | The patient's timeline shows a solitary left lung mass diagnosed in March 2013, with biopsy performed in April 2013. Imaging at that time (April 2013) shows no evidence of distant metastatic disease, and no recurrence or progression is documented within the 2-year window. The timeline ends without any evidence of recurrence or progression, and no treatment response is documented as having occurred prior to the 2-year mark. Therefore, the patient has not achieved an initial treatment response (as no treatment is mentioned) and no recurrence is documented within 2 years.

no radiology report: [CORRECT] The provided PATIENT_TIMELINE contains imaging studies (CT and MR scans) from 2013, but it lacks any explicit documentation of the patient's cancer diagnosis, treatment initiation, treatment response, or any evidence of recurrence within 2 years of treatment. There is no information regarding the clinical history, treatment outcomes, or follow-up findings necessary to determine if the patient achieved an initial treatment response or experienced recurrence. Therefore, the question cannot be answered based on the available evidence. No | No

100 axial images (no timeline): [CORRECT] The provided PATIENT_TIMELINE consists solely of a series of CT scan images that sequentially scan from the lower extremities up through the abdomen, pelvis, thorax, and finally the head and neck. There is no clinical history, no documentation of cancer diagnosis, no treatment plan, no evidence of initial treatment

middle axial image: [INCORRECT] <brief reasoning trace with explanation for label selection>
| <label> The patient has a history of lung cancer, specifically a mass in the lingula of the left lung. This mass was confirmed by CT scans and biopsy. The biopsy showed metastatic disease, with the presence of a left internal mammary lymph node metastasis and another suspicious node in the left anterior cardiophrenic region. The PET CT scan confirms the hypermetabolic nature of the lung mass and the identified lymph node metastasis, indicating active cancer. The patient has received treatment for the lung cancer (biopsy). The question asks if the patient will achieve an initial treatment response but experience cancer recurrence within 2 years. Given the confirmed metastatic disease (lung mass and internal mammary node), the patient has already experienced a treatment response (biopsy of the lung mass). However, the presence of metastatic disease means the cancer is not cured and will likely recur. The question asks about recurrence within 2 years. While the exact timing of recurrence is unknown, the presence of metastatic disease indicates a high likelihood of recurrence. The patient has already received treatment, which is a form of response, but the underlying disease is not cured. Therefore, recurrence is expected. No | Yes

[illegible]

[illegible]

Subtask: has_recurrence_3_yr

Question:

Based on the patient's clinical history and current cancer-related evidence, will the patient achieve an initial treatment response but experience cancer recurrence within 3 years of treatment initiation?

Correct Answer: No

Model: OpenGVLab/InternVL3_5-8B

middle image from each view: **[INCORRECT]** <brief reasoning trace with explanation for label selection> | <label> The patient was diagnosed with a left lung mass, which was later confirmed to be hypermetabolic on PET CT, indicating malignancy. The presence of metastasis to the internal mammary node suggests an advanced stage of cancer. Given the stage and the nature of the tumor, it is likely that the patient will experience cancer recurrence within 3 years of treatment initiation, despite an initial treatment response. | Yes

middle axial image: **[INCORRECT]** <brief reasoning trace with explanation for label selection> | <label> The patient was diagnosed with a left lung mass, which was later confirmed to be hypermetabolic on PET-CT, indicating malignancy. The presence of metastasis to the internal mammary node and another node in the left cardiophrenic region suggests an advanced stage of cancer. Given the stage and the nature of the tumor, it is likely that the patient will experience cancer recurrence within 3 years of treatment initiation, despite an initial treatment response. | Yes

no image: **[INCORRECT]** <brief reasoning trace with explanation for label selection> | <label> The patient was diagnosed with a left lung mass, which was later confirmed to be hypermetabolic on PET-CT, indicating malignancy. The presence of metastases to the internal mammary node and another node in the left cardiophrenic region suggests an advanced stage of cancer. Given the stage and the presence of metastases, it is likely that the patient will experience cancer recurrence within 3 years of treatment initiation. | <label>Yes</label>

no radiology report: **[CORRECT]** <No> | <No> The patient's timeline does not provide specific evidence of cancer diagnosis, treatment response, or recurrence within 3 years of treatment initiation. The imaging and procedures listed are from 2013, but there is no indication of cancer-related findings or outcomes. Therefore, there is insufficient information to determine an initial treatment response or cancer recurrence within the specified timeframe.

100 axial images (no timeline): **[INCORRECT]** <brief reasoning trace with explanation for label selection> | <label> The CT images show evidence of metastatic disease throughout multiple slices, indicating advanced cancer. The presence of lesions in various organs suggests a high likelihood of recurrence post-treatment, especially given the extensive spread. This aligns with a scenario where initial treatment might yield a response, but recurrence within 3 years is probable due to the aggressive nature and widespread metastasis observed. | Yes

Model: OctoMed/OctoMed-7B

middle image from each view: **[INCORRECT]** <think>First, I carefully reviewed the entire patient timeline provided to understand the clinical course and cancer-related evidence. The patient was diagnosed with a left lingular lung mass in 2013, which was further evaluated with CT scans and confirmed to be a suspicious lesion. The CT chest with contrast on 03/28/2013 showed a 5.1 cm mass in the left lung, and subsequent PET-CT on 04/09/2013 revealed

intense hypermetabolism of the mass with FDG uptake, indicating malignancy. Additionally, there were new hypermetabolic lymph nodes in the left internal mammary chain and left cardiophrenic region, suspicious for metastases. The patient underwent a CT-guided biopsy of the left internal mammary lymph node on 04/17/2013, which confirmed metastatic disease. This confirms that the cancer had already spread to regional lymph nodes at the time of diagnosis. The presence of metastatic lymph nodes at initial diagnosis is a strong indicator of advanced disease and a higher risk of recurrence. Given that the patient had a confirmed malignant lung mass with regional lymph node involvement at diagnosis, the likelihood of achieving an initial treatment response is low. Moreover, the presence of metastatic lymph nodes suggests that the cancer is not localized and therefore more likely to recur after initial therapy. The timeline does not indicate any subsequent treatment details or outcomes, but based on the available data, the patient's cancer was already advanced and metastatic at diagnosis. Therefore, based on the evidence of a malignant lung mass with confirmed lymph node metastases at initial presentation, the patient is likely to experience cancer recurrence within 3 years of treatment initiation.

</think> <brief reasoning trace with explanation for label selection> | <label> The patient presented with a 5.1 cm left lingular lung mass confirmed as malignant via biopsy. PET-CT revealed hypermetabolic lymph nodes in the left internal mammary chain and left cardiophrenic region, indicating metastatic spread at diagnosis. The presence of regional lymph node metastases at initial staging is a strong predictor of recurrence. Given the advanced nature of the disease at presentation, the likelihood of achieving an initial treatment response but experiencing recurrence within 3 years is high. </think> <answer>Yes</answer>

middle axial image: [INCORRECT] <think>First, I need to analyze the patient's timeline and imaging findings to determine if they achieved an initial treatment response but experienced cancer recurrence within 3 years of treatment initiation. Looking at the timeline: - The patient had a CT scan on 2013-02-22 showing a left hemithorax mass in the lingula measuring 4.8 x 5.2 x 7.1 cm. - A CT-guided biopsy was performed on 2013-03-06, confirming the presence of a mass. - On 2013-03-07, a PET-CT scan showed intense hypermetabolism in the left lung mass and metastasis to an ipsilateral internal mammary node and another node in the left cardiophrenic region. - The patient underwent a biopsy of the internal mammary lymph node on 2013-04-17, which confirmed metastatic disease. - The PET-CT on 2013-03-07 already indicated metastatic disease, suggesting that the cancer was not localized at diagnosis. Given that the patient had a confirmed lung mass and metastatic lymph nodes at the time of initial diagnosis (based on the PET-CT findings), this indicates that the cancer was already advanced and not localized. Therefore, the patient did not achieve an initial treatment response because treatment had not yet been initiated. The timeline does not show any treatment initiation or response assessment. Moreover, the question asks if the patient would experience recurrence within 3 years of treatment initiation. However, there is no evidence in the timeline of any treatment being started or completed. The timeline only shows diagnostic imaging and procedures, not treatment or follow-up after treatment. Since there is no treatment data, it is impossible to determine recurrence within 3 years. The patient's cancer was already metastatic at diagnosis, which is a poor prognostic factor, but without treatment initiation, recurrence cannot be assessed. Therefore, based solely on the provided timeline, there is no evidence of treatment initiation or response, and thus the answer must be "No" because the premise of treatment initiation and subsequent recurrence cannot be confirmed from the data provided.

</think> <brief reasoning trace with explanation for label selection> | <label> The patient's timeline shows a left lung mass and metastatic lymph nodes at diagnosis, with no evidence of treatment initiation or response assessment. Since treatment initiation and recurrence cannot be evaluated, the answer is "No."</label>

no image: [CORRECT] <think>First, I need to determine if the patient achieved an initial treatment response but experienced cancer recurrence within 3 years based on the provided timeline. Looking at the timeline, the patient was diagnosed with a left lingular mass in February 2013. The CT scans from March 2013 show a 5.1 cm mass, and a PET scan in April 2013

confirmed intense hypermetabolism in the left lung mass with metastases to an ipsilateral internal mammary node and another node in the left cardiophrenic region. This indicates that the cancer was present and aggressive at diagnosis. The patient underwent a CT-guided biopsy of the lung mass and the internal mammary lymph node in April 2013, which confirmed malignancy. There is no mention of any treatment initiated after this point in the timeline provided. The timeline continues with follow-up imaging but does not indicate any treatment such as surgery, chemotherapy, or radiation. Since there is no evidence of treatment being administered, it is impossible to assess whether the patient achieved an initial treatment response. Without treatment, recurrence cannot be evaluated. The timeline does not show any post-treatment imaging or outcomes that would suggest a response followed by recurrence. Therefore, based solely on the provided patient timeline, there is no information to support that the patient received treatment, achieved a response, and then had a recurrence within 3 years. The timeline only shows the diagnostic process and biopsy results, not treatment or subsequent outcomes.

</think> <brief reasoning trace with explanation for label selection> | <label> The patient's timeline documents the diagnosis of a left lingular mass with metastatic spread to lymph nodes in April 2013. No treatment initiation, response assessment, or recurrence events are recorded. Without evidence of treatment or subsequent outcomes, it is impossible to determine if an initial response followed by recurrence occurred. The timeline lacks post-treatment data required to answer "Yes" or "No" definitively.

<answer>No</answer></think>

no radiology report: [CORRECT] <think>To determine whether the patient will achieve an initial treatment response but experience cancer recurrence within 3 years of treatment initiation, I must carefully analyze the provided patient timeline and clinical data. The timeline includes imaging studies from 2013, such as CT scans of the abdomen, pelvis, and chest, as well as MR imaging of the head. These studies are likely part of the patient's cancer staging and follow-up. However, the timeline does not explicitly mention any recurrence events, treatment modalities, or outcomes. Without specific evidence of recurrence within 3 years, I cannot definitively conclude that the patient will experience recurrence. The absence of detailed clinical outcomes or recurrence data in the timeline leads me to conclude that there is no evidence to support the recurrence claim.</think> <answer>No</answer>

100 axial images (no timeline): [CORRECT] <think>First, I carefully examine the image provided. It is a CT scan showing axial slices of the pelvis and lower abdomen. The scan reveals bony structures, soft tissues, and gas patterns. The image does not provide direct evidence of tumor recurrence or treatment response. There is no visible tumor mass, no new lesions, or signs of metastasis. The scan appears to show normal post-treatment anatomy without acute abnormalities. However, the question asks about the patient's clinical history and treatment response, which cannot be inferred solely from this image. The question references a timeline and recurrence within 3 years, which requires clinical data not visible here. Without additional clinical data, I cannot confirm recurrence or response. Therefore, I must rely on the patient's documented timeline. Since the question is about recurrence within 3 years, and the image does not show recurrence, I conclude that the patient likely does not experience recurrence within 3 years based on the image and clinical context.</think> <answer>No</answer>

Model: Qwen/Qwen3-VL-8B-Instruct

middle image from each view: [CORRECT] The patient's timeline shows a left lung mass diagnosed in March 2013, with subsequent imaging and biopsy confirming it as lung cancer. The PET-CT scan from April 2013 revealed the primary lung mass and two new, FDG-avid lymph nodes in the left internal mammary chain and left cardiophrenic angle, which are suspicious for metastases. This indicates the cancer had already spread beyond the primary site at the time of initial diagnosis. The timeline does not contain any evidence of treatment

being initiated or any documentation of a treatment response. Furthermore, there is no information regarding any recurrence within 3 years of treatment initiation, as no treatment has been documented. Therefore, the question of whether the patient will achieve an initial treatment response but experience recurrence within 3 years cannot be answered as "Yes" based on the provided evidence. No | No

middle axial image: [CORRECT] The provided PATIENT_TIMELINE documents a solitary left lung mass (lingular) diagnosed in 2013, with subsequent imaging and biopsy confirming malignancy. The timeline includes a PET-CT scan (April 2013) that identified the primary lung mass and two FDG-avid lymph nodes (left internal mammary and left cardiophrenic angle), which are suspicious for metastases. The timeline also includes a CT scan (March 2013) that showed a 5.1 cm mass and a follow-up CT (April 2013) that noted the mass was unchanged in size. The timeline does not contain any documentation of treatment initiation, response to treatment, or any evidence of cancer recurrence within 3 years of treatment initiation. Therefore, based on the available evidence, it is not possible to determine whether the patient achieved an initial treatment response or experienced recurrence within 3 years. No | No

no image: [CORRECT] The patient's timeline shows a large left lung mass (5.0–6.4 cm) identified in March 2013, with subsequent imaging and biopsy confirming malignancy (PET-CT shows intense hypermetabolism, SUV max 18.21, and biopsy of internal mammary node confirms metastatic disease). The timeline includes no documentation of treatment initiation (surgery, radiation, or systemic therapy) or any response to treatment. There is no evidence of initial treatment response, nor is there any documentation of cancer recurrence within 3 years — in fact, the timeline ends at 2013-03-15 with no follow-up or recurrence data. Since the patient has not yet received treatment, the question of achieving an initial treatment response and experiencing recurrence within 3 years cannot be answered as "Yes" — there is no evidence of either. The label "No" is selected because the patient has not yet undergone treatment, so no response can be assessed, and no recurrence is documented. No | No

no radiology report: [CORRECT] The provided PATIENT_TIMELINE contains imaging studies (CT and MR scans) from 2013, but it lacks any explicit documentation of the patient's cancer diagnosis, treatment history, treatment response, or any evidence of recurrence within 3 years. There are no clinical notes, pathology reports, or follow-up imaging results that confirm an initial treatment response or a subsequent recurrence. Therefore, it is impossible to determine the answer based solely on the given evidence. <brie reasoning trace with explanation for label selection> | <label> The patient's timeline includes imaging studies from 2013, but no evidence of cancer diagnosis, treatment, response, or recurrence is documented. Without this information, the question cannot be answered. | No

100 axial images (no timeline): [CORRECT] The provided PATIENT_TIMELINE consists solely of a series of CT scan images that sequentially scan from the lower extremities up through the abdomen, pelvis, thorax, and finally the head and neck. There is no clinical history, no documentation of cancer diagnosis, no treatment plan, no evidence of initial treatment response, and no information regarding cancer recurrence or follow-up. Without any explicit evidence of cancer, treatment, or recurrence, it is impossible to determine whether the patient will achieve an initial treatment response or experience recurrence within 3 years. <brie reasoning trace with explanation for label selection> | No

Model: google/medgemma-1.5-4b-it

middle image from each view: [INCORRECT] <brie reasoning trace with explanation for label selection> | <label> The patient has a history of lung cancer, specifically a mass in the lingula of the left lung. The patient has undergone multiple imaging studies including CT scans and PET CT scans. The PET CT scan shows hypermetabolic activity in the left lung mass, left internal mammary lymph node, and left anterior costophrenic region. The patient has also undergone a

[illegible]

[illegible]

100 axial images (no timeline): [CORRECT] FINDINGS: - Bilateral breast implants. - Bilateral breast tissue. - No suspicious mass or lesion. - No suspicious lymph node. - No suspicious axillary lymph node. - No suspicious skin lesion. - No suspicious chest wall lesion. - No suspicious lung lesion. - No suspicious bone lesion. - No suspicious adrenal lesion. - No suspicious liver lesion. - No suspicious spleen lesion. - No suspicious pancreas lesion. - No suspicious retroperitoneal lymph node. - No suspicious abdominal wall lesion. - No suspicious pelvic lymph node. - No suspicious pelvic organ lesion. - No suspicious urinary bladder lesion. - No suspicious prostate lesion. - No suspicious seminal vesicle lesion. - No suspicious rectum lesion. - No suspicious colon lesion. - No suspicious small bowel lesion. - No suspicious mesentery lesion. - No suspicious omentum lesion. - No suspicious peritoneal lesion. - No

[illegible]

Model: google/medgemma-4b-it

middle image from each view: [INCORRECT] The patient's clinical history indicates a diagnosis of lung cancer with evidence of metastasis to the internal mammary lymph node. The CT chest biopsy confirmed the presence of cancer in the lung and the internal mammary lymph node. The patient has undergone a biopsy of the internal mammary lymph node. Given the presence of metastasis to the internal mammary lymph node, the patient is at risk for cancer recurrence within 3 years of treatment initiation. <Yes>

middle axial image: [INCORRECT] The patient's clinical history indicates a diagnosis of lung cancer with evidence of metastasis to the internal mammary lymph node. The patient underwent a CT-guided biopsy of the internal mammary lymph node, which confirmed the presence of cancer. The patient's current cancer-related evidence includes a lung mass, a metastasis to the internal mammary lymph node, and a biopsy confirming the presence of cancer. Given the presence of metastasis, the patient is at risk for cancer recurrence within 3

years of treatment initiation. <Yes>

no image: [CORRECT] The patient was diagnosed with lung cancer in 2013. The patient underwent a CT-guided biopsy of the left lung mass and the internal mammary lymph node. The biopsy revealed metastatic disease. The patient is currently undergoing treatment for lung cancer. Given the presence of metastatic disease, it is likely that the cancer will recur within 3 years of treatment initiation. <No>

no radiology report: [CORRECT] The provided timeline does not contain information about the patient's cancer history, treatment response, or recurrence. Therefore, it is impossible to answer the question based on the given information. <No>

[illegible]

[illegible]

Subtask: has_recurrence_4_yr

Question:

Based on the patient's clinical history and current cancer-related evidence, will the patient achieve an initial treatment response but experience cancer recurrence within 4 years of treatment initiation?

Correct Answer: No

Model: OpenGVLab/InternVL3_5-8B

middle image from each view: **[INCORRECT]** <brief reasoning trace with explanation for label selection> | <label> The patient was diagnosed with a left lung mass, which was later confirmed to be hypermetabolic on PET CT, indicating malignancy. The presence of metastasis to the internal mammary node suggests an advanced stage of cancer. Given the stage and the nature of the tumor, it is likely that the patient would achieve an initial treatment response. However, the presence of metastasis and the aggressive nature of the tumor suggest a high likelihood of recurrence within 4 years of treatment initiation. | Yes

middle axial image: **[INCORRECT]** <brief reasoning trace with explanation for label selection> | <label> The patient was diagnosed with a left lung mass, which was later confirmed to be hypermetabolic on PET-CT, indicating malignancy. The presence of metastasis to the internal mammary node and another node in the left cardiophrenic region suggests an advanced stage of cancer. Given the stage and the nature of the tumor, it is likely that the patient will experience cancer recurrence within 4 years of treatment initiation, despite an initial treatment response. | Yes

no image: **[INCORRECT]** <brief reasoning trace with explanation for label selection> | <label> The patient was diagnosed with a left lung mass, which was later confirmed to be hypermetabolic on PET CT, indicating malignancy. The presence of metastasis to the internal mammary node and another node in the left cardiophrenic region suggests an advanced stage of cancer. Given the stage and the presence of metastatic disease, it is likely that the patient will experience cancer recurrence within 4 years of treatment initiation. | <label>Yes</label>

no radiology report: **[CORRECT]** <No> | <No> The provided timeline does not include any specific evidence of cancer diagnosis, treatment response, or recurrence. The entries are mostly related to medical imaging procedures without clear indications of cancer-related findings or outcomes. Therefore, there is insufficient information to determine whether the patient will achieve an initial treatment response and experience cancer recurrence within 4 years.

100 axial images (no timeline): **[INCORRECT]** <brief reasoning trace with explanation for label selection> | <label> The CT images show evidence of metastatic disease throughout multiple slices, indicating advanced cancer. The presence of lesions in various organs suggests a high likelihood of recurrence post-treatment, especially given the extensive spread. This aligns with a scenario where initial treatment might yield a response, but recurrence within 4 years is probable due to the aggressive nature and widespread metastasis observed. | Yes

Model: OctoMed/OctoMed-7B

middle image from each view: **[INCORRECT]** <think>First, I carefully reviewed the entire patient timeline provided to understand the clinical course and cancer-related evidence. The patient was diagnosed with a left lingular lung mass in 2013, which was further evaluated with

CT scans and confirmed to be a suspicious lesion. The CT chest with contrast on 03/28/2013 showed a 5.1 cm mass in the left lung, and subsequent PET-CT on 04/09/2013 revealed intense hypermetabolism of the mass with FDG uptake, indicating malignancy. Additionally, there were new hypermetabolic lymph nodes in the left internal mammary chain and left cardiophrenic region, suspicious for metastases. The patient underwent a CT-guided biopsy of the left internal mammary lymph node on 04/17/2013, which was successful and confirmed metastatic disease. This confirms that the cancer had already spread to regional lymph nodes at the time of diagnosis. The presence of metastatic lymph nodes at initial diagnosis is a strong indicator of advanced disease and a higher risk of recurrence. Given that the patient had a confirmed malignant lung mass with regional lymph node involvement at diagnosis, the likelihood of achieving an initial treatment response but experiencing recurrence within 4 years is high. Lung cancer, especially with lymph node metastases, often has a high recurrence rate despite initial treatment. The timeline does not indicate any long-term remission or sustained response beyond the initial treatment period. Therefore, based on the evidence of metastatic disease at diagnosis and the typical clinical course of such cancers, the patient is likely to experience an initial treatment response but will likely have cancer recurrence within 4 years.

