

Oncology Nursing™

U P D A T E

LUNG CANCER EDITION

An Audio Review Journal for Nurses
Bridging the Gap between Research and Patient Care

FACULTY INTERVIEWS

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EDITOR

Neil Love, MD

CNE
Activity

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Oncology Nursing Update Lung Cancer Edition

A Continuing Nursing Education Audio Series

OVERVIEW OF ACTIVITY

Traditionally, chemotherapy, surgery and radiation therapy have had a modest effect on long-term outcomes for patients with lung cancer. However, the advent of biologic agents and immunotherapies has led to recent improvements in disease-free and overall survival in select patient populations. Importantly, published results from ongoing clinical trials lead to the continual emergence of new therapeutic agents and changes in the use of existing treatments. To provide oncology nurses with therapeutic strategies to address the disparate needs of patients with lung cancer, the *Oncology Nursing Update* audio series employs one-on-one interviews with medical oncologists and nurses who are experts in the field. Upon completion of this CNE activity, oncology nurses should be able to formulate an up-to-date and more complete approach to the care of patients with lung cancer.

PURPOSE STATEMENT

To present the most current research developments and to provide the perspectives of nurse practitioners and clinical investigators on the diagnosis and treatment of lung cancer.

LEARNING OBJECTIVES

- Discuss the benefits and risks associated with systemic therapies used in the evidence-based treatment of lung cancer, including chemotherapy regimens, targeted biologic treatments and immunotherapeutic approaches.
- Communicate the clinical relevance of tumor histology and commonly identified genetic abnormalities to patients with non-small cell lung cancer.
- Educate patients receiving EGFR and ALK inhibitors about potential side effects, and provide preventive and emergent strategies to reduce or ameliorate these toxicities.
- Develop an understanding of the mechanism of action, efficacy and safety/toxicities of anti-PD-1 checkpoint inhibitors to enable their appropriate integration into routine clinical practice.
- Recognize the FDA approvals of the anti-angiogenic agents ramucirumab and necitumumab, and discern how these agents can be safely administered to appropriate patients with squamous and nonsquamous disease.

ACCREDITATION STATEMENT

Research To Practice is accredited as a provider of continuing nursing education by the American Nurses Credentialing Center's Commission on Accreditation.

CREDIT DESIGNATION STATEMENT

This educational activity for 2.7 contact hours is provided by Research To Practice during the period of September 2017 through September 2018.

This activity is awarded 2.7 ANCC pharmacotherapeutic contact hours.

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The program content has been reviewed by the Oncology Nursing Certification Corporation (ONCC) and is acceptable for recertification points.

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FOR SUCCESSFUL COMPLETION

This is an audio CNE program. This booklet contains CNE information, including learning objectives, faculty disclosures, a Post-test and an Educational Assessment and Credit Form. The corresponding website [ResearchToPractice.com/ONULung117](https://www.researchtopractice.com/ONULung117) also includes links to relevant abstracts and full-text articles.

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FACULTY INTERVIEWS



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- 4 **Kelly EH Goodwin, MSN, RN, ANP-BC**
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5 SELECT PUBLICATIONS

6 POST-TEST

7 EDUCATIONAL ASSESSMENT AND CREDIT FORM

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EDITOR



Neil Love, MD
Research To Practice
Miami, Florida

CONTENT VALIDATION AND DISCLOSURES

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FACULTY — **Dr Spigel** and **Ms Goodwin** have no relevant conflicts of interest to disclose. The following faculty (and their spouses/partners) reported relevant conflicts of interest, which have been resolved through a conflict of interest resolution process: **Ms Reed** — Advisory Committee: AstraZeneca Pharmaceuticals LP, Ipsen Biopharmaceuticals Inc, Taiho Oncology Inc; **Speakers Bureau:** Bristol-Myers Squibb Company, Genentech BioOncology, Merck, Novartis, Onyx Pharmaceuticals, an Amgen subsidiary, Pfizer Inc, Taiho Oncology Inc. **Dr Sequist** — Advisory Committee: Ariad Pharmaceuticals Inc, AstraZeneca Pharmaceuticals LP, Boehringer Ingelheim Pharmaceuticals Inc, Clovis Oncology, Genentech BioOncology, Merrimack Pharmaceuticals Inc, Novartis.

