ENHANCING VALUE
IMPROVING OUTCOMES
ASTRO'S 58TH ANNUAL MEETING
Welcome
ASTRO News Briefing: Expanding Access to Care
Monday, September 26, 10:30-11:30am ET
Moderator: Brian Kavanagh, MD, FASTRO, University of Colorado

• Reducing Racial Disparities in Treatment for Early Stage Lung Cancer with a Multimodal Intervention
  Matthew Manning, MD, Cone Health Cancer Center, Greensboro, NC

• Outcomes in Elderly Stage I Non-Small Cell Lung Cancer in the SBRT Era: A SEER Analysis
  Andrew M. Farach, MD, Houston Methodist Hospital

• Survival with Stereotactic Body Radiation Therapy (SBRT) and Conventional Radiation Therapy (CRT) in Stage I NSCLC Patients in the Veterans Health Administration
  Matthew J. Boyer, MD, PhD, Duke University

• Radiotherapy Utilization in Middle Income Countries
  Elena Fidarova, MD, International Atomic Energy Agency, Vienna
Reducing Racial Disparities in Treatment for Early Stage Lung Cancer with a Multimodal Intervention

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Background

• Surgical resection (R) and stereotactic body radiotherapy (SBRT) in early stage lung cancer represent potentially curative treatments.

• Historically, controlling for age, comorbidities and other important factors, fewer black than white patients undergo curative surgery resulting in higher mortality.

• Accountability for Cancer Care through Undoing Racism and Equity (ACCURE) is an NIH sponsored multi-institutional trial designed to test a multimodal intervention to reduce racial disparities and increase treatment completion for all early stage breast and lung cancer.
Background

• The ACCURE multi-modal systems change consists of:
  • Real time registry with automated alerts for missed appointments and unmet milestones in expected care
  • Race-specific data feedback on treatment adherence
  • ACCURE nurse navigator trained in race-specific barriers with special training regarding trust, culturally appropriate communication, and Kleinman's explanatory model
  • Quarterly Health Equity Education Training (HEET) sessions for staff.
Materials/Methods

• Participants: White and African American patients with Stage 1-2 lung cancer
• Primary Outcome: Lung Resection Surgery or SBRT within 4 months of diagnosis
• 5-year interrupted time-series with an embedded randomized controlled trial

<table>
<thead>
<tr>
<th>Baseline</th>
<th>ACCURE</th>
<th>Control</th>
</tr>
</thead>
<tbody>
<tr>
<td>5 Years of retrospective data for participating cancer center populations obtained as a baseline group</td>
<td>Enrolled, consented RCT patients in the real time registry system randomized to:</td>
<td>Total cancer center population data during the ACCURE study to account for secular trends and possible spillover effect of the study intervention across the cancer center</td>
</tr>
<tr>
<td></td>
<td>ACCURE Navigator vs. Usual Care</td>
<td></td>
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</tbody>
</table>
Results: Treatment Rates by Race

<table>
<thead>
<tr>
<th></th>
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</thead>
<tbody>
<tr>
<td></td>
<td>R + SBRT</td>
<td>R</td>
<td>R + SBRT</td>
</tr>
<tr>
<td>Black</td>
<td>64%</td>
<td>55%</td>
<td>96%*</td>
</tr>
<tr>
<td>White</td>
<td>76%</td>
<td>61%</td>
<td>96%*</td>
</tr>
</tbody>
</table>

*p<0.05 compared to baseline

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**Graph 1:**
- **Baseline:** Black: 55%, White: 61%
- **ACCURE:** Black: 96%, White: 96%
- **Control:** Black: 85%, White: 87%

**Graph 2:**
- **Baseline:** Black: 55%, White: 61%
- **ACCURE:** Black: 96%, White: 96%
- **Control:** Black: 85%, White: 87%
Results

• Overall treatment improved significantly in the enrolled ACCURE intervention group and control group compared to baseline.

• The statistically significant treatment disparity also resolved.

• The surgical approach was the vehicle of improvement within the ACCURE intervention cohort.

• SBRT explained improved care and resolution of disparities in the overall cancer center populations.

• In the randomized controlled trial, comparing ACCURE navigator vs. usual care, there was elimination of disparity with high rates of treatment completion in both arms without statistically significant difference.
Conclusions

• In this study, the ACCURE intervention increased overall rates of treatment completion and eliminated treatment differences for blacks and whites with early stage lung cancer.

• A spillover effect was observed for the total population of participating cancer centers.