</think> <brief reasoning trace with explanation for label selection> | <label> The patient presented with a left lingular lung mass confirmed to be malignant via biopsy. The PET-CT on 04/09/2013 showed hypermetabolic lymph nodes in the left internal mammary chain and left cardiophrenic region, indicating metastatic spread at diagnosis. This confirms stage III disease, which is associated with a high risk of recurrence despite initial treatment. The timeline does not indicate any long-term remission or sustained response beyond the initial treatment period. Therefore, the patient is likely to experience an initial treatment response but will likely have cancer recurrence within 4 years. <answer>Yes</answer> </label></think>

middle axial image: [CORRECT] <think>First, I need to analyze the patient's timeline and imaging findings to determine if they achieved an initial treatment response but then experienced cancer recurrence within 4 years of treatment initiation. Looking at the timeline: - The patient had a CT scan on 2013-02-22 showing a left hemithorax mass in the lingula measuring approximately 4.8-5.5 cm. - A CT-guided biopsy was performed on 2013-03-06, confirming the presence of a mass and possibly metastatic lymph nodes. - A PET-CT on 2013-04-09 showed intense hypermetabolism in the left lung mass and FDG-avid lymph nodes in the left internal mammary chain and left cardiophrenic angle, indicating metastatic disease. - A CT chest biopsy of the left internal mammary lymph node was performed on 2013-04-17, confirming metastasis. From these findings, the patient was diagnosed with lung cancer with regional lymph node metastases. The treatment initiated would likely be surgery or other local therapies, but the timeline does not specify the exact treatment. The question is whether the patient achieved an initial treatment response but then had recurrence within 4 years. However, the timeline provided only goes up to 2013-04-17, with no follow-up imaging or clinical data beyond that date. There is no mention of any treatment response assessment, such as tumor shrinkage, or any subsequent imaging showing recurrence. The last entry is from 2013-04-17, which is a biopsy report, not a follow-up scan. Without any post-treatment imaging or clinical notes indicating recurrence or response, it is impossible to determine if there was an initial response followed by recurrence within 4 years. Therefore, based solely on the provided patient timeline and imaging data, there is no evidence to support that the patient achieved an initial treatment response and then had recurrence within 4 years. The timeline does not include any data beyond the initial diagnosis and biopsy, and no follow-up is documented. Hence, the correct answer is "No" because the necessary follow-up data to confirm recurrence within 4 years is absent.</think> <brief reasoning trace with explanation for label selection> | <label> The patient's timeline includes initial diagnosis of a left lung mass with metastatic lymph nodes confirmed by biopsy and PET-CT. However, there is no follow-up imaging or clinical data provided beyond 2013-04-17, which is a biopsy report. Without evidence of treatment response assessment or recurrence within 4 years, it is impossible to confirm the scenario described.

Therefore, the answer is "No." </label></think> <answer>No</answer>

no image: [CORRECT] <think>First, I need to determine if the patient achieved an initial treatment response but experienced cancer recurrence within 4 years of treatment initiation. The key points to consider are the timeline of events, the nature of the cancer, treatments administered, and any evidence of recurrence. Looking at the patient's timeline: - The patient was born in 1988 (MEDS_BIRTH entries). - In 2013, there were multiple imaging studies showing a left lung mass, which was biopsied and confirmed as a lung carcinoma. - The PET CT scan on 04/09/2013 showed intense hypermetabolism in the left lung mass and metastasis to an ipsilateral internal mammary node and another node in the left cardiophrenic region. This indicates that the cancer was already metastatic at the time of initial diagnosis. - The patient underwent a CT-guided biopsy of the lung mass and the internal mammary lymph node, confirming metastatic disease. - There is no mention of any treatment (surgery, chemotherapy, radiation) being initiated after the biopsy. The timeline only shows diagnostic procedures and follow-up imaging. - The last entry in the timeline is from 2013-03-15, which is before the biopsy on 04/17/2013. There is no indication of any treatment after the biopsy. - The question asks if the patient achieved an initial treatment response but then had recurrence within 4 years. However, there is no evidence of any treatment being given. Without treatment, there is no response to evaluate, and recurrence cannot be assessed. - The patient's disease was already metastatic at diagnosis, which suggests a poor prognosis, but without treatment, the timeline doesn't show any intervention. - Therefore, since no treatment was administered, the concept of an initial treatment response and subsequent recurrence does not apply. The patient's cancer was advanced and untreated at the time of the latest documented imaging. Based on this, the correct answer is "No" because there is no evidence of treatment initiation or response, and recurrence cannot be determined without treatment.</think> <brief reasoning trace with explanation for label selection> | <label> The patient's timeline shows a diagnosis of metastatic lung cancer in 2013, confirmed by imaging and biopsy. There is no documented initiation of treatment (e.g., surgery, chemotherapy, radiation) following the biopsy. Without treatment, there is no evidence of an initial treatment response or subsequent recurrence within 4 years. The timeline only includes diagnostic procedures and follow-up imaging, with no indication of therapeutic intervention. Therefore, the premise of an initial treatment response followed by recurrence is not supported by the provided data. <answer>No</answer></think>

no radiology report: [INCORRECT] <think>To determine whether the patient will achieve an initial treatment response but experience cancer recurrence within 1 year of treatment initiation, I must carefully analyze the provided patient timeline and clinical data. The timeline includes imaging studies from 2013, such as CT scans of the abdomen, pelvis, and chest, as well as MR imaging of the head. These studies likely reflect the patient's cancer progression, treatment response, and recurrence status. However, the timeline does not explicitly mention any clinical outcomes, treatment details, or recurrence events. Without additional information such as pathology reports, treatment modalities, or documented recurrence within 1 year, it is impossible to definitively conclude whether the patient experienced an initial response followed by recurrence. Therefore, based solely on the provided timeline, I cannot confirm the recurrence within 1 year. The correct answer is "No."</think> <answer>No</answer>

100 axial images (no timeline): [INCORRECT] <think>First, I carefully examine the image provided. It appears to be a CT scan of the pelvis, showing axial slices progressing from the lower pelvis upward. The images show bony structures, soft tissues, and gas patterns. The scan does not directly show the brain or skull base, but the lower axial slices include the pelvis and proximal femurs. The question asks about cancer recurrence within 4 years of treatment initiation, which implies the patient has a known malignancy. However, the image itself does not provide direct evidence of tumor recurrence or response to treatment. There are no visible masses, no obvious new lesions, or signs of recurrence in the pelvis. The scan shows normal-appearing bone and soft tissue without clear evidence of tumor progression. Without additional clinical data or imaging of the original tumor site (e.g., brain or other organs), I cannot

definitively conclude recurrence. The question is asking about a clinical scenario that requires knowledge of the patient's treatment history, tumor type, and follow-up imaging or pathology, none of which are provided here. Therefore, based solely on the image and the lack of clinical context, I cannot confirm recurrence or response. The correct answer must be based on the patient's timeline, which is not available here. Given the lack of evidence in the image, I must conclude that the answer cannot be determined from this image alone.</think>
<answer>Yes</answer>

Model: Qwen/Qwen3-VL-8B-Instruct

middle image from each view: [CORRECT] The patient's timeline shows a large, hypermetabolic left lung mass (4.6 x 5.3 cm) with confirmed metastases to the left internal mammary lymph node and another node in the left cardiophrenic angle, as evidenced by PET-CT findings on 04/09/2013. The timeline documents a biopsy of the lung mass and lymph node, but does not contain any information regarding the initiation of treatment, the patient's response to that treatment, or any subsequent recurrence of cancer. The timeline ends with imaging findings that confirm metastatic disease, but there is no documentation of treatment outcomes or follow-up beyond the initial staging. Therefore, it is impossible to determine whether the patient achieved an initial treatment response or experienced recurrence within 4 years based on the provided evidence. No | No

middle axial image: [CORRECT] The provided PATIENT_TIMELINE documents a left lung mass (lingular) diagnosed in 2013, with subsequent imaging and biopsy confirming malignancy. The timeline includes a PET-CT scan (04/09/2013) that identified the primary lung mass and also revealed FDG-avid metastases to the left internal mammary lymph node and a node in the left cardiophrenic angle. This indicates stage IV disease at diagnosis. The timeline does not contain any documentation of treatment initiation, response, or follow-up beyond the initial staging. There is no evidence of any treatment being administered, nor is there any documentation of a treatment response or recurrence within 4 years. Therefore, based on the available evidence, the patient has not yet achieved an initial treatment response, and there is no evidence of recurrence within 4 years. The question asks whether the patient will achieve an initial treatment response but experience recurrence within 4 years. Since no treatment has been initiated and no recurrence is documented, the answer is "No". No | No

no image: [CORRECT] The patient's timeline shows a large left lung mass (5.0–6.4 cm) identified in March 2013, with subsequent imaging and biopsy confirming malignancy (PET-CT shows intense hypermetabolism, SUV max 18.21, and biopsy of internal mammary node confirms metastatic disease). The timeline includes no documentation of treatment initiation (surgery, radiation, or systemic therapy) or any response to treatment. There is no evidence of initial treatment response, nor is there any documentation of cancer recurrence within 4 years — in fact, the timeline ends at the point of diagnosis and staging, with no follow-up beyond 2013. Therefore, the patient has not yet achieved an initial treatment response, and recurrence cannot be confirmed or inferred from the provided data. No | No

no radiology report: [CORRECT] The provided PATIENT_TIMELINE contains imaging studies (CT and MR scans) from 2013, but it lacks any explicit documentation of the patient's cancer diagnosis, treatment history, treatment response, or any evidence of recurrence within 4 years. There is no information regarding initial treatment response or subsequent recurrence. Therefore, it is impossible to determine whether the patient will achieve an initial treatment response and experience recurrence within 4 years based solely on the given timeline. No | No

100 axial images (no timeline): [CORRECT] The provided PATIENT_TIMELINE consists solely of a series of CT scan images that sequentially scan from the lower extremities up through the abdomen, pelvis, thorax, and finally the head and neck. There is no clinical history, no documentation of cancer diagnosis, no treatment details, no evidence of initial treatment

[illegible]

Model: google/medgemma-4b-it

middle axial image: [INCORRECT] The patient's clinical history indicates a diagnosis of lung cancer with evidence of metastasis to the internal mammary lymph node. The patient underwent a CT-guided biopsy of the internal mammary lymph node, which confirmed the presence of cancer. The patient's current cancer-related evidence includes a lung mass, a metastasis to the internal mammary lymph node, and a biopsy confirming the presence of cancer. Given the presence of metastasis, the patient is at risk for cancer recurrence within 4 years of treatment initiation. <Yes>

no radiology report: [CORRECT] The provided timeline does not contain information about the patient's cancer history, treatment response, or recurrence. Therefore, it is impossible to answer the question based on the given information. <No>

[illegible]

[illegible]

Subtask: has_recurrence_5_yr

Question:

Based on the patient's clinical history and current cancer-related evidence, will the patient achieve an initial treatment response but experience cancer recurrence within 5 years of treatment initiation?

Correct Answer: No

Model: OpenGVLab/InternVL3_5-8B

middle image from each view: **[INCORRECT]** <brief reasoning trace with explanation for label selection> | <label> The patient was diagnosed with a left lung mass, which was later confirmed to be hypermetabolic on PET CT, indicating malignancy. The presence of metastasis to the internal mammary node suggests an advanced stage of cancer. Given the stage and the nature of the tumor, it is likely that the patient will experience cancer recurrence within 5 years of treatment initiation, despite an initial treatment response. | Yes

middle axial image: **[INCORRECT]** <brief reasoning trace with explanation for label selection> | <label> The patient was diagnosed with a left lung mass, which was later confirmed to be hypermetabolic on PET CT, indicating malignancy. The presence of metastasis to the internal mammary node suggests an advanced stage of cancer. Given the stage and the nature of the tumor, it is likely that the patient will experience cancer recurrence within 5 years of treatment initiation, despite an initial treatment response. | Yes

no image: **[INCORRECT]** <brief reasoning trace with explanation for label selection> | <label> The patient was diagnosed with a left upper lobe lung mass, which was later confirmed to be hypermetabolic on PET-CT, indicating malignancy. The presence of metastases to the internal mammary node and another node in the left cardiophrenic region suggests an advanced stage of cancer. Given the stage and the presence of metastatic disease, it is likely that the patient will experience cancer recurrence within 5 years of treatment initiation. | <label>Yes</label>

no radiology report: **[CORRECT]** <No> | <No> The provided timeline does not include any specific evidence of cancer diagnosis, treatment response, or recurrence. The entries are mostly related to medical imaging procedures without clear indications of cancer-related findings or outcomes. Therefore, there is insufficient information to determine whether the patient will achieve an initial treatment response and experience cancer recurrence within 5 years.

100 axial images (no timeline): **[INCORRECT]** <brief reasoning trace with explanation for label selection> | <label> The CT images show evidence of metastatic disease throughout multiple slices, indicating advanced cancer. Given the widespread nature of the disease and typical patterns of recurrence in such cases, it is likely that the patient will experience cancer recurrence within 5 years despite an initial treatment response. | Yes

Model: OctoMed/OctoMed-7B

middle image from each view: **[CORRECT]** <think>First, I carefully reviewed the entire patient timeline provided to understand the clinical course and cancer-related evidence. The patient was diagnosed with a left lingular lung mass in 2013, which was further evaluated with CT scans and confirmed to be a suspicious lesion. The CT chest with contrast on 04/09/2013 showed intense hypermetabolism of the mass and new FDG-avid lymph nodes in the left internal mammary chain and left cardiophrenic region, indicating metastatic spread. This was

confirmed by a PET-CT scan on the same date, which is a standard staging tool for lung cancer. The patient underwent a CT-guided biopsy of the left internal mammary lymph node on 04/17/2013, which was successful and confirmed metastatic disease. There is no mention of any treatment initiation or response assessment in the timeline provided. The timeline ends with the PET-CT and biopsy results but does not include any follow-up imaging or clinical outcomes after treatment. Since the question asks whether the patient achieved an initial treatment response but experienced cancer recurrence within 5 years, I must note that there is no evidence of treatment initiation or response in the timeline. The timeline only provides diagnostic and staging information up to 04/09/2013. Without any data on treatment, response assessment, or recurrence within 5 years, it is impossible to determine if the patient had an initial response followed by recurrence. Therefore, based solely on the provided patient timeline, there is no information to support either "Yes" or "No" to the question. The correct answer must be "No" because the timeline does not provide evidence of treatment or recurrence within 5 years.

</think> <brief reasoning trace with explanation for label selection> | <label> The patient's timeline includes diagnostic imaging and biopsy confirming a left lung mass with metastatic lymph nodes but does not include any information on treatment initiation, response assessment, or recurrence within 5 years. Without evidence of treatment or recurrence, it is impossible to determine if the patient achieved an initial response followed by recurrence. Therefore, the correct answer is "No" based on the lack of relevant clinical data in the timeline.

<answer>No</answer></think>

middle axial image: [CORRECT] <think>First, I need to analyze the patient's timeline and imaging findings to determine if they achieved an initial treatment response but then experienced cancer recurrence within 5 years. Looking at the timeline, the patient was born in 1988, and the first significant event is a CT scan in February 2013 showing a large left lingular mass. The CT report mentions a 5.1 cm mass in the left lung, which is suspicious for malignancy. The patient had symptoms like shortness of breath and fever, leading to further imaging and biopsy. In March 2013, a CT-guided biopsy was performed on the lung mass, confirming it as a lung mass. The biopsy also identified a left internal mammary lymph node as FDG-avid on a PET scan in April 2013, indicating possible metastasis. The PET scan showed intense hypermetabolism in the lung mass and lymph nodes, suggesting active cancer. The patient underwent a biopsy of the internal mammary lymph node in April 2013, which confirmed metastatic disease. This confirms the diagnosis of lung cancer with regional lymph node involvement. Now, the key point is whether the patient achieved an initial treatment response but then had recurrence within 5 years. However, the timeline provided does not include any treatment details such as surgery, chemotherapy, or radiation therapy. There is no mention of any treatment initiation or response assessment after the initial diagnosis. The last entry in the timeline is from March 2013, showing the PET scan confirming metastatic disease. There is no subsequent imaging or clinical data indicating treatment or recurrence beyond that. The patient's clinical course after 2013 is not documented in the provided timeline. Since the timeline does not provide any information about treatment or recurrence events after the initial diagnosis and biopsy, it is impossible to determine if the patient achieved an initial response followed by recurrence within 5 years. The available data only confirms the presence of a lung mass and metastatic lymph node involvement at the time of diagnosis. Therefore, based solely on the provided patient timeline, there is no evidence to support that the patient achieved an initial treatment response but later experienced recurrence within 5 years. The timeline lacks post-treatment data or recurrence findings.

</think> <brief reasoning trace with explanation for label selection> | <label> The patient's timeline documents the discovery of a left lingular lung mass and subsequent confirmation of metastatic disease via biopsy and PET imaging. However, there is no information about any treatment administered, response to treatment, or recurrence events within 5 years. Without evidence of treatment initiation or recurrence, it is impossible to conclude whether the patient achieved an initial response followed by recurrence. The timeline only confirms the presence of the mass and metastases at diagnosis.

<answer>No</answer></think>

no image: [CORRECT] <think>First, I need to determine if the patient will achieve an initial treatment response but experience cancer recurrence within 5 years based on the provided timeline. Looking at the timeline, the patient was diagnosed with a left lingular mass in February 2013. The CT scans show a 5.1 cm mass in the left hemithorax. A biopsy was performed on March 31, 2013, which confirmed the presence of a lung mass. The PET-CT on April 9, 2013, showed intense hypermetabolism of the mass and new FDG-avid lymph nodes in the left internal mammary chain and left cardiophrenic region, indicating metastatic disease. The patient underwent a CT-guided biopsy of the internal mammary lymph node on April 17, 2013, which confirmed metastasis. This suggests that the cancer had already spread to lymph nodes by mid-April 2013. Given that the patient had a confirmed lung mass and metastatic lymph nodes at the time of diagnosis, this indicates that the cancer was at least stage III (locally advanced with regional lymph node involvement). In such cases, the initial treatment would likely involve a combination of surgery, chemotherapy, and/or radiation. However, the presence of lymph node metastases at diagnosis is a poor prognostic factor and increases the risk of recurrence. The timeline does not show any definitive evidence of treatment response followed by recurrence within 5 years. The last entry is on March 15, 2013, with the PET-CT showing hypermetabolic lesions, but there is no mention of treatment initiation or follow-up imaging post-treatment. Without evidence of treatment response (e.g., reduction in tumor size or metabolic activity) and subsequent recurrence (e.g., new lesions or growth of existing ones), it's not possible to conclude that the patient achieved an initial response and then recurred within 5 years. Moreover, the timeline ends in March 2013, so there is no data beyond that date to assess recurrence. Therefore, based solely on the provided timeline, there is no information to support the claim that the patient had an initial treatment response followed by recurrence within 5 years. Hence, the correct answer is "No."</think> <brief reasoning trace with explanation for label selection> | <label> The patient was diagnosed with a left lingular mass and confirmed metastatic disease to lymph nodes by April 2013. The timeline does not include evidence of treatment initiation, response, or recurrence within 5 years. Without documented treatment outcomes or follow-up data post-treatment, it is impossible to confirm an initial response followed by recurrence. Thus, the answer is "No."</label></think> <answer>No</answer>

no radiology report: [INCORRECT] <think>First, I carefully examine the provided CT images to identify any signs of cancer recurrence or treatment response. The images show axial slices progressing from the lower abdomen to the thorax. I note the presence of gas-filled bowel loops, soft tissue structures, and bony landmarks. There is no clear evidence of a mass, abnormal lesion, or recurrence in the visible regions. The bone structures appear intact without lytic or blastic lesions. The lungs in the thoracic slices show no suspicious nodules or masses. The liver and other abdominal organs appear unremarkable. There is no visible fluid collection or abnormal enhancement. The images do not show any signs of tumor regrowth or recurrence. Based on the imaging findings alone, there is no evidence to suggest cancer recurrence within 5 years. However, clinical history and other data are not provided here, so the assessment is limited to imaging findings.</think> <answer>No</answer>

100 axial images (no timeline): [CORRECT] <think>First, I carefully examine the image provided. It appears to be a CT scan of the pelvis, showing axial slices progressing from the lower pelvis upward. The images show bony structures, soft tissues, and gas patterns. The scan does not directly show the brain or skull base, but the lower axial slices include the pelvis and proximal femurs. The question asks about cancer recurrence within 5 years of treatment initiation, which implies the patient has a history of cancer treated in the pelvis or lower abdomen. However, the image itself does not provide direct evidence of cancer recurrence or treatment response. There are no visible tumor masses, no obvious metastatic lesions, or signs of recurrence such as new bone destruction or soft tissue masses. The bony structures appear intact, and the soft tissues do not show abnormal enhancement or masses. The gas patterns in the bowel are normal and do not suggest obstruction or perforation. Since the question is about

the patient's clinical history and treatment response, I must rely on the timeline data provided, which is absent here. Without clinical data, pathology reports, or treatment records, I cannot definitively conclude recurrence or response. The image alone does not confirm recurrence or response. Given the lack of direct evidence in the image and the question's focus on the patient's clinical course, I must conclude that the image does not provide sufficient information to answer definitively. However, the question asks specifically about recurrence within 5 years, and the image does not show any signs of recurrence. Therefore, based on the image alone, the most cautious answer is "No," as there is no visible evidence of recurrence in these scans. In summary, the image does not show recurrence, and without clinical data, the answer is "No."

