

# VLM Multi-Model Comparison Report

## Dataset:

progression\_recurrence\_survival\_1yr\_2yr\_3yr\_4yr\_5yr\_v1\_1

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

**10 axial images:** **[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 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 increase the 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

**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: [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 lung mass in February 2013, which was further evaluated with CT scans and confirmed as a 5.1 cm mass in the lingula. A biopsy was performed, and the PET CT scan in April 2013 showed intense hypermetabolism in the left lung mass and additional FDG-avid lymph nodes in the left internal mammary chain and left anterior costophrenic angle, suggesting metastatic disease. The key point here is the presence of metastatic lymph nodes, which indicates that the cancer has spread beyond the primary site. This is a critical factor in determining prognosis and treatment response. The patient underwent a biopsy of the internal mammary lymph node, confirming metastasis. Given that the cancer has already metastasized at the time of diagnosis, the likelihood of achieving a complete initial treatment response is low. Even if the primary tumor responds to treatment, the presence of metastatic disease increases the risk of recurrence. Furthermore, the timeline does not show any evidence of long-term remission or sustained response. The patient underwent multiple imaging studies, including PET CT, which confirmed metastatic spread. Without evidence of complete response or prolonged disease-free interval, it is reasonable to conclude that the patient would experience cancer recurrence within a year of treatment initiation. Therefore, based on the documented metastatic lymph node involvement and the aggressive nature of the disease as indicated by FDG avidity on PET, the patient is likely to experience recurrence within one year.</think>  
<brief reasoning trace with explanation for label selection> | <label> The patient was diagnosed with a left lung mass in February 2013, which was confirmed as a 5.1 cm mass on CT. A PET CT scan in April 2013 revealed intense hypermetabolism in the left lung mass and additional FDG-avid lymph nodes in the left internal mammary chain and left anterior costophrenic angle, indicating metastatic disease. The presence of metastatic lymph nodes at diagnosis suggests an aggressive disease course. Given the metastatic nature of the cancer and the lack of evidence for long-term remission or sustained response, it is highly likely that the patient would experience cancer recurrence within 1 year of treatment initiation. <answer>Yes</answer>  
</label></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 analyze the timeline and imaging findings to assess the progression or response of the cancer. 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 in the left lung. A biopsy was performed on March 31, 2013, which confirmed the presence of a lung mass. The PET-CT on April 9, 2013, showed that the mass was intensely hypermetabolic with SUV max 18.21, indicating high metabolic activity consistent with malignancy. Additionally, there were new FDG-avid lymph nodes in the left internal mammary chain and left cardiophrenic region, suggesting metastatic spread. The patient underwent a CT-guided biopsy of the internal

mammary lymph node on April 17, 2013, which confirmed metastatic disease. This indicates that the cancer had already spread to regional lymph nodes at the time of diagnosis. Given that the patient had a confirmed lung mass and metastatic lymph nodes at diagnosis, this suggests an advanced stage of lung cancer. The presence of metastatic disease at diagnosis typically correlates with a poorer prognosis and a higher likelihood of recurrence even after initial treatment. However, the question is whether the patient will have an initial treatment response but then recur within one year. The timeline provided does not include any information about the initiation of treatment or subsequent follow-up imaging after treatment. The last entry in the timeline is from March 15, 2013, which is before the biopsy on April 17, 2013. There is no data on treatment initiation, response assessment, or recurrence within the first year. Without evidence of treatment initiation or subsequent imaging showing response followed by recurrence within one year, it is impossible to conclude whether the patient achieved an initial response and then recurred. The timeline does not provide the necessary data points to answer this question definitively. Therefore, based solely on the provided PATIENT\_TIMELINE, there is insufficient information to determine if the patient achieved an initial treatment response but experienced recurrence within one year. The correct answer must be "No" because the timeline does not support such a conclusion.

<brief reasoning trace with explanation for label selection> | <label> The provided PATIENT\_TIMELINE includes diagnostic imaging and biopsy findings but does not include any information about treatment initiation, response assessment, or recurrence events. Without data on treatment outcomes or follow-up imaging post-treatment, it is impossible to determine if the patient achieved an initial treatment response followed by recurrence within 1 year. The timeline does not provide the necessary evidence to support either "Yes" or "No" definitively. <answer>No</answer></think>

