

2023 Staging Summit

Promoting Guideline-Concordant
Lung Cancer Staging

EXECUTIVE SUMMARY

March 2, 2023
Loews O'Hare Hotel
Chicago, Illinois

Introduction

The **American Cancer Society National Lung Cancer Roundtable (ACS NLCRT)** held the ***Promoting Guideline-Concordant Lung Cancer Staging Summit*** on Thursday, March 2, 2023, in Chicago, Illinois. Sixty attendees representing 48 organizations from across the country participated in this catalyzing summit, including lung cancer advocates, clinicians, researchers, and industry partners. The summit convened leading experts in the lung cancer field to discuss the best practices for lung cancer staging and improve the delivery of stage-appropriate therapy to advance patient outcomes and create more lung cancer survivors.

Lung cancer staging is a key determinant of appropriate treatment selection and results in ideal patient outcomes by increasing the chances of delivering optimal therapy. The summit was guided by the work of the multidisciplinary ACS NLCRT Triage for Appropriate Treatment Task Group, which has been charged with addressing the knowledge and resource barriers, and provider, patient, and systems characteristics, to advancing care in several areas. The task group developed a strategic plan that identified gaps in care delivery, and it proposed seven recommendations for increasing rates of guideline-concordant lung cancer staging. The goal of this summit was to focus on four of the task group's strategic plan recommendations: Clinician Education, Patient Education, Guideline Reconciliation, and Quality Improvement.

Speakers at the summit gave presentations on a variety of topics related to lung cancer staging. The structure of the one-day summit contained 11 sessions, including two breakout group sessions:

- Welcome and the Importance of Lung Cancer Staging
- Strategic Plan Recommendations and Today's Targets
- Graduate Medical Education and Lung Cancer Staging
- Disparities in Guideline Recommendations
- Performance Feedback Platforms
- Patient Perspectives on Messaging Lung Cancer Staging
- Anticipated Changes in the American Joint Committee on Cancer (AJCC) Cancer Staging System
- Clinical Target 1: Pretreatment Nodal Staging - Presentation and Breakout Groups
- Clinical Target 2: Intraoperative Nodal Staging - Presentation and Breakout Groups
- Breakout Group Report Outs
- Wrap-Up and Next Steps

This document provides an overview of the summit, summaries of the presentations, and links to videos of the presentation slides and audio tracks.

High-level Overview of the Summit

Session 1 of the summit, *Welcome and the Importance of Lung Cancer Staging*, was opened by Dr. Farhood Farjah. He welcomed the attendees to the inaugural Lung Cancer Staging Summit in Chicago, Illinois, and thanked the ACS NLCRT sponsors, leadership, and staff for making the event possible.

Dr. Douglas Wood, the ACS NLCRT Vice Chair, gave a presentation on why lung cancer staging is important. He highlighted recent publications and findings in the lung cancer staging field and noted the research accomplishments of many of the summit attendees. Finally, he emphasized that the goal of the summit was not to create more guidelines but rather to discuss guideline implementation and coordination that could help to improve staging adherence in practice.

Session 2 on the *Strategic Plan Recommendations and Today's Targets* was given by Dr. M. Patricia Rivera. In her presentation, she detailed the work of the ACS NLCRT Triage for Appropriate Treatment Task Group in the staging field. She described the three-step process that guided their work, including 1) a comprehensive review of the existing literature, 2) the creation of draft recommendations that were reviewed by 25 members, and 3) a consensus process used by the writing committee to identify gaps and final recommendations. The task group identified seven gaps and developed seven recommendations for promoting guideline-concordant lung cancer staging.

Session 3 focused on *Graduate Medical Education and Lung Cancer Staging*. The panel highlighted five presentations on the topic of graduate medical education and lung cancer staging from experts in the five fields of thoracic surgery, pulmonary medicine, medical oncology, radiation oncology, and radiology. The speakers shared their perspectives on the relative paucity of specific education directly related to lung cancer staging, and they noted that there was a general lack of enforcement regarding the completion of relevant educational curricula.

