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Each ECHO session will be recorded and will be posted to a publicly-facing website



Use the buttons in the *black* menu bar to unmute your line and to turn on your video.



Today's materials will be made available on our ACS ECHO website,
<https://echo.cancer.org/program/lung-cancer-biomarker-testing-echo-cohort-5/>



Remember: Do **NOT** share any personal health information (PHI) about any patient.



Questions about Zoom? Type in the chat box **@Mindi Odom**

Lung Cancer Biomarker Testing ECHO



Session 4 Reflex Testing Implementation Models

Wednesday, March 11, 2026
4:00 PM - 5:00 PM EST



Have a question? Don't wait to ask! Feel free to enter in the Chat at any time.

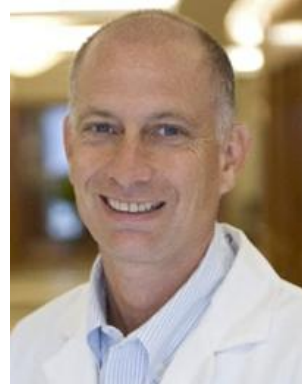
Agenda

Topic: *Reflex Testing Implementation Models*

Agenda Item	Moderator/Presenters	Time
Welcome & Announcements	Mindi Odom	2 mins
Introductions	Korey Hofmann	3 mins
Clinical Presentation with Q&A	Adam Fox, MD, MS	25 mins
Case Presentation & Discussion	Jennifer Aversano, MSN APRN OCN ONN-CG	25 mins
Feedback Survey & Wrap-up	Mindi Odom	5 mins

ECHO Hub Team

Subject Matter Experts



Gerard Silvestri, MD, MS

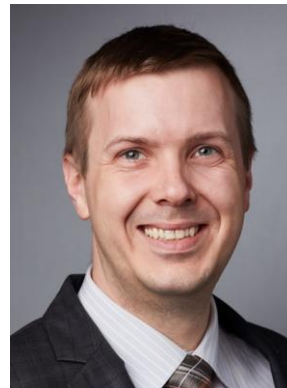
FACILITATOR

Hillenbrand Endowed Chair, Professor of Medicine,
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Jennifer Aversano, MSN, RN

Nurse Navigator
Northwest Community Hospital



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ECHO Hub Team

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Sinchita Roy-Chowdhuri, MD, PhD

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Ignacio Wistuba, MD

Chair, Department of Translational Pathology,
Moffitt Cancer Center

Thoracic Oncology Reflex Testing

Adam Fox

3/11/26

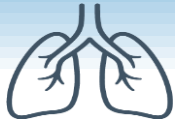
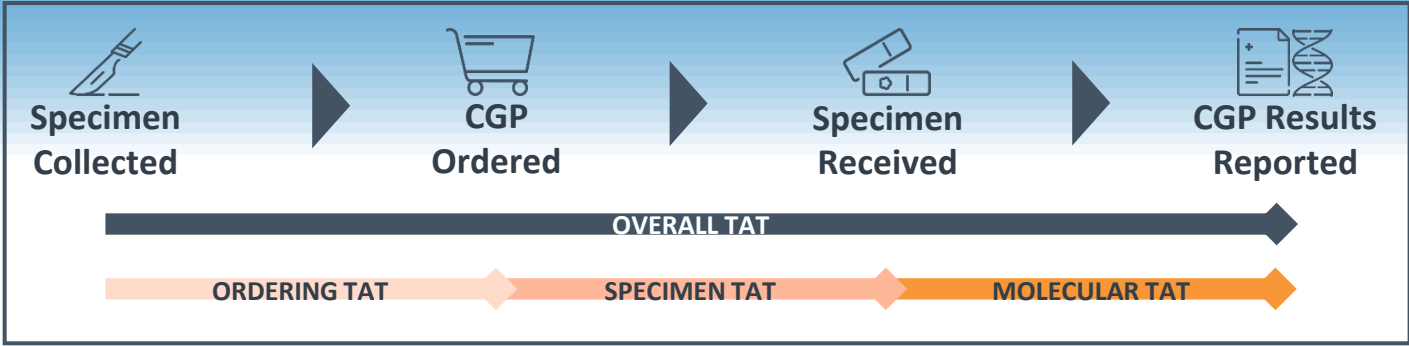