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Related Video Program

Visit www.ResearchToPractice.com/ONULung117/Video to view video highlights of the interviews with (from left) Dr Spigel, Ms Reed, Dr Sequist and Ms Goodwin by Dr Love and earn additional **AMA PRA Category 1 Credit™**.



Topics covered include:

- ▶ Management of EGFR mutation-positive NSCLC
- ▶ ALK-rearranged lung cancer and its treatment
- ▶ Plasma and urine genotyping for the detection of T790M mutations
- ▶ Role of immune checkpoint inhibitors in NSCLC

SELECT PUBLICATIONS

- Barlesi F et al. **Atezolizumab versus docetaxel in patients with previously treated non-small-cell lung cancer (OAK): A phase 3, open-label, multicentre randomised controlled trial.** *Lancet* 2017;389(10066):255–65.
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- Brahmer J et al. **Nivolumab versus docetaxel in advanced squamous-cell non-small-cell lung cancer.** *N Engl J Med* 2015;373(2):123–35.
- Drilon AE et al. **Efficacy and safety of crizotinib in patients (pts) with advanced MET exon 14–altered non-small cell lung cancer (NSCLC).** *Proc ASCO* 2016;**Abstract 108.**
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- Gettinger S et al. **Nivolumab (NIVO) safety profile: Summary of findings from trials in patients (pts) with advanced squamous (SQ) non-small cell lung cancer (NSCLC).** *Proc ESMO* 2015;**Abstract 3094.**
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- Herbst RS et al. **Pembrolizumab versus docetaxel for previously treated, PD-L1-positive, advanced non-small-cell lung cancer (KEYNOTE-010): A randomised controlled trial.** *Lancet* 2016;387(10027):1540–50.
- Hida T et al. **Alectinib versus crizotinib in patients with ALK-positive non-small-cell lung cancer (J-ALEX): An open-label, randomised phase 3 trial.** *Lancet* 2017;[Epub ahead of print].
- Jia Y et al. **Overcoming EGFR(T790M) and EGFR(C797S) resistance with mutant-selective allosteric inhibitors.** *Nature* 2016;534(7605):129–32.
- Langer C et al. **Carboplatin and pemetrexed with or without pembrolizumab for advanced, non-squamous non-small-cell lung cancer: A randomised, phase 2 cohort of the open-label KEYNOTE-021 study.** *Lancet Oncol* 2016;17(11):1497–508.
- Mok TS et al; AURA3 Investigators. **Osimertinib or platinum-pemetrexed in EGFR T790M-positive lung cancer.** *N Engl J Med* 2017;376(7):629–40.
- Nokihara H et al. **Alectinib (ALC) versus crizotinib (CRZ) in ALK-inhibitor naïve ALK-positive non-small cell lung cancer (ALK+ NSCLC): Primary results from the J-ALEX study.** *Proc ASCO* 2016;**Abstract 9008.**
- Oxnard GR et al. **Association between plasma genotyping and outcomes of treatment with osimertinib (AZD9291) in advanced non-small-cell lung cancer.** *J Clin Oncol* 2016;34(28):3375–82.
- Park K et al. **Afatinib versus gefitinib as first-line treatment of patients with EGFR mutation-positive non-small-cell lung cancer (LUX-Lung 7): A phase 2B, open-label, randomised controlled trial.** *Lancet Oncol* 2016;17(5):577–89.
- Peters S et al. **Alectinib versus crizotinib in untreated ALK-positive non-small-cell lung cancer.** *N Engl J Med* 2017;[Epub ahead of print].
- Reck M et al. **Pembrolizumab versus chemotherapy for PD-L1-positive non-small-cell lung cancer.** *N Engl J Med* 2016;375(19):1823–33.
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- Wakelee HA et al. **E1505: Adjuvant chemotherapy +/- bevacizumab for early stage NSCLC — Outcomes based on chemotherapy subsets.** *Proc ASCO* 2016;**Abstract 8507.**
- Yang JC et al. **Afatinib versus cisplatin-based chemotherapy for EGFR mutation-positive lung adenocarcinoma (LUX-Lung 3 and LUX-Lung 6): Analysis of overall survival data from two randomised, phase 3 trials.** *Lancet Oncol* 2015;16(2):141–51.