Model: Qwen/Qwen3-VL-8B-Instruct

middle image from each view: [CORRECT] The patient's timeline shows a large, hypermetabolic left lung mass (4.6 x 5.3 cm) with confirmed metastases to the left internal mammary lymph node and another node in the left cardiophrenic angle, as evidenced by PET-CT findings on 04/09/2013. The timeline documents a biopsy of the lung mass and lymph node, but there is no record of any subsequent treatment (surgery, radiation, or systemic therapy) being administered. The question asks whether the patient will achieve an initial treatment response but experience recurrence within 5 years. Since no treatment has been initiated, there can be no "initial treatment response." Therefore, the answer is "No." No | No

middle axial image: [CORRECT] The provided PATIENT_TIMELINE documents a solitary left lung mass (lingular) diagnosed in 2013, with subsequent imaging and biopsy confirming malignancy. The timeline includes a PET-CT scan (April 2013) that identified the primary lung mass and also revealed FDG-avid metastases to the left internal mammary lymph node and a node in the left cardiophrenic angle. This indicates stage IV disease at diagnosis. The timeline does not contain any documentation of treatment initiation, response, or follow-up beyond the initial staging. There is no evidence of any treatment being administered, nor is there any documentation of a treatment response or recurrence within 5 years. Therefore, based on the available evidence, the patient has not yet achieved an initial treatment response, and there is no evidence of recurrence within 5 years. The question asks whether the patient will achieve an initial treatment response but experience recurrence within 5 years. Since no treatment has been initiated and no recurrence is documented, the answer is "No". No | No

no image: [CORRECT] The patient's timeline shows a large left lung mass (5.0–6.4 cm) identified in March 2013, with subsequent imaging and biopsy confirming malignancy (PET-CT shows intense hypermetabolism, SUV max 18.21, and biopsy of internal mammary node confirms metastatic disease). The timeline includes no documentation of treatment initiation (surgery, radiation, or systemic therapy) or any response to treatment. There is no evidence of treatment response, nor is there any documentation of recurrence within 5 years — in fact, the timeline ends at the point of diagnosis and staging, with no follow-up beyond 2013. Since no treatment has been administered and no recurrence is documented, the question of achieving an initial treatment response followed by recurrence within 5 years cannot be affirmed. Label: "No"

no radiology report: [CORRECT] The provided PATIENT_TIMELINE contains imaging studies (CT and MR scans) from 2013, but it lacks any explicit documentation of the patient's cancer diagnosis, treatment history, treatment response, or any evidence of recurrence within 5 years. There is no information regarding the initial treatment response or subsequent recurrence. Therefore, it is impossible to determine whether the patient will achieve an initial treatment response and experience recurrence within 5 years based solely on the given timeline. No | No

100 axial images (no timeline): [CORRECT] The provided PATIENT_TIMELINE consists solely of a series of CT scan images that sequentially scan from the lower extremities up

through the abdomen, pelvis, thorax, and finally the head and neck. There is no clinical history, no documentation of cancer diagnosis, no treatment details, no evidence of initial treatment response, and no information regarding cancer recurrence or follow-up. Without any explicit evidence of cancer, treatment, or recurrence within the timeline, it is impossible to determine whether the patient will achieve an initial treatment response or experience recurrence within 5 years. <brief reasoning trace with explanation for label selection> | No

Model: google/medgemma-1.5-4b-it

middle image from each view: [INCORRECT] <brief reasoning trace with explanation for label selection> | <label> The patient has a history of lung cancer, specifically a mass in the lingula of the left lung. The patient has undergone multiple imaging studies including CT scans and PET CT scans. The PET CT scan shows hypermetabolic activity in the left lung mass and also in a left internal mammary lymph node, suggesting metastasis. The patient has also undergone a biopsy of the internal mammary lymph node. The question asks if the patient will achieve an initial treatment response but experience cancer recurrence within 5 years. Given the evidence of metastatic disease (lung mass and internal mammary lymph node), the patient is likely to experience cancer recurrence within 5 years. No | Yes

middle axial image: [INCORRECT] <brief reasoning trace with explanation for label selection> | <label> The patient has a history of lung cancer, specifically a mass in the lingula of the left lung. This mass was confirmed by CT scans and biopsy. The biopsy showed metastatic disease, with the presence of a left internal mammary lymph node metastasis and another suspicious node in the left anterior cardiophrenic region. The PET CT scan confirms the hypermetabolic nature of the lung mass and the identified lymph node metastases. The patient has received treatment for the lung cancer, including a biopsy. The question asks if the patient will achieve an initial treatment response but experience cancer recurrence within 5 years. Given the confirmed metastatic disease (lung mass and lymph node involvement), the patient has already experienced a treatment response (biopsy confirmation of metastasis). However, the presence of metastatic disease indicates a high likelihood of recurrence, especially within 5 years. Therefore, the patient is unlikely to achieve a complete initial treatment response without further treatment, and recurrence is expected. No | The patient has a confirmed lung mass and lymph node metastasis, indicating metastatic cancer. While the biopsy represents a treatment response, the presence of metastatic disease means recurrence is highly likely, especially within 5 years. The PET scan confirms hypermetabolic activity in the primary tumor and metastatic sites. Therefore, the patient is unlikely to achieve a complete initial treatment response without further treatment, and recurrence is expected.

no image: [INCORRECT] <brief reasoning trace with explanation for label selection> | <label> The patient has a history of a left lung mass, confirmed by CT and biopsy. The biopsy showed metastatic disease to an internal mammary lymph node. The patient also has a new FDG-avid lesion in the left anterior cardiophrenic angle on the CT scan performed on April 9, 2013. This lesion is described as "suspicious for areas of metastases". The patient's PET CT scan also shows hypermetabolism in this left anterior cardiophrenic angle lesion (SUV max 3.59). The patient has a history of lung cancer and evidence of metastatic disease. The question asks if the patient will achieve an initial treatment response but experience cancer recurrence within 5 years. Given the confirmed metastatic disease (internal mammary node and new cardiophrenic angle lesion) and the PET scan findings, the patient has metastatic lung cancer. Metastatic cancer is generally considered incurable, and recurrence is highly likely, even with treatment. Therefore, the patient is unlikely to achieve a cure, but recurrence is expected. The question asks about initial treatment response and recurrence within 5 years. While treatment aims to control the disease and prolong survival, a complete cure is unlikely. Recurrence is a significant risk. The presence of metastatic disease makes a cure unlikely, and recurrence is expected. The question asks about initial treatment response and recurrence within 5 years. The patient

has metastatic disease, which is generally considered incurable. Therefore, recurrence is expected. <label>No</label>

[illegible][illegible]

Model: google/medgemma-4b-it

100 axial images (no timeline): [INCORRECT] The images show a large, well-defined mass with surrounding edema. The images also show a large mass with a central area of necrosis. The images also show a large mass with surrounding edema. The images also show a large

[illegible]

large mass with a central area of necrosis. The images also show a large mass with surrounding edema. The images also show a large mass with a central

Dataset: radiation_treatment_outcomes_v1_1

Subtask: radiation_outcome

Question:

Based on the provided medical history and cancer evidence, what is the patient's expected response to external beam radiation therapy?

Correct Answer: Tumor symptoms controlled

Model: OpenGVLab/InternVL3_5-8B

middle image from each view: **[INCORRECT]** <brief reasoning trace with explanation for label selection> | <label> The patient's medical history indicates multiple malignancies, including malignant neoplasms of the lung, lymph nodes, and mediastinum. The timeline includes codes for therapeutic radiology simulation-aided field setting, basic radiation dosimetry calculation, and intensity modulated radiotherapy plan, suggesting that the patient has undergone or is undergoing radiation therapy. However, there is no explicit evidence of the patient's response to the treatment, such as imaging results or clinical assessments indicating tumor symptom control or recurrence. Therefore, based on the provided information, the most appropriate label is "Never achieved complete response" as there is no documented evidence of a complete response to the radiation therapy. | <label> "Never achieved complete response"

middle axial image: **[INCORRECT]** <brief reasoning trace with explanation for label selection> | <label> The patient's medical history indicates multiple malignancies, including malignant neoplasms of the lung, lymph nodes, and mediastinum. The timeline includes codes for therapeutic radiology simulation-aided field setting, basic radiation dosimetry calculation, and intensity modulated radiotherapy plan, suggesting that the patient has undergone or is undergoing radiation therapy. However, there is no explicit evidence of the patient's response to the treatment, such as imaging results or clinical assessments indicating tumor symptom control or recurrence. Therefore, based on the provided information, the most appropriate label is "Never achieved complete response" as there is no documented evidence of a complete response to the radiation therapy. | <label> "Never achieved complete response"

no image: **[INCORRECT]** <brief reasoning trace with explanation for label selection> | <label> The patient's medical history indicates multiple malignancies, including malignant neoplasms of the lung, lymph nodes, and mediastinum. The timeline includes codes for therapeutic radiology simulation-aided field setting, basic radiation dosimetry calculation, and intensity modulated radiotherapy plan, suggesting that the patient has undergone or is undergoing radiation therapy. However, there is no explicit evidence of the patient's response to the treatment, such as imaging results or clinical assessments indicating tumor symptom control or recurrence. Therefore, based on the provided information, the most appropriate label is "Never achieved complete response" as there is no documented evidence of a complete response to the radiation therapy. | <label> "Never achieved complete response"

100 axial images (no timeline): **[INCORRECT]** <No medical history or cancer evidence provided in the timeline to base the expected response to external beam radiation therapy.> | <Never achieved complete response>

Model: OctoMed/OctoMed-7B

middle image from each view: [INCORRECT] <think>First, I need to analyze the patient's timeline to determine their expected response to external beam radiation therapy. The options are "Tumor symptoms controlled," "Tumor symptoms returned," or "Never achieved complete response." Looking at the patient's medical history, they have multiple ICD-10 codes indicating various malignancies: C34.90 (lung cancer), C77.0 (lymph node metastasis), C38.1 (anterior mediastinal tumor), and C38.2 (posterior mediastinal tumor). This suggests advanced or metastatic disease involving multiple sites. The STANFORD_OBS/Flowsheet entries provide clinical assessments. Notably, there are entries related to sensory perception, altered elimination patterns, altered mental status, fall risks, and delirium interventions. The patient has a total score of 21 on the Confusion Assessment Method (CAM), indicating significant delirium. Delirium can be a sign of systemic illness, including cancer progression or treatment side effects. The CPT codes indicate that radiation therapy was planned and delivered, including IMRT planning and multiple treatments. However, the presence of delirium and altered mental status might affect the patient's ability to tolerate or respond to treatment fully. Importantly, there is no mention of tumor response assessment such as imaging results showing tumor shrinkage or complete response. The records focus on symptom management, delirium interventions, and fall risks rather than tumor control outcomes. Given the advanced, multi-site malignancies and the presence of significant comorbidities (delirium, altered mental status), it is likely that the patient did not achieve a complete response to radiation therapy. The absence of documented tumor control or resolution, combined with the clinical context, points towards the option "Never achieved complete response."</think> <brief reasoning trace with explanation for label selection> | <label> The patient has advanced, multi-site malignancies (lung, lymph nodes, mediastinum) with no documented tumor response metrics (e.g., imaging, pathology). Clinical notes emphasize delirium, altered mental status, and fall risks, indicating systemic compromise. Radiation therapy was planned but no evidence of tumor control or resolution is provided. The absence of complete response documentation and presence of significant comorbidities suggest the patient "Never achieved complete response."</label>

middle axial image: [INCORRECT] <think>First, I need to analyze the patient's timeline to determine their expected response to external beam radiation therapy (EBRT). The options are "Tumor symptoms controlled," "Tumor symptoms returned," or "Never achieved complete response." Looking at the timeline, the patient has multiple ICD-10 codes indicating various malignancies: C34.90 (lung), C77.0 (lymph nodes of head/neck), C38.1 (anterior mediastinum), and C38.2 (posterior mediastinum). This suggests multiple primary or metastatic sites, which complicates treatment. The STANFORD_OBS/Flowsheet entries provide clinical assessments. Key points include: - Sensory Perception: 4 (normal) - Altered Elimination Patterns: 0 (no issues) - Altered Mental Status: 0 (no issues) - Other Fall Risks: 2 (some risk) - CAM Results: Negative - RASS: Not specified, but other entries like Total Score (21 and 22) might relate to mental status or other assessments. - Fall Interventions: Standard - Delirium Interventions: Manage pain, promote sleep, manage toileting - Mobility: 4 (normal) - Moisture: 4 (normal) - High Risk for Delirium?: No The CPT codes indicate that radiation therapy was planned and delivered (77280, 77300, 77301, 77338, 77427, 77386). This confirms that EBRT was administered. However, the patient's symptoms and functional status are mostly normal (Sensory, Elimination, Mental Status, Mobility, Moisture). There's no mention of tumor shrinkage, symptom relief, or complete response. The presence of multiple malignancies and the lack of documented tumor response in the timeline suggest that the treatment may not have achieved a complete response. The options are: - "Tumor symptoms controlled": This would require evidence of symptom improvement or stabilization. - "Tumor symptoms returned": This would require prior control followed by recurrence. - "Never achieved complete response": This implies that the treatment did not fully eliminate the tumor. Given the timeline, there's no indication that symptoms were controlled or that they returned after being controlled. The patient's functional status is stable, but without specific imaging or pathology data showing tumor response, it's hard to confirm symptom control. The presence of multiple malignancies

and the lack of any documented tumor response in the timeline (no imaging results, no pathology reports, no notes on tumor size reduction) suggest that the patient likely "Never achieved complete response." Therefore, the most appropriate label is "Never achieved complete response."</think> <brief reasoning trace with explanation for label selection> | <label> The patient's timeline shows multiple malignancies (lung, lymph nodes, mediastinum) but no documented evidence of tumor response (e.g., imaging, pathology, or symptom improvement). The STANFORD_OBS/Flowsheet focuses on functional status (e.g., mobility, delirium interventions) without addressing tumor control. The absence of tumor-specific outcomes or symptom resolution indicates the treatment did not achieve a complete response. <answer>Never achieved complete response</answer></think>

no image: [INCORRECT] <think>First, I need to analyze the patient's timeline to determine their expected response to external beam radiation therapy (EBRT). The options are "Tumor symptoms controlled," "Tumor symptoms returned," or "Never achieved complete response." Looking at the timeline, the patient has multiple ICD-10 codes indicating various malignancies: C34.90 (lung), C77.0 (lymph nodes of head/neck), C38.1 (anterior mediastinum), and C38.2 (posterior mediastinum). This suggests multiple primary or metastatic sites, which complicates treatment. The STANFORD_OBS/Flowsheet entries show several assessments. The patient has a "Total Score" of 21 and 21, which might relate to some scoring system, but without more context, it's hard to interpret. There are entries about sensory perception, altered elimination patterns, altered mental status, fall risks, and mobility. However, these seem more related to general patient status rather than direct tumor response. The CPT codes listed are related to radiation therapy planning and delivery, including IMRT and dosimetry. This indicates that radiation therapy was planned and administered. However, the timeline does not mention any follow-up imaging or pathology results post-radiation to assess tumor response. There are no documented outcomes like tumor shrinkage, recurrence, or complete response. The medications listed include albuterol and ipratropium, which are for respiratory issues, possibly related to lung involvement, but again, no direct evidence of tumor response is provided. Given the lack of specific data on tumor response (e.g., imaging showing control, recurrence, or complete response), and the presence of multiple malignancies, it's reasonable to conclude that the patient's tumor symptoms were not fully controlled or resolved. The presence of ongoing symptoms (as indicated by altered mental status, fall risks, etc.) and the complexity of the disease suggest that complete response was not achieved. Therefore, the most appropriate label is "Never achieved complete response."</think> <brief reasoning trace with explanation for label selection> | <label> The patient's timeline includes multiple malignancies (lung, lymph nodes, mediastinum) and radiation therapy planning (CPT4 codes). However, there is no documented evidence of tumor response (e.g., imaging, pathology, or clinician assessments confirming control, recurrence, or complete response). The presence of ongoing symptoms (e.g., altered mental status, fall risks) and complex disease suggests incomplete treatment response. Therefore, the most accurate label is "Never achieved complete response."</think> <answer>Never achieved complete response</answer>

no radiology report: [INCORRECT] <think>First, I need to analyze the patient's timeline to determine their expected response to external beam radiation therapy (EBRT). The options are "Tumor symptoms controlled," "Tumor symptoms returned," or "Never achieved complete response." Looking at the timeline, the patient has multiple ICD-10 codes indicating various malignancies: C34.90 (lung), C77.0 (lymph nodes of head/neck), C38.1 (anterior mediastinum), and C38.2 (posterior mediastinum). This suggests widespread or multiple primary cancers in the thoracic region. The STANFORD_OBS/Flowsheet entries provide clinical assessments. Key points include: - Sensory Perception: 4 (normal) - Altered Elimination Patterns: 0 (no issues) - Altered Mental Status: 0 (no issues) - Other Fall Risks: 2 (some risk factors) - CAM Results: Negative - RASS: Not specified, but other entries like Total Score (21 and 22) might relate to mental status or other assessments. - Fall Interventions: Standard, including assistance and monitoring. - Delirium Interventions: Pain management, sleep promotion, toileting support. -

Mobility: 4 (normal) - Moisture: 4 (normal) - High Risk for Delirium?: No The CPT codes indicate that radiation therapy was planned and delivered, including IMRT planning and treatment sessions. This confirms that EBRT was administered. Now, to assess the response to EBRT, I need to look for evidence of tumor control or progression. The timeline does not include any imaging reports, pathology results, or specific notes on tumor size changes, symptom resolution, or recurrence. The flow sheet mentions delirium interventions and fall risks but no direct tumor-related outcomes. Given the lack of specific data on tumor response (e.g., imaging showing shrinkage or progression), and considering the presence of multiple malignancies, it's challenging to determine if the treatment was successful. The absence of documented tumor symptom control or recurrence suggests that the response is uncertain. However, the options require choosing one of the three. Since the timeline does not explicitly state that symptoms were controlled or returned, and there's no mention of complete response, the most appropriate choice is "Never achieved complete response," indicating that the treatment did not fully resolve the tumor burden.</think> <brief reasoning trace with explanation for label selection> | <label>The patient's timeline includes multiple malignancies (lung, lymph nodes, mediastinum) and radiation therapy planning (CPT codes 77280, 77300, 77301, 77338, 77427, 77386). However, there is no documented evidence of tumor symptom control, recurrence, or complete response. The STANFORD_OBS/Flowsheet focuses on delirium, fall risks, and mobility without tumor-specific outcomes. Without imaging, pathology, or clinician assessments confirming response, the most accurate label is "Never achieved complete response."</think><answer>Never achieved complete response</answer>

100 axial images (no timeline): [INCORRECT] <think>First, I note that the question asks about the patient's expected response to external beam radiation therapy based on the provided medical history and cancer evidence. The options are "Tumor symptoms controlled," "Tumor symptoms returned," or "Never achieved complete response." Looking at the PATIENT_TIMELINE provided, the only entries are: - [1947-01-26 00:00] | MEDS_BIRTH - [1947-01-26 00:00] | Ethnicity/38003564 - [1947-01-26 00:00] | Race/8527 These entries do not provide any specific medical history, cancer diagnosis, treatment details, or outcomes. There is no information about the patient's cancer stage, tumor biology, treatment intent, margins, nodal status, biomarkers, or any documented outcomes such as imaging results or clinician assessments. Since the question requires basing the decision solely on the PATIENT_TIMELINE, and the timeline only contains demographic data (birth date, ethnicity, race) without any clinical or treatment-related information, it is impossible to determine the patient's response to radiation therapy from this data alone. Therefore, the correct label must be "Never achieved complete response," as there is no evidence to suggest any tumor control or response, nor any indication that symptoms returned. The lack of any treatment or outcome data means the patient could not have achieved a complete response or any other response to therapy.</think> <Explanation>There is no information in the PATIENT_TIMELINE regarding cancer diagnosis, treatment, or outcomes. Without data on tumor response, symptoms, or treatment results, it is impossible to determine the patient's expected response to external beam radiation therapy. The absence of any clinical or treatment-related evidence necessitates selecting "Never achieved complete response" as the most accurate label.</think><Explanation>There is no information in the PATIENT_TIMELINE regarding cancer diagnosis, treatment, or outcomes. Without data on tumor response, symptoms, or treatment results, it is impossible to determine the patient's expected response to external beam radiation therapy. The absence of any clinical or treatment-related evidence necessitates selecting "Never achieved complete response" as the most accurate label.</think> <label>Never achieved complete response</label>

Model: Qwen/Qwen3-VL-8B-Instruct

middle image from each view: **[INCORRECT]** No evidence of tumor response or symptom control documented post-radiation; no imaging, pathology, or clinical outcome data provided to assess efficacy. | Never achieved complete response

middle axial image: **[INCORRECT]** No evidence of tumor response or symptom control documented post-radiation; no imaging, pathology, or clinical outcome data provided to assess efficacy. | Never achieved complete response

no image: **[INCORRECT]** No evidence of tumor response or symptom control documented post-radiation; no imaging or pathology outcomes reported; only radiation treatment codes and supportive care noted. | Never achieved complete response

no radiology report: **[INCORRECT]** No evidence of tumor response or symptom control is documented in the timeline; only radiation treatment planning and delivery codes are present, with no follow-up imaging, pathology, or clinical outcome data. | Never achieved complete response

100 axial images (no timeline): **[INCORRECT]** No evidence of cancer diagnosis, treatment, or response to radiation therapy is present in the provided PATIENT_TIMELINE. The timeline only contains birth and demographic data. | Never achieved complete response

Model: google/medgemma-1.5-4b-it

middle image from each view: **[CORRECT]** <brief reasoning trace with explanation for label selection> | <label> The patient has a history of lung cancer (Malignant neoplasm of unspecified part of unspecified bronchus or lung) diagnosed in 2015. The patient received external beam radiation therapy (EBRT) as indicated by the CPT codes 77300, 77301, 77338, 77427, and 77386. The patient also received bronchodilator medications (albuterol and ipratropium bromide) which are commonly used in patients with lung cancer, especially those undergoing radiation therapy, to manage bronchospasm and airway inflammation. The presence of these medications suggests the patient was likely experiencing respiratory symptoms related to the cancer or the treatment. Although the specific outcome of the radiation therapy is not explicitly stated in the timeline, the use of bronchodilators often indicates ongoing respiratory symptoms or risk. Therefore, the most likely expected response is that tumor symptoms (potentially including respiratory symptoms) have not been completely controlled. Tumor symptoms returned | Never achieved complete response | Tumor symptoms controlled

middle axial image: **[INCORRECT]** <brief reasoning trace with explanation for label selection> | <label> The patient has a history of malignant neoplasm of the lung (C34.90), secondary malignant neoplasm of lymph nodes (C77.0), and malignant neoplasm of the anterior mediastinum (C38.1) and posterior mediastinum (C38.2). These are all lung cancer diagnoses. The patient received external beam radiation therapy (EBRT) as indicated by the CPT codes 77300, 77301, 77338, 77427, and 77386. The patient also received bronchodilator medications (albuterol and ipratropium bromide) and saline inhalation, suggesting potential respiratory issues or airway management during treatment. The patient's clinical status during treatment is documented with Stanford observations, including falls, activity levels, and potential delirium risk factors. However, the provided timeline does not contain any explicit documentation of tumor response (e.g., imaging reports, pathology results, or clinical assessments specifically stating tumor shrinkage or resolution of symptoms). Therefore, based solely on the provided information, we cannot determine the patient's response to the radiation therapy. The absence of documented tumor response means we cannot conclude that the tumor symptoms are controlled or returned. <label>Never achieved complete response</label>

no image: **[INCORRECT]** <brief reasoning trace with explanation for label selection> | <label> The patient has a history of lung cancer (Malignant neoplasm of unspecified part of unspecified bronchus or lung) diagnosed in 2015. The patient received external beam radiation therapy (EBRT) as indicated by the CPT codes 77300, 77301, 77338, 77427, and 77386. The patient

also received bronchodilator medications (albuterol and ipratropium bromide) which are commonly used in patients with lung cancer, especially those undergoing radiation therapy, to manage bronchospasm. The patient also received sodium chloride inhalation solution. The patient's clinical status, as documented by the Stanford observations, shows a total score of 21, indicating a high risk for delirium. The patient also has a history of falls, including a fall within the last admission. The patient's overall clinical picture suggests significant respiratory compromise and high risk for delirium, which are common side effects of radiation therapy for lung cancer. The patient's symptoms are likely related to the cancer and its treatment. Tumor symptoms controlled | Tumor symptoms returned | Never achieved complete response

no radiology report: [INCORRECT] <brief reasoning trace with explanation for label selection>

[illegible]

moisture-related issues. The patient had a fall intervention score of 4, indicating a high risk for falls. The patient had a delirium intervention score of 4, indicating a high risk for delirium. The patient had a total score of 3 on the CAM-6, indicating a high risk for delirium. The patient had a fall risk score of 3, indicating a high

100 axial images (no timeline): [INCORRECT] <reasoning trace with explanation for label selection> | Tumor symptoms controlled <label> <reasoning trace with explanation for label selection> | Tumor symptoms returned <label> <reasoning trace with explanation for label selection> | Never achieved complete response

Model: google/medgemma-4b-it

middle image from each view: [CORRECT] Tumor symptoms controlled

middle axial image: [CORRECT] Tumor symptoms controlled

no image: [CORRECT] Tumor symptoms controlled

no radiology report: [CORRECT] Tumor symptoms controlled

100 axial images (no timeline): [INCORRECT] The provided timeline does not contain any information about the patient's cancer history, treatment, or response to radiation therapy. Therefore, I cannot determine the patient's expected response to external beam radiation therapy based on the given information. <reasoning trace: The timeline only contains birth information and demographic data, which is insufficient to assess the patient's cancer history or response to radiation therapy.> | Never achieved complete response

Dataset: tb_v1_1_tb_classification_tasks

Subtask: pneumonitis_infection_answer

Question:

Based on the provided medical history, cancer evidence, and imaging findings, which diagnosis is most consistent with the imaging differential?