Overview

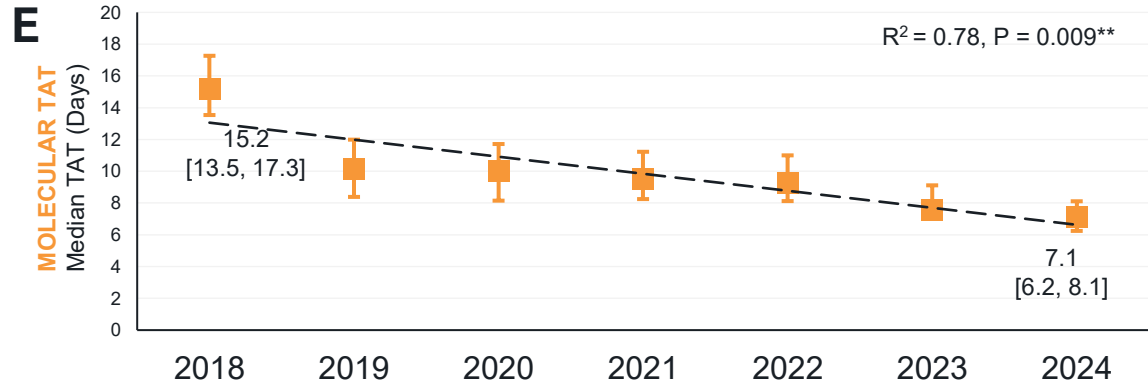
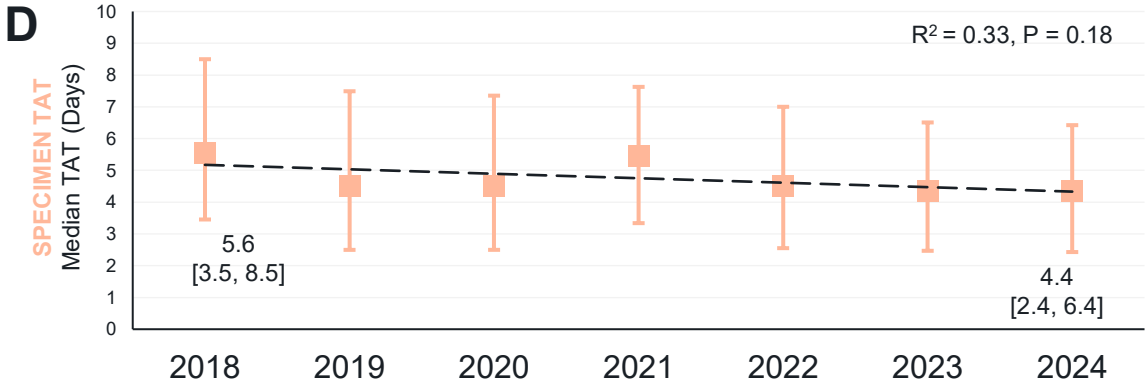
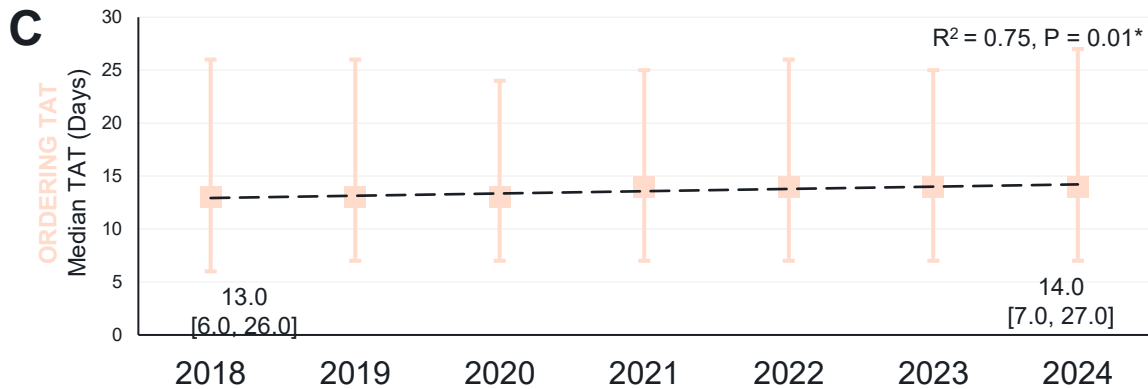
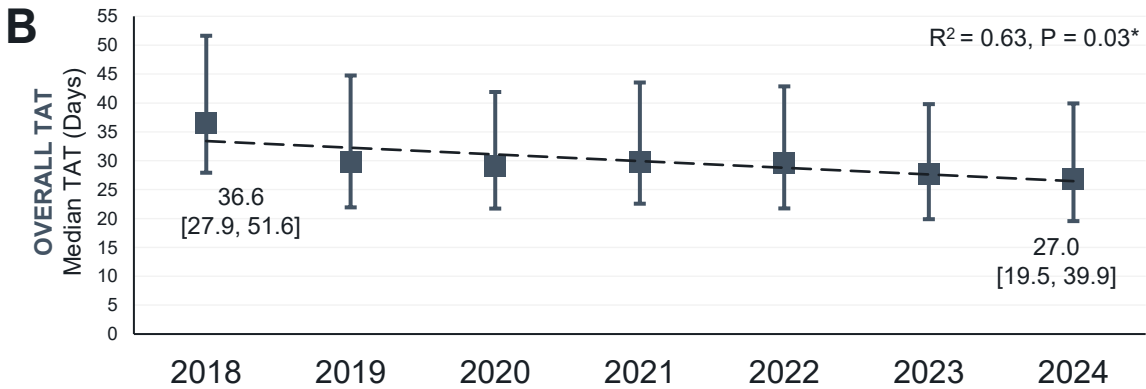
1. Define the goal of reflex testing
2. Reflex testing design and logistics
3. Sustainability and maintenance



1. DEFINING THE GOAL



2018-2024 N=62,650



Defining the Goal and Create Consensus

- Which assays, for which patients, at what stage, histology, other cancer types?
- Ideally captures patients across an entire hospital or system

