



## Frequently Asked Questions for Clinicians

### For risk assessment of indeterminate pulmonary nodules

#### What is **EarlyCDT<sup>®</sup>—Lung**?

**EarlyCDT<sup>®</sup>—Lung** is a simple, affordable blood test for the early detection of lung cancer. It is not a genetic predisposition test, but rather provides information as to risk of a cancer being present. **EarlyCDT—Lung** has two uses:

1. to aid in the risk assessment and early detection of lung cancer in high-risk patients where CT screening is not available, outside the US;
2. to assess indeterminate pulmonary nodules (IPNs) for the risk of malignancy.

These FAQs relate to use (2).

#### How does **EarlyCDT—Lung** work?

**EarlyCDT—Lung** measures blood levels of a panel of seven autoantibodies to tumour-associated antigens that are linked to lung cancer. The seven autoantibodies have been shown to be elevated for all types of lung cancer, and from the earliest stage of the disease.<sup>1,2</sup>

Autoantibody levels can be measured easily and accurately, thanks to the signal magnification created by the body's immune response to cancer. The test runs on a simple enzyme-linked immunosorbent assay (ELISA) platform.

#### How do I know if the **EarlyCDT—Lung** result is positive, and what does that mean?

Positive **EarlyCDT—Lung** results are reported as **Moderate Level** or **High Level**. For a nodule deemed to be >10% risk, a **High Level** result moves the nodule into the high risk category (>65%). A **Moderate Level** result will also move the nodule into the high risk category if the pre-test risk is >45%; otherwise, a **Moderate Level** result indicates an increased moderate risk.



## What does a No Significant Level of Autoantibodies Detected result mean? Does it mean that the patient does not have lung cancer?

This means all autoantibodies in the **EarlyCDT—Lung** panel are below the low cut-off value, and the overall risk for lung cancer is unchanged. A **No Significant Level of Autoantibodies Detected** result should signal the clinician to continue with the previously selected course of action for the patient.

This result can enhance the clinician's confidence that the previously selected treatment pathway is the correct one to follow, and the patient should experience less anxiety, especially if the next steps are "watchful waiting," as is often the case for intermediate nodules.

## Is there a correlation between nodule size and results?

No, autoantibody production is not dependent on nodule size. The immune system responds aggressively when it encounters a tumour antigen, so it only takes a small amount of antigen to stimulate production of an abundance of autoantibodies. This is a key advantage of measuring autoantibodies for early cancer detection; autoantibodies have been shown to elevate four years or more before standard clinical diagnosis.<sup>3,4</sup>

## How does this work with PET?

**EarlyCDT—Lung** is not intended to replace PET. The blood test is appropriate if there are no plans to utilise PET or if the PET scan is negative. A **Moderate** or **High Level EarlyCDT—Lung** result increases the risk of a nodule being malignant even after a positive PET scan. For example, there may be circumstances when **EarlyCDT—Lung** is deemed helpful if the PET result is inconclusive: a nodule with 20% risk increases to 60% with a positive PET, and with a **High Level EarlyCDT—Lung** result the risk increases further to 90%.

## How many positives (Moderate or High Level results) can I expect?

For low- to moderate-risk nodules (5–65%), typically a clinician will see about 1 positive for every 7–10 tests ordered for nodule patients. The exact number of positives depends on the prevalence of lung cancer in the overall population of nodules.



## In what types of difficult clinical scenarios will **EarlyCDT—Lung** be helpful?

Examples of difficult clinical scenarios where **EarlyCDT—Lung** may help include:

- Patients with a nodule and chronic emphysema at higher biopsy risk.
- Patients who refuse biopsy; to assist in identifying those at highest risk to help further inform the patient.

## Does **EarlyCDT—Lung** detect all types of lung cancer at all stages?

**EarlyCDT—Lung** detects all stages and types of lung cancer, including small cell and all sub-types of non-small cell. A key advantage of measuring autoantibodies is that they can be detected at all stages of disease.

## Which autoantibodies are measured by the test?

The **EarlyCDT—Lung** panel includes: CAGE, GBU4-5, HuD, MAGE A4, NY-ESO-1, p53 and SOX-2.

## Is there cross reactivity with other cancers among these autoantibodies? I recognise some of these biomarkers for other cancers. What are the chances that it's not lung cancer?

