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/benefits of anti-PD-1 checkpoint inhibitors to enable appropriate integration into routine clinical practice.

• Recognize the FDA approval 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.

ONCC/ILNA CERTIFICATION INFORMATION

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

To review certification qualifications please visit ResearchToPractice.com/ONULung117/ILNA.

ONCC review is only for designating content to be used for recertification points and is not for CNE accreditation. CNE programs must be formally approved for contact hours by an acceptable accreditor/approver of nursing CE to be used for recertification by ONCC. If the CNE provider fails to obtain formal approval to award contact hours by an acceptable accreditor/approver, no information related to ONCC recertification may be used in relation to the program.

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 also includes links to relevant abstracts and full-text articles.

To receive credit, participants should read the learning objectives and faculty disclosures, listen to the audio tracks and complete the Post-test and Educational Assessment and Credit Form located on the back of this booklet or on our website at ResearchToPractice.com/ONULung117/CNE. A statement of credit will be issued only upon receipt of a completed Post-test with a score of 80% or better and a completed Educational Assessment and Credit Form. Your statement of credit will be mailed to you within 3 weeks or may be printed online.

This activity is supported by educational grants from AstraZeneca Pharmaceuticals LP, Boehringer Ingelheim Pharmaceuticals Inc, Celgene Corporation, Genentech BioOncology and Lilly.

There is no implied or real endorsement of any product by RTP or the American Nurses Credentialing Center.
This educational activity contains discussion of published and/or investigational uses of agents that are not indicated by the Food and Drug Administration. Research To Practice does not recommend the use of any agent outside of the labeled indications. Please refer to the official prescribing information for each product for discussion of approved indications, contraindications and warnings. The opinions expressed are those of the presenters and are not to be construed as those of the publisher or grantors.
EDITOR

Neil Love, MD
Research To Practice
Miami, Florida

CONTENT VALIDATION AND DISCLOSURES

Research To Practice (RTP) is committed to providing its participants with high-quality, unbiased and state-of-the-art education. We assess conflicts of interest with faculty, planners and managers of CNE activities. Conflicts of interest are identified and resolved through a conflict of interest resolution process. In addition, all activity content is reviewed by both a member of the RTP scientific staff and an external, independent reviewer for fair balance, scientific objectivity of studies referenced and patient care recommendations.

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.


RESEARCH TO PRACTICE STAFF AND EXTERNAL REVIEWERS — The scientific staff and reviewers for Research To Practice have no relevant conflicts of interest to disclose.

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™. 

Related Video Program

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


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

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 heavy smoker with multiple comorbidities achieves a complete response with a checkpoint inhibitor as fourth-line therapy for metastatic adenocarcinoma 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

Facebook.com/ResearchToPractice or Twitter @DrNeilLove
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
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?

<table>
<thead>
<tr>
<th>Activity</th>
<th>BEFORE</th>
<th>AFTER</th>
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</thead>
<tbody>
<tr>
<td>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</td>
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<td>4 3 2 1</td>
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<td>Activity and safety of alectinib for patients with ALK-rearranged metastatic NSCLC, including those with CNS metastases</td>
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<tr>
<td>Management of immune-related adverse events associated with immune checkpoint inhibitor therapy</td>
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<tr>
<td>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</td>
<td>4 3 2 1</td>
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<tr>
<td>Role of plasma and urine detection for T790M mutations in patients with EGFR mutation-positive NSCLC</td>
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</tbody>
</table>

**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:

<table>
<thead>
<tr>
<th>LO</th>
<th>4 = Yes</th>
<th>3 = Will consider</th>
<th>2 = No</th>
<th>1 = Already doing</th>
<th>N/M = LO not met</th>
<th>N/A = Not applicable</th>
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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

<table>
<thead>
<tr>
<th>Faculty</th>
<th>Knowledge of subject matter</th>
<th>Effectiveness as an educator</th>
</tr>
</thead>
<tbody>
<tr>
<td>David R Spigel, MD</td>
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<td>Mollie Reed, MSN, RN, ACNP-BC</td>
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<td>Lecia V Sequist, MD, MPH</td>
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<tr>
<td>Neil Love, MD</td>
<td>4 3 2 1</td>
<td>4 3 2 1</td>
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</tbody>
</table>

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: .....................................................................................

Telephone: ......................................................................................... Fax: ....................................................

Email: ......................................................................................................

Signature: ............................................................................................. Date: ....................................................

The expiration date for this activity is September 2018. To obtain a certificate of completion and receive credit for this activity, please complete the Post-test, fill out the Educational Assessment and Credit Form and fax both to (800) 447-4310, or mail both to Research To Practice, One Biscayne Tower, 2 South Biscayne Boulevard, Suite 3600, Miami, FL 33131. You may also complete the Post-test and Educational Assessment online at www.ResearchToPractice.com/ONULung117/CNE.