Notable Barriers:

- Lack of knowledge for the urgent need
- Lack of compensation for pathologists and others
- Uncertainty around coverage
- Lack of consensus
- Separated subspecialty practices
 - Ex. 1 pathology group serving 4 oncology groups who want different tests

Defining the Goal – MUSC

- To provide systematic and expedient comprehensive biomarker testing to patients newly diagnosed with NSCLC using a pathology-directed reflex testing

Last updated: 7/18/2024

Primary Cancer Site: Lung, newly diagnosed

Histology: Non-small cell lung cancer (adenocarcinoma, squamous cell carcinoma, NSCLC NOS, large cell carcinoma, poorly differentiated malignancies with a lung primary)

Stages: All stages ≥ 1b

Medical necessity of testing the above characteristics:

- In advanced stages (stage III and IV), assessment of targetable mutations and immune inhibitory protein expression (PD-L1) can direct the use of first-line therapies or those available after progression on first-line therapy.¹
- For early stages (stage Ib and II), assessment of targetable mutations and immune inhibitory protein expression (PD-L1) directs complex decision-making surrounding neoadjuvant and adjuvant therapies (including targeted and immune therapies).²⁻⁴ There is predictable response and non-response for patients with different molecular profiles.⁵ Additionally, should their malignancy be unresectable, testing can inform alternate systemic therapies. Molecular analysis can also allow for discrimination of recurrence, multi-focal disease, and separate primary lung tumors.¹ Finally, for completely resected stage I NSCLC, recent evidence suggests the 5-year disease-free survival is only 63.6%, indicating the need for subsequent therapies for stage I lung cancers, even when completely resected at its earlier stage.⁶

Non-small cell lung cancer reflex testing panel based on NCCN guidelines version 3.2023:

1. FUSIONS
 - a. ALK
 - b. ROS1
 - c. RET
 - d. NTRK1/2/3
2. MUTATIONS
 - a. EGFR
 - b. BRAF
 - c. KRAS
 - d. MET exon 14 skipping
 - e. ERBB2
3. COPY NUMBER
 - a. MET amplification
4. OTHER
 - a. PD-L1 (22C3 can be agreed upon for all patients, especially if this allows for bringing this test in-house)
5. TESTING OUTSIDE OF CURRENT GUIDELINES AND PRACTICE (Future direction, will need to discuss cases such as this in the future, especially when outside of guidelines)
 - a. NRG1/2 fusions
 - b. ERBB2 amplification

References

1. National Comprehensive Cancer Network (NCCN). *NCCN Clinical Practice Guidelines in Oncology: Non-Small Cell Lung Cancer. version 3.2023*. 2023 March 01.
2. Felip E, Altorki N, Zhou C, et al. Adjuvant atezolizumab after adjuvant chemotherapy in resected stage IB-IIIA non-small-cell lung cancer (IMPow010): a randomised, multicentre, open-label, phase 3 trial. *Lancet*. Oct 9 2021;398(10308):1344-1357. doi:10.1016/s0140-6736(21)02098-5
3. Forde PM, Spicer J, Lu S, et al. Neoadjuvant Nivolumab plus Chemotherapy in Resectable Lung Cancer. *New England Journal of Medicine*. 2022;386(21):1973-1985. doi:10.1056/NEJMoa2202170
4. Wu Y-L, Tsuboi M, He J, et al. Osimertinib in Resected EGFR-Mutated Non-Small-Cell Lung Cancer. *New England Journal of Medicine*. 2020;383(18):1711-1723. doi:10.1056/NEJMoa2027071
5. Lee CK, Man J, Lord S, et al. Checkpoint Inhibitors in Metastatic EGFR-Mutated Non-Small Cell Lung Cancer-A Meta-Analysis. *J Thorac Oncol*. Feb 2017;12(2):403-407. doi:10.1016/j.jtho.2016.10.007