The panel of autoantibodies was developed and validated for lung cancer; however, there is the potential for some of the autoantibodies to be elevated due to a different type of cancer. If a patient's result is **Moderate** or **High Level** and the patient has a pulmonary nodule, the risk of it being a lung cancer is much higher than the likelihood of the patient having another type of cancer. Nevertheless, it is always good practice to ensure the patient is up-to-date on all other age- and gender-specific screenings for other cancers (for example, breast and colon), as recommended by the American Cancer Society ([www.cancer.org](http://www.cancer.org)).



Why is **EarlyCDT—Lung** not recommended for those with previous history of cancer, and why is basal cell carcinoma an exception?

**EarlyCDT—Lung** test performance may vary for patients with a previous history of cancer or cancer treatment. The panel of autoantibodies measured by the test has been optimised to detect lung cancer, not other types of cancer. Additionally, the control population used to validate the test did not include any patients with a history of cancer.

The exception for patients with history of basal cell carcinoma is based on study data suggesting that this malignancy does not impact the **EarlyCDT—Lung** result.

Is there mortality data for **EarlyCDT—Lung**?

The key to reducing mortality is early detection. **EarlyCDT—Lung** has not been utilised in a clinical trial to show mortality benefit; however, the NLST trial demonstrated that annual screening of high-risk patients with low-dose CT resulted in a 20% reduction in mortality, which was attributable to early detection of the pulmonary nodule. Data have repeatedly demonstrated that **EarlyCDT—Lung** can detect lung cancers early.

What is the specificity and positive predictive value (PPV) of **EarlyCDT—Lung**?

A **High Level** result has a specificity of 98% and PPV of 82% (1 in 1.2), consequently, five out of six results are a true cancer. Considering both **High** and **Moderate Level** results, the specificity is 93% and the PPV is over 66% (1 in 1.5), meaning that nearly two out of three results are a true cancer at a prevalence of 25%, as seen in normal clinical practice.

What peer review publications support the test?

Extensive data have been collected and published for **EarlyCDT—Lung**, including more than 25 peer-reviewed publications and more than 50 peer-reviewed oral and poster presentations at key conferences. Pierre Massion of Vanderbilt published a paper in the Journal of Thoracic Oncology in 2017 showing the performance of **EarlyCDT—Lung** in patients with pulmonary nodules.<sup>5</sup> A second key publication by Healey et al. in the Journal of Cancer Therapy in 2017 shows how **EarlyCDT—Lung** enables risk re-classification of low-to-moderate-risk nodules to facilitate more appropriate intervention.<sup>6</sup> A full list of key publications is available at <http://oncimmune.com/publications>



## Is **EarlyCDT—Lung** in guidelines?

**EarlyCDT—Lung** has not yet been incorporated into clinical guidelines; however, the test provides a way to assess the risk of malignancy of a lung nodule, as recommended by ACCP guidelines. **High** and **Moderate Level** results add to the risk determined by risk calculators. The “both-positive rule” for combining tests is used to evaluate the combined diagnostic performance of two independent tests, such as when **EarlyCDT—Lung** is combined with the Swensen/Mayo malignancy risk model, for example. Using a calculated risk threshold  $>R\%$  for positive, the **EarlyCDT—Lung** result, if also positive, enables clinicians to identify some cancers in IPNs that appear to be at lower risk of malignancy as assessed by current methods alone. This was described by Massion et al. in an analysis of 208 patients with IPNs 4-20 mm diameter, for whom 40 patients (19% prevalence) were diagnosed with a lung cancer.<sup>5</sup>

## How do I order **EarlyCDT—Lung**?

Whole blood should be collected into a serum separator tube (SST) and sent at ambient temperature to the test provider. In some territories, a simple finger stick sample collection is offered.

For all orders, please contact the test provider for full sample collection and sending instructions: <http://oncimmune.com/distributors/>

## How quickly will I get results?

Typically results are reported out in 2–5 business days. Results will be faxed directly to the clinician, or other reporting options are available upon request, including online portal or File Transfer Protocol (FTP) interface; contact Oncimmune if interested in another reporting option.



## How much does **EarlyCDT—Lung** cost and is it covered by medical insurance?

- The cost of the test is low relative to many other tests, particularly as it is not a genetic predisposition test.
- Patients with private insurance need to confirm coverage with their insurance provider.
- For information on the self-pay price for the test, please contact your test provider.

## Is **EarlyCDT—Lung** approved by the FDA?

The **EarlyCDT—Lung** test has been performed as a laboratory-developed test (LDT) in a CLIA-certified laboratory in De Soto, Kansas since 2009. FDA does not require approval of LDTs.

## Contact us

Within the US, please call **+1 888 583 9030**

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Outside the US, please call **+44 (0)115 823 1869**

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## References

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