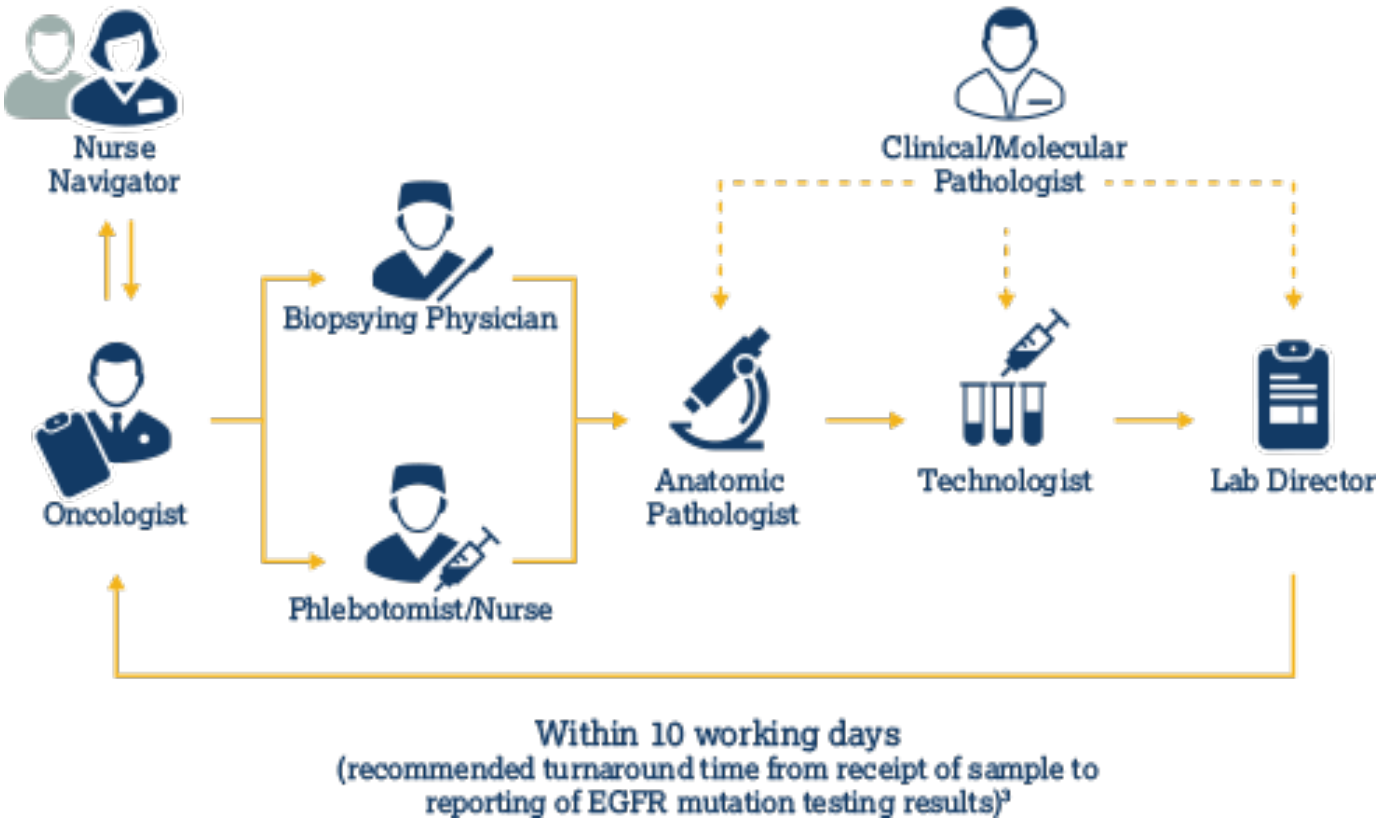
EGFR Testing: The Multidisciplinary Team and Available Tests

Testing for EGFR mutations takes teamwork

According to the NCCN®, epidermal growth factor receptor (EGFR) mutation testing is recommended for all patients who have been diagnosed with non–small cell lung cancer (NSCLC), and who are eligible for systemic therapy.[1]

Executing treatment plans in the era of biomarker-driven therapy requires coordination of care across all disciplines, including oncology, nursing, pathology, pulmonology, interventional radiology, and thoracic surgery.[2] Examples of health care professionals' roles in the EGFR mutation testing process are detailed in the figure below.