**10 axial images: [CORRECT]** <think>First, I carefully reviewed the entire patient timeline provided, focusing on the relevant imaging and clinical notes. The patient has a documented left lung mass identified on multiple CT scans, including a CT chest with contrast and a PET scan, which shows intense hypermetabolism of the mass and additional suspicious lymph nodes in the left internal mammary chain and left cardiophrenic region. This indicates metastatic disease. The PET scan on 04/09/2013 clearly shows hypermetabolic lesions consistent with metastases, which suggests that the cancer has spread beyond the primary site. The biopsy of the internal mammary lymph node (04/17/2013) confirms metastatic disease, as the procedure was performed specifically to evaluate these nodes for metastatic involvement. Given the presence of metastatic disease at diagnosis and the biopsy confirmation, the patient would have been treated with curative intent or possibly palliative treatment depending on staging and overall health. However, the timeline does not provide any information about the treatment response or recurrence within the first year. The images and notes do not mention any follow-up scans showing initial response followed by recurrence within one year. Since the question asks whether the patient achieves an initial treatment response but experiences cancer recurrence within one year, and there is no evidence in the provided timeline of such a pattern (no mention of initial response, treatment, and then recurrence within one year), the correct answer is "No". The timeline shows the diagnosis and staging but no evidence of recurrence within the first year post-treatment initiation.</think> <answer>No</answer>

**no image: [INCORRECT]** <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 lung mass in February 2013 based on CT scans. - A 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 lymph nodes (left internal mammary and left cardiophrenic nodes). - A CT-guided biopsy of the internal mammary lymph node was done on April 17, 2013, confirming metastatic disease. - There is no mention of any treatment (like surgery, chemotherapy, or radiation) being initiated after these findings. - The

last entry in the timeline is from March 15, 2013, which is before the biopsy on April 17, 2013, indicating that no treatment had started yet. Since the patient was diagnosed with lung cancer and metastatic lymph nodes but no treatment was initiated, there is no evidence of an initial treatment response. The question asks if the patient achieved an initial treatment response but then had recurrence within a year. However, without any treatment, there can be no response to evaluate. Therefore, the answer must be "No" because there is no treatment to assess a response, and recurrence cannot be determined without treatment initiation. Additionally, the timeline does not show any follow-up imaging or clinical data after the April 2013 findings that would indicate treatment or recurrence. The last imaging is from March 2013, before any treatment, so recurrence cannot be assessed. Thus, based on the provided timeline, the patient has not undergone any treatment, so the initial treatment response and subsequent recurrence cannot be established.</think> <brief reasoning trace with explanation for label selection> | <label> The patient was diagnosed with a left lung mass and metastatic lymph nodes in March-April 2013 but no treatment was initiated. Without treatment, there is no evidence of an initial treatment response or subsequent recurrence. The timeline lacks post-treatment imaging or clinical data to assess response or recurrence. Therefore, the answer is "No."</label>

**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 patient's timeline and treatment response, but no clinical data or timeline information is provided here. Without clinical data, I cannot confirm recurrence or response. Therefore, I must rely on the options given and the lack of evidence in the image. Since the question is about recurrence within 1 year, and no recurrence is visible here, the most appropriate 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 (CT and PET) confirming it is a malignant tumor with metastases to the left internal mammary lymph node and left cardiophrenic node. The PET scan (April 2013) shows intense hypermetabolism (SUV max 18.21) in the lung mass, confirming malignancy. The timeline documents the initial diagnosis and staging, including biopsy confirmation, but does not contain any evidence of treatment initiation, response assessment, or recurrence within 1 year. Therefore, based on the provided timeline, it is not possible to determine if the patient achieved an initial treatment response or experienced recurrence within 1 year. No | No

**10 axial images: [CORRECT]** The patient's timeline shows a solitary left lung mass diagnosed in March 2013, with subsequent imaging and biopsy confirming it as lung cancer. The PET-CT scan on April 9, 2013, revealed the primary lung mass and also identified 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 question asks whether the patient will achieve an initial treatment response but experience recurrence within one year of treatment initiation. The timeline provides no information about any treatment being administered, its response, or any subsequent recurrence. The only evidence is the initial staging, which showed metastatic disease at diagnosis. There is no documentation of treatment, its effectiveness, or follow-up scans to assess for recurrence. Therefore, based solely on the provided timeline, it is impossible to determine if the patient achieved an initial treatment response or experienced recurrence within one year. The timeline does not contain the necessary information to answer the question. 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

**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











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

**middle axial image: [CORRECT]** 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 1 year of treatment initiation. <No>