Correct Answer: -1

Model: OpenGVLab/InternVL3_5-8B

middle image from each view: **[INCORRECT]** <brief reasoning trace with explanation for label selection> | <label> The timeline shows multiple emergency room visits and radiology imaging over several years, indicating a chronic condition. The repeated imaging of the chest and whole body suggests ongoing monitoring for abnormalities. The absence of specific evidence for infection or pneumonitis, such as fever or positive cultures, and the normal cytology report, point towards a chronic condition like cancer progression. The repeated imaging and emergency visits are consistent with monitoring for cancer recurrence or progression. | <Cancer Progression>

middle axial image: **[INCORRECT]** <brief reasoning trace with explanation for label selection> | <label> The timeline shows multiple visits to the emergency room and radiology, with imaging studies conducted over several years. The repeated imaging and visits suggest ongoing monitoring for potential issues. The absence of specific findings such as infection or pneumonitis in the provided timeline, and the lack of evidence for new cancer progression, makes it difficult to definitively diagnose either condition. Therefore, the most consistent diagnosis based on the provided information is "Neither". | <label> Neither

no image: **[INCORRECT]** <The patient has a history of multiple emergency room visits and chest imaging studies over several years. The repeated imaging and visits suggest a chronic condition. The absence of any specific evidence of infection or pneumonitis, such as positive cultures or specific inflammatory markers, and the lack of new cancer diagnosis or progression indicators, points towards a chronic condition that is not clearly defined as either infection or cancer progression. The normal cytology report and negative HPV test further support the absence of an active infection or cancer-related changes.> | <Neither>

no radiology report: **[INCORRECT]** <brief reasoning trace with explanation for label selection> | <label> The timeline shows multiple radiology visits and imaging studies, particularly focusing on the chest area. The repeated imaging and emergency room visits suggest ongoing monitoring and possible complications. The presence of multiple imaging studies over several years indicates a need for continuous evaluation, which is often seen in cases of cancer progression. The absence of specific evidence pointing to infection or pneumonitis, such as clinical symptoms or specific test results, makes "Cancer Progression" the most consistent diagnosis based on the provided timeline. | Cancer Progression

100 axial images (no timeline): **[INCORRECT]** <brief reasoning trace with explanation for label selection> | <label> The provided patient timeline does not include any specific medical history, cancer evidence, or imaging findings that would help determine a diagnosis. Without relevant clinical data, it is not possible to make a definitive diagnosis. | Neither

Model: OctoMed/OctoMed-7B

middle image from each view: [INCORRECT] <think>First, I carefully examine the provided patient timeline and imaging data to identify relevant clinical and radiological findings. The timeline shows multiple dates of imaging studies, including CT scans of the chest and whole body, as well as ER visits and radiology consultations. The imaging studies are labeled with codes such as SR, CR, OT, PT, and CT, indicating different types of scans and possibly different phases or modalities. Next, I note that the patient has a history of emergency room visits and multiple imaging studies over several years, suggesting ongoing monitoring or treatment. The imaging findings include axial and sagittal CT images of the chest, which show lung parenchyma and mediastinal structures. The images reveal areas of abnormality, such as possible consolidation, cavitation, or nodules, which could be consistent with infection, inflammation, or malignancy. The patient also has a cytology report (LOINC 47528-5) from December 2016 that is normal, and a negative HPV 16 DNA test (LOINC 59263-4) from the same date, which may relate to cervical cancer screening but does not directly inform the chest findings. In May 2017, the patient underwent multiple CT scans of the chest and whole body, which likely aim to assess for cancer progression or metastasis. The presence of multiple CT scans over time suggests concern for cancer monitoring. The question asks which diagnosis is most consistent with the imaging differential. The options are pneumonitis, infection, both, cancer progression, or neither. Given the imaging findings of lung abnormalities and the clinical context of multiple imaging studies over years, the differential includes infection (pneumonitis) and cancer progression. The presence of cavitation or nodules could be seen in both infectious and malignant processes. However, the repeated imaging and ER visits may indicate ongoing evaluation for cancer progression, especially if the patient has a known malignancy. Without explicit evidence of infection (e.g., fever, positive cultures) or pneumonitis (e.g., ground-glass opacities, clinical symptoms), and given the focus on cancer monitoring, the most consistent diagnosis is cancer progression. Therefore, the answer is Cancer Progression.</think> <brief reasoning trace with explanation for label selection> | <label> The imaging findings show abnormalities consistent with both infection and cancer progression. However, the repeated imaging studies and clinical context suggest a focus on cancer monitoring. Without explicit evidence of infection (e.g., fever, positive cultures) or pneumonitis (e.g., ground-glass opacities), the most consistent diagnosis is cancer progression. <answer>Cancer Progression</answer></think>

middle axial image: [INCORRECT] <think>First, I carefully examine the provided patient timeline for any relevant medical history, treatments, or diagnostic findings that could inform the imaging differential diagnosis. The timeline includes multiple dates of imaging studies, primarily chest CT scans and other radiology reports, but no explicit mention of cancer diagnosis, treatment, or pathology results. Looking at the imaging dates, there are several CT chest scans from 2011, 2016, and 2017, with multiple entries for each date, indicating repeated imaging. However, the timeline does not specify any cancer diagnosis, tumor type, or treatment details such as chemotherapy, radiation, or surgery. There is no mention of cytology or HPV testing related to cervical cancer, which is normal and negative, suggesting no active cervical malignancy. The patient has a history of montelukast use (RxNorm/200224) starting in May 2017, which is a leukotriene receptor antagonist used for asthma or allergies, not directly related to cancer. The repeated ER visits and imaging could be for various reasons, but no clear evidence of cancer progression or recurrence is documented. Importantly, the imaging findings themselves are not described in detail here. Without specific radiologic descriptions (e.g., masses, nodules, lymphadenopathy, or pleural effusions), I cannot definitively correlate the imaging with cancer progression or other diagnoses. The options include pneumonitis, infection, both, cancer progression, or neither. Given the lack of explicit cancer diagnosis or progression in the timeline, and no clear evidence of infection or pneumonitis (such as fever, infiltrates, or clinical notes), the most appropriate choice is "Neither," as there is no documented evidence supporting any of the other options.</think> <brief reasoning trace with explanation for label

selection> | <label> The patient timeline does not provide any explicit evidence of cancer diagnosis, progression, or treatment. There are no documented cytology or HPV results indicating cervical cancer, and no imaging findings or clinical notes suggesting pneumonitis or infection. The repeated imaging studies (CT chest) lack detailed descriptions to support cancer progression or infection. Therefore, the most consistent label is "Neither."</think>
<answer>Neither</answer>

no image: [INCORRECT] <think>First, I need to analyze the patient's timeline to understand their medical history, treatments, and imaging findings. The timeline shows multiple dates with imaging studies, emergency room visits, and some lab tests. Looking at the imaging entries, there are several chest CT scans and other imaging studies over the years. The key is to identify any changes or abnormalities that might indicate pneumonitis, infection, cancer progression, or neither. The patient had a cervical cytology and HPV test in 2016, both normal, which might be relevant for ruling out cervical cancer but not directly related to chest issues. The medications include montelukast, which is for asthma or allergies, suggesting possible respiratory issues. The imaging from 2011 and 2016 shows some chest scans, but without specific findings described, I need to look for changes over time. The 2017 series includes multiple CT scans of the chest and whole body, which might show progression or new lesions. Since the question is about the imaging differential, I should focus on the chest imaging. The options are pneumonitis, infection, both, cancer progression, or neither. If there are signs of inflammation or infection on imaging, such as infiltrates or consolidation, that could suggest pneumonitis or infection. If there are new or enlarging masses, nodules, or lymphadenopathy, that might indicate cancer progression. The timeline doesn't provide explicit findings like "ground glass opacities" or "consolidation" for pneumonitis, nor does it mention fever or leukocytosis for infection. Similarly, no clear evidence of tumor growth or metastasis is noted. Given the lack of specific imaging findings described in the timeline, and no documented clinical signs pointing to infection or pneumonitis, the most consistent diagnosis based solely on the provided data would be "Neither," as there is no explicit evidence supporting the other options.</think> <brief reasoning trace with explanation for label selection> | <label> The provided PATIENT_TIMELINE includes multiple imaging studies (CT scans, X-rays) but does not specify findings such as infiltrates, consolidation, or tumor progression. Without documented evidence of pneumonitis (e.g., ground-glass opacities), infection (e.g., fever, leukocytosis), or cancer progression (e.g., new lesions, nodal enlargement), the imaging differential cannot be conclusively attributed to any of the listed diagnoses. The absence of explicit pathological or clinical evidence necessitates selecting "Neither." <answer>Neither</answer></think>

no radiology report: [INCORRECT] <think>First, I carefully examine the provided CT images to identify any abnormalities or features that might suggest a diagnosis. The images show axial slices progressing from the lower abdomen to the thorax. I note the presence of gas-filled bowel loops in the abdomen, which appear normal. The thoracic images show lung parenchyma with some patchy opacities, which could suggest inflammation or infection. There is no clear evidence of a mass or nodular lesion that would strongly suggest cancer progression. The mediastinum and heart appear normal in size and shape. There is no pleural effusion or pneumothorax. The bony structures, including the ribs, clavicles, and spine, appear intact without lytic or blastic lesions. The soft tissues show no obvious masses or swelling. Given the imaging findings, the most likely diagnosis is pneumonitis or infection, as there are no definitive signs of cancer progression. The presence of patchy opacities in the lungs supports this. The patient's timeline does not indicate recent cancer treatment or progression, which would be expected to show more aggressive findings. Therefore, the most consistent diagnosis is pneumonitis or infection.</think> <answer>Both</answer>

100 axial images (no timeline): [INCORRECT] <think>First, I note that the question asks for the most consistent diagnosis based on the patient's timeline, cancer evidence, and imaging findings. However, the provided image is a CT scan of the pelvis, not the chest or head/neck region. The image shows axial slices progressing from the pelvis upward, with the final slice

showing the lower neck region. The timeline data provided is minimal and only includes birthdate and ethnicity/race, with no clinical or cancer-related details. Given the lack of clinical or cancer-related information in the timeline, and the absence of any specific imaging findings related to cancer progression, pneumonitis, or infection, it is impossible to definitively diagnose based solely on the provided data. The imaging does not show clear signs of pneumonitis (lung inflammation), infection, or cancer progression. The timeline does not mention any cancer history, treatments, or outcomes. Therefore, the most appropriate answer is "Neither," as there is no evidence to support any of the other options.</think> <answer>Neither</answer>

Model: Qwen/Qwen3-VL-8B-Instruct

middle image from each view: **[INCORRECT]** The imaging findings (CT scans from 2011, 2016, and 2017) show recurrent, progressive, and multi-site lesions consistent with metastatic cancer. The timeline includes multiple emergency room visits with radiology findings, and a whole-body CT in 2017 confirms widespread disease. There is no evidence of infection or pneumonitis in the timeline or imaging. The documented history and imaging are consistent with cancer progression. | Cancer Progression

middle axial image: **[INCORRECT]** The imaging findings (CT scans from 2011, 2016, 2017) show recurrent or progressive lesions, particularly in the chest and abdomen, with no evidence of infection or pneumonitis (no inflammatory or infectious markers documented). The patient's history includes multiple ER visits and imaging studies, suggesting ongoing disease monitoring. The presence of multiple lesions and the context of repeated imaging over time are most consistent with cancer progression rather than infection or pneumonitis. There is no evidence of resolution or improvement that would suggest infection. Therefore, "Cancer Progression" is the most consistent diagnosis. | Cancer Progression

no image: **[INCORRECT]** The patient has a documented history of multiple emergency room visits with chest imaging (CXR, CT) in 2011, 2016, and 2017, all occurring without clear evidence of infection or pneumonitis (no fever, no microbiological confirmation, no inflammatory markers noted). The 2017 whole-body CT scan is the most comprehensive imaging, and while it does not explicitly state a diagnosis, the pattern of repeated chest imaging and ER visits over time, without resolution of symptoms or infection markers, suggests a chronic, progressive process. The absence of cervical/vaginal cytology abnormalities (normal cytology, HPV negative) rules out gynecologic malignancy. The repeated imaging and lack of resolution point toward cancer progression as the most consistent explanation for the imaging findings, especially given the chronicity and pattern of presentation. No evidence supports infection or pneumonitis as the primary diagnosis. | Cancer Progression

no radiology report: **[INCORRECT]** The provided PATIENT_TIMELINE contains no explicit documentation of a cancer diagnosis, cancer treatment, or cancer-related imaging findings. The imaging studies (CT scans of the chest, abdomen, and whole body) are noted, but there is no evidence in the timeline that these scans reveal cancer progression or any cancer-related pathology. The timeline includes normal cytology results, a history of ER visits, and imaging for general evaluation, but no cancer diagnosis or treatment is mentioned. Therefore, the most consistent diagnosis with the available evidence is "Neither". <brief reasoning trace with explanation for label selection> | Neither

100 axial images (no timeline): **[INCORRECT]** The provided PATIENT_TIMELINE contains no medical history, cancer evidence, imaging findings, or any clinical data. It only includes birth date, ethnicity, and race identifiers. Without any evidence of cancer, infection, or pneumonitis, no diagnosis can be supported. <brief reasoning trace with explanation for label selection> | Neither

Model: google/medgemma-1.5-4b-it

no image: [INCORRECT] <reasoning trace with explanation for label selection> | <label> The patient has a history of chest imaging (SR, CR, OT, CT) performed in 2011 and 2016, showing no clear evidence of malignancy or significant pathology. The patient also has a history of ER visits in 2011, 2016, and 2017, suggesting potential symptoms or concerns. However, there is no documented evidence of cancer diagnosis, treatment, or follow-up imaging specifically related to a cancer diagnosis. The cytology report from 2016 is normal, and the HPV test is negative. The imaging findings in 2017 show a CT scan of the chest, but the report is not provided. Without a confirmed cancer diagnosis or specific findings suggestive of cancer progression in the provided timeline, the most consistent diagnosis with the imaging differential is "Neither". Neither

no radiology report: [INCORRECT] <reasoning trace with explanation for label selection> | <label> The patient has a history of multiple emergency room visits related to chest symptoms, including chest X-rays and CT scans. The CT scans show findings consistent with bilateral pleural effusions and possible interstitial lung disease. The patient has been on montelukast for asthma. There is no mention of cancer history or findings. The imaging findings are not specific for cancer progression, infection, or pneumonitis. The differential diagnosis includes conditions like interstitial lung disease, infection, or other inflammatory processes. Given the imaging findings and lack of cancer history, "Pneumonitis" is a plausible differential diagnosis. "Infection" is also possible given the history of ER visits. "Both" is possible, but the imaging findings are not definitive for either. "Cancer Progression" is less likely without a history of cancer or specific findings suggestive of malignancy. "Neither" is unlikely given the imaging findings. The most appropriate label based on the available information is "Pneumonitis" as it aligns with the imaging findings of interstitial lung disease and pleural effusions, although infection cannot be ruled out. Pneumonitis | Pneumonitis <reasoning trace with explanation for label selection> | <label> The patient has a history of multiple emergency room visits related to chest symptoms, including chest X-rays and CT scans. The CT scans show findings consistent with bilateral pleural effusions and possible interstitial lung disease. The patient has been on montelukast for asthma. There is no mention of cancer history or findings. The imaging findings are not specific for cancer progression, infection, or pneumonitis. The differential diagnosis includes conditions like interstitial lung disease, infection, or other inflammatory processes. Given the imaging findings and lack of cancer history, "Pneumonitis" is a plausible differential diagnosis. "Infection" is also possible given the history of ER visits. "Both" is possible, but the imaging findings are not definitive for either. "Cancer Progression" is less likely without a history of cancer or specific findings suggestive of malignancy. "Neither" is unlikely given the imaging findings. The most appropriate label based on the available information is "Pneumonitis" as it aligns with the imaging findings of interstitial lung disease and pleural effusions, although infection cannot be ruled out. Infection | Infection <reasoning trace with explanation for label selection> | <label> The patient has a history of multiple emergency room visits related to chest symptoms, including chest X-rays and CT scans. The CT scans show findings consistent with bilateral pleural effusions and possible interstitial lung disease. The patient has been on montelukast for asthma. There is no mention of cancer history or findings. The imaging findings are not specific for cancer progression, infection, or pneumonitis. The differential diagnosis includes conditions like interstitial lung disease, infection, or other inflammatory processes. Given the imaging findings and lack of cancer history, "Pneumonitis" is a plausible differential diagnosis. "Infection" is also possible given the history of ER visits. "Both" is possible, but the imaging findings are not definitive for either. "Cancer Progression" is less likely without a history of cancer or specific findings suggestive of malignancy. "Neither" is unlikely given the imaging findings. The most appropriate label based on the available information is "Pneumonitis" as it aligns with the imaging findings of interstitial lung disease and pleural effusions, although infection cannot be ruled out. Both | Both <reasoning trace with explanation for label selection> | <label> The patient has a history of multiple emergency room visits related to chest symptoms, including chest X-rays and CT scans. The CT scans show findings consistent with bilateral pleural

effusions and possible interstitial lung disease. The patient has been on montelukast for asthma. There is no mention of cancer history or findings. The imaging findings are not specific for cancer progression, infection, or pneumonitis. The differential diagnosis includes conditions like interstitial lung disease, infection, or other inflammatory processes. Given the imaging findings and lack of cancer history, "Pneumonitis" is a plausible differential diagnosis. "Infection" is also possible given the history of ER visits. "Both" is possible, but the imaging findings are not definitive for either. "Cancer Progression" is less likely without a history of cancer or specific findings suggestive of malignancy. "Neither" is unlikely given the imaging findings. The most appropriate label based on the available information is "Pneumonitis" as it aligns with the imaging findings of interstitial lung disease and pleural effusions, although infection cannot be ruled out. Cancer Progression | Cancer Progression <reasoning trace with explanation for label selection> | <label> The patient has a history of multiple emergency room visits related to chest symptoms, including chest X-rays and CT scans. The CT scans show findings consistent with bilateral pleural effusions and possible interstitial lung disease. The patient has been on montelukast for asthma. There is no mention of

100 axial images (no timeline): [INCORRECT] FINDINGS: [1978-12-11 00:00] | FINDINGS_IMAGING_CT_CHEST_1 - The lungs are clear. - The heart is normal in size. - The mediastinum is unremarkable. - The visualized bones are normal. [1978-12-11 00:00] | FINDINGS_IMAGING_CT_CHEST_2 - The lungs are clear. - The heart is normal in size. - The mediastinum is unremarkable. - The visualized bones are normal. [1978-12-11 00:00] | FINDINGS_IMAGING_CT_CHEST_3 - The lungs are clear. - The heart is normal in size. - The mediastinum is unremarkable. - The visualized bones are normal. [1978-12-11 00:00] | FINDINGS_IMAGING_CT_CHEST_4 - The lungs are clear. - The heart is normal in size. - The mediastinum is unremarkable. - The visualized bones are normal. [1978-12-11 00:00] | FINDINGS_IMAGING_CT_CHEST_5 - The lungs are clear. - The heart is normal in size. - The mediastinum is unremarkable. - The visualized bones are normal. [1978-12-11 00:00] | FINDINGS_IMAGING_CT_CHEST_6 - The lungs are clear. - The heart is normal in size. - The mediastinum is unremarkable. - The visualized bones are normal. [1978-12-11 00:00] | FINDINGS_IMAGING_CT_CHEST_7 - The lungs are clear. - The heart is normal in size. - The mediastinum is unremarkable. - The visualized bones are normal. [1978-12-11 00:00] | FINDINGS_IMAGING_CT_CHEST_8 - The lungs are clear. - The heart is normal in size. - The mediastinum is unremarkable. - The visualized bones are normal. [1978-12-11 00:00] | FINDINGS_IMAGING_CT_CHEST_9 - The lungs are clear. - The heart is normal in size. - The mediastinum is unremarkable. - The visualized bones are normal. [1978-12-11 00:00] | FINDINGS_IMAGING_CT_CHEST_10 - The lungs are clear. - The heart is normal in size. - The mediastinum is unremarkable. - The visualized bones are normal. [1978-12-11 00:00] | FINDINGS_IMAGING_CT_CHEST_11 - The lungs are clear. - The heart is normal in size. - The mediastinum is unremarkable. - The visualized bones are normal. [1978-12-11 00:00] | FINDINGS_IMAGING_CT_CHEST_12 - The lungs are clear. - The heart is normal in size. - The mediastinum is unremarkable. - The visualized bones are normal. [1978-12-11 00:00] | FINDINGS_IMAGING_CT_CHEST_13 - The lungs are clear. - The heart is normal in size. - The mediastinum is unremarkable. - The visualized bones are normal. [1978-12-11 00:00] | FINDINGS_IMAGING_CT_CHEST_14 - The lungs are clear. - The heart is normal in size. - The mediastinum is unremarkable. - The visualized bones are normal. [1978-12-11 00:00] | FINDINGS_IMAGING_CT_CHEST_15 - The lungs are clear. - The heart is normal in size. - The mediastinum is unremarkable. - The

Model: google/medgemma-4b-it

middle image from each view: [INCORRECT] The patient has a history of chest pain and visits to the ER. The imaging shows a large, dense mass in the chest, which could be a tumor. The patient also has a history of asthma, which could be related to the chest pain. <Both>

middle axial image: [INCORRECT] The patient has a history of chest pain and visits to the ER. The imaging shows a chest X-ray and CT scans of the chest and whole body. There is no mention of cancer or infection in the timeline. <Both>

no image: [INCORRECT] The patient has a history of chest pain and visits to the ER. The imaging shows multiple chest X-rays, CT scans, and PET scans over a period of time. There is no mention of any specific diagnosis or treatment. <Neither>

no radiology report: [INCORRECT] The provided images show a chest X-ray with a clear outline of the lungs and heart. There are no obvious signs of infection, cancer, or pneumonitis. The images are consistent with a normal chest X-ray. <Neither>

100 axial images (no timeline): [INCORRECT] The images show a large, homogenous, white mass occupying the majority of the chest cavity. This is highly suggestive of a large mass, which could be a tumor. The presence of a "sunburst" pattern of radiating lines is also consistent with a mass effect. Given the imaging findings, the most likely diagnosis is cancer progression.
Cancer Progression

Subtask: pneumonitis_infection_discussed

Question:

Based on the provided medical history, cancer evidence, and imaging findings, is there sufficient diagnostic ambiguity to warrant presentation of this case at a thoracic tumor board to discuss differentiation between radiation pneumonitis and infection?

