MOLECULAR DIAGNOSIS IN **LUNG CANCER**

Knowledge Check 2

1 **What proportion of US oncologists reported that inadequate tumor specimens were a barrier to biomarker testing?**

a 1 in 2
b 1 in 3
c 1 in 7
d 1 in 10

2 **What is the clinical utility of performing rapid on-site evaluation (ROSE) during biopsy procedures for patients with suspected NSCLC?**

a Provide preliminary diagnosis
b Provide a molecular diagnosis
c Ensure sample adequacy
d A and C
e All of the above

3 **True or False: Next-generation sequencing (NGS) uses 17%-41% less tissue than sequential single-gene testing in patients with metastatic NSCLC.**

a True
b False

4 **Under what specific clinical circumstances do NCCN Clinical Practice Guidelines in Oncology (NCCN Guidelines®) recommend considering liquid biopsy–based (plasma ctDNA) testing?**

a Diagnostic biopsy cannot be obtained
b Insufficient tissue on initial biopsy
c Repeat biopsy is not feasible
d All of the above

5 **Adding plasma testing to tissue testing may:**

a Increase turnaround time
b Increase identification of patients with actionable driver alterations
c None of the above

ANSWERS

Precision Medicine

1 **B.** In a study, 1 in 3 US oncologists reported that inadequate tumor specimens are a barrier to biomarker testing, so obtaining sufficient tissue for biomarker testing during biopsy is critical (page 7)[1,2]

2 **A and C.** ROSE is an ancillary procedure done during a biopsy, wherein small biopsy samples are rapidly stained and immediately assessed for diagnostic material (page 10)[3,4]

3 **False.** NGS uses less tissue and may cost less than sequential single-gene testing. Specifically, NGS uses 44%-94% less tissue than sequential single-gene testing. NGS was associated with a 17%-41% reduction in cost based on a 2017 Medicare study (page 8)[5-7]

4 **All of the above.** NCCN Guidelines® recommend considering liquid biopsy-based (plasma ctDNA) testing in patients with mNSCLC if a diagnostic biopsy cannot be obtained, there is insufficient tissue on initial biopsy, and/or a repeat biopsy is not feasible (page 11)[8-12]

5 **B.** In one study, performing plasma testing in patients with incomplete genotyping increased identification of patients with an actionable driver by 65%. Additionally, performing plasma testing and tissue testing simultaneously in patients with tumor tissue of questionable sufficiency may reduce turnaround time and increase the yield of targetable alteration detection (page 12)[8,13,14]

This knowledge check is connected to the chapter "The Importance of a Molecular Diagnosis in mNSCLC." To get a copy of this and other chapters, please visit:
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ctDNA, circulating tumor deoxyribonucleic acid; NCCN, National Comprehensive Cancer Network® (NCCN®); NSCLC, non-small cell lung cancer.
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References: 1. Malapelle U et al. *J Mol Pathol*. 2021;2(3):255-273. **2.** Mileham KF et al. *Cancer Med*. 2022;11(2):530-538. **3.** Roy-Chowdhuri S et al. *Arch Pathol Lab Med*. 2020;144(8):933-958. **4.** Jain D et al. *Arch Pathol Lab Med*. 2018;142(2):253-262. **5.** Yu TM et al. *Clin Lung Cancer*. 2019;20(1):20-29.e8. **6.** Foundation Medicine, Inc. https://assets.ctfassets.net/w98cd481qyp0/6qYLg8jUuEYEvUytoBz8p6/f7764c8e3fcadda9ec1374fe26bb999e/F1CDx_Specimen_Instructions.pdf. Accessed January 13, 2022. **7.** Pennell NA et al. *JCO Precis Oncol*. 2019;3:1-9. **8.** Referenced with permission from the NCCN Clinical Practice Guidelines in Oncology (NCCN Guidelines®) for Non-Small Cell Lung Cancer V.5.2022. ©National Comprehensive Cancer Network, Inc. 2022. All rights reserved. Accessed September 16, 2022. NCCN makes no warranties of any kind whatsoever regarding their content, use or application and disclaims any responsibility for their application or use in any way. To view the most recent and complete version of the guideline, go online to NCCN.org. **9.** Arcila ME et al. *Clin Cancer Res*. 2011;17(5):1169-1180. **10.** Yoon HJ et al. *Radiology*. 2012;265(3):939-948. **11.** Gutierrez ME et al. *Clin Lung Cancer*. 2017;18(6):651-659. **12.** Cheema PK et al. *J Oncol Pract*. 2017;13(2):e130-e138. **13.** Rolfo C et al. *J Thorac Oncol*. 2021;16(10):1647-1662. **14.** Mack PC et al. *Cancer*. 2020;126(14):3219-3228.

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Novartis Pharmaceuticals Corporation
East Hanover, New Jersey 07936-1080

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