Session 4 on *Disparities in Guideline Recommendations* contained two presentations focused on disparities among guideline recommendations (the NCCN 2023 and the CHEST 2013 guidelines). The first presentation showed that the guidelines, which were published ten years apart, often gave different recommendations on whether various procedures were required for guideline adherence for particular clinical situations. In particular, the CHEST 2013 guidelines highlighted the evidence and methodological rigor that focused on optimal management in ideal settings. The second presentation showed that the NCCN guidelines contained disparities around recommended approaches for invasive nodal staging with respect to pretreatment and intraoperative staging of various lung cancer stages (IA, IB, IIIA/N2, and IIIB).

Session 5 on *Performance Feedback Platforms* contained four presentations. The first presentation highlighted the differences between quality care and quality indicators, as well as an outline for a quality indicator project. The second presentation focused on the American College of Surgeons

Commission on Cancer (CoC) Operative Standards, synoptic reporting, and the implementation of CoC Operative Standards. The third presentation discussed performance feedback platforms used by the Society of Thoracic Surgeons General Thoracic Surgery Database. Finally, the fourth presentation centered on quality management in endobronchial ultrasound (EBUS) staging.

Session 6 was a panel presentation on *Patient Perspectives on Messaging Lung Cancer Staging*. It highlighted three patient perspectives on lung cancer staging. The panel emphasized their view that lung cancer staging serves the clinicians more than the patients and that the lack of uniformity in messaging and practices around staging can create difficult and emotional experiences for patients to understand. The three patients on the panel shared their personal experiences during their diagnostic, staging, and therapeutic journeys, which at times were confusing and frustrating. The patient panel recommended that more approachable and bidirectional conversations be conducted between clinicians and patients. The panel also recommended improvements in communication between the oncology, surgical, and primary care teams and that patient preferences be included in the computer systems and patient portals.

Session 7 contained one presentation on the *Anticipated Changes in the American Joint Committee on Cancer (AJCC) Cancer Staging System*. The presentation summarized the history of the eight editions of the staging system and highlighted that nodal staging was the only operator-dependent component of the staging process and was subject to human factors twice in the process (first by a proceduralist (a surgeon, pulmonologist, or interventional radiologist) and then by a pathologist). Two unmet needs were identified for nodal staging: there is no recognition of the location or distance between primary and metastatic tumors, and there is no indication of the quantity of the tumor burden. The presentation concluded by reviewing the IASLC recommendations for staging, the data used for the 9th edition recommendations, a proposed classification for nodal staging, and the validation analysis procedure for the proposal.

Session 8 was titled *Clinical Target 1: Pretreatment Nodal Staging*. The presentation critically evaluated the scientific evidence in support of guideline-concordant nodal staging. Until a higher level of evidence is available on alternative staging strategies, the current evidence best supports guideline-concordant nodal staging.

The following breakout session on *Pretreatment Nodal Staging* contained four breakout groups on different aspects of the pretreatment nodal staging process. Each of the four groups approached the topic from a different perspective based on the goals of the summit: Clinician Education, Patient Education, Guideline Reconciliation, and Quality Improvement.

Session 9 was titled *Clinical Target 2: Intraoperative Nodal Staging*. The presentation prepared attendees for the second round of breakout group discussions on intraoperative nodal staging. The presentation highlighted key questions around intraoperative nodal staging and the pathologic nodal staging quality gap.

The second group of breakout sessions on **Intraoperative Nodal Staging** contained four breakout groups with the same membership as the previous breakout session to promote the continuity of perspectives. The four groups approached the intraoperative topic through the same lenses they used in the first session on pretreatment nodal staging: Clinician Education, Patient Education, Guideline Reconciliation, and Quality Improvement.

Session 10 was the **Breakout Group Report Outs** session. Each of the four breakout groups reported their combined high-level summary points and possible interventions from their two discussion sessions. See the Session 10 detailed summary later in this document for more detailed information.

Session 11 was the closing session entitled **Wrap-Up and Next Steps**. Dr. Gerard Silvestri highlighted his key takeaways from each of the presentations given earlier in the day. He concluded by thanking his summit co-chairs for their expertise and guidance and the ACS NLCRT staff, leadership, and sponsors for their dedicated work in creating a successful summit experience for everyone.