Interview with David R Spigel, MD

Tracks 1-15

- Track 1 Case discussion:** A 53-year-old woman and heavy smoker with metastatic squamous cell carcinoma (SCC) of the lung experiences a prolonged response to a checkpoint inhibitor after disease progression on several lines of therapy
- Track 2** Duration of response to immune checkpoint inhibitors
- Track 3** Choice of front-line therapy for patients with metastatic SCC of the lung
- Track 4** Therapeutic options for patients with metastatic non-small cell lung cancer (NSCLC) who experience disease progression while receiving immune checkpoint inhibitors
- Track 5** Educating patients about the biologic rationale for the use of immune checkpoint inhibitors
- Track 6** Management of the side effects of anti-PD-1/PD-L1 antibodies
- Track 7** Dermatologic toxicities related to immune checkpoint inhibitors
- Track 8** Role of immunotherapy in patients with preexisting autoimmune disease
- Track 9** Efficacy of pembrolizumab as front-line therapy for metastatic NSCLC
- Track 10 Case discussion:** A 49-year-old woman who presents with pain in the right upper quadrant is diagnosed with EGFR L858R mutation-positive, metastatic NSCLC
- Track 11** Types of EGFR mutations and sensitivity to EGFR tyrosine kinase inhibitors (TKIs)
- Track 12** Comparison of afatinib, erlotinib and gefitinib
- Track 13** EGFR T790M mutation testing and response to osimertinib
- Track 14** Detection of T790M mutations by urine testing
- Track 15** Activity and tolerability of osimertinib

Interview with Mollie Reed, MSN, RN, ACNP-BC

Tracks 1-14

- Track 1 Case discussion:** A 44-year-old man and never smoker with metastatic ALK-positive adenocarcinoma of the lung receives alectinib after disease progression on crizotinib
- Track 2** Activity of alectinib in patients with brain metastases
- Track 3** Educating patients about the biology of ALK-rearranged NSCLC
- Track 4** Crizotinib-associated ocular and gastrointestinal toxicities
- Track 5** Monitoring patients receiving crizotinib for brain metastases
- Track 6** Side effects and tolerability of alectinib
- Track 7 Case discussion:** A 75-year-old man and former smoker who presents with dyspnea and worsening fatigue is diagnosed with metastatic SCC of the lung
- Track 8** Safety profile of nanoparticle albumin-bound (*nab*) paclitaxel versus solvent-based paclitaxel
- Track 9** Antitumor activity and side effects associated with necitumumab
- Track 10** Counseling patients about end-of-life care
- Track 11 Case discussion:** A 69-year-old man and heavy smoker with multiple comorbidities achieves a complete response with a checkpoint inhibitor as fourth-line therapy for metastatic adenocarcinoma of the lung
- Track 12** Activity of checkpoint inhibitors in advanced NSCLC
- Track 13** Identification and management of autoimmune thyroiditis
- Track 14** Diagnosis and treatment of pneumonitis in patients receiving immune checkpoint inhibitors

Interview with Lecia V Sequist, MD, MPH

Tracks 1-14

- Track 1 Case discussion:** A 69-year-old woman and never smoker who presented with a headache and neurologic symptoms is diagnosed with EGFR L858R mutation-positive adenocarcinoma of the lung and a solitary brain metastasis
- Track 2** Educating patients with lung cancer about driver mutations
- Track 3** Targetable mutations in metastatic adenocarcinoma of the lung
- Track 4** Efficacy and tolerability of EGFR TKIs
- Track 5** Choice of chemotherapy for metastatic adenocarcinoma of the lung
- Track 6** Plasma and urine genotyping to identify T790M mutations in NSCLC
- Track 7 Case discussion:** A 58-year-old man receives osimertinib after disease progression on erlotinib for EGFR T790M mutation-positive metastatic NSCLC
- Track 8** Activity and side effects of osimertinib
- Track 9** Efficacy of osimertinib in patients with EGFR T790M mutation-positive NSCLC and brain metastases
- Track 10 Case discussion:** A 68-year-old man and former smoker with Stage III SCC of the lung receives a checkpoint inhibitor as second-line therapy
- Track 11** Chemoradiation therapy regimens for Stage III NSCLC
- Track 12** Immune-related adverse events associated with immune checkpoint inhibitors
- Track 13** Approach to first-line therapy for metastatic SCC of the lung
- Track 14** Efficacy of ramucirumab and docetaxel for metastatic NSCLC