Correct Answer: No

Model: OpenGVLab/InternVL3_5-8B

middle image from each view: [INCORRECT] <The imaging findings and clinical history indicate a complex case with potential differential diagnoses including radiation pneumonitis and infection. The presence of a large pelvic mass and associated lung findings necessitates further expert evaluation.> | Yes

middle axial image: [CORRECT] <The provided medical timeline does not mention any specific evidence of radiation pneumonitis or infection. The imaging findings and clinical assessments focus on a pelvic mass and potential lung nodules, but there is no direct indication of differential diagnosis between radiation pneumonitis and infection. Therefore, there is no diagnostic ambiguity to warrant a thoracic tumor board discussion for this specific case.> | No

no image: [INCORRECT] <The patient's medical timeline indicates a complex case involving a large pelvic mass with characteristics suggestive of a sarcoma. Imaging findings include a heterogeneous enhancing mass with central necrosis and peripheral enhancement, which could be indicative of radiation pneumonitis if the patient had undergone radiation therapy. However, the timeline does not explicitly mention radiation therapy. The differential diagnosis includes pleomorphic undifferentiated sarcoma, chondrosarcoma, or other unspecified sarcomas, and the possibility of metastasis. Given the ambiguity in distinguishing between radiation pneumonitis and infection, and the need for a multidisciplinary approach, presenting this case at a thoracic tumor board is warranted to discuss the differentiation and appropriate management.]> | Yes

no radiology report: [INCORRECT] <brief reasoning trace with explanation for label selection> | <label> The patient's timeline includes multiple imaging studies and diagnoses related to malignancies, but there is no direct evidence of radiation pneumonitis or infection. The imaging findings and clinical notes do not provide clear differentiation between these conditions, which creates diagnostic ambiguity. This ambiguity justifies presenting the case at a thoracic tumor board for further differentiation. Yes

100 axial images (no timeline): [INCORRECT] <brief reasoning trace with explanation for label selection> | <label> The imaging findings and clinical history indicate a need for further evaluation to differentiate between radiation pneumonitis and infection. The presence of both radiation therapy and potential infection symptoms creates diagnostic ambiguity. | Yes

Model: OctoMed/OctoMed-7B

middle image from each view: [CORRECT] <think>First, I carefully reviewed the provided patient timeline and imaging findings to understand the clinical context. The patient is a 49-year-old female with a known aggressive bone tumor in the right superior pubic ramus, confirmed by MRI and CT scans. The imaging shows a large, locally invasive mass with features suggestive of a primary bone sarcoma, such as chondrosarcoma or pleomorphic undifferentiated sarcoma, rather than metastasis. There is also a suspicious lung nodule noted

on CT, which raises concern for possible metastatic disease. The key question is whether there is sufficient diagnostic ambiguity to warrant a thoracic tumor board discussion to differentiate between radiation pneumonitis and infection. Radiation pneumonitis typically occurs after radiation therapy and presents with pulmonary infiltrates, cough, and dyspnea, often weeks to months post-radiation. Infection would present with fever, leukocytosis, and possibly infiltrates or consolidation on imaging. However, the patient's timeline does not mention any prior radiation therapy. The imaging findings focus on the pelvic mass and lung nodules, with no mention of pulmonary infiltrates or signs of infection. The lung nodule is described as spiculated, suspicious for primary lung malignancy, not infection. There is no evidence of fever, leukocytosis, or other signs of infection in the provided data. Given the absence of radiation history and the lack of clinical or imaging evidence supporting infection, there is no ambiguity in the diagnosis. The findings strongly suggest a primary bone tumor with possible lung metastasis, and no evidence to support radiation pneumonitis or infection. Therefore, the case does not present sufficient diagnostic ambiguity to require a tumor board discussion for differentiation between these two entities.

</think> <brief reasoning trace with explanation for label selection> | <label> - The patient has a confirmed aggressive bone tumor in the right pelvis with imaging findings consistent with a primary sarcoma. - There is no history of radiation therapy to suggest radiation pneumonitis. - No clinical or imaging evidence of infection (e.g., fever, leukocytosis, pulmonary infiltrates). - The lung nodule is described as spiculated and suspicious for primary malignancy, not infection. - Therefore, there is no diagnostic ambiguity to warrant a thoracic tumor board discussion. </think> <answer> | <label> No </label> </answer>

middle axial image: [INCORRECT] <think>First, I need to understand the clinical scenario. The patient is a 49-year-old female with a right superior pubic rami bone tumor. The imaging findings show a large, aggressive mass with features suggesting a primary bone tumor rather than metastasis. The differential includes pleomorphic undifferentiated sarcoma, chondrosarcoma, or other sarcomas. There is also a right middle lobe lung nodule and a rib fracture, but no clear evidence of metastatic disease from the chest CT. The key question is whether there is sufficient ambiguity to warrant a thoracic tumor board discussion to differentiate between radiation pneumonitis and infection. However, the imaging findings and clinical context do not support radiation pneumonitis or infection as the primary concern. The patient has a confirmed aggressive bone tumor with possible lung involvement, but no signs of infection or radiation-related changes. The lung nodule is described as spiculated and suspicious for primary malignancy, not infection. There is no mention of fever, leukocytosis, or other signs of infection. Radiation pneumonitis would typically occur after radiation therapy, which is not mentioned here. The patient's history includes chronic pain and recent worsening, with a biopsy performed showing a primary bone tumor. The lung findings are more consistent with a primary lung malignancy or metastasis rather than infection or radiation pneumonitis. Therefore, the ambiguity between radiation pneumonitis and infection is not present here. The case is clear enough to proceed with staging and treatment planning without needing a tumor board discussion for this differentiation. Hence, the answer is "No" because there is no ambiguity in the imaging or clinical findings to suggest radiation pneumonitis or infection over the primary bone tumor diagnosis.

</think> <brief reasoning trace with explanation for label selection> | <label> - The imaging findings show a large, aggressive bone tumor in the right superior pubic rami with features favoring a primary sarcoma (e.g., chondrosarcoma or pleomorphic undifferentiated sarcoma) over metastasis. - There is a right middle lobe lung nodule described as spiculated and suspicious for primary malignancy, not infection or radiation pneumonitis. - No clinical or imaging evidence supports radiation pneumonitis (e.g., post-radiation changes) or infection (e.g., fever, leukocytosis, infiltrates). - The case is clear enough to proceed with staging and treatment without ambiguity. </brief reasoning trace with explanation for label selection> | <label> - The explanation must be concise and reference specific evidence from the PATIENT_TIMELINE. - The label must be one of the allowed output labels (exactly as specified). - Select "No" because there is no ambiguity in the imaging or clinical findings to

suggest radiation pneumonitis or infection over the primary bone tumor diagnosis. </label>

no image: [INCORRECT] <think>First, I need to determine if there is sufficient diagnostic ambiguity between radiation pneumonitis and infection to warrant a thoracic tumor board discussion. The patient's history and imaging findings are key here. Looking at the patient timeline, the main issue is a bone tumor in the right superior pubic rami, with aggressive features noted on imaging. The differential includes sarcoma, chondrosarcoma, metastasis, and less likely infection. The imaging reports (both CT and MRI) describe a large, destructive lesion with calcifications and soft tissue involvement, but no mention of lung findings related to radiation pneumonitis. The CT chest shows a spiculated nodule in the right middle lobe and another small nodule, which are more suggestive of primary lung malignancy or metastasis rather than radiation pneumonitis. Radiation pneumonitis typically presents with patchy infiltrates or consolidation in the irradiated field, not discrete nodules. There is no history of prior thoracic radiation mentioned, which would be necessary to consider radiation pneumonitis. The patient's symptoms are localized to the pelvis and knee, with no respiratory symptoms or imaging findings indicative of lung infection or pneumonitis. Therefore, the ambiguity between radiation pneumonitis and infection is minimal, and the primary concern is the pelvic bone tumor and its staging. Hence, there is no need for a thoracic tumor board discussion at this stage.</think> <answer>Yes</answer>

no radiology report: [INCORRECT] <think>First, I carefully examine the provided CT images and the patient timeline to identify any evidence that might differentiate between radiation pneumonitis and infection. The CT images show axial slices of the thorax, including the lungs, heart, and surrounding structures. The lungs appear to have some abnormalities, but there is no clear consolidation or ground-glass opacities that would strongly suggest infection. The heart and mediastinum appear normal in size and shape. There is no visible pleural effusion or pneumothorax. The bones and soft tissues do not show any acute abnormalities. The patient timeline indicates a history of smoking and a diagnosis of secondary malignant neoplasm of bone and a malignant neoplasm of the left bronchus or lung. The patient has undergone multiple imaging studies, including CT scans, and has been treated with various medications. However, there is no specific evidence in the imaging or timeline that confirms infection such as fever, leukocytosis, or new infiltrates. Radiation pneumonitis is a known complication of radiation therapy, but there is no mention of radiation treatment in the timeline. The absence of clear radiologic signs of infection and the presence of a known malignancy suggest that the findings are more likely related to the underlying cancer rather than infection. Therefore, there is insufficient evidence to definitively differentiate between radiation pneumonitis and infection based on the provided data.</think> <answer>Yes</answer>

100 axial images (no timeline): [CORRECT] <think>First, I note that the question asks whether there is sufficient diagnostic ambiguity to warrant presentation of this case at a thoracic tumor board to differentiate between radiation pneumonitis and infection. The options are "Yes" or "No." To answer this, I must evaluate the imaging findings and any clinical context provided in the PATIENT_TIMELINE. However, the image provided is a CT scan of the chest, showing axial slices through the thorax. The scan shows lung parenchyma, mediastinum, and bony structures. The lungs appear mostly clear with no obvious consolidation, ground-glass opacities, or nodules that would suggest infection or radiation pneumonitis. The mediastinum and heart appear normal in size and shape. There is no visible pleural effusion or pneumothorax. The bones show no acute fractures or lytic lesions. Importantly, the question references a PATIENT_TIMELINE, but no specific clinical details are provided here. Without clinical data such as symptoms, lab results, or treatment history (e.g., radiation therapy, chemotherapy, or recent infection), it is impossible to determine if there is diagnostic ambiguity. The imaging alone does not show clear signs of radiation pneumonitis (e.g., patchy ground-glass opacities, fibrosis) or infection (e.g., consolidation, cavitation). Therefore, without additional clinical context, the imaging findings are not sufficient to raise diagnostic uncertainty. Hence, the answer must be based solely on the lack of clinical information and imaging findings that would create ambiguity. Since the question

asks if there is sufficient ambiguity to warrant tumor board discussion, and no such evidence is present, the answer is "No."</think> <answer>No</answer>

Model: Qwen/Qwen3-VL-8B-Instruct

middle image from each view: [CORRECT] The provided PATIENT_TIMELINE details a 49-year-old female with a large, aggressive pelvic bone tumor (right superior pubic rami) and a concurrent lung nodule. The imaging findings (CT and MRI) are consistent with a primary sarcoma (e.g., chondrosarcoma or undifferentiated sarcoma) rather than metastatic disease. The timeline explicitly states that the patient was referred to Medical Oncology for multidisciplinary care, and the radiology reports do not suggest radiation therapy as a prior treatment. Therefore, there is no evidence of radiation pneumonitis or infection to differentiate. The case is not ambiguous in this regard. No

middle axial image: [CORRECT] The provided PATIENT_TIMELINE does not contain any evidence of prior radiation therapy to the thorax or pelvis, nor is there any indication that the patient has received radiation treatment. The imaging findings (CT scan of the chest, abdomen, and pelvis) show a large pelvic mass and pulmonary nodules, but there is no mention of radiation pneumonitis as a differential diagnosis or any history of radiation exposure. The differential diagnosis discussed in the notes (e.g., primary sarcoma, metastasis) does not include radiation pneumonitis, which is typically a complication of prior radiation therapy. Therefore, there is no diagnostic ambiguity to warrant presentation to a thoracic tumor board for differentiation between radiation pneumonitis and infection, as radiation pneumonitis is not a relevant consideration in this case. No

no image: [CORRECT] No | The patient's timeline shows a primary pelvic bone tumor with imaging findings consistent with a sarcoma (e.g., aggressive mass, internal matrix, no evidence of radiation exposure or prior thoracic treatment), and no history of thoracic radiation or prior lung disease. The lung nodule is noted as suspicious for primary lung malignancy, not radiation pneumonitis, and there is no evidence of prior thoracic irradiation. Therefore, there is no diagnostic ambiguity between radiation pneumonitis and infection, as neither condition is clinically or radiologically supported.

no radiology report: [CORRECT] The provided PATIENT_TIMELINE contains no information regarding prior radiation therapy to the thorax, nor any documentation of a known malignancy in the thorax. The imaging findings described are from a CT scan of the chest, abdomen, and pelvis, which show a large, heterogeneous mass in the right upper abdomen/pelvis (likely a pelvic mass) and multiple pulmonary nodules. The timeline documents a diagnosis of "Malignant neoplasm of unspecified part of left bronchus or lung" (ICD10CM/C34.92) and "Secondary malignant neoplasm of bone" (ICD10CM/C79.51), but there is no evidence of prior thoracic radiation or a history of thoracic malignancy. The question asks about differentiation between radiation pneumonitis and infection, which is a differential diagnosis typically considered in patients with a history of thoracic radiation. Since the patient's history does not include thoracic radiation, radiation pneumonitis is not a relevant differential diagnosis. The imaging findings are more consistent with metastatic disease or a primary lung malignancy, not radiation-related lung injury. Therefore, there is no diagnostic ambiguity requiring a thoracic tumor board for this specific differential. No

100 axial images (no timeline): [CORRECT] The provided imaging series shows a progressive, large, heterogeneous mass in the right upper lobe that is consistent with a primary lung tumor. The mass is not a diffuse infiltrate or ground-glass opacity pattern that would be more suggestive of radiation pneumonitis or infection. Radiation pneumonitis typically presents as a patchy, bilateral or unilateral infiltrate, often with a geographic distribution, and is usually seen in the context of prior radiation therapy. Infection, while it can present as a mass-like consolidation, typically shows more diffuse or lobar consolidation with air bronchograms and

may be associated with systemic signs. The imaging findings here are more consistent with a solid mass lesion, which is more indicative of a primary malignancy. There is no evidence of diffuse infiltrates, ground-glass opacities, or other findings that would suggest radiation pneumonitis or infection. Therefore, there is no diagnostic ambiguity to warrant presentation at a thoracic tumor board for differentiation between radiation pneumonitis and infection. No

Model: google/medgemma-1.5-4b-it

middle image from each view: [INCORRECT] <brief reasoning trace with explanation for label selection> | <label> 1. ****Identify the core question:**** The question asks if there is sufficient diagnostic ambiguity to warrant a thoracic tumor board presentation, specifically regarding differentiation between radiation pneumonitis and infection. 2. ****Scan the timeline for relevant information:**** Look for mentions of lung nodules, chest imaging, and potential diagnoses related to the lung. 3. ****Locate key findings:**** * On 03/14/2017, a CT scan of the chest, abdomen, and pelvis was performed. * The report notes a "2.3 cm spiculated nodule in the right middle lobe (3/22)". * The report further states, "suspicious for primary lung malignancy, especially in the setting of centrilobular emphysema." * The report also mentions "2 mm pulmonary nodule in the right upper lobe (3/15)". * The report notes "mild bilateral centrilobular emphysema." * On 03/19/2017, a follow-up visit notes the patient is referred to the lung cancer clinic. * On 03/29/2017, a bone scan is performed, and the report notes "Radiopharmaceutical uptake in the right pelvis, consistent with known osseous involvement of pelvic tumor." This suggests the bone scan is likely focused on the pelvic tumor, not the lung nodule. * On 03/29/2017, a follow-up visit notes the patient is referred to the lung cancer clinic. * On 03/31/2017, the timeline includes staging information: "c-7th_AJCC/UICC-M1b (CLINICAL|AJCC 7TH EDITION|M1B)". This indicates metastatic disease, likely from the lung nodule. 4. ****Evaluate the ambiguity:**** The presence of a spiculated lung nodule suspicious for malignancy, coupled with the patient's history of smoking (implied by the mention of emphysema and the nodule), raises significant concern for lung cancer. The report explicitly states the nodule is "suspicious for primary lung malignancy." 5. ****Consider the differential diagnosis:**** While radiation pneumonitis and infection are possibilities, the report's description of the nodule as "spiculated" and "suspicious for primary lung malignancy" strongly points towards a primary lung cancer diagnosis. The mention of emphysema further supports this. The other findings (pelvic tumor, bone scan) are related to the pelvic mass, not the lung nodule. 6. ****Determine if ambiguity warrants a tumor board:**** The report provides a specific finding (spiculated nodule) with a strong suspicion for malignancy (primary lung cancer). While other diagnoses are possible, the description leans heavily towards cancer. The ambiguity is not significant enough to warrant a tumor board discussion focused on differentiating between radiation pneumonitis and infection, as the primary concern is the lung nodule. The report already provides a strong initial assessment. 7. ****Select the label:**** Based on the strong suspicion for primary lung malignancy described in the imaging report, there is not sufficient diagnostic ambiguity to warrant a tumor board presentation focused on differentiating radiation pneumonitis and infection. The primary concern is the lung nodule. Therefore, the answer is "No".<unused95><brief reasoning trace with explanation for label selection> | <label> 1. ****Identify the core question:**** The question asks if there is sufficient diagnostic ambiguity to warrant a thoracic tumor board presentation to differentiate between radiation pneumonitis and infection. 2. ****Scan the timeline for relevant information:**** Look for mentions of lung nodules, chest imaging, and potential diagnoses related to the lung. 3. ****Locate key findings:**** * On 03/14/2017, a CT scan of the chest, abdomen, and pelvis was performed. * The report notes a "2.3 cm spiculated nodule in the right middle lobe (3/22)". * The report further states, "suspicious for primary lung malignancy, especially in the setting of centrilobular emphysema." * The report also mentions "2 mm pulmonary nodule in the right upper lobe (3/15)". * The report notes "mild bilateral centrilobular emphysema." * On 03/19/2017, a follow-up visit notes the patient is referred to the lung cancer clinic. * On

03/29/2017, a bone scan is performed, and the report notes "Radiopharmaceutical uptake in the right pelvis, consistent with known osseous involvement of pelvic tumor."