Breakout Group Recommendations

The following four tables summarize the breakout recommendations for the four breakout groups of Clinician Education, Guideline Reconciliation, Patient Education, and Quality Improvement.

Clinician Education	
Pretreatment Nodal Staging	Intraoperative Nodal Staging
<p>Philosophy</p> <ul style="list-style-type: none"> Simple, accessible, community, patient-oriented, consensus-building & multidisciplinary <p>Who</p> <ul style="list-style-type: none"> Everyone in the room and generalists, hospital administrators, trainees <p>What to Disseminate</p> <ul style="list-style-type: none"> Simple message – the significance of staging, what it is, who should deliver the information, and when it should be done. <p>Deliverables</p> <ul style="list-style-type: none"> Virtual and/or physical pocket card (short-term) 	<p>Philosophy</p> <ul style="list-style-type: none"> Simple, accessible, community & patient-oriented <p>Who</p> <ul style="list-style-type: none"> Pathologists, surgeons (general & thoracic) <p>What to Disseminate</p> <ul style="list-style-type: none"> American College of Surgeons Commission on Cancer Guidelines (3 +1) Synoptic operative reports <p>Deliverables</p> <ul style="list-style-type: none"> MOC – thoracic & general surgeons CME – shared b/w surgeons & pathologists

Guideline Reconciliation

Key Questions

- Is guideline reconciliation **desirable**? Yes
- Is it **necessary** to achieve guideline reconciliation? No
 - Differences must be explained.
- Are differences easy to discern?
- What is **desirable**? Need Clarity
 - Shared curriculum development, CME, slide deck, MOC & double publications (long-term)

Practical Recommendations - Pretreatment

- Focus on HOW information is conveyed.
 - Infographics are good for patients and good for clinicians.
- The only differences for nodal staging are the definition of “central” and multiple lung cancers.
- Highlight the alignment.
- Develop an infographic that clearly demonstrates the major common aspects (and minor differences) to improve understanding.
 - Shared curriculum development, CME, slide deck, MOC & double publications (long-term)

Intraoperative Staging

- Minimal differences that do not appear to create confusion:
- Chest (3A) systematic lymph node sampling or complete lymph node dissection
- NCCN (3A) complete lymph node dissection
- ACCP (3A): either complete dissection or systematic sampling
- The real problem is not obtaining nodes from enough stations.

Possible Interventions

- Develop a synoptic operative report that mirrors the pathology report and will highlight a surgeon’s responsibility.
- Monitored by the American College of Surgeons Commission on Cancer
- Perhaps not as effective as a kit, but it would require a surgeon’s knowledge about the nodes and their potential importance.

Patient Education

Discussion Summary

- Stage generally means “How big and where is the cancer?”
- There is a conflation of stage and state. The stage doesn’t define the disease or what the patient will experience.
- Drug approvals and treatment paradigms rely on stage.
- Staging occurs in multiple ways, including imaging and biopsies.
- Lymph nodes should be explained simply – with a diagram.
- Staging is a process but can lead to the best care through the best treatment selection.
- Messaging and communication education around staging needs to be built in as a part of the entire continuum.
 - Who is delivering the message?
 - Glossary of terms

Action Plan

- Survey patients about what they know about lymph nodes and lymph node staging.
- Survey available patient education: ATS, CHEST, ASCO, STS, GO2 Foundation, LUNgevity, IASLC, LCRF, LCFA, NCCN, ALA, cancer centers, UpToDate
 - Do they incorporate staging?
 - Do they discuss lymph node staging?
 - Is their communication patient-centered?
 - Are there multiple languages?
 - Is there multi-media?
- Collaborate with interested groups (advocacy and professional societies)
 - Create common patient-centered print material and a glossary of terms.
 - Commonly endorsed video for patient education.
- Collaborate with the clinician education breakout group to ensure that clinicians know about patient needs.

Quality Improvement

Problem #1

- “I do EBUS, but I don’t do staging....”
- “I got a + call... That node is too small for me....”

Problem #2

- “The node is large, but the PET scan was +/-, so I don’t need EBUS.”
- “What is skip metastasis? Why does it matter?”