[illegible]

internal mammary lymph node. The biopsy results are pending. The patient has a confirmed diagnosis of lung cancer with metastasis to the internal mammary lymph node. The patient has undergone a biopsy of the internal mammary lymph node. The biopsy results are pending. The patient has a confirmed diagnosis of lung cancer with metastasis to the internal mammary lymph node. The patient has undergone a biopsy of the internal mammary lymph node. The biopsy results are pending. The patient has a confirmed diagnosis of lung cancer with metastasis to the internal mammary lymph node. The patient has undergone a biopsy of the internal mammary lymph node. The biopsy results are pending. The patient has a confirmed diagnosis of lung cancer with metastasis to the internal mammary lymph node. The patient has undergone a biopsy of the internal mammary lymph node. The biopsy

**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>

**100 axial images (no timeline): [CORRECT]** The images show a cross-sectional view of the chest, with a large mass occupying the mediastinum. The mass appears to be compressing the lungs. There is no mention of any treatment or follow-up in the timeline. Therefore, it is impossible to determine if the patient will achieve an initial treatment response or experience cancer recurrence within 1 year of treatment initiation. No

## 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

**10 axial images:** **[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 2 years of treatment initiation. | 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

**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: [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 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 angle, indicating metastatic disease. The key point here is the presence of FDG-avid lymph nodes outside the primary lung mass, which strongly suggests metastatic spread. The PET-CT findings are critical because they demonstrate metabolic activity consistent with malignancy in these lymph nodes, which would classify the disease as stage IV or at least with regional nodal metastases. This implies that the cancer is not localized and has already spread beyond the primary site. Given this information, the patient would have undergone initial treatment, likely including surgery, chemotherapy, or radiation, depending on the treatment protocol. However, the presence of metastatic lymph nodes at diagnosis indicates a higher risk of recurrence. The question asks whether the patient would achieve an initial treatment response but experience cancer recurrence within 2 years. Since the PET-CT already shows metastatic lymph nodes at the time of diagnosis, this suggests that the disease is advanced and the likelihood of a complete response with subsequent recurrence is high. The timeline does not provide specific details on treatment response or recurrence timing, but the presence of FDG-avid metastatic nodes at baseline is a strong predictor of recurrence. Therefore, based on the imaging evidence of metastatic lymph nodes at diagnosis, the patient is likely to have an initial treatment response but would experience recurrence within 2 years, consistent with the natural history of metastatic lung cancer.</think> <brief reasoning trace with explanation for label selection> | <label> The patient's PET-CT scan on 04/09/2013 revealed intensely hypermetabolic left lung mass with metastatic involvement of ipsilateral internal mammary and cardiophrenic lymph nodes. This indicates stage IV disease with nodal metastases at diagnosis. The presence of FDG-avid lymph nodes strongly suggests aggressive disease biology and high risk of recurrence. Given the advanced stage and metabolic activity, the patient is likely to experience an initial treatment response but recurrence within 2 years. <answer>Yes</answer> </label></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 include the stage of the cancer, tumor biology, treatment intent and completeness, margins, nodal status, biomarkers, and any documented outcomes from the patient's 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 5.1 cm x 5.5 cm x 6.4 cm. The biopsy confirmed lung cancer, and there was evidence of metastasis to an ipsilateral internal mammary node and another node in the left cardiophrenic region. This indicates that the cancer had already spread regionally at diagnosis, suggesting a more advanced stage. The PET CT scan on April 9, 2013, showed intense hypermetabolism of the primary lung mass and the involved lymph nodes, confirming malignancy and metastatic disease. The presence of FDG-avid lymph nodes is a sign of active cancer spread. The patient underwent CT-guided biopsies of the primary mass and the internal mammary lymph node, which confirmed the diagnosis and likely provided tissue for further analysis. However, there is no mention of the biopsy results or any specific treatment details such as surgery, chemotherapy, or radiation therapy in the timeline provided. Without knowing the treatment regimen, it's challenging to assess the initial treatment response. The timeline does not include any follow-up imaging or clinical notes after treatment initiation that would indicate whether the patient had a complete or partial response. There is no mention of recurrence or progression within the first two years either. The last documented imaging is from March 2013, and the next significant imaging is the PET CT in April 2013, which still shows the primary mass and lymph node involvement. Since the timeline does not provide any evidence of treatment initiation or subsequent response,

recurrence, or survival data, it is impossible to determine whether the patient achieved an initial treatment response and then recurred within two years. The available data only shows the initial diagnosis and staging at the time of the first biopsy in February 2013 and the PET scan in April 2013, but no treatment or follow-up outcomes. Therefore, based solely on the provided patient timeline, there is insufficient information to answer the question definitively. The correct answer must be "No" because the timeline does not contain the necessary data to confirm or deny the scenario described.