Updated annually and as needed



2. DEFINING THE “REFLEX” INTERVENTION

Defining Reflex Testing

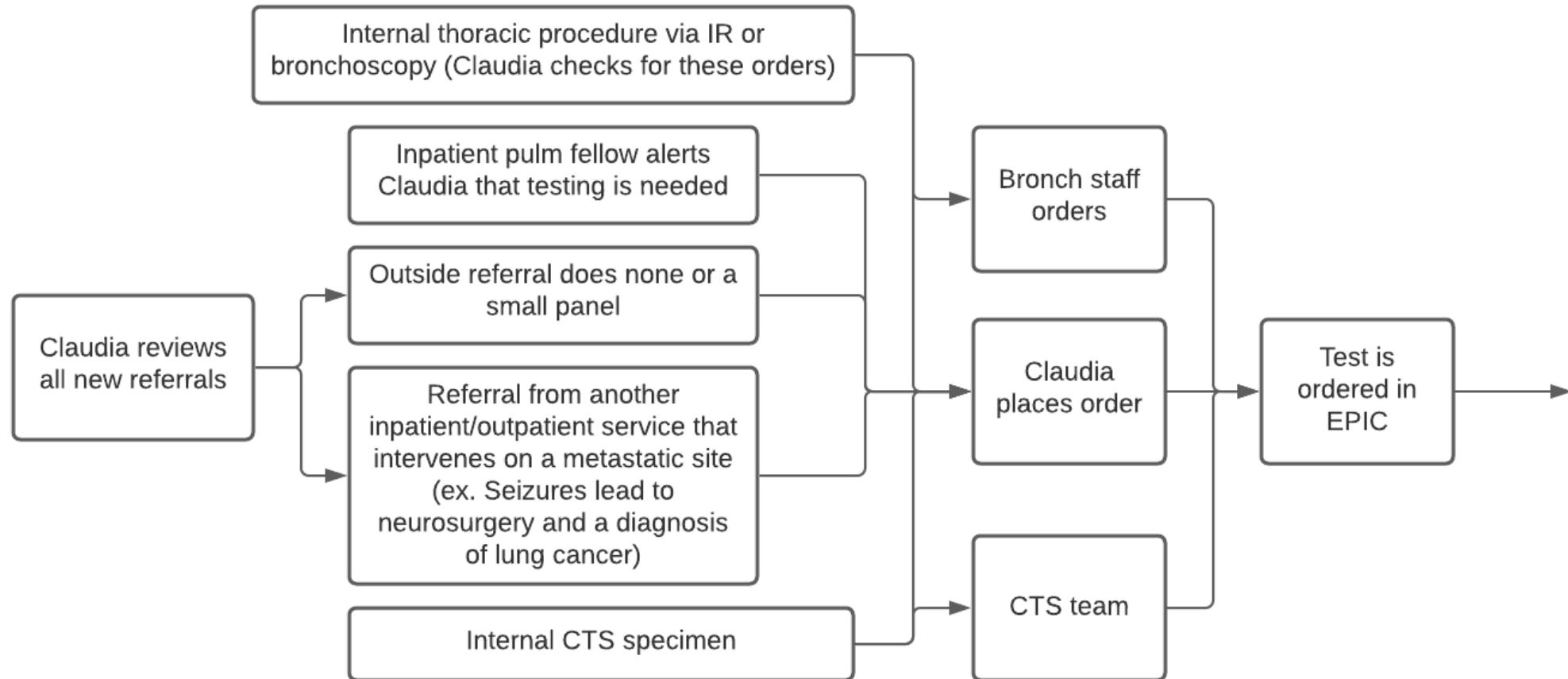
- Pathology-initiated (probably most common)
 - Pathologist recognizes the case as NSCLC + other criteria and initiates the orders for testing
- Ordering prompts in health record
 - Wording in pathology order or report prompts pathology or non-pathology members to order testing
 - “Molecular Navigator”
 - Wording automatically triggers testing
- Staff orders on cases at time of referral
 - Example: Bronch staff; problem what happens in IR?

Map Past and Present Steps to Biomarker Testing

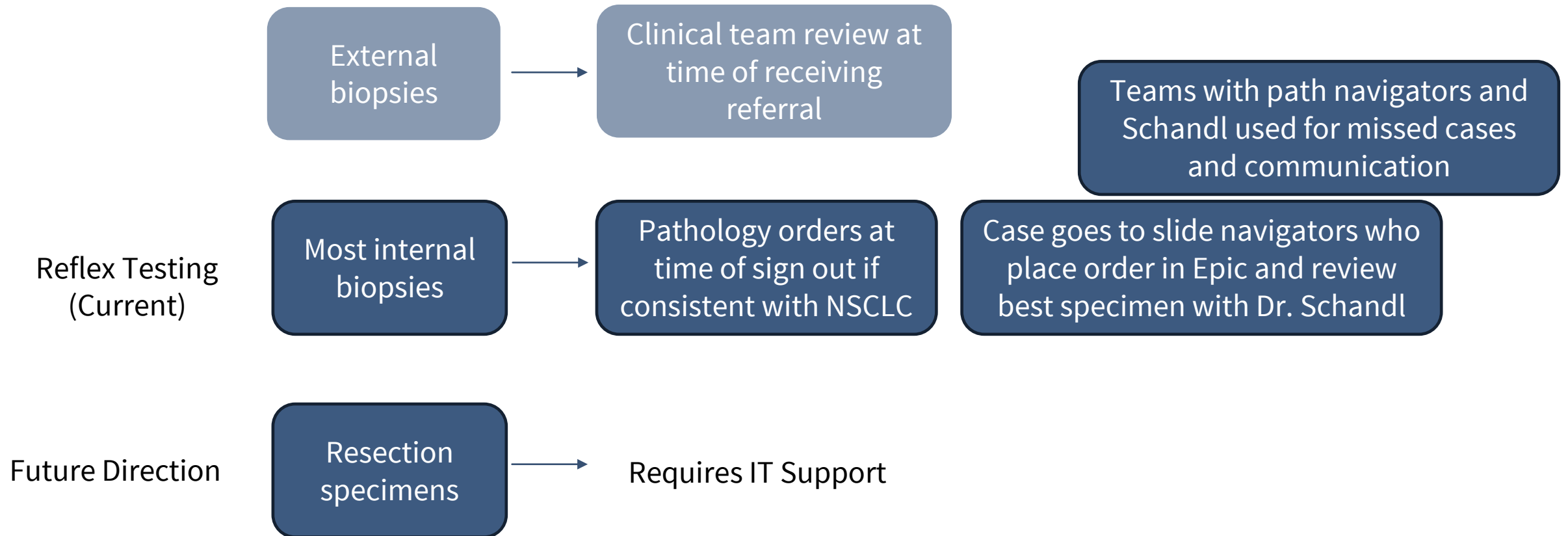
- Anticipate changes in how people interact with the orders, process, and results – will anything change?
- Identify new roles and what they need to fulfill them