Problem #3

- “I met my hospital’s credentials criteria.”

Recommended Next Steps

- Propose a Pilot Project
- Propose a process measure of clinical staging.
- Use STS data; PDSA cycle.
- Demonstrate unprecedented collaboration between pulmonologists and thoracic surgeons.
- Demonstrate responsiveness to the data.
- Take the experience to the Commission of Cancer and propose scaling.

Additionally

- Education interventions to distribute across the country.
- Checklist system - EMR build-in?

Overview of Panel Presentations with Video Links

Welcome and the Importance of Lung Cancer Staging

- [Staging Summit Welcome](#)
Farhood Farjah, MD, MPH, FACS, ACS NLCRT Summit Chair, University of Washington
- [ACS NLCRT Staging Summit](#)
Douglas Wood, MD, FACS, FRCSEd, ACS NLCRT Vice Chair and Summit Co-Chair, University of Washington

Strategic Plan Recommendations and Today's Targets

- [Strategic Plan Recommendations and Today's Targets](#)
M. Patricia Rivera, MD, ATSF, FCCP, University of Rochester Medical Center

Graduate Medical Education (GME) and Lung Cancer Staging

- [GME and Lung Cancer Staging: Thoracic Surgery](#)
James Huang, MD, Memorial Sloan Kettering Cancer Center
- [GME and Lung Cancer Staging: Pulmonary Medicine](#)
Catherine Sears, MD, ATSF, Indiana University School of Medicine, Richard L. Roudebush VA Medical Center
- [GME and Lung Cancer Staging: Medical Oncology](#)
Carolyn Presley, MD, MHS, The Ohio State University
- [GME and Lung Cancer Staging: Radiation Oncology](#)
John Kang, MD, PhD, University of Washington
- [GME and Lung Cancer Staging: Radiology](#)
Ella Kazerooni, MD, MS, FACR, FACC, FSABI, ACS NLCRT Chair, University of Michigan

Disparities in Guideline Recommendations

- [Mediastinal Staging in ACCP Clinical Guidelines](#)
Frank Detterbeck, MD, FACS, FCCP, Yale University
- [Disparities in Guideline Recommendation: Nodal Staging According to the NCCN Guidelines](#)
Jane Yanagawa, MD, University of California at Los Angeles

Performance Feedback Platforms

- [Quality Metrics for Lung Cancer Clinical Staging](#)
Peter Mazzone, MD, MPH, FCCP, Cleveland Clinic
- [American College of Surgeons Commission National Cancer Database](#)

Timothy Mullett, MD, MBA, FACS, University of Kentucky

- [Performance Feedback Platforms: Society of Thoracic Surgeons General Thoracic Surgery Database](#)

Christopher Seder, MD, Rush University Medical Center

- [American College of Chest Physicians Quality Improvement Registry](#)

George Eapen, MD, FACP, FCCP, University of Texas MD Anderson Cancer Center

Patient Perspectives on Messaging Lung Cancer Staging

- [Patient Perspectives on Messaging Lung Cancer Staging](#)

Jill Feldman, EGFR Resisters

James Pantelas, Veterans Health Administration

Katie Wright, Patient Advocate

Anticipated Changes in the American Joint Committee on Cancer (AJCC) Cancer Staging System

- [Anticipated Changes in N-Staging for the 9th Edition of TNM](#)

James Huang, MD, Memorial Sloan Kettering Cancer Center

Clinical Target 1: Pretreatment Nodal Staging

- [Clinical Target 1: Pretreatment Nodal Staging](#)

Farhood Farjah, MD, MPH, FACS, ACS NLCRT Summit Chair, University of Washington

Breakout Groups: Pretreatment Nodal Staging

Clinical Target 2: Intraoperative Nodal Staging

- [Clinical Target 2: Intraoperative Nodal Staging](#)

Raymond Osarogiagbon, MBBS, FACP, ACS NLCRT Summit Co-Chair, Baptist Memorial Healthcare Corporation

Breakout Groups: Intraoperative Nodal Staging

Breakout Group Report Outs

- [Clinician Education](#)