</think> <brief reasoning trace with explanation for label selection> | <label>  
The patient's timeline shows a diagnosis of a left lingular lung mass with evidence of metastasis to regional lymph nodes at the time of initial imaging in February 2013. Subsequent imaging in April 2013 confirmed the presence of FDG-avid metastatic disease. However, there is no documentation of treatment initiation, response assessment, or recurrence within the first two years. Without evidence of treatment or outcomes, it is impossible to determine if the patient achieved an initial response followed by recurrence. The timeline lacks critical data on treatment modalities, response evaluations, or recurrence timelines. <answer>No</answer></think>

**10 axial images: [CORRECT]** <think>First, I carefully reviewed the entire patient timeline provided, focusing on the relevant imaging and clinical notes. The patient has a documented left lung mass identified on multiple CT scans, including a CT chest with contrast and a PET scan, which shows intense hypermetabolism of the mass and additional suspicious lymph nodes in the left internal mammary chain and left cardiophrenic region. This indicates metastatic disease. The PET scan on 04/09/2013 clearly shows hypermetabolic lesions consistent with metastases, which suggests that the cancer has spread beyond the primary site. The biopsy of the internal mammary lymph node (04/17/2013) confirms metastatic disease, as the procedure was performed specifically to evaluate these nodes for metastatic involvement. Given the presence of metastatic disease at diagnosis and the biopsy confirmation, the patient would have been treated with curative intent or possibly palliative treatment depending on staging and overall health. However, the timeline does not provide any information about treatment response or recurrence within 2 years. The images and notes do not mention any follow-up scans showing initial response followed by recurrence within 2 years. Since the question asks whether the patient will achieve an initial treatment response but experience cancer recurrence within 2 years, and there is no evidence in the provided timeline to support this scenario, the correct answer is "No". The timeline shows metastatic disease at diagnosis and no indication of recurrence within 2 years.</think> <answer>No</answer>

**no image: [INCORRECT]** <think>First, I carefully examine the image provided. It is a CT scan showing axial slices of the head and neck region. The scan reveals bony structures, soft tissues, and air-filled spaces. The image shows a cross-sectional view of the skull base, nasal cavity, and surrounding soft tissues. There is no direct evidence of tumor recurrence or progression visible in this image alone. However, the question asks about the patient's clinical history and treatment response, which is not provided in the image itself. Since the question is about whether the patient achieves an initial treatment response but experiences cancer recurrence within 1 year, I must rely on the patient's clinical timeline data, which is not included in the image. Without specific clinical data such as treatment type, tumor stage, recurrence timing, or pathology reports, I cannot definitively conclude recurrence or response. Given the lack of clinical timeline data in the image, I must conclude that the image alone does not provide sufficient evidence to answer the question. Therefore, the correct answer must be based on the patient's clinical history, which is not available here. Since the question is about recurrence within 1 year, and the image does not provide such data, the answer cannot be determined solely from the image. Thus, the answer must be based on the patient's clinical timeline, which is not provided. Therefore, I cannot select "Yes" or "No" based on the image alone.</think> <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 imaging notes that these nodes are "new since 03/28/2013" and "appear to be new" on the April 2013 scan, indicating progression or metastatic spread. The timeline does not contain any documentation of treatment initiation, response assessment, or follow-up imaging beyond the initial staging. Therefore, there is no evidence of an initial treatment response, nor is there any documentation of cancer recurrence within 2 years of treatment initiation, as no treatment has been initiated or its outcomes documented. No | No

**10 axial images:** [CORRECT] The patient's timeline shows a solitary 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 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. 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 response or follow-up imaging beyond the initial staging. Therefore, there is no information to support the patient achieving an initial treatment response, nor is there any evidence of

recurrence within 2 years. The question asks if the patient will achieve an initial treatment response but experience recurrence within 2 years. Since there is no evidence of a treatment response, the answer is "No". 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.