MUSC WORKFLOW: TEST ORDERING FOR LUNG CANCER

Common Pathways for Molecular Test Ordering for Lung Cancer after Pathology is Finalized

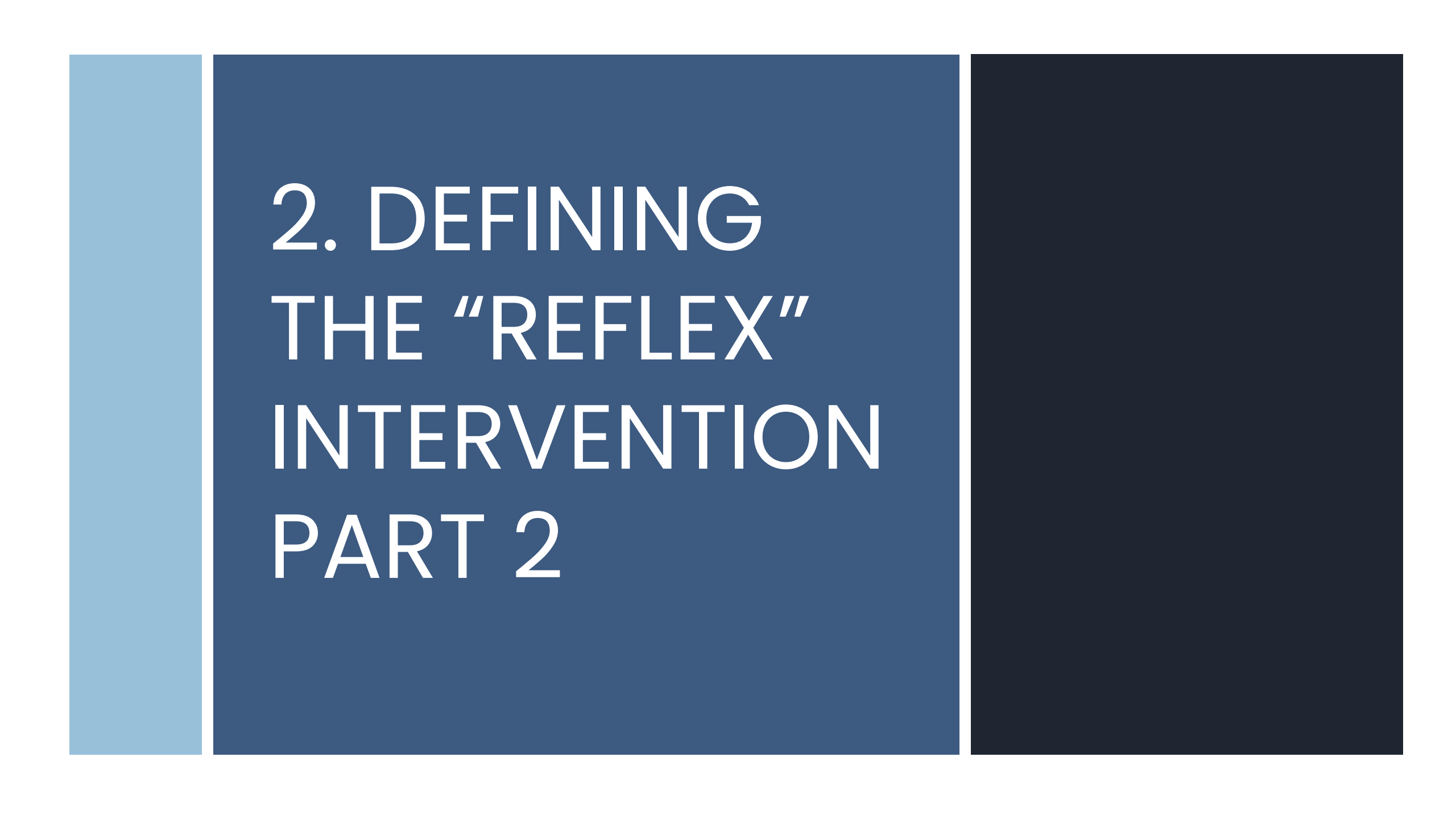


MUSC WORKFLOW: TEST ORDERING FOR LUNG CANCER



Lessons Learned

- Pathology slide navigators needed Epic access to place the “request” order
- Small number of pathologists needed to be on-board for most biopsies, but large pool for resections...
- Limitations of health record for transparency in the short term
 - Testing was being worked on but order not placed for a few days
- Efficient communication portal is needed (Teams)