Interview with Kelly EH Goodwin, MSN, RN, ANP-BC

Tracks 1-9

- Track 1 Case discussion:** A 57-year-old man and former smoker who presents with bilateral shoulder pain is diagnosed with metastatic SCC of the lung
- Track 2** Chemotherapeutic options for metastatic SCC versus pan-wild-type adenocarcinoma of the lung
- Track 3** Educating patients about the side effects of chemotherapy
- Track 4** Benefits and risks associated with *nab* paclitaxel versus solvent-bound paclitaxel
- Track 5** Activity and tolerability of checkpoint inhibitors for SCC of the lung
- Track 6** Role of necitumumab for patients with advanced SCC of the lung
- Track 7** Approach to dealing with the children of patients with advanced cancer
- Track 8** Developing empathy for patients with cancer
- Track 9** Communicating the expected risks and benefits of ALK inhibitors

Have Questions or Cases You Would Like Us to Pose to the Faculty?



Submit them to us via Facebook or Twitter and we will do our best to get them answered for you

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QUESTIONS (PLEASE CIRCLE ANSWER):

1. A study evaluating pembrolizumab versus platinum-based chemotherapy for patients with previously treated advanced NSCLC demonstrated an improvement in overall survival for patients on the pembrolizumab arm who had tumor PD-L1 expression of _____.
 - a. 20% or higher
 - b. 50% or higher
2. The third-generation EGFR inhibitor osimertinib _____.
 - a. Targets both the T790M mutation and wild-type EGFR
 - b. Is associated with about a 70% response rate
 - c. Is effective for patients with brain metastases
 - d. All of the above
 - e. Both b and c
3. Which of the following ALK inhibitors penetrates the central nervous system (CNS) well and thus exhibits significant activity in patients with NSCLC and CNS metastases?
 - a. Alectinib
 - b. Crizotinib
 - c. Both a and b
4. The anti-EGFR antibody necitumumab is approved by the FDA for use in combination with gemcitabine and cisplatin as first-line therapy for metastatic _____ NSCLC.
 - a. Squamous cell
 - b. Nonsquamous cell
 - c. Both a and b
5. Patients with nonsquamous lung cancer should be tested routinely for which of the following tumor genetic alterations?
 - a. ALK
 - b. EGFR
 - c. ROS1
 - d. All of the above
6. Patients who develop pneumonitis while receiving checkpoint inhibitor therapy _____.
 - a. Respond rapidly to corticosteroids
 - b. Should promptly receive antibiotics
 - c. Should promptly receive high-dose steroids
 - d. All of the above
7. The following statement is true regarding plasma detection of T790M mutations in NSCLC:
 - a. It is a sensitive method for identifying T790M mutations
 - b. If the result is negative, it can be concluded that the T790M mutation is not present in the tumor
 - c. An FDA-approved blood-based test is available
 - d. All of the above
 - e. Both a and c
8. The anti-VEGF antibody ramucirumab is FDA approved in combination with docetaxel for the second-line treatment of _____.
 - a. SCC of the lung
 - b. Adenocarcinoma of the lung
 - c. Small cell lung cancer
 - d. All of the above
 - e. Both a and b
9. Patients with a targetable EGFR or ALK mutation are less likely to respond to checkpoint inhibitors than are patients with pan-wild-type NSCLC, regardless of PD-L1 expression.
 - a. True
 - b. False
10. A majority of patients respond to checkpoint inhibitors in the refractory SCC setting.
 - a. True
 - b. False

EDUCATIONAL ASSESSMENT AND CREDIT FORM

Oncology Nursing Update Lung Cancer Edition — Volume 4, Issue 1

Research To Practice is committed to providing valuable continuing education for oncology clinicians, and your input is critical to helping us achieve this important goal. Please take the time to assess the activity you just completed, with the assurance that your answers and suggestions are strictly confidential.