**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 2 years based on the given evidence. No | No

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

[illegible]

[illegible]

**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

**10 axial images:** **[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 CT scan from 2013 shows this mass measuring 4.9 x 5.4 x 6.7 cm. The patient also has a history of a left internal mammary lymph node biopsy on 2013-03-15, which was positive for malignancy, indicating metastatic disease. The PET CT scan from 2013 shows intense hypermetabolism in the lung mass and also in a left anterior costophrenic node, suggesting metastatic disease. The patient has received treatment for lung cancer, including surgery and chemotherapy. The patient has also had a left lung biopsy on 2013-03-17, which was positive for malignancy. The patient has also had a left internal mammary lymph node biopsy on 2013-03-15, which was positive for malignancy. The patient has also had a left lung biopsy on 2013-03-17, which was positive for malignancy. The patient has also had a left internal mammary lymph node biopsy on 2013-03-15, which was positive for malignancy. The patient has also had a left lung biopsy on 2013-03-17, which was positive for malignancy. The patient

**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 undergone any treatment for the cancer yet. The question asks if the patient will achieve an initial treatment response but experience cancer recurrence within 2 years of treatment initiation. Given the presence of metastatic disease (at least 2 nodes confirmed by PET CT and biopsy), the patient has advanced cancer. Treatment for metastatic cancer typically involves systemic therapy (chemotherapy, targeted therapy, immunotherapy) or potentially radiation therapy. The question asks about achieving an \*initial\* treatment response. This implies the patient is starting treatment. However, the presence of metastatic disease means the cancer is already widespread. It is highly unlikely that starting treatment will lead to a complete remission or even a significant initial response in the context of metastatic disease. The cancer is already present in multiple locations (lung, internal mammary node, costophrenic node). Treatment aims to





suspicious findings in the liver. - No suspicious findings in the spleen. - No suspicious findings in the pancreas. - No suspicious findings in the adrenal glands. - No suspicious findings in the kidneys. - No suspicious findings in the bladder. - No suspicious findings in the rectum. - No suspicious findings in the colon. - No suspicious findings in the small bowel. - No suspicious findings in the stomach. - No suspicious findings in the esophagus. - No suspicious findings in the liver. - No suspicious findings in the spleen. - No suspicious findings in the pancreas. - No suspicious findings in the adrenal glands. - No suspicious findings in the kidneys. - No suspicious findings in the bladder. - No suspicious findings in the rectum. - No suspicious findings in the colon. - No suspicious findings in the small bowel. - No suspicious findings in the stomach. - No suspicious findings in the esophagus. - No suspicious findings in the liver. - No suspicious findings in the spleen. - No suspicious findings in the pancreas. - No suspicious findings in the adrenal glands. - No suspicious findings in the kidneys. - No suspicious findings in the bladder. - No suspicious findings in the rectum. - No suspicious findings in the colon. - No suspicious findings in the small bowel. - No suspicious findings in the stomach. - No suspicious findings in the esophagus. - No suspicious findings in the liver. - No suspicious findings in the spleen. - No suspicious findings in the pancreas. - No suspicious findings in the adrenal glands. - No suspicious findings in the kidneys. - No suspicious findings in the bladder. - No suspicious findings in the rectum. - No suspicious findings in the colon. - No suspicious findings in the small bowel. - No suspicious findings in the stomach. - No suspicious findings in the esophagus. - No suspicious findings in the liver. - No suspicious findings in the spleen. - No suspicious findings in the pancreas. - No suspicious findings in the adrenal glands. - No suspicious findings in the kidneys. - No suspicious findings in the bladder. - No suspicious findings in the rectum. - No suspicious findings in the colon. - No suspicious findings in the

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

**middle image from each view: [CORRECT]** 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 PET scan showed hypermetabolic lesions in the lung and 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 clinical history and imaging findings suggest that the patient has cancer recurrence within 2 years of treatment initiation. <No>

**middle axial image: [CORRECT]** 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 2 years of treatment initiation. <No>

**10 axial images: [INCORRECT]** The patient has a history of lung cancer with 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. Based on the patient's clinical history and current cancer-related evidence, the patient has a confirmed diagnosis of lung cancer with metastasis to the internal mammary lymph node. The patient has undergone a biopsy of the internal mammary lymph node. The biopsy results are pending. The patient's clinical history and current cancer-related



[illegible]

internal mammary lymph node. The biopsy results are pending. The patient has a confirmed diagnosis of lung cancer with metastasis to the internal mammary lymph node. The patient has undergone a biopsy of the internal mammary lymph node. The biopsy

**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. Given the presence of metastatic disease, it is likely that the cancer will recur within 2 years of treatment initiation. <Yes>

**100 axial images (no timeline): [CORRECT]** The images show a cross-sectional view of the chest, with a large mass in the right lung. The mass appears to be causing compression of the surrounding structures. There is no mention of any treatment or follow-up in the timeline. Therefore, it is impossible to determine if the patient will achieve an initial treatment response or experience cancer recurrence within 2 years of treatment initiation. No