Nichole Tanner, MD, MSCR, FCCP, Medical University of South Carolina

Cherie Erkmen, MD, FACS, Temple University

- [Guideline Reconciliation](#)

Thomas D'Amico, MD, FACS, Duke University

Anne Valerie Gonzalez, MD, MSc, FCCP, McGill University

- **Patient Education**
Adam Fox, MD, Medical University of South Carolina
Jeffrey Velotta, MD, FACS, Kaiser Permanente Oakland Medical Center
- **Quality Improvement**
Eric Flenaugh, MD, FCCP, Morehouse School of Medicine
Christopher Seder, MD, Rush University Medical Center

Wrap-Up and Next Steps

- **They Said, I Heard, We Learned**
Gerard Silvestri, MD, MS, Master FCCP, ACS NLCRT Summit Co-Chair, Medical University of South Carolina

Presentation Highlights

Welcome and the Importance of Lung Cancer Staging

The opening session was introduced by the summit co-chair, Dr. Farhood Farjah of the University of Washington. He thanked attendees for their expertise in lung cancer staging and engaging in this critical summit, and he thanked the members of the ACS NLCRT leadership and staff and corporate supporters for their efforts and contributions. He then introduced the ACS NLCRT Vice Chair, Dr. Douglas Wood of the University of Washington.

Dr. Wood spoke on the importance of lung cancer staging and that the staging process helps to identify the disease boundaries to support prognosis, deliver the best treatment options, and identify the most appropriate course of treatment. He highlighted some of the significant findings by summit attendees, including Doctors Osarogiagbon, Farjah, Silvestri, Detterbeck, Rivera, and Ost. Finally, he said that the summit's purpose was not to create guidelines but rather to discuss guideline implementation and coordination, clinician and patient education, performance feedback, and best practices.

ACS NLCRT Strategic Plan Recommendations and Today's Targets

Dr. M. Patricia Rivera of the University of Rochester Medical Center, and the co-chair of the ACS NLCRT Biomarker Initiative, gave a presentation on the progress of the ACS NLCRT Triage for Appropriate Treatment Task Group. The task group is currently focused on identifying knowledge gaps in guideline-discordant staging and conducted a multi-step process in which they reviewed existing literature. Members came to a consensus on seven knowledge gaps and seven recommendations that informed the structure of this summit. Breakout groups at this summit later developed action items for four of the seven focus areas: 1) Identify facilitators and barriers in guideline-concordant lung cancer screening (e.g., clinician education), 2) Harmonize guideline recommendations, 3) Develop and implement a performance feedback mechanism, and 4) Increase opportunities for patient self-advocacy.

Graduate Medical Education and Lung Cancer Staging

Dr. James Huang of Memorial Sloan Kettering Cancer Center presented on the topic of graduate medical education and lung cancer staging. He discussed how workforce training intersects with knowledge of staging classification and staging guideline recommendations. However, it is unclear how training programs uniformly incorporate practice guidelines into their respective training programs.

Dr. Catherine Sears of the Indiana University School of Medicine presented on the topic of graduate medical education from the pulmonary perspective. Most teaching for pulmonologists follows the CHEST guidelines. However, there is a generational gap. Much focus has been on EBUS as a technique, not a staging tool. Staging is variable depending on location and training, and there is no standard guideline on how to stage. Further, training is often conducted by individuals who do not have regular exposure to EBUS.

Dr. Carolyn Presley of The Ohio State University presented on the medical oncology perspective, emphasizing the importance of tissue. Medical oncologists are key players because they can communicate with pulmonologists or surgeons to ensure adequate staging. They rely on PDL-1 and tumor genomic testing to discern the best therapeutics from various treatment options. However, there is no standardized curriculum for invasive nodal sampling in training. The information is available but has not been consolidated or distributed to community oncologists. Additionally, most teaching for medical oncologists is informal. These issues are significant because a lack of tissue can delay treatment, and inadequate nodal sampling can lead to incorrect treatment.