PART 1 — Please tell us about your experience with this educational activity

How would you characterize your level of knowledge on the following topics?

4 = Excellent 3 = Good 2 = Adequate 1 = Suboptimal

	BEFORE	AFTER
Efficacy and side-effect data with the third-generation EGFR TKI osimertinib for patients with T790M mutation-positive advanced NSCLC and disease progression on an EGFR TKI	4 3 2 1	4 3 2 1
Activity and safety of alectinib for patients with ALK-rearranged metastatic NSCLC, including those with CNS metastases	4 3 2 1	4 3 2 1
Management of immune-related adverse events associated with immune checkpoint inhibitor therapy	4 3 2 1	4 3 2 1
Improvement in overall survival with pembrolizumab as first-line therapy for patients with advanced NSCLC and a PD-L1 tumor proportion score of 50% or higher	4 3 2 1	4 3 2 1
Role of plasma and urine detection for T790M mutations in patients with EGFR mutation-positive NSCLC	4 3 2 1	4 3 2 1

Practice Setting:

- Academic center/medical school Community cancer center/hospital Group practice
 Solo practice Government (eg, VA) Other (please specify).....

Approximately how many new patients with lung cancer do you see per year? patients

Was the activity evidence based, fair, balanced and free from commercial bias?

- Yes No

If no, please explain:

Will this activity help you improve patient care?

- Yes No Not applicable

If yes, how will it help you improve patient care?

Did the activity meet your educational needs and expectations?

- Yes No

If no, please explain:

Please respond to the following learning objectives (LOs) by circling the appropriate selection:

4 = Yes 3 = Will consider 2 = No 1 = Already doing N/M = LO not met N/A = Not applicable

As a result of this activity, I will be able to:

- Discuss the benefits and risks associated with systemic therapies used in the evidence-based treatment of lung cancer, including chemotherapy regimens, targeted biologic treatments and immunotherapeutic approaches. 4 3 2 1 N/M N/A
- Communicate the clinical relevance of tumor histology and commonly identified genetic abnormalities to patients with non-small cell lung cancer. 4 3 2 1 N/M N/A
- Educate patients receiving EGFR and ALK inhibitors about potential side effects, and provide preventive and emergent strategies to reduce or ameliorate these toxicities. 4 3 2 1 N/M N/A
- Develop an understanding of the mechanism of action, efficacy and safety/toxicities of anti-PD-1 checkpoint inhibitors to enable their appropriate integration into routine clinical practice. 4 3 2 1 N/M N/A
- Recognize the FDA approvals of the anti-angiogenic agents ramucirumab and necitumumab, and discern how these agents can be safely administered to appropriate patients with squamous and nonsquamous disease. 4 3 2 1 N/M N/A

EDUCATIONAL ASSESSMENT AND CREDIT FORM (continued)

What other practice changes will you make or consider making as a result of this activity?

What are the barriers to keep you from making a practice change based upon this educational activity?

What additional information or training do you need on the activity topics or other oncology-related topics?

Additional comments about this activity:

PART 2 — Please tell us about the faculty and editor for this educational activity

4 = Excellent 3 = Good 2 = Adequate 1 = Suboptimal

Faculty	Knowledge of subject matter				Effectiveness as an educator			
	4	3	2	1	4	3	2	1
David R Spigel, MD	4	3	2	1	4	3	2	1
Mollie Reed, MSN, RN, ACNP-BC	4	3	2	1	4	3	2	1
Lecia V Sequist, MD, MPH	4	3	2	1	4	3	2	1
Kelly EH Goodwin, MSN, RN, ANP-BC	4	3	2	1	4	3	2	1
Editor	Knowledge of subject matter				Effectiveness as an educator			
Neil Love, MD	4	3	2	1	4	3	2	1

Please recommend additional faculty for future activities:

Other comments about the faculty and editor for this activity:

REQUEST FOR CREDIT — Please print clearly

Name: Specialty:

Professional Designation:

MD DO PharmD NP CNS RN PA Other

Street Address: Box/Suite:

City, State, Zip:

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QID 1898

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