2. DEFINING THE “REFLEX” INTERVENTION PART 2

Who Orders and Under Whose Name

- Potential compliance concerns
- Ordering providers often receive report, undesirable for non-oncologists
- Potential options:
 - Standing orders (and thus a standing provider, often oncologist)
 - Pathologist orders
 - Ordered under the proceduralist (similar issue with reports)
 - Medical executive committee approval is a common pathway mitigating concerns
 - “Hand-shake” agreements; perhaps less desirable but cheap and low tech

Interdisciplinary Communication

- Gather all stakeholders across the process for final consensus and/or awareness
- Discuss at tumor board
- Identify a person(s) to troubleshoot issues as they arise
 - E.g., “What do we do with this case?”
 - What about repeat biopsies? (reflex or request only?)
- Identify a way to communicate about individual cases: Messaging platform, EMR, email

Integration into the EMR

Core components:

- Ease of ordering (for whoever is ordering)
 - Especially pathologists/pulmonologists/staff who may have never ordered
- Communication
 - At time of biopsy or order
 - e.g., Special testing, opt-out if not needed, suspected stage (esp if the mechanism is stage-dependent)
 - It is time to eliminate samples received in pathology labeled “lung” and “lymph node.” Size, location or lymph node station can help pathologists understand the case and stage.
- Transparency of the order
- Timeline or ETA of results
- Adequacy for testing
- Plan for difficult cases (e.g., unknown origin, need to repeat testing)

Measuring, Updating, and Maintaining

- Identify measurable metrics of processes and outcomes
- Must plan as needed and scheduled time to review patient criteria, assay, the process as a whole as these are constantly changing
- Value of this intervention may need to be demonstrated, esp if FTE is required

Future Directions

- Additional cancer groups
- Epic ordering prompts for communication
- Epic tracking systems and dashboards
- Expand to RHN

Special Thanks

- Norma Evans, Sydney Lovice, Jamilah Washington, Alexis Govert
- Dr. Silvestri
- Dr. Alexander, Claudia Miller and the entire thoracic oncology team
- Dr. Yang, Dr. Reyes, Dr. Forcucci
- Dr. Schandl, Haywood Titchner, Sam Green
- CHEST, American Cancer Society (ACS), and the ACS NLCRT

Thank You!

Open Discussion: Questions & Answers

Thank You!

Open Discussion: Questions & Answers

Patient Case with System-Level Changes

Jennifer Aversano MSN APRN OCN ONN-CG | Endeavor Health; Northwest Community Hospital



Delayed time to treatment with biomarker testing

Patient Introduction

65-year-old female with Stage IIIA NSCLC - **KRAS G12C and EGFR L858R detected** - Initial concern: delayed time to treatment

Patient Timeline

- Biopsy: 4/3/2023
- Surgery: 5/14/2023
- NGS results returned: 7/25/2023
- Chemotherapy started: 8/4/2023
- **Total time to treatment: 85 days (56 days post-surgery)**
- National median TAT for molecular testing $\approx$ 30 days; reflex testing $\approx$ 15 days
- **Her delay highlighted gaps in our reflex biomarker testing workflow**

Patient Case with System-Level Changes

Jennifer Aversano MSN APRN OCN ONN-CG | Endeavor Health; Northwest Community Hospital



Delayed time to treatment with biomarker testing

Key Challenges

- No standardized reflex testing process in place
- Reflex testing not done on site; ordering varies by provider
- No unified vendor across independent practices
- EMR fragmentation impacts result sharing
- Patients experience distress due to delays

Recent Progress

- All new pathology reviewed at thoracic conference; navigator follows up after discussion
- Precision Medicine Committee leading NSCLC reflex testing efforts; two oncologists overseeing initiative
- Oncology lung navigator serving as champion for process improvement

Goal

Standardized reflex biomarker testing for NSCLC with results available by first oncology consult; scalable to other tumor sites

Patient Case with System-Level Changes

Jennifer Aversano MSN APRN OCN ONN-CG | Endeavor Health; Northwest Community Hospital



Discussion

- 1. Who orders the biomarker testing at your site?**
- 2. What resources are available at sites to help with this?**
- 3. Who ensures results get to the medical oncologist?**
- 4. What if they are not in the same EMR?**