Accurate and Efficient EGFR Mutation Testing Requires a Multidisciplinary Team Approach[2]



Descriptions

Nurse Navigator:

- Serves as navigator to help patients along their cancer testing and treatment journey
- Helps clarify lab results and explain treatment to patient

Oncologist:

- Orders EGFR mutation test, receives results
- Discusses mutation test results with patient
- Outlines treatment plan for patient

Biopsying Physician:

(Interventional Radiologist, Pulmonologist, or Thoraic Surgeon)

- Obtains tissue biopsy sample for biomarker testing
- Sends sample to pathology

Phlebotomist/Nurse:

- Obtains blood sample for biomarker testing

Clinical/Molecular Pathologist:

- Oversees testing process
- Determines if sample includes mutations to genes such as EGFR
- Sends report to oncologist

Anatomic Pathologist:

- Analyzes tissue sample
- Identifies tumor cells through histology
- Makes histopathological diagnosis of type of lung cancer (eg, NSCLC)

Technologist:

- Ensures that sample quantity and quality are appropriate for mutation testing
- Performs EGFR mutation test

Lab Director:

- Oversees testing process
- Determines if sample includes mutations to genes such as EGFR
- Sends report to oncologist

Identifying EGFR activating mutations guides NSCLC treatment decisions

Treatment for metastatic NSCLC can include surgical resection or radiation therapy for limited sites, or systemic treatment including chemotherapy and targeted therapy.[1] Mutation testing in metastatic disease, which is recommended for patients eligible for systemic treatment, may reveal the presence of biomarkers such as EGFR activating mutations.[1]

The presence of EGFR activating mutations can inform treatment options.

EGFR tyrosine kinase inhibitors (TKIs) are a standard first-line therapy option for patients with EGFR mutation-positive metastatic NSCLC.

NCCN Clinical Practice Guidelines in Oncology (NCCN Guidelines®) recommend EGFR TKIs as a first-line treatment of patients with EGFR mutation-positive metastatic NSCLC.[1]

Tests used to identify an EGFR activating mutation in patients with NSCLC

FDA-approved tests

There are 2 FDA-approved diagnostic tests for the detection of EGFR activating mutations at diagnosis of NSCLC[4]:

therascreen® EGFR RGQ PCR Kit (Qiagen Manchester, Ltd.)

- Able to detect EGFR activating mutations (eg, exon 19 deletions and the L858R mutation)
- Approved to test DNA samples derived from NSCLC tumor tissue[4,*]

cobas® EGFR Mutation Test v2 (Roche)

- Able to detect EGFR activating mutations (eg, exon 19 deletions and the L858R mutation)
- Can use tumor tissue* or circulating tumor DNA (ctDNA) from plasma[4]

Laboratory-developed tests

There are several laboratory-developed tests (LDTs) that can also be used to test for EGFR activating mutations. LDTs will be discussed in greater detail in Module [4].

*Formalin-fixed paraffin-embedded (FFPE) tissue samples are approved for testing.

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References: 1. Referenced with permission from the NCCN Clinical Practice Guidelines in Oncology (NCCN Guidelines®) for Non–Small Cell Lung Cancer V.5.2017. © National Comprehensive Cancer Network, Inc 2017. All rights reserved. Accessed April 28, 2017. To view the most recent and complete version of the guideline, go online to NCCN.org. **2.** Levy BP, Chioda MD, Herndon D, et al. Molecular testing for treatment of metastatic non–small cell lung cancer: how to implement evidence-based recommendations. *Oncologist*. 2015;20(10):1175-1181. doi: 10.1634/theoncologist.2015-0114. **3.** Lindeman NI, Cagle PT, Beasley MB, et al. Molecular testing guideline for selection of lung cancer patients for EGFR and ALK tyrosine kinase inhibitors: guideline from the College of American Pathologists, International Association for the Study of Lung Cancer, and Association for Molecular Pathology. *Arch Pathol Lab Med*. 2013;137(6):828-860. **4.** US Food and Drug Administration. List of Cleared or Approved Companion Diagnostic Devices (In Vitro and Imaging Tools). http://www.fda.gov/MedicalDevices/ProductsandMedicalProcedures/InVitroDiagnostics/ucm301431.htm. Accessed October 16, 2016.