Dr. John Kang of the University of Washington presented on the radiation oncology perspective. In the American Board of Radiology (ABR) study guide, lung and thoracic radiology are one topic out of ten. For the Accreditation Council for Graduate Medical Education (ACGME) requirements, every resident must perform at least 450 simulations, including a minimum of 16 non-small cell lung cancer simulations. However, there is no staging requirement. A graduating resident likely has two to six months of thoracic experience. Radiation oncologists use the given information and may refer to pulmonologists and surgeons. Yet, proper mediastinal staging dictates the radiation field for stages II and III, as well as patterns of failure and likely survival for stage I.

Dr. Ella Kazerooni of the University of Michigan presented on the radiology perspective. Most curricula are well-intentioned but not thorough. Additionally, most are not mandated. The ACGME diagnostic radiology residency requirements are specified for nuclear medicine time and breast imaging case volume. The American Board of Radiology study guides were last updated in 2014 and do not provide detailed content for lung cancer. The Society of Thoracic Radiology curriculum was last updated in 2016 and is not required. The ACGME nuclear Medicine residency focuses on the nuclear component rather than CT or MRI. Finally, the Society of Nuclear Medicine and Molecular Imaging provides a superficial curriculum that is not required. It is unlikely that patients will have their exams read by a thoracic radiologist because there are few.

Disparities in Guideline Recommendations

Dr. Frank Detterbeck of Yale University gave a presentation on mediastinal staging according to the ACCP clinical guidelines. He highlighted the disparities in recommendations in the 2023 NCCN guidelines and the 2013 ACCP guidelines. While the ACCP guidelines focus on evidence and

methodologic rigor, they fail to recognize that many settings do not have optimal resources available. He emphasized that institutional resources contribute to the quality of invasive staging. Finally, while the idea of harmonizing guidelines sounds desirable, he felt that achieving that goal is politically, financially, and practically difficult. Dr. Detterbeck proposed that there is value in diverse practices and the enhancement of clinical judgment.

Dr. Jane Yanagawa of the University of California at Los Angeles gave a presentation on disparities in guideline recommendations with reference to nodal staging according to NCCN guidelines. Invasive staging can be deferred for peripheral clinical stage IA and is required for lesions that are clinical stage IB to IIIB. In the presence of N2-positive lymph nodes, there should be a pathologic evaluation of the mediastinum that includes an evaluation of the subcarinal station and contralateral lymph nodes. Considering EBUS for initial staging and mediastinoscopy for restaging is a viable option, but the management of N2 disease overall is controversial. Approaches to invasive nodal staging are varied and include mediastinoscopy, mediastinotomy, EBUS, EUS, and CT-guided biopsy. The convenience of the staging process is noted in NCCN guidelines; it is better to perform invasive nodal staging at the time of the lung resection if you have the resources. The guidelines recommend sampling a minimum of three N2 stations. Additionally, formal ipsilateral mediastinal lymph node dissection is indicated for patients undergoing resection.

Performance Feedback Platforms

Dr. Peter Mazzone of the Cleveland Clinic reviewed a Thoracic Oncology Network project from the ACCP that was conducted about ten years ago. The project centered on developing a formal process for creating quality metrics for pretreatment evaluations, focusing primarily on the staging component. The Quality Indicator Project was divided into a planning phase and a development phase. In the planning phase, researchers evaluated the literature, chose a clinical area, and organized the measurement team. In the development phase, researchers conducted an overview of existing evidence, selected clinical indicators and standards, designed measure specifications, and pilot-tested the new quality indicators that could be used to assess the quality of care. Good quality indicators are valid (connected to desirable outcomes), feasible (they can be implemented and measured in practice), and relevant (they must measure variations in different practices). Eighteen quality indicators were initially proposed, and four indicators related to staging survived the rounds of evaluation based on the principles of validity, feasibility, and relevance. The four measures were pilot-tested and went on to be accepted by the National Quality Measures Clearinghouse in 2017.

Dr. Timothy Mullet of the University of Kentucky gave a presentation on the American College of Surgeons Commission on Cancer (CoC) operative standards. He shared that operative standards were intended to be repeatable, harmonized, agreed-upon, and documented procedures. For the first time, CoC standards are evaluating the conduct of surgery. Dr. Mullet's presentation explained that health outcomes are better when surgeons follow the standards. According to CoC data from

2022, 42% were non-compliant in the first year of implementation of standard 5.8, which refers to pulmonary resection. The goal is 80% compliance in 2023 and 2024.