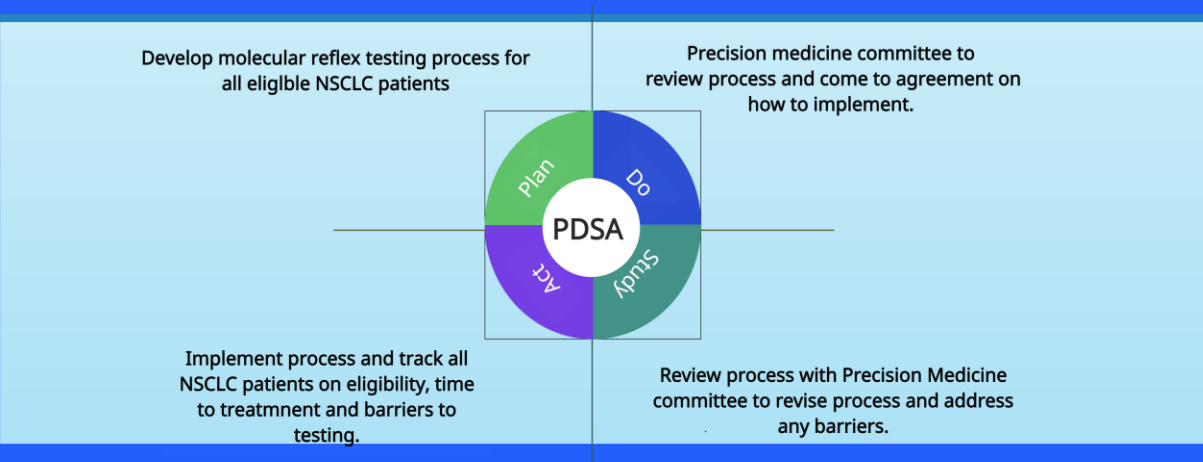
Background

- ❑ Lung Cancer is the leading cause of cancer mortality in the United States.¹
- ❑ National Comprehensive Cancer Network (NCCN) recommends broad based molecular testing for Non-Small Cell Lung Cancer (NSCLC).²
- ❑ Median turn around times (TAT) from ordering molecular testing to receiving testing results for tissue is around 30 days in the United States.³
- ❑ Reflex molecular testing has been shown to decrease TAT to an average of 15 days.⁴
- ❑ Minorities, specifically black patients may have decreased molecular testing rates with more than a 10% point difference vs. white counterparts in the United States.⁵
- ❑ There is no current process or policy in place on molecular reflex testing for NSCLC at Northwest Community Hospital.

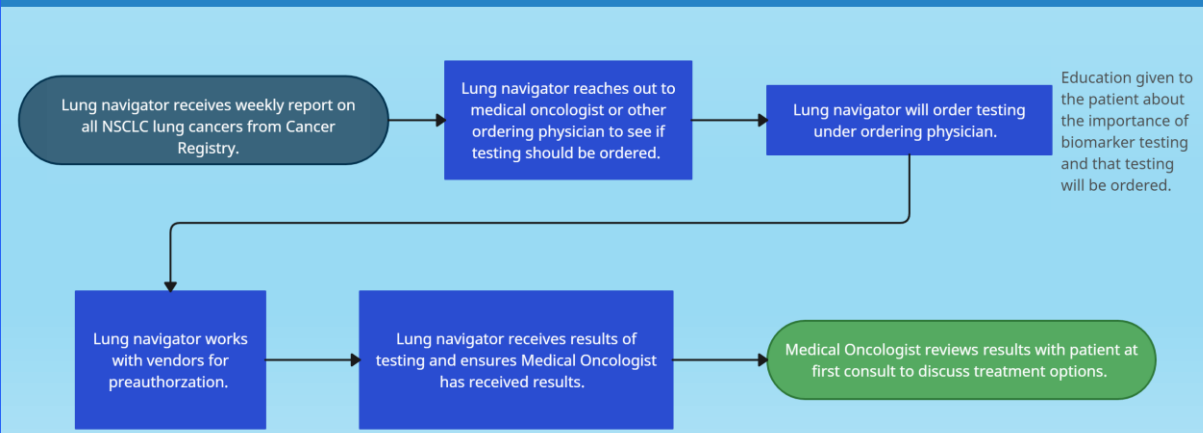
Purpose

- ❑ The purpose of this initiative is to develop a reflex molecular testing process for NSCLC with the following goals:
 - ❑ Identify all NSCLC patients who are eligible for molecular testing and order testing on all eligible patients.
 - ❑ Decrease time to treatment for all NSCLC lung cancer.
 - ❑ Testing results will be available to the Medical Oncologist by first consult to discuss treatment options for all NSCLC patients.

Project Framework



Interventions



Evaluation

- ❑ The process began in December 2023
- ❑ Time to treatment for all lung cancer in 2023 had median time of 22.4 days.
- ❑ Time to treatment for all lung cancer for 1st quarter in 2024 had median time of 20.7 days.
- ❑ Precision Medicine Committee in 2024 is being overseen by 2 medical oncologists with the goal of reflex testing for NSCLC.

Conclusions

- ❑ This is an ongoing quality improvement initiative of the Cancer Service Line Precision Medicine Committee.
- ❑ Currently the lung navigator oversees this process for NSCLC.
- ❑ The long term goal is to have a pathology led molecular reflex testing process for all tumor sites.