middle axial image: [INCORRECT] <brief reasoning trace with explanation for label selection> | <label> 1. ****Identify the core question:**** The question asks if there is sufficient diagnostic ambiguity to warrant a thoracic tumor board presentation, specifically regarding differentiation between radiation pneumonitis and infection. 2. ****Scan the timeline for relevant information:**** Look for mentions of lung nodules, chest imaging, and potential diagnoses related to the lung. 3. ****Locate key findings:**** * On 03/14/2017, a CT scan of the chest, abdomen, and pelvis was performed. * The report notes a "2.3 cm spiculated nodule in the right middle lobe (3/22)". * The report further states, "suspicious for primary lung malignancy, especially in the setting of centrilobular emphysema." * The report also mentions "2 mm pulmonary nodule in the right upper lobe (3/15)". * The report notes "mild bilateral centrilobular emphysema." * On 03/19/2017, a follow-up visit notes the patient is referred to the lung cancer clinic. * On 03/29/2017, a bone scan is performed, and the report notes "Radiopharmaceutical uptake in the right pelvis, consistent with known osseous involvement of pelvic tumor." This confirms the pelvic tumor is the primary source of the bone metastasis. * On 03/29/2017, a follow-up visit notes the patient is referred to the lung cancer clinic. * On 03/31/2017, the timeline includes staging information: "c-7th_AJCC/UICC-M1b (CLINICAL|AJCC 7TH EDITION|M1B)". This indicates metastatic disease (M1b). 4. ****Evaluate the ambiguity:**** The presence of a spiculated lung nodule suspicious for primary lung malignancy, along with emphysema, raises concern for lung cancer. The patient's history of smoking (former) also increases this risk. While radiation pneumonitis and infection are possibilities, the findings are more suggestive of malignancy. The lung nodule is a significant finding that warrants further investigation and discussion, potentially at a tumor board. 5. ****Determine if the ambiguity warrants a tumor board:**** The lung nodule is a significant finding that requires expert multidisciplinary discussion. The differential diagnosis includes malignancy (primary lung cancer, metastasis from the pelvic tumor), infection, and inflammatory processes. The ambiguity between these possibilities, especially considering the potential for malignancy, makes a tumor board presentation appropriate to discuss the findings and plan further management. 6. ****Select the label:**** Based on the presence of a suspicious lung nodule and the need for multidisciplinary discussion regarding the differential diagnosis (including malignancy), the answer is "Yes".<unused95><brief reasoning trace with explanation for label selection> | <label> 1. ****Identify the core question:**** The question asks if there is sufficient diagnostic ambiguity to warrant a thoracic tumor board presentation to differentiate between radiation pneumonitis and infection. 2. ****Scan the timeline for relevant information:**** Look for mentions of lung nodules, chest imaging, and potential diagnoses related to the lung. 3. ****Locate key findings:**** * On 03/14/2017, a CT scan of the chest, abdomen, and pelvis was performed. * The report notes a "2.3 cm spiculated nodule in the right middle lobe (3/22)". * The report further states, "suspicious for primary lung malignancy, especially in the setting of centrilobular emphysema." * The report also mentions "2 mm pulmonary nodule in the right upper lobe (3/15)". * The report notes "mild bilateral centrilobular emphysema." * On 03/19/2017, a follow-up visit notes the patient is referred to the lung cancer clinic. * On 03/29/2017, a bone scan is performed, and the report notes "Radiopharmaceutical uptake in the right pelvis, consistent with known osseous involvement of pelvic tumor." This confirms the pelvic tumor is the primary source of the bone metastasis. * On 03/29/2017, a follow-up visit notes the patient is referred to the lung cancer clinic. * On 03/31/2017, the timeline includes staging information: "c-7th_AJCC/UICC-M1b (CLINICAL|AJCC 7TH EDITION|M1B)". This indicates

no image: [INCORRECT] <unused94>thought The user wants me to determine if there is sufficient diagnostic ambiguity to warrant a thoracic tumor board presentation based on the provided patient timeline. 1. ****Identify the core question:**** Is there diagnostic ambiguity warranting a thoracic tumor board? 2. ****Scan the timeline for relevant information:**** Look for diagnoses, imaging findings, and clinical assessments related to the patient's condition,

specifically focusing on the pelvic tumor and any potential lung involvement. 3. **Analyze the pelvic tumor:** * Diagnosis: Aggressive bone tumor in the right superior pubic rami. * Imaging: Radiographs show destruction. CT/MRI show a large mass involving the superior pubic ramus, extending into the acetabulum, and involving the obturator neurovascular bundle. * Biopsy: Tru-cut biopsy performed. Pathology report (pending during the visit, but the note says it appears to be metastatic adenocarcinoma, which is a type of cancer). * Clinical context: Patient has chronic pain, wheelchair-bound, pain radiating down leg, numbness in arm, sweating. 4. **Analyze the lung findings:** * Diagnosis: Suspicious spiculated nodule (2.3 cm) in the right middle lobe on CT chest (03/14/2017). * Clinical context: Patient has chronic pain, sweating, and is wheelchair-bound. 5. **Evaluate the relationship between the findings:** * The pelvic tumor is described as "aggressive-appearing" and involves the obturator neurovascular bundle. * The lung nodule is described as "spiculated" and suspicious for primary lung malignancy. * The patient has symptoms (pain, sweating, numbness) that could be associated with malignancy. * The pelvic tumor is described as potentially metastatic, but the pathology report is pending. * The lung nodule is suspicious for primary lung cancer. * The question is whether the pelvic tumor could be metastatic *from* the lung nodule, or if both are unrelated primary malignancies (pelvic sarcoma and lung cancer), or if the pelvic tumor is a primary sarcoma and the lung nodule is unrelated. 6. **Assess diagnostic ambiguity:** * The pelvic tumor is aggressive and involves neurovascular structures. * The lung nodule is suspicious for primary lung cancer. * The patient has symptoms potentially related to malignancy. * The differential diagnosis for the pelvic tumor includes sarcoma (primary or metastatic), chondrosarcoma, myeloma, lymphoma. * The differential diagnosis for the lung nodule includes primary lung cancer (adenocarcinoma, squamous cell, etc.) or metastasis from the pelvic tumor. * The pending pathology report on the pelvic biopsy adds uncertainty. * The combination of a suspicious lung nodule and a potentially metastatic pelvic tumor raises concern for metastatic disease. * The ambiguity lies in whether the pelvic tumor is primary or metastatic, and whether the lung nodule is primary or metastatic. This requires further investigation (e.g., PET scan, further imaging, potentially biopsy of the lung nodule) to clarify the origin and extent of the disease. 7. **Determine if a thoracic tumor board is warranted:** * A thoracic tumor board is typically used to discuss primary lung cancers, metastatic disease *to* the lung, or complex thoracic malignancies. * In this case, the primary concern is the pelvic tumor, which *could* be metastatic from the lung nodule, or could be a primary pelvic malignancy. * The lung nodule is suspicious for primary lung cancer. * The pelvic tumor is aggressive and potentially metastatic. * The combination of a suspicious primary lung lesion and a potentially metastatic pelvic lesion warrants discussion of metastatic disease patterns, staging, and treatment options, which is the purview of a thoracic tumor board. The board can help determine the best next steps for evaluating the lung nodule and the pelvic tumor. 8. **Formulate the reasoning:** * The patient has a suspicious lung nodule (2.3 cm spiculated RML nodule) and a large, aggressive pelvic tumor involving neurovascular structures, potentially metastatic. The pending pathology on the pelvic biopsy adds uncertainty. The combination of a potential primary lung malignancy and a potentially metastatic pelvic tumor raises significant diagnostic ambiguity regarding the origin and extent of the disease. This warrants discussion of metastatic patterns and staging, making a thoracic tumor board appropriate. 9. **Select the label:** * Yes.<unused95><brief reasoning trace with explanation for label selection> The patient has a suspicious lung nodule (2.3 cm spiculated RML nodule) and a large, aggressive pelvic tumor involving neurovascular structures, potentially metastatic. The pending pathology on the pelvic biopsy adds uncertainty. The combination of a potential primary lung malignancy and a potentially metastatic pelvic

no radiology report: [INCORRECT] <unused94>thought The user wants me to determine if there is sufficient diagnostic ambiguity to warrant a thoracic tumor board presentation based on the provided timeline. 1. **Identify the core question:** Is there diagnostic ambiguity regarding the patient's chest findings? 2. **Scan the timeline for relevant information:** Look for imaging reports, pathology results, clinical notes, and diagnoses related to the chest. 3. **Analyze the

100 axial images (no timeline): [INCORRECT] FINDINGS: [1968-02-23 00:00] | Chest X-ray
[1968-02-23 00:00] | Chest X-ray [1968-02-23 00:00] | Chest X-ray [1968-02-23 00:00] | Chest
X-ray [1968-02-23 00:00] | Chest X-ray [1968-02-23 00:00] | Chest X-ray [1968-02-23 00:00] |
Chest X-ray [1968-02-23 00:00] | Chest X-ray [1968-02-23 00:00] | Chest X-ray [1968-02-23
00:00] | Chest X-ray [1968-02-23 00:00] | Chest X-ray [1968-02-23 00:00] | Chest X-ray
[1968-02-23 00:00] | Chest X-ray [1968-02-23 00:00] | Chest X-ray [1968-02-23 00:00] | Chest
X-ray [1968-02-23 00:00] | Chest X-ray [1968-02-23 00:00] | Chest X-ray [1968-02-23 00:00] |
Chest X-ray [1968-02-23 00:00] | Chest X-ray [1968-02-23 00:00] | Chest X-ray [1968-02-23
00:00] | Chest X-ray [1968-02-23 00:00] | Chest X-ray [1968-02-23 00:00] | Chest X-ray
[1968-02-23 00:00] | Chest X-ray [1968-02-23 00:00] | Chest X-ray [1968-02-23 00:00] | Chest

Model: google/medgemma-4b-it

[illegible]

Subtask: progression_assessment_discussed

Question:

Based on the provided medical history and cancer evidence, is there ambiguity in radiologic interpretation that warrants presentation of this case at a thoracic tumor board for progression assessment?

Correct Answer: No

Model: OpenGVLab/InternVL3_5-8B

middle image from each view: [INCORRECT] <The patient has a history of recurrent nasopharyngeal carcinoma and a separate diagnosis of a right upper lobe adenocarcinoma, identified as a second primary lung cancer. The imaging and pathology reports indicate a spiculated hypermetabolic nodule in the right upper lobe, which was confirmed as adenocarcinoma. The patient's condition involves two distinct malignancies, which may complicate treatment decisions and progression assessment. Given the complexity and the need for multidisciplinary evaluation, presenting this case at a thoracic tumor board for progression assessment is warranted.> | <Yes>

middle axial image: [INCORRECT] <The patient has a history of recurrent nasopharyngeal carcinoma and a separate diagnosis of a right upper lobe adenocarcinoma, which is a second primary lung cancer. The imaging and pathology reports indicate that the lung nodule is consistent with a primary lung adenocarcinoma. The patient's case involves multiple malignancies, and the presence of a second primary tumor suggests a complex clinical scenario. Given the need for precise treatment planning and the potential for progression, it is reasonable to consider presenting this case at a thoracic tumor board for further assessment and multidisciplinary discussion.> | Yes

no image: [INCORRECT] <The patient has a history of recurrent nasopharyngeal carcinoma and a separate diagnosis of a right upper lobe adenocarcinoma, which is considered a second primary lung cancer. The imaging and pathology reports indicate that the right upper lobe nodule is FDG avid and was diagnosed as adenocarcinoma. The patient's clinical presentation and imaging findings suggest a complex case with potential ambiguity in radiologic interpretation, particularly regarding the nature of the pulmonary nodules. The note mentions that the case will be discussed at the thoracic oncology tumor board, indicating that there is a need for further expert evaluation.> | <Yes>

no radiology report: [CORRECT] <No> | <No> The patient's medical timeline indicates a diagnosis of a malignant neoplasm of the nasopharynx (ICD9CM/147.9) with a clinical staging of T2 N1 (AJCC 7th edition). Imaging studies, including CT and PET scans, were performed to assess the extent of the disease. The presence of a solitary pulmonary nodule (ICD9CM/793.11) was noted, leading to a CT-guided lung biopsy. The patient's clinical course, including vital signs and laboratory results, were closely monitored during the procedure. There is no explicit mention of radiologic ambiguity or the need for further multidisciplinary assessment at a thoracic tumor board. The detailed imaging and clinical data suggest a clear progression assessment has been made, reducing the need for additional board presentation.

100 axial images (no timeline): [CORRECT] <brief reasoning trace with explanation for label selection> | <label> The CT images show a clear presence of a mass in the left hilum with evidence of lymph node involvement, consistent with a diagnosis of squamous cell carcinoma of the left hilum (T2 N2 M0, Stage IIIA). The images do not indicate significant changes or ambiguities that would impact the staging or treatment plan. Therefore, there is no immediate

need for a thoracic tumor board presentation based on this evidence. | No

Model: OctoMed/OctoMed-7B

middle image from each view: [INCORRECT] <think>First, I carefully review the patient timeline and medical records provided. The patient has a history of treated nasopharyngeal carcinoma (NPC) in 2001 with chemoradiation. She now presents with recurrent NPC, classified as T4, involving multiple anatomical structures including the pterygopalatine fossa, orbit, and skull base. Additionally, there is a right upper lobe (RUL) lung nodule diagnosed as adenocarcinoma, which is considered a second primary malignancy. The imaging and pathology findings show that the RUL nodule is FDG-avid, indicating metabolic activity suspicious for malignancy, but the biopsy confirms it is a primary lung adenocarcinoma. The left upper lobe (LUL) nodule is non-FDG avid and less suspicious, possibly a scar. The patient also has a history of pulmonary tuberculosis (TB), which is noted but not directly related to the current malignancies. The key question is whether there is ambiguity in radiologic interpretation that warrants presentation at a thoracic tumor board for progression assessment. The patient has two distinct malignancies: recurrent NPC and a second primary lung adenocarcinoma. The differentiation between these two neoplasms is supported by molecular testing (negative for ALK and ROS1 rearrangements) and immunohistochemistry (positive for TTF-1 and napsinA, consistent with lung primary). The imaging findings also support separate primaries rather than metastasis. Given the complexity of managing two separate malignancies, especially with the patient's history of radiation and TB, and the need for coordinated multidisciplinary care involving head and neck surgery, radiation oncology, and medical oncology, the case would benefit from discussion at a tumor board. This ensures that treatment plans consider both the recurrent NPC and the second primary lung cancer, including potential interactions and sequencing of therapies. Therefore, the presence of two distinct malignancies with complex clinical and radiologic features necessitates a multidisciplinary approach, making the presentation at a thoracic tumor board appropriate.</think> <answer>Yes</answer>

middle axial image: [INCORRECT] <think>First, I need to determine if there is ambiguity in the radiologic interpretation that would warrant presentation at a thoracic tumor board for progression assessment. The options are "Yes" or "No". Looking at the patient timeline and provided data: - The patient has a history of pulmonary tuberculosis (ICD9 011.90) and malignant neoplasms including nasopharyngeal carcinoma (ICD9 147.9) and lung adenocarcinoma (ICD9 162.9). This indicates multiple primary cancers or recurrence. - Imaging findings include a hypermetabolic right upper lobe (RUL) nodule (13mm) and a non-hypermetabolic left upper lobe (LUL) nodule (8mm). The RUL nodule is FDG-avid, which can suggest malignancy but is not definitive. The LUL nodule is non-FDG avid and partially necrotic, which may be less suspicious but still requires follow-up. - Pathology from the RUL FNA shows adenocarcinoma consistent with lung primary, and the nasopharyngeal mass is recurrent nasopharyngeal carcinoma. The two cancers are considered separate primaries based on molecular profiles (EBV negative in lung, positive in nasopharynx). - The patient underwent chemoradiation for NPC in 2001, and now has a recurrent tumor (T4) with bony destruction. The lung nodules are under evaluation for progression or new primaries. - The chest CT and PET-CT show the RUL nodule as suspicious but not definitive, and the LUL nodule as possibly a scar. The recommendation is for short-term follow-up or biopsy. - The patient's clinical status includes tachycardia (pulse 120), low BMI (19.079), and recent weight loss (1460.32 kg), which may indicate systemic illness or cancer progression. - The note from the oncologist mentions the need to discuss at thoracic tumor boards, indicating uncertainty in management and progression assessment. Given the presence of multiple suspicious lesions (RUL nodule FDG-avid, LUL partially necrotic), the history of prior cancers, and the need for multidisciplinary input to determine if these are progression of prior disease, new primaries, or infection/inflammation, there is ambiguity in radiologic interpretation. The tumor board would

help clarify the nature of these lesions and guide further steps like biopsy or treatment. Therefore, the answer is "Yes" because the radiologic findings are ambiguous and require expert tumor board discussion.</think> <brief reasoning trace with explanation for label selection> | <label> The patient has a complex history of recurrent nasopharyngeal carcinoma (T4) and a second primary lung adenocarcinoma, with ambiguous findings on imaging (FDG-avid RUL nodule and non-FDG LUL nodule). The differential diagnosis includes progression of prior disease, new primaries, or infection, necessitating multidisciplinary evaluation at a tumor board to resolve diagnostic uncertainty and guide management. </brief reasoning trace with explanation for label selection> | <label> <answer>Yes</answer> </label></think>

no image: [INCORRECT] <think>Okay, let's try to figure this out. The question is whether there's ambiguity in the radiologic interpretation that would warrant presenting the case at a thoracic tumor board for progression assessment. The options are Yes or No. First, I need to look at the patient's timeline and the provided medical history. The patient has a history of pulmonary tuberculosis and was treated for nasopharyngeal carcinoma (NPC) in 2001 with chemoradiation. Now, there's a recurrent NPC that's T4, and there's a separate right upper lobe (RUL) adenocarcinoma, which is considered a second primary. There's also a left upper lobe (LUL) nodule that's non-avid on PET, which might be a scar but needs follow-up. The key here is whether the radiologic findings are ambiguous enough to require a tumor board discussion. The patient has two separate malignancies: recurrent NPC and a second primary lung adenocarcinoma. The RUL nodule was FDG-avid, leading to an FNA confirming adenocarcinoma consistent with lung primary. The LUL nodule is non-avid, so it's less suspicious but still under observation. The MRI and PET-CT show a hypermetabolic right nasopharyngeal mass with bony destruction, consistent with recurrent NPC. The chest CT shows the RUL lesion and the LUL nodule. The pathology from the RUL FNA supports lung primary adenocarcinoma. The LUL nodule's non-avid status makes malignancy less likely but not excluded, hence the recommendation for follow-up. Now, considering the need for tumor board discussion: progression assessment would involve evaluating the current status of both cancers, treatment options, and possible interactions. The presence of two separate primaries complicates management. The RUL adenocarcinoma is confirmed, but the LUL nodule's status is uncertain. The recurrent NPC is T4, which is advanced. The tumor board would help in coordinating care, especially since the patient has a complex history and multiple sites of disease. However, the question is about ambiguity in radiologic interpretation. The RUL lesion was FDG-avid and confirmed as a second primary. The LUL nodule is non-avid, so maybe that's not ambiguous. The NPC is recurrent with bony destruction. The imaging findings seem to support the diagnoses, but the LUL nodule's non-avid nature might raise some uncertainty. However, the main issue here is whether the case needs a tumor board for progression assessment. Given the presence of two separate malignancies and the complexity of the case, involving a multidisciplinary team (tumor board) would be prudent to discuss treatment strategies, especially since the patient has a history of radiation and TB, which might affect treatment options. So, even though the radiologic findings might not be ambiguous in isolation, the overall case complexity and the need for coordinated care across different specialties (head and neck, thoracic oncology) would warrant presenting the case at a tumor board. Therefore, the answer is Yes.</think> <brief reasoning trace with explanation for label selection> | <label> Yes </label> ****Explanation****: The patient has a complex oncologic history with recurrent nasopharyngeal carcinoma (T4) and a confirmed second primary lung adenocarcinoma. The presence of two distinct malignancies, along with a non-avid left upper lobe nodule of uncertain significance, necessitates multidisciplinary evaluation. Radiologic findings, while supporting the diagnoses, require tumor board input to coordinate treatment strategies, assess progression, and address the interplay between prior radiation, tuberculosis history, and current disease status. Ambiguity in the non-avid LUL nodule's significance and the need for integrated care across specialties justify tumor board presentation.</think> <answer> Yes </answer>

no radiology report: [CORRECT] <think>First, I will carefully analyze the provided CT images and clinical data to determine if there is ambiguity in the radiologic interpretation that necessitates a thoracic tumor board review for progression assessment. The images show axial CT scans of the thorax, including the lungs, mediastinum, and surrounding structures. The scans reveal a mass in the anterior mediastinum consistent with a thymic lesion, which aligns with the ICD10CM code D15.0 (Benign neoplasm of thymus). There is no clear evidence of new or progressive disease in the lungs or mediastinum. The scans do not show any new metastatic lesions or significant changes in the size or density of the known lesion. The clinical data does not indicate any new symptoms or findings that would suggest progression. The patient's history of tobacco use is noted, but no new radiologic findings suggest progression. The absence of new findings and the stability of the lesion suggest no ambiguity in interpretation. Therefore, there is no indication for a thoracic tumor board review at this time.</think>
<answer>Yes</answer>

100 axial images (no timeline): [CORRECT] <think>First, I observe the CT image provided. It is a cross-sectional axial view of the thorax, showing the lungs, mediastinum, and bony structures. The lungs appear mostly clear with no obvious masses or consolidations. The mediastinum shows normal anatomy without significant widening or lymphadenopathy. The bones, including the vertebrae and ribs, appear intact without lytic or blastic lesions. There is no visible pleural effusion or pneumothorax. Given the lack of visible tumor progression or new findings, and assuming the patient's timeline does not indicate recent changes or concerns that would necessitate a tumor board review, the radiologic interpretation appears straightforward. There is no ambiguity in the imaging findings that would warrant further multidisciplinary discussion at a tumor board. Therefore, based on the provided image and the absence of radiologic evidence suggesting progression or ambiguity, the appropriate answer is "No."</think> <answer>No</answer>

Model: Qwen/Qwen3-VL-8B-Instruct

middle image from each view: [CORRECT] The patient has a documented history of two distinct malignancies: recurrent nasopharyngeal carcinoma (NPC) and a separate primary lung adenocarcinoma in the right upper lobe (RUL). The timeline explicitly states that the lung lesion was diagnosed as a "second primary" and that the case was "discussed at Thoracic oncology tumor boards" as part of the management plan. The radiologic findings (PET-CT, CT) were noted to be non-specific for the lung lesion, prompting a biopsy which confirmed adenocarcinoma. The presence of two separate primary malignancies, especially with different molecular profiles (EBV-positive NPC vs. EBV-negative lung adenocarcinoma), is a complex clinical scenario that requires multidisciplinary assessment. The explicit documentation of a tumor board discussion for this case indicates that the interpretation and management plan were deemed complex enough to warrant such a review. Therefore, there is no ambiguity in the radiologic interpretation that would necessitate a new presentation; the case was already presented and discussed. No

middle axial image: [CORRECT] The patient has a documented history of two distinct malignancies: recurrent nasopharyngeal carcinoma (NPC) and a separate primary lung adenocarcinoma (RUL). The timeline explicitly states that the lung adenocarcinoma was diagnosed as a "second primary" and that the case was recommended for discussion at "Thoracic oncology tumor boards" (as noted in the progress note from 10/11/2012). The imaging and pathology findings support this dual diagnosis, with separate molecular profiles (EBV-negative lung adenocarcinoma vs. EBV-positive NPC). Given the presence of a second primary malignancy and the explicit recommendation for thoracic tumor board discussion, there is no ambiguity in the radiologic interpretation that would preclude presentation at a thoracic tumor board for progression assessment. The case is already being managed with this multidisciplinary approach. No | No

no image: [INCORRECT] The patient has two distinct malignancies: recurrent nasopharyngeal carcinoma (NPC) and a separate right upper lobe (RUL) adenocarcinoma diagnosed as a second primary. The radiologic findings (PET-CT, MRI, CT) are described as non-specific for the RUL nodule, with differential diagnoses including infection or malignancy, and the LUL nodule is noted as non-hypermetsabolic and possibly scar. The pathology confirms the RUL lesion as a primary lung adenocarcinoma, but the imaging interpretation is ambiguous regarding progression or nature of the LUL lesion. The note explicitly states: "RECOMMEND SHORT TERM FOLLOW UP CHEST CT IN 3-6 MONTHS TO ASSESS PROGRESSION" for the RUL lesion, and "IF THIS LESION IS NOT BIOPSIED, RECOMMEND SHORT INTERVAL FOLLOW UP" for the LUL lesion. The case is already being discussed at both head and neck and thoracic tumor boards, indicating that ambiguity in radiologic interpretation (especially regarding progression or nature of lung lesions) warrants multidisciplinary review. Yes | Yes

no radiology report: [CORRECT] The provided PATIENT_TIMELINE contains no evidence of radiologic ambiguity or progression assessment that would warrant presentation at a thoracic tumor board. The timeline documents a history of nasopharyngeal cancer (ICD9CM/147.9) and a solitary pulmonary nodule (ICD9CM/793.11), with a CT scan of the chest performed on 2012-09-03. However, there is no mention of any radiologic findings that are unclear, equivocal, or require multidisciplinary interpretation. The timeline does not contain any radiology reports, radiologist interpretations, or discussions about ambiguous imaging findings. Therefore, based on the available information, there is no ambiguity in radiologic interpretation that necessitates a tumor board presentation. No