Dr. Christopher Seder of Rush University Medical Center presented on the performance feedback platforms developed with the Society of Thoracic Surgeons (STS) General Thoracic Surgery Database. The database includes 279 sites and 859 surgeons. Data managers must collect information about the utilization of imaging and invasive pretreatment nodal staging procedures, tumor size, and TNM (tumor, node, metastases) stage. Additional data must be collected on the pathologic stage of the tumor, histology, grade, positive margins, what lymph nodes were collected, and whether they were malignant or benign. All the data are reported by the year and are benchmarked across the entire STS database. This database can be used as an example for pathologists, pulmonologists, and others on how to collect data on a broader scale.

Dr. George Eapen of the University of Texas MD Anderson Cancer Center gave the final presentation of the session, focusing on quality management in EBUS staging. He noted that bronchoscopy is advancing rapidly and is pivotal in the lung cancer care continuum. The ACCP Quality Improvement Registry sponsored development of the AQUiRE database, which is both diagnostic and therapeutic. Barriers to quality management include fragmented and siloed data, tedious and error-prone manual extraction, challenging data collection and analysis, a lack of resources and funding, learned helplessness, and fear of change. After five years of this work, a Pulmonary Procedures Registry was developed. The registry is a HIPAA-compliant, seamlessly EHR-integrated, cloud-based database of pulmonary procedures, with the goal of integrating quality management into routine clinical care.

Clinical Target 1: Pretreatment Nodal Staging

Dr. Farhood Farjah addressed pretreatment nodal staging, the first clinical target for the breakout groups. Pretreatment nodal staging allows for diagnosis, staging, and comprehensive biomarker testing that leads to appropriate treatment options and individualized care. NCCN and ACCP provide the same recommendations for pretreatment nodal staging: tumors greater than 3 centimeters, central tumors, lymphadenopathy on CT, and lymphadenopathy on PET. About 75% of patients without stage IV disease have one of these indications for pretreatment invasive nodal disease, but only about 30% undergo pretreatment invasive nodal staging. Dr. Farjah emphasized that accurate staging leads to appropriate therapy and optimal outcomes. He hypothesized that more tests would be associated with better survival. However, as he learned more about the nuances of thoracic oncology, he began to question the strength of the staging-outcome relationship. Guidelines perfectly selected all patients with nodal disease but also two-thirds of patients with no nodal disease for pretreatment invasive nodal staging. This exposes some patients—including those with no nodal disease—to unnecessary procedures with very rare but severe procedure-related risks. He concluded that the guidelines are not perfect but an intervention with both benefits and risks. Until a superior staging strategy is developed and tested, the current scientific evidence supports following

practice guidelines and recommendations. Dr. Farjah then introduced the four breakout groups, which focused on the following topics: 1) Clinician education, 2) Patient education, 3) Guideline reconciliation, and 4) Quality improvement. Three topics not addressed by breakout groups at this summit were: 1) Prioritizing comparative effectiveness research, 2) Augmenting existing databases, and 3) Promoting policy-level interventions.

Clinical Target 2: Intraoperative Nodal Staging

Dr. Raymond Osarogiagbon of Baptist Memorial Healthcare Corporation addressed intraoperative nodal staging, the second clinical target for breakout groups. He first questioned the components and definition of quality pathologic nodal staging and then emphasized the importance of an evidence-based consensus definition, evidence to promote good quality resection, and engaging key stakeholders to overcome the pathologic nodal staging quality gap. There are many definitions of quality, ranging from definitions of extremely poor-quality outliers such as non-examination of lymph nodes (pNX) and non-examination of mediastinal lymph nodes (Mediastinal NX) to composite definitions of good quality from sources such as CoC, AJCC, NCCN, ESTS, and ACOSOG, and the quality gap widens with the stringency of the definition. For example, under the NCCN definition of quality, only 37% of the Mid-South Quality of Surgical Resection Cohort attain the quality parameter. Dr. Osarogiagbon conducted an implementation science project that investigated the hypothesis that the successful implementation of routine use of a lymph node collection kit would improve the quality of pathologic nodal staging across institutions. The team assessed survival across the baseline, pilot study, implementation, and combined surgical and pathology intervention eras in this population-based cohort. He found that quality improves as these interventions are implemented over subsequent eras.