References

¹ American Cancer Society (2023). *Key statistics for Lung cancer*. <https://www.cancer.org/cancer/types/lung-cancer/about/key-statistics.html>
² National Comprehensive Cancer Network: Non-Small Cell Lung Cancer. (Version 4.2024).
³ Yan, J.T., Jin T., Lo E., et al. (2023). Real-world biomarker test utilization and subsequent treatment in patients with early-stage non-small cell lung cancer in the United States *Oncology therapy* 11(3), 343-360. [https://doi.org/10.1016/j.clc.2020.05.007](http://doi.org/10.1007/s40487-023-0024-Anad, K., Plung.T., Bernicker, E., Cage, P., Olsen, R., Thomas, J. (2020). Clinical utility of reflex ordered testing for molecular biomarkers in lung adenocarcinoma. <i>Clinical Lung Cancer</i>, 21(5), 437-42. <a href=)
⁵ Bruno, D., Hess, L., Li, X. et al. (2021). Racial disparities in biomarker testing and clinical trial enrollment in non-small cell lung cancer (NSCLC). *Journal of Clinical Oncology* (39)15, 9005. https://doi.org/10.1200/JCO.2021.39.15_suppl.9005

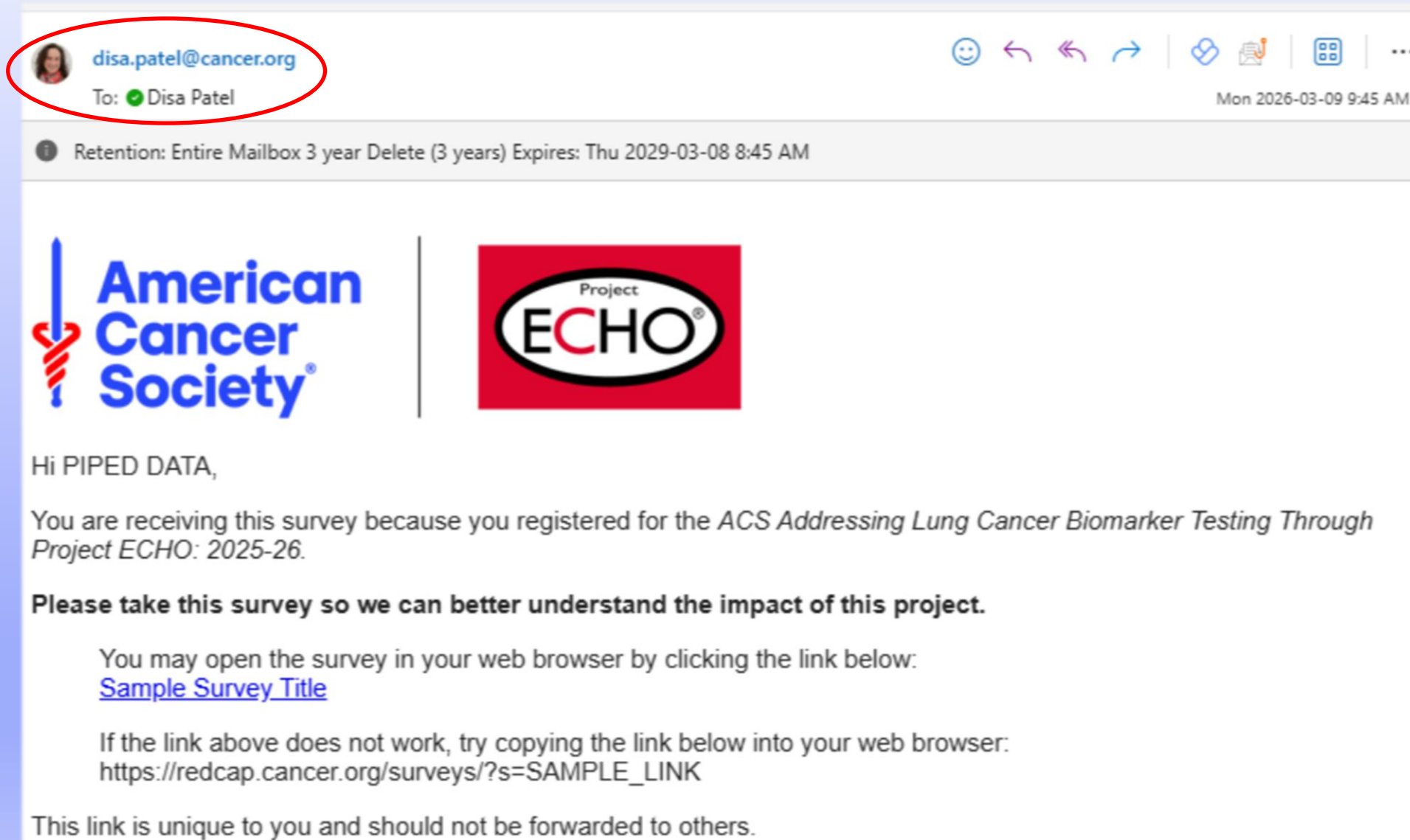


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provide feedback on today's
session.**

ACS NLCRT Lung Cancer Biomarker
Testing ECHO Cohort 5 - Post-
Session Survey - Session 4



Post-ECHO Survey



Check your
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Your
feedback
matters

Webinar Coming Soon!

Biomarker Testing Insurance Coverage, Advocacy & Patient Advocate Perspective

Intended Audience:

- Medical oncologists
- Pulmonologists
- Interventional radiologists
- Thoracic surgeons
- Primary Care Physicians
- Oncology nurse navigators
- Lung cancer navigators
- Patients and advocates



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Contact: Rish O'Brien at
Rishika.Obrien@cancer.org

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For more information, contact Rish O'Brien, Project ECHO Superhub Director, at Rishika.OBrien@cancer.org

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Questions?

ACS NLCRT Lung Cancer Biomarker
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