100 axial images (no timeline): [CORRECT] The provided PATIENT_TIMELINE consists solely of a series of identical or nearly identical chest CT images, with no accompanying clinical history, prior imaging reports, treatment records, or radiologist interpretations. There is no evidence of tumor progression, new lesions, or any radiologic findings that would necessitate a thoracic tumor board review. Without any documented clinical context or radiologic changes to assess for progression, there is no ambiguity that warrants board presentation. No | No

Model: google/medgemma-1.5-4b-it

middle image from each view: [INCORRECT] <brief reasoning trace with explanation for label selection> | <label> The patient has a history of nasopharyngeal carcinoma (NPC) treated with chemoradiation in 2001. She now presents with a right nasal mass and obstruction. Imaging (CT and PET/CT) reveals a large, lobulated soft tissue mass in the right nasopharynx extending into the posterior nasal cavity and orbital fissures, involving the pterygopalatine fossa, sphenoid bone, and clivus. There is also a hypermetabolic 1.5 cm nodule in the right upper lobe of the lung. The patient has a history of tuberculosis treated in the past. The combination of a locally recurrent/metastatic NPC and a lung nodule raises concern for malignancy. The lung nodule is hypermetabolic on PET, which is concerning, although it could also represent an infection. The nasopharyngeal mass is also hypermetabolic, consistent with recurrent cancer. Given the high suspicion for malignancy in both the lung and the nasopharynx, and the potential for metastatic disease, presentation at a thoracic tumor board for progression assessment is warranted. The PET/CT findings are significant and require expert multidisciplinary evaluation. No | Yes

middle axial image: [INCORRECT] <brief reasoning trace with explanation for label selection> | <label> The patient has a history of nasopharyngeal carcinoma (NPC) treated with chemoradiation in 2001. The current presentation includes a right nasal mass and a history of right nasal obstruction. Imaging (CT and PET/CT) reveals a large, lobulated soft tissue mass in the right nasopharynx extending into the posterior nasal cavity and orbital fissures, involving the pterygopalatine fossa, sphenoid bone, and clivus. There is also a hypermetabolic 1.5 cm nodule in the right upper lobe of the lung. The patient has a history of tuberculosis treated in the past. The combination of a locally recurrent/metastatic NPC and a lung nodule raises concern for malignancy. The lung nodule is hypermetabolic on PET, which is concerning, although it could

also represent an inflammatory process. The primary concern is the recurrent NPC, which is likely aggressive given the extent of involvement and the patient's history. The presence of a lung nodule further increases the suspicion of metastatic disease. Therefore, a thoracic tumor board is warranted to discuss the management of both the primary NPC and the lung nodule, including potential biopsy and treatment options. No | <brief reasoning trace with explanation for label selection> | <label> The patient has a history of nasopharyngeal carcinoma (NPC) treated with chemoradiation in 2001. The current presentation includes a right nasal mass and a history of right nasal obstruction. Imaging (CT and PET/CT) reveals a large, lobulated soft tissue mass in the right nasopharynx extending into the posterior nasal cavity and orbital fissures, involving the pterygopalatine fossa, sphenoid bone, and clivus. There is also a hypermetabolic 1.5 cm nodule in the right upper lobe of the lung. The patient has a history of tuberculosis treated in the past. The combination of a locally recurrent/metastatic NPC and a lung nodule raises concern for malignancy. The lung nodule is hypermetabolic on PET, which is concerning, although it could also represent an inflammatory process. The primary concern is the recurrent NPC, which is likely aggressive given the extent of involvement and the patient's history. The presence of a lung nodule further increases the suspicion of metastatic disease. Therefore, a thoracic tumor board is warranted to discuss the management of both the primary NPC and the lung nodule, including potential biopsy and treatment options. Yes |

no image: [INCORRECT] <brief reasoning trace with explanation for label selection> | <label> The patient has a history of nasopharyngeal carcinoma (NPC) treated with chemoradiation in 2001. She presents with a right nasal mass and obstruction since 2012. Imaging (CT and MRI) reveals a large, lobulated soft tissue mass in the right nasopharynx extending into the pterygopalatine fossa, involving the right orbital fissures, cavernous sinus, and clivus, with bony destruction. This is highly suspicious for recurrent NPC. Additionally, there are two lung nodules, one with a low SUVmax (1.7) and one with a higher SUVmax (4.4). The PET/CT confirms the hypermetabolic right nasopharyngeal mass and the hypermetabolic right upper lobe lung nodule. The patient has a history of tuberculosis treated in the past. The combination of a hypermetabolic nasopharyngeal mass, lung nodules with varying metabolic activity, and a history of TB raises concern for metastatic disease, although the lung nodules could also represent reactivation TB. The presence of a hypermetabolic mass in the nasopharynx in a patient with a history of NPC is highly concerning for recurrence. The lung nodules also warrant further investigation, potentially including biopsy, given their metabolic activity. The findings are significant and warrant discussion at a tumor board to evaluate the extent of disease, potential treatment options (including biopsy and systemic therapy), and the need for further imaging (like PET/CT, which was already done). <label>Yes</label> <brief reasoning trace with explanation for label selection> | <label> The patient has a history of nasopharyngeal carcinoma (NPC) treated with chemoradiation in 2001. She presents with a right nasal mass and obstruction since 2012. Imaging (CT and MRI) reveals a large, lobulated soft tissue mass in the right nasopharynx extending into the pterygopalatine fossa, involving the right orbital fissures, cavernous sinus, and clivus, with bony destruction. This is highly suspicious for recurrent NPC. Additionally, there are two lung nodules, one with a low SUVmax (1.7) and one with a higher SUVmax (4.4). The PET/CT confirms the hypermetabolic right nasopharyngeal mass and the hypermetabolic right upper lobe lung nodule. The patient has a history of tuberculosis treated in the past. The combination of a hypermetabolic nasopharyngeal mass, lung nodules with varying metabolic activity, and a history of TB raises concern for metastatic disease, although the lung nodules could also represent reactivation TB. The presence of a hypermetabolic mass in the nasopharynx in a patient with a history of NPC is highly concerning for recurrence. The lung nodules also warrant further investigation, potentially including biopsy, given their metabolic activity. The findings are significant and warrant discussion at a tumor board to evaluate the extent of disease, potential treatment options (including biopsy and systemic therapy), and the need for further imaging (like PET/CT, which was already done). <label>Yes</label> <brief reasoning trace with explanation for label selection> | <label> The patient has a history of

nasopharyngeal carcinoma (NPC) treated with chemoradiation in 2001. She presents with a right nasal mass and obstruction since 2012. Imaging (CT and MRI) reveals a large, lobulated soft tissue mass in the right nasopharynx extending into the pterygopalatine fossa, involving the right orbital fissures, cavernous sinus, and clivus, with bony destruction. This is highly suspicious for recurrent NPC. Additionally, there are two lung nodules, one with a low SUVmax (1.7) and one with a higher SUVmax (4.4). The PET/CT confirms the hypermetabolic right nasopharyngeal mass and the hypermetabolic right upper lobe lung nodule. The patient has a history of tuberculosis treated in the past. The combination of a hypermetabolic nasopharyngeal mass, lung nodules with varying metabolic activity, and a history of TB raises concern for metastatic disease, although the lung nodules could also represent reactivation TB. The presence of a hypermetabolic mass in the nasopharynx in a patient with a history of NPC is highly concerning for recurrence. The lung nodules also warrant further investigation, potentially including biopsy, given their metabolic activity. The findings are significant and warrant discussion at a tumor board to evaluate the extent of disease, potential treatment options (including biopsy and systemic therapy), and the need for further imaging (like PET/CT, which was already done). <label>Yes</label> <brief reasoning trace with explanation for label selection> | <label> The patient has a history of nasopharyngeal carcinoma (NPC) treated with chemoradiation in 2001. She presents with a right nasal mass and obstruction since 2012. Imaging (CT and MRI) reveals a

no radiology report: [INCORRECT] <unused94>thought The user wants me to analyze a patient's medical history and imaging reports to determine if there's ambiguity that warrants a thoracic tumor board presentation. 1. ****Identify the core question:**** Is there ambiguity in the radiologic interpretation that requires a tumor board? 2. ****Scan the timeline for relevant information:**** Look for imaging reports, pathology results, clinical notes, and treatment details. 3. ****Focus on imaging:**** The patient has CT scans of the head (2012), chest (2012), and chest (2012). 4. ****Analyze the chest CT scans (2012):**** * The scans show findings consistent with a lung nodule (specifically, a solitary pulmonary nodule). * There are also findings suggestive of emphysema. * The report mentions a CT-guided biopsy was performed. * The pathology report (implied by the biopsy) would be crucial for definitive diagnosis. 5. ****Consider the clinical context:**** * The patient has a history of nasopharyngeal cancer (diagnosed 2012). * The patient has a history of smoking (though stated as "never" in the timeline, this might be inaccurate or refer to a different type of tobacco). The timeline states "Never" for smoking, but the history of nasopharyngeal cancer is a significant risk factor for lung cancer. * The patient has received treatment (likely chemotherapy and radiation, given the history of cancer). * The patient has received a PET scan (2012). 6. ****Evaluate for ambiguity:**** * The presence of a solitary pulmonary nodule (SPN) is common. * The patient's history of nasopharyngeal cancer increases the risk of lung cancer. * The biopsy result is key. If the biopsy confirms malignancy (e.g., adenocarcinoma, squamous cell carcinoma), the nodule is confirmed as cancer. * If the biopsy is negative or indeterminate, further investigation (e.g., repeat CT, PET-CT, biopsy) would be needed. * The timeline doesn't explicitly state the biopsy result or the final diagnosis. * The presence of emphysema might influence the interpretation of the nodule. 7. ****Determine if ambiguity warrants a tumor board:**** * A tumor board is typically convened when there is uncertainty about the diagnosis, staging, or treatment plan for a cancer patient. * In this case, the diagnosis of the lung nodule is not yet confirmed. The biopsy result is missing. * Even if the biopsy confirms cancer, a board might be convened to discuss the specific type, stage, and treatment options. * The lack of a definitive diagnosis (cancer vs. benign) creates ambiguity. 8. ****Formulate the reasoning:**** The patient has a solitary pulmonary nodule identified on CT scans. Given the patient's history of nasopharyngeal cancer, the risk of lung cancer is elevated. However, the diagnosis is not yet confirmed. A biopsy has been performed, but the results are not provided in the timeline. Without the biopsy result, there is ambiguity regarding whether the nodule represents malignancy or a benign condition. This uncertainty warrants discussion among specialists to determine the appropriate next steps, including potential treatment if

100 axial images (no timeline): [INCORRECT] FINDINGS: [1968-01-26 00:00] | Chest X-ray
[1968-01-26 00:00] | Chest X-ray [1968-01-26 00:00] | Chest X-ray [1968-01-26 00:00] | Chest
X-ray [1968-01-26 00:00] | Chest X-ray [1968-01-26 00:00] | Chest X-ray [1968-01-26 00:00] |
Chest X-ray [1968-01-26 00:00] | Chest X-ray [1968-01-26 00:00] | Chest X-ray [1968-01-26
00:00] | Chest X-ray [1968-01-26 00:00] | Chest X-ray [1968-01-26 00:00] | Chest X-ray
[1968-01-26 00:00] | Chest X-ray [1968-01-26 00:00] | Chest X-ray [1968-01-26 00:00] | Chest
X-ray [1968-01-26 00:00] | Chest X-ray [1968-01-26 00:00] | Chest X-ray [1968-01-26 00:00] |
Chest X-ray [1968-01-26 00:00] | Chest X-ray [1968-01-26 00:00] | Chest X-ray [1968-01-26
00:00] | Chest X-ray [1968-01-26 00:00] | Chest X-ray [1968-01-26 00:00] | Chest X-ray
[1968-01-26 00:00] | Chest X-ray [1968-01-26 00:00] | Chest X-ray [1968-01-26 00:00] | Chest
X-ray [1968-01-26 00:00] | Chest X-ray [1968-01-26 00:00] | Chest X-ray [1968-01-26 00:00] |
Chest X-ray [1968-01-26 00:00] | Chest X-ray [1968-01-26 00:00] | Chest X-ray [1968-01-26
00:00] | Chest X-ray [1968-01-26 00:00] | Chest X-ray [1968-01-26 00:00] | Chest X-ray
[1968-01-26 00:00] | Chest X-ray [1968-01-26 00:00] | Chest X-ray [1968-01-26 00:00] | Chest
X-ray [1968-01-26 00:00] | Chest X-ray [1968-01-26 00:00] | Chest X-ray [1968-01-26 00:00] |
Chest X-ray [1968-01-26 00:00] | Chest X-ray [1968-01-26 00:00] | Chest X-ray [1968-01-26

[illegible]

Therefore, presentation at a thoracic tumor board for progression assessment is appropriate.
<Yes>

100 axial images (no timeline): [INCORRECT] The images show a nodule in the lung. The nodule is present in multiple images, suggesting it is likely a persistent lesion. There is no mention of prior treatment or follow-up imaging. Therefore, further evaluation is warranted. Yes

Subtask: radiation_oligoprogression_answer

Question:

TODO: Based on the provided medical history, cancer evidence, and imaging findings, is focal radiotherapy recommended for the management of this patient's oligoprogressive disease?

Correct Answer: Yes

Model: OpenGVLab/InternVL3_5-8B

middle image from each view: [INCORRECT] <brief reasoning trace with explanation for label selection>: The patient has a history of lung malignancy and multiple myeloma, with imaging findings indicating stable lesions in the brain and a new focus of intense hypermetabolism in the left subcarinal region. The presence of oligoprogression suggests that focal radiotherapy could be considered to target the specific area of progression. However, the decision to use focal radiotherapy should be based on a comprehensive assessment of the patient's overall condition and treatment goals. Given the complexity of the patient's case, the appropriateness of focal radiotherapy needs careful consideration. | No

middle axial image: [INCORRECT] <brief reasoning trace with explanation for label selection> The patient has a history of multiple myeloma and lung adenocarcinoma, with evidence of oligoprogression. The imaging findings show stable lesions in the brain and a new focus of intense hypermetabolism in the subcarinal region, suggesting progression. Focal radiotherapy is often used to manage oligoprogression in oncology, targeting specific areas of progression while sparing normal tissue. Given the patient's history and the imaging findings, focal radiotherapy appears appropriate for managing the oligoprogression. | <label> Yes

no image: [CORRECT] <brief reasoning trace with explanation for label selection> | <label> The patient has a history of lung adenocarcinoma with oligoprogression, as evidenced by the stable lesion in the brain and a new focus of intense hypermetabolism in the subcarinal region on PET-CT. The lesion in the brain is stable, and focal radiotherapy is often considered for such cases to manage oligoprogression. The patient's overall condition and the presence of multiple myeloma complicate the treatment plan, but focal radiotherapy remains a viable option for the brain lesion. | Yes

no radiology report: [INCORRECT] <The patient has a history of multiple myeloma and a malignant neoplasm of the left bronchus or lung. The timeline shows multiple imaging studies and treatments, including a bone marrow biopsy and various blood tests indicating ongoing monitoring. The patient's condition appears stable with no significant progression noted in recent tests. Focal radiotherapy is typically considered for areas of disease progression or specific treatment targets. Given the patient's stable condition and the absence of clear evidence of progression in the provided timeline, focal radiotherapy may not be immediately necessary.> | No

100 axial images (no timeline): [CORRECT] <brief reasoning trace with explanation for label selection> | <label> The imaging findings show evidence of oligoprogression, which is typically characterized by a small number of tumor sites progressing despite prior treatment. Focal radiotherapy is often considered appropriate for managing oligoprogression as it targets the specific areas of progression while sparing other regions from additional radiation exposure. This approach is supported by the imaging evidence indicating localized progression. | Yes

Model: OctoMed/OctoMed-7B

middle image from each view: [CORRECT] <think>First, I need to understand the clinical scenario and the question: whether focal radiotherapy is appropriate for oligoprogression in this patient. Oligoprogression refers to the development of a limited number of new lesions in a patient with previously controlled metastatic disease. The decision depends on several factors including the number and location of new lesions, prior treatments, tumor biology, and the patient's overall status. Looking at the provided imaging and clinical data: - The patient has a history of lung adenocarcinoma with brain metastases (previously treated with SBRT, as indicated by the brain MRI findings showing stable lesions). - The PET/CT from 08/03/2016 shows a new focus of intense hypermetabolism in the left subcarinal region with an adjacent ill-defined soft tissue density, suggesting a new or progressing lesion. - The patient has multiple myeloma, which is noted as not in remission, but the primary concern here is the lung cancer progression. - The bone marrow biopsy was performed on 09/05/2016, showing abnormal cells but no specific mention of new bone lesions. - The patient is on afatinib, a targeted therapy for EGFR-mutant lung cancer, indicating prior systemic treatment. - There is no mention of prior radiation to the subcarinal region or elsewhere. - The patient has a pathological fracture of the right humerus (noted in the clinical notes), but this is likely related to myeloma rather than lung cancer. - The brain lesions are stable, and there is no evidence of new brain metastases. - The patient's performance status is stable, with no acute complications from the bone marrow biopsy. Given that the patient has a single new lesion in the subcarinal region (oligoprogression), and no other new lesions are evident, focal radiotherapy could be considered to target this lesion. This approach aims to control the progressing disease while sparing the patient from more extensive systemic therapy. The decision aligns with guidelines for oligoprogressive metastatic lung cancer, where localized treatment can be beneficial if the disease is limited and the patient is fit. However, the presence of multiple myeloma complicates the picture, but the primary malignancy here is lung adenocarcinoma. The patient's prior treatments and the stability of brain lesions support the consideration of focal therapy for the new subcarinal lesion. Therefore, based on the imaging findings of a single new lesion in the subcarinal region and the absence of widespread progression, focal radiotherapy is appropriate.</think> <brief reasoning trace with explanation for label selection> | <label> The patient has a history of lung adenocarcinoma with stable brain metastases and a new subcarinal lesion identified on PET/CT. Oligoprogression is characterized by limited new lesions in a patient with previously controlled metastatic disease. Focal radiotherapy is appropriate for managing oligoprogression when there is a limited number of new lesions, stable systemic disease, and no contraindications. The absence of widespread progression and the patient's stable performance status support this approach. <answer> Yes</answer> </answer></think> <answer> Yes</answer>

middle axial image: [CORRECT] <think>First, I need to understand the question: Is focal radiotherapy appropriate for managing oligoprogression in this patient? The patient has a history of lung adenocarcinoma with brain metastases, currently on afatinib, and has multiple myeloma not in remission. The key is to evaluate the imaging findings and clinical context to determine if focal radiotherapy is suitable. Looking at the imaging from August 2016, there is a new focus of intense hypermetabolism in the left subcarinal region with an adjacent ill-defined soft tissue density. This suggests a new or progressing lesion. The patient also has a pathological fracture of the right humerus, which is likely related to metastatic disease given the history of lung cancer and multiple myeloma. Oligoprogression refers to limited sites of disease progression while the rest of the disease remains controlled. In this case, the new subcarinal lesion represents a single site of progression. The patient has already undergone brain radiation (SBRT) for brain metastases, and the current lesion is outside the brain, in the thorax. Focal radiotherapy could be considered for this isolated progression. However, the presence of multiple myeloma complicates the picture. Multiple myeloma can cause lytic bone lesions and pathological fractures, but the subcarinal lesion is more likely related to the lung cancer given the history. The bone marrow biopsy from September 2016 showed abnormalities consistent

with multiple myeloma but no mention of active lung cancer progression in the marrow. The lung cancer itself is not described as progressing except for the new subcarinal lesion. The patient is on afatinib, a targeted therapy for EGFR-mutant lung adenocarcinoma. The new lesion could represent progression despite systemic therapy. Focal radiotherapy is often used for oligoprogression to control isolated metastases and delay further systemic progression. The decision would depend on the patient's overall status, prior treatments, and the feasibility of targeting the lesion. Given the imaging shows a single new lesion in the subcarinal region and no other widespread progression, focal radiotherapy could be appropriate. The patient's prior treatments (brain SBRT, systemic therapy) and the isolated nature of the progression support this approach. There is no evidence of contraindications such as extensive disease or poor performance status mentioned. Therefore, based on the imaging findings of a single new lesion and the clinical context of oligoprogression, focal radiotherapy is a reasonable option.

brief reasoning trace with explanation for label selection | **The patient has a history of lung adenocarcinoma with brain metastases and multiple myeloma. Imaging shows a new focus of intense hypermetabolism in the left subcarinal region, suggesting oligoprogression. Focal radiotherapy is appropriate for isolated progression in this context.**

answer Yes

no image: [CORRECT] First, I need to determine if focal radiotherapy is appropriate for oligoprogression in this patient. Oligoprogression refers to the development of a limited number of new lesions while the rest of the disease remains stable or controlled. The patient has a history of lung adenocarcinoma with brain metastases, currently on afatinib, and has multiple myeloma not in remission. Looking at the imaging findings from August 2016, there is a new focus of intense hypermetabolism in the left subcarinal region with an adjacent ill-defined soft tissue density, suggesting possible progression of the primary lung cancer. The brain lesions noted earlier are stable, as per the August 2016 MRI, with no new lesions. The patient also underwent a bone marrow biopsy in September 2016, indicating active myeloma, which complicates the picture. Focal radiotherapy is typically considered for oligoproliferative disease to target the new lesion(s) while maintaining systemic therapy. However, the presence of active myeloma (evidenced by the bone marrow biopsy findings and elevated beta-2 microglobulin) suggests that the patient's disease is not fully controlled systemically. This could affect the efficacy of focal therapy alone, as the systemic disease might continue to progress. Additionally, the patient is on afatinib, a targeted therapy, which may be controlling the brain lesions but the new subcarinal lesion might indicate resistance or progression. The decision to use focal radiotherapy would depend on the patient's overall status, prior treatments, and the goal of care. However, based solely on the provided timeline, there is no explicit evidence that the patient has been treated for the new subcarinal lesion, nor is there mention of prior radiation to that area. The brain lesions are stable, but the new lesion in the chest is a concern. Given the information, the presence of active myeloma and the new lesion in the lung region suggest that systemic therapy should be optimized before considering focal radiotherapy. However, the question is whether focal radiotherapy is appropriate for oligoprogression. Since the brain lesions are stable and the new lesion is isolated, focal radiotherapy could be considered for oligoprogression, but the active myeloma complicates this decision. However, the timeline does not provide evidence of prior treatment for the new lesion, so it might be a candidate for focal therapy. But the key point is that the patient has multiple myeloma not in remission, which is an active systemic disease. Oligoprogression in the context of active systemic disease may not be ideal for focal therapy alone. However, the question is specifically about oligoprogression management. The patient has a new lesion in the lung (subcarinal) which is oligoproliferative, and the brain lesions are stable. Therefore, focal radiotherapy could be appropriate for the new lesion, assuming it is isolated and the patient is otherwise stable. However, the presence of active myeloma (elevated beta-2 microglobulin, abnormal immunoglobulins) suggests that systemic disease is active, which might make focal therapy less effective. But the question is about oligoprogression, not overall disease control. The answer hinges on whether the new

lesion is isolated and if focal therapy is indicated for that. Given the timeline, the new subcarinal lesion is the only new finding, and the brain lesions are stable. Therefore, focal radiotherapy could be appropriate for oligoprogression. However, the patient's myeloma status complicates this, but the question is specifically about oligoprogression, not the myeloma. The answer would be "Yes" if the new lesion is isolated and focal therapy is indicated. But the presence of active myeloma might contraindicate or complicate focal therapy. However, the question is only about oligoprogression, not the myeloma. Therefore, based on the timeline, focal radiotherapy is appropriate for the new subcarinal lesion as oligoprogression.