Breakout Group Report Outs

Dr. Cherie Erkmen and Dr. Nichole Tanner presented the summary of the Clinician Education breakout group. In the pretreatment nodal staging session, the group outlined the barriers to clinician education. The largest barrier appeared to be limited knowledge of staging guidelines by clinicians. They established a philosophy of simple, accessible, and community and patient-oriented messaging, with an audience of all relevant staff. They considered short-term deliverables such as a virtual or physical pocket card and long-term deliverables such as shared curriculum development, CME, a slide deck, MOC, and publications. In the intraoperative nodal staging session, they maintained the same messaging philosophy but with an audience of pathologists and surgeons. They agreed to disseminate CoC Guidelines and the synoptic operative report. Their deliverables included MOC, CME, a white paper, meetings, a slide deck, and nodal staging sessions.

Dr. Thomas D'Amico and Dr. Anne Valerie Gonzalez presented the summary of the Guideline Reconciliation breakout group. The group agreed that harmonization is desirable but not necessary

because they felt guidelines had more similarities than differences and that the similarities were worth emphasizing. For pretreatment nodal staging, the group recommended focusing on how information is conveyed, highlighting alignment, and developing an infographic to improve understanding of the commonalities and differences. For intraoperative nodal staging, the group noted differences in NCCN and ACCP guidelines for stage IIIA. They agreed that the central issue is not obtaining enough nodes. A possible intervention for this issue includes developing a synoptic operative note that mirrors the pathology report and would be monitored by the CoC.

Dr. Adam Fox and Dr. Jeffrey Velotta presented the summary of the Patient Education breakout group. The group considered the definition of staging and why it is important. They emphasized that drug approvals and treatment paradigms rely on staging, which can occur in various ways. They also discussed the need to explain lymph nodes simply and to use supportive diagrams. Finally, they established that messaging and communication education around staging needs to be built in as a part of the entire continuum of care. Action steps include surveying patients and patient education materials, collaborating with interested advocacy and professional societies, and collaborating with the Clinician Education breakout group to ensure that clinicians are attuned to patient needs.

Dr. Eric Flenaugh and Dr. Christopher Seder presented the summary of the Quality Improvement breakout group. For pretreatment nodal staging, the group identified a lack of incentives, training, and performance feedback. The group proposed a pilot project measuring clinical staging using STS data and the PDSA cycle. This project would take the experience to the Commission on Cancer for future scaling up. For intraoperative nodal staging, the group recommended national education interventions and a checklist system with an EMR build-in.

Review and Wrap-Up

Dr. Farhood Farjah took the podium one last time to introduce the closing session, which was presented by Dr. Gerard Silvestri of the Medical University of South Carolina. In his presentation titled *They Said, I Heard, We Learned*, Dr. Silvestri highlighted his key takeaways from each presentation at the summit.

Clinician Education

1. Work with key specialists' professional organizations (e.g., AATS/STS, ASCO, ASTRO, CHEST, ATS, ACR, etc.) to raise awareness of the need for improved professional training and ongoing quality improvement.
2. Explore possibilities of enhancing the components of staging in the relevant specialists' training curriculum.

Patient Education

1. Produce materials to facilitate simple, clear communication on staging between clinicians and patients: what it is, why it is important, and how it connects to optimal treatment and outcomes.

Quality Improvement

1. Emphasize consensus standards (e.g., CoC Operative Standard 5.8).
2. Support ongoing efforts of the CoC.
3. Engage other professional organizational groups (e.g., CAP, ASCO, ASTRO) in communicating with their constituencies.
4. Encourage the development and use of synoptic reports, including in electronic health records.

This Executive Summary was thoughtfully prepared by the ACS NLCRT Executive Leadership Team:

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