</think> <brief reasoning trace with explanation for label selection> | <label> The patient has a history of lung adenocarcinoma with stable brain metastases (no new lesions) and a new subcarinal lesion identified on PET-CT. Oligoprogression is defined as isolated new lesions in the context of stable systemic disease. The patient's myeloma is active (elevated beta-2 microglobulin, abnormal immunoglobulins), but the question focuses on oligoprogression management. Focal radiotherapy is appropriate for isolated new lesions to control progression while maintaining systemic therapy. The timeline does not indicate prior treatment for the subcarinal lesion, supporting its consideration for focal therapy. </label> <answer>Yes</answer>

no radiology report: [INCORRECT] <think>Okay, let's analyze the question carefully. The question asks whether focal radiotherapy is appropriate for the management of oligoprogression in a patient with a history of multiple myeloma and lung cancer. The options are "Yes" or "No". First, I need to understand what oligoprogression means. Oligoprogression refers to the presence of a limited number of new lesions or progression in a patient who has been stabilized or responding to treatment. In this case, the patient has a history of multiple myeloma and lung cancer. The imaging findings show progression in the lungs and possibly other areas. Focal radiotherapy is often used for oligoproliferative disease to target specific areas of progression while sparing the rest of the body. This approach can be effective in controlling localized disease and improving quality of life. However, the decision depends on factors like the patient's overall health, prior treatments, and the extent of progression. The patient's history includes multiple myeloma and lung cancer, and the imaging shows progression in the lungs. Focal radiotherapy could be considered for localized progression, but the decision would require a multidisciplinary team's input. However, based on the provided information and standard guidelines, focal radiotherapy is generally appropriate for oligoprogression to target specific areas.

</think> <answer>Yes</answer>

100 axial images (no timeline): [CORRECT] <think>First, I need to understand the question: "Is focal radiotherapy appropriate for the management of oligoprogression?" Oligoprogression refers to the presence of a limited number of progressing lesions in a patient with otherwise stable disease. Focal radiotherapy is a treatment approach that targets specific areas of progression rather than systemic therapy. Next, I must analyze the provided image and any associated clinical data to determine if focal radiotherapy is appropriate. The image appears to be a CT scan showing a cross-sectional view of the pelvis. There are visible implants or hardware, possibly related to prior surgery or treatment. The scan shows bony structures, soft tissues, and some metallic components, but no clear evidence of active tumor progression or metastatic lesions is visible in this single image. However, the question is about oligoprogression, which implies that there is clinical or imaging evidence of a few progressing lesions. The image alone does not provide sufficient information to confirm or deny oligoprogression. The decision on focal radiotherapy would depend on the patient's full clinical history, including prior treatments, tumor response, and the presence of progressing lesions. Since the question asks specifically about oligoprogression and the appropriateness of focal radiotherapy, and given that the image does not provide definitive evidence of oligoprogression or its absence, I must rely solely on the patient timeline provided. If the patient has documented oligoprogression and the lesions are few and localized, focal radiotherapy could be appropriate. If there is no evidence of oligoprogression or if the disease is more widespread, systemic therapy might be preferred. Without additional clinical data, I cannot definitively conclude.

However, the question implies that oligoprogression is present. Therefore, based on the assumption that oligoprogression is documented and localized, focal radiotherapy would be appropriate. Final answer: "Yes"</think> <answer>Yes</answer>

Model: Qwen/Qwen3-VL-8B-Instruct

middle image from each view: **[INCORRECT]** The provided PATIENT_TIMELINE indicates the patient has a history of multiple myeloma (ICD10CM/C90.00) and lung adenocarcinoma (ICD10CM/C34.90, C34.92). A PET-CT scan on 09/02/2016 revealed a new focus of intense hypermetabolism in the subcarinal region of the mediastinum, which is consistent with oligoprogression. The timeline does not contain any documentation of a prior radiation therapy plan or indication for focal radiotherapy for this specific oligoprogression. The patient's history and current findings do not provide sufficient evidence to support the appropriateness of focal radiotherapy without further clinical context or a treatment plan. No | No

middle axial image: **[CORRECT]** The provided timeline indicates the patient has a history of multiple myeloma and lung adenocarcinoma with metastatic disease. The imaging findings show a stable brain lesion and a new focus of intense hypermetabolism in the subcarinal region on PET-CT, which is consistent with oligoprogression. The question is whether focal radiotherapy is appropriate for managing this oligoprogression. Focal radiotherapy is a standard and appropriate management strategy for oligoprogression in cancer patients. It is used to target new or progressing lesions while sparing the rest of the body from unnecessary radiation. The evidence in the timeline supports this approach: the PET-CT scan identified a new, metabolically active lesion in the subcarinal region, which is a clear sign of progression. The patient's history of prior treatments (including SBRT for brain lesions) and current disease status (multiple myeloma not in remission) make focal radiotherapy a rational and commonly employed option to control this specific site of progression. Therefore, based on the evidence of oligoprogression and standard oncology practice, focal radiotherapy is appropriate. Yes

no image: **[CORRECT]** The patient has a history of lung adenocarcinoma with prior lobectomy and adjuvant chemotherapy, and has developed oligoprogression (a new focus of intense hypermetabolism in the subcarinal region on PET-CT, noted on 09/02/2016). The timeline shows no prior radiotherapy for this new site, and the patient is on afatinib. Focal radiotherapy is a standard management option for oligoprogression in lung cancer to control local disease and potentially improve survival. The evidence supports that focal radiotherapy is appropriate for this scenario. Yes

no radiology report: **[INCORRECT]** No The patient's medical history and imaging findings do not support the use of focal radiotherapy for oligoprogression. The timeline shows a diagnosis of multiple myeloma (ICD10CM/C90.00) and a malignant neoplasm of the lung (ICD10CM/C34.92). The imaging, including CT scans of the chest, abdomen, and pelvis, and MRIs of the head and spine, are part of a comprehensive staging workup (e.g., PET/CT on 2016-09-02) to assess the extent of disease. The imaging findings are consistent with systemic disease, not isolated, localized progression. Focal radiotherapy is typically reserved for localized disease or symptomatic lesions, which is not the case here. The patient's condition is managed with systemic therapy (e.g., lenalidomide, dexamethasone, and other agents), which is appropriate for multiple myeloma. There is no evidence of oligoprogression that would warrant focal radiotherapy.

100 axial images (no timeline): **[INCORRECT]** The provided PATIENT_TIMELINE consists solely of a series of grayscale axial CT scan images, progressing from the lower abdomen/pelvis upwards through the thorax to the head. There is no accompanying clinical history, cancer diagnosis, treatment details, or documentation of oligoprogression. The images show anatomical structures without any explicit evidence of tumor, metastasis, or disease progression. Therefore, it is impossible to determine if focal radiotherapy is appropriate for

oligoprogession based on the given information. No | No

Model: google/medgemma-1.5-4b-it

middle image from each view: [INCORRECT] <unused94>thought The user wants me to determine if focal radiotherapy is appropriate for oligoprogession based on the provided patient timeline. 1. **Identify the core question:** Is focal radiotherapy appropriate for oligoprogession? 2. **Define oligoprogession:** Oligoprogession is the recurrence of cancer in multiple sites, but the number of sites is limited (typically 2-5). 3. **Analyze the patient's timeline for evidence of oligoprogession:** **History:** Lung adenocarcinoma (left lower lobectomy), metastatic disease to the brain (2 lesions, SBRT), metastatic disease to the bone (right humerus, pathological fracture), history of multiple myeloma (smoldering). **Imaging (PET/CT 08/03/2016):** Brain: No new lesions, but persistent enhancement in the left thalamus (likely from prior SBRT). Chest: Postsurgical changes from left lobectomy. No new lesions. Abdomen/Pelvis: No new lesions. Musculoskeletal: Postsurgical changes from right humerus ORIF. No new lesions. **Imaging (MRI Brain 08/22/2016):** Brain: Stable size and appearance of the 9 mm peripherally enhancing lesion in the left precentral gyrus. Stable residual enhancement in the anterior left thalamus. No new lesions. **Imaging (CT Chest/Abdomen/Pelvis 08/22/2016):** Chest: No new lesions. Abdomen/Pelvis: No new lesions. **Imaging (Bone Marrow Biopsy 08/06/2016):** Bone Marrow: No new lesions identified. **Imaging (Bone X-rays 08/25/2016):** Right Humerus: No new lesions. Hip: No new lesions. Left Femur: No new lesions. **Other Findings:** No new actionable findings on low-dose CT. No new lesions on PET/CT. No new lesions on MRI Brain. No new lesions on Bone Marrow Biopsy. No new lesions on Bone X-rays. 4. **Evaluate the findings in the context of oligoprogession:** The patient has evidence of disease recurrence in multiple sites (brain, bone, lung, bone marrow), but the number of sites is limited (2 brain lesions, 1 bone lesion, 1 lung lesion, 1 bone marrow lesion). This fits the definition of oligoprogession. 5. **Consider the treatment options for oligoprogession:** **Systemic therapy:** Often the first-line treatment for oligoprogession, especially in patients with limited disease burden and good performance status. **Focal radiotherapy:** Can be considered for oligoprogession, particularly for lesions that are symptomatic, rapidly growing, or in locations where systemic therapy is less effective or contraindicated. It can also be used to consolidate response to systemic therapy. **Surgery:** Generally not indicated for oligoprogession. 6. **Determine if focal radiotherapy is appropriate based on the evidence:** The timeline shows multiple sites of recurrence, but no new lesions are identified on recent imaging (PET/CT, MRI Brain, Bone Marrow Biopsy, Bone X-rays). While systemic therapy is often the primary approach, focal radiotherapy *could* be considered for specific lesions if they were symptomatic or showed signs of progression. However, the timeline doesn't explicitly state any symptomatic lesions or evidence of progression requiring focal treatment. The question asks if focal radiotherapy is *appropriate*, implying a potential indication. Given the limited number of sites (oligoprogession), focal radiotherapy is a potential treatment modality to consider, especially if specific lesions warrant it. The timeline doesn't provide enough information to definitively say "yes" or "no" without more context (e.g., symptoms, specific lesion characteristics, treatment goals). However, the presence of oligoprogession itself makes focal radiotherapy a *possible* and *considered* option, even if systemic therapy is often preferred. 7. **Formulate the reasoning:** The patient has evidence of cancer recurrence in multiple sites (brain, bone, lung, bone marrow), fitting the definition of oligoprogession. While systemic therapy is often the primary treatment, focal radiotherapy is a potential option for managing oligoprogession, especially for symptomatic or progressive lesions. The provided timeline does not explicitly state a need for focal radiotherapy, but the

middle axial image: [INCORRECT] <brief reasoning trace with explanation for label selection> | <label> The patient has a history of multiple myeloma, which is a cancer of plasma cells. The patient has also had a bone marrow biopsy performed on 2016-09-05. The biopsy was

performed to evaluate the patient's multiple myeloma. The biopsy showed abnormal cells consistent with myeloma. The patient has also had a PET-CT scan performed on 2016-09-02. The PET-CT scan showed a new focus of intense hypermetabolism in the left subcarinal region with an adjacent ill-defined soft tissue density. This finding is concerning for malignancy. The patient has also had a brain MRI on 2016-08-23. The brain MRI showed unchanged size and appearance of the 0.9 cm peripherally enhancing lesion in the medial aspect of the left precentral gyrus and the residual enhancement in the region of the anterior left thalamus. These findings are consistent with metastatic disease. The patient has also had a brain MRI on 2016-06-07. The brain MRI showed unchanged size and appearance of the 0.9 cm peripherally enhancing and restricting lesion in the medial aspect of the left precentral gyrus or the persistent enhancement in the region of the anterior left thalamus. These findings are consistent with metastatic disease. The patient has also had a brain MRI on 2016-02-24. The brain MRI showed intense FDG uptake in the visualized cerebral cortex gray matter. This high physiologic background activity reduces the sensitivity of PET for malignant processes. Physiologic FDG uptake is seen in the ocular muscles, salivary glands, oropharynx, and vocal cords. There are no pathologically enlarged or hypermetabolic abdominal, pelvic, or inguinal lymph nodes. The thyroid gland is unremarkable. The patient has also had a PET-CT scan performed on 2016-08-03. The PET-CT scan showed a new focus of intense hypermetabolism in the mediastinum in the subcarinal region with SUV max 11.4. This finding is concerning for malignancy. The patient has also had a PET-CT scan performed on 2016-02-24. The PET-CT scan showed intense FDG uptake in the left subcarinal region with an adjacent ill-defined soft tissue density. This finding is concerning for malignancy. The patient has also had a PET-CT scan performed on 2016-09-02. The PET-CT scan showed a new focus of intense hypermetabolism in the mediastinum in the subcarinal region with SUV max 11.4. This finding is concerning for malignancy. The patient has also had a PET-CT scan performed on 2016-02-24. The PET-CT scan showed intense FDG uptake in the left subcarinal region with an adjacent ill-defined soft tissue density. This finding is concerning for malignancy. The patient has also had a PET-CT scan performed on 2016-08-03. The PET-CT scan showed a new focus of intense hypermetabolism in the mediastinum in the subcarinal region with SUV max 11.4. This finding is concerning for malignancy. The patient has also had a PET-CT scan performed on 2016-02-24. The PET-CT scan showed intense FDG uptake in the left subcarinal region with an adjacent ill-defined soft tissue density. This finding is concerning for malignancy. The patient has also had a PET-CT scan performed on 2016-09-02. The PET-CT scan showed a new focus of intense hypermetabolism in the mediastinum in the subcarinal region with SUV max 11.4. This finding is concerning for malignancy. The patient has also had a PET-CT scan performed on 2016-02-24. The PET-CT scan showed intense FDG uptake in the left subcarinal region with an adjacent ill-defined soft tissue density. This finding is concerning for malignancy. The patient has also had a PET-CT scan performed on 2016-08-03. The PET-CT scan showed a new focus of intense hypermetabolism in the mediastinum in the subcarinal region with SUV max 11.4. This finding is concerning for malignancy. The patient has also had a PET-CT scan performed on 2016-02-24. The PET-CT scan showed intense FDG uptake in the left subcarinal region with an adjacent ill-defined soft tissue density. This finding is concerning for malignancy. The patient has also had a PET-CT scan performed on 2016-09-02. The PET-CT

no image: [INCORRECT] <brief reasoning trace with explanation for label selection> | <label>
The patient has a history of multiple myeloma, diagnosed in 2016. The patient has undergone several treatments including chemotherapy (cisplatin and pemetrexed) and radiation therapy (SBRT) for brain metastases. The patient also has a history of lung adenocarcinoma status post lobectomy. The patient is currently on afatinib for lung cancer. The patient has a history of non-scarring hair loss and xerosis cutis. The patient has a history of smoking. The patient has a BMI of 26.89. The patient has a history of hypertension (BP 133/80) and hyperlipidemia (on colesevelam). The patient has a history of hypercalcemia (Calcium 8.9). The patient has a history of hyperuricemia (Urea nitrogen 18). The patient has a history of hyperphosphatemia

(Phosphate not explicitly mentioned but likely elevated given myeloma). The patient has a history of hyperkalemia (Potassium 4.1). The patient has a history of hyperproteinemia (Protein 7.8). The patient has a history of elevated alkaline phosphatase (128). The patient has a history of elevated total bilirubin (1.0). The patient has a history of elevated AST (27) and ALT (29). The patient has a history of elevated LDH (not explicitly mentioned but likely elevated given myeloma). The patient has a history of elevated beta-2 microglobulin (1677). The patient has a history of elevated free light chain ratio (2.9). The patient has a history of elevated IgA (22) and IgG (1630). The patient has a history of elevated IgM (35.8). The patient has a history of elevated M-spike (1.0). The patient has a history of elevated anion gap (7). The patient has a history of elevated creatinine (0.77). The patient has a history of elevated alkaline phosphatase (128). The patient has a history of elevated total protein (7.8). The patient has a history of elevated albumin (3.9). The patient has a history of elevated AST (27) and ALT (29). The patient has a history of elevated total bilirubin (1.0). The patient has a history of elevated beta-2 microglobulin (1677). The patient has a history of elevated free light chain ratio (2.9). The patient has a history of elevated IgA (22) and IgG (1630). The patient has a history of elevated IgM (35.8). The patient has a history of elevated M-spike (1.0). The patient has a history of elevated anion gap (7). The patient has a history of elevated creatinine (0.77). The patient has a history of elevated alkaline phosphatase (128). The patient has a history of elevated total protein (7.8). The patient has a history of elevated albumin (3.9). The patient has a history of elevated AST (27) and ALT (29). The patient has a history of elevated total bilirubin (1.0). The patient has a history of elevated beta-2 microglobulin (1677). The patient has a history of elevated free light chain ratio (2.9). The patient has a history of elevated IgA (22) and IgG (1630). The patient has a history of elevated IgM (35.8). The patient has a history of elevated M-spike (1.0). The patient has a history of elevated anion gap (7). The patient has a history of elevated creatinine (0.77). The patient has a history of elevated alkaline phosphatase (128). The patient has a history of elevated total protein (7.8). The patient has a history of elevated albumin (3.9). The patient has a history of elevated AST (27) and

no radiology report: [INCORRECT] <unused94>thought The user wants me to determine if focal radiotherapy is appropriate for the patient based on the provided timeline. 1. ****Identify the core question:**** Is focal radiotherapy appropriate for oligoprogression? 2. ****Analyze the patient's history:**** * Diagnosis: Malignant neoplasm of unspecified part of left bronchus or lung (C34.92). * Treatment History: * Chemotherapy (calcium carbonate, cholecalciferol) - likely for multiple myeloma, but the timeline doesn't explicitly state this. * Radiotherapy (likely involved in the initial treatment, but the timeline doesn't specify the exact modality or location). * Systemic therapy (lenalidomide, acyclovir, aspirin, dextran, dexamethasone, loperamide, sulfamethoxazole/trimethoprim) - likely for multiple myeloma. * Focal radiotherapy (likely involved in the initial treatment, but the timeline doesn't specify the exact modality or location). * Current Status: Oligoprogression (multiple lesions, likely the lung cancer and potentially others, but the timeline doesn't explicitly state the number or location of lesions). * Imaging: CT scans (chest, abdomen) show multiple lesions. * Pathology: Bone marrow biopsy (diagnostic, not necessarily for treatment planning). * Other findings: Xerosis cutis, lymphedema, hair loss, diarrhea, abnormal blood counts (WBC, RBC, platelets, differential, reticulocytes, electrolytes, creatinine, glucose, sodium, BUN, calcium, phosphorus, alkaline phosphatase, potassium, albumin, total protein, MCHC, free light chains, beta-2-microglobulin, IGM, IGF-1, vitamin D, calciferol, carbon dioxide, anion gap, GFR). * Recent Procedures: * Bone marrow biopsy

[illegible]

middle axial image: [CORRECT] The patient has a history of lung malignancy, multiple myeloma, and brain metastases. The most recent imaging shows persistent enhancement in the left thalamus and a new focus of hypermetabolism in the left subcarinal region. Given the patient's history of malignancy and the presence of new lesions, focal radiotherapy is a reasonable consideration for the management of oligoprogression. <Yes>

no radiology report: [CORRECT] The provided medical history indicates a patient with a history of lung cancer (C34.92), multiple myeloma (C90.00), and a history of tobacco use. The patient is currently on calcium carbonate and cholecalciferol. The most recent imaging findings show a large, well-defined mass in the chest, likely representing the patient's known lung cancer. The patient is also on colesevelam and aspirin. The patient is being treated with focal radiotherapy. Based on the patient's history of lung cancer, the presence of a large mass, and the use of focal radiotherapy, focal radiotherapy is appropriate for the management of oligoprogression. <brief reasoning trace with explanation for label selection> | Yes

100 axial images (no timeline): [CORRECT] The images show a central mass with surrounding edema and a clear margin. There is no evidence of distant metastasis. The patient has a history of oligoprogression. Focal radiotherapy is a reasonable option for managing oligoprogression. Yes