• Health Systems can eliminate racial disparity with systems change through engagement with community organizations:

  http://greensborohealth.org
  http://rei.racialequityinstitute.org
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• Radiotherapy Utilization in Middle Income Countries
  Elena Fidarova, MD, International Atomic Energy Agency, Vienna
Outcomes in Elderly Stage I Non-Small Cell Lung Cancer in the SBRT Era: A SEER Analysis

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Background & Purpose

% New Cases NSCLC by Age

% Total Cases Receiving SBRT by Year

SEER 18, Cancer StatFacts (2009-2013)

Corso et al, American Journal of Clinical Oncology (2014)
Purpose

To review outcomes in elderly stage I NSCLC based on treatment modality using the SEER database for patients treated between 2004 and 2012.
Method

• Retrospective population-based study
  • National SEER-18 Database
  • Biopsy-proven stage I NSCLC
  • Age 60+
  • 2004-2012
  • Excluded patients without definitive records for local therapy

• N = 62,213
Results

Number of Patients:

No Treatment = 7,373

Radiation Only: 11,589

Surgery Only: 41,509
Results

Absolute increase in OS at 23 months:
- Surgery: 5%
- Radiation: 19%

Absolute increase in CSS at 23 months:
- Surgery: 4%
- Radiation: 24%
Conclusions

• With advancing age, radiation replaces surgery as the most appropriate treatment modality for early-stage NSCLC.

• Concurrent with the adoption of SBRT as a community standard, both overall survival and lung-cancer specific survival have improved dramatically for patients age 60+ with stage I NSCLC patients treated with radiation alone.
  • OS at 23 months increased 19%
  • CSS at 23 months increased 24%

• SBRT may improve access to care.
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Survival with Stereotactic Body Radiation Therapy (SBRT) and Conventional Radiation Therapy (CRT) in Stage I NSCLC Patients in the Veterans Health Administration

M. J. Boyer¹, C. Williams², M. J. Kelley³, and J. K. Salama¹

¹Duke University Medical Center, Durham, NC, ²Durham Veterans Affairs Medical Center, Durham, NC, ³Durham VA Hospital and Duke University, Department of Medical Oncology, Durham, NC
Background: Stage I NSCLC

- Survival and tumor control following SBRT significantly greater than historical outcomes with conventionally fractionated RT

- At time of this analysis, direct comparison of the two regimens is lacking

<table>
<thead>
<tr>
<th>Treatment</th>
<th>3 year LC</th>
<th>Median Survival</th>
</tr>
</thead>
<tbody>
<tr>
<td>SBRT (54 Gy/3) – Timmerman</td>
<td>90.6%</td>
<td>48.1 months</td>
</tr>
<tr>
<td>CRT (70 Gy/35) – Bradley</td>
<td>63%</td>
<td>24 months</td>
</tr>
<tr>
<td>CRT (80.5 Gy/35) – Urbanic</td>
<td>64%</td>
<td>24 months</td>
</tr>
</tbody>
</table>
Methods

• VA Central Cancer Registry (VACCR) and Corporate Data Warehouse (CDW) from 2001-2010

• Patients
  • Clinical stage I non-small cell lung cancer
  • Conventional radiation treatment (CRT) – 20 or more fractions by procedural codes or direct documentation
  • Stereotactic body radiation therapy (SBRT) – SBRT procedural codes or direct documentation
Patients

Stage I NSCLC
n=14,177

Radiation
n=3,012

Conventional Fractionation (CRT) n=1,203

Stereotactic Body Radiation Therapy (SBRT) n=468

Radiation

Mean Age 72 years
Smoking History 89.4%
Male 98.6%
Stage IA 50.5%
Squamous cell 41.5%
Improved Survival in Radiation Cohort with Increased SBRT Utilization

<table>
<thead>
<tr>
<th>Year of Diagnosis</th>
<th>2001</th>
<th>2010</th>
<th>p value</th>
</tr>
</thead>
<tbody>
<tr>
<td>4 year overall survival</td>
<td>12.7%</td>
<td>28.5%</td>
<td>&lt;0.01</td>
</tr>
<tr>
<td>4 year lung cancer specific survival</td>
<td>33.9%</td>
<td>50.4%</td>
<td>&lt;0.01</td>
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</table>

<table>
<thead>
<tr>
<th>Radiation Type</th>
<th>2001</th>
<th>2010</th>
</tr>
</thead>
<tbody>
<tr>
<td>CRT</td>
<td>95.1%</td>
<td>4.9%</td>
</tr>
<tr>
<td>SBRT</td>
<td>39.7%</td>
<td>60.3%</td>
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</table>
Improved Survival Following SBRT

4 year OS

<table>
<thead>
<tr>
<th></th>
<th>SBRT</th>
<th>CRT</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>37.0%</td>
<td>18.8%</td>
</tr>
<tr>
<td>HR</td>
<td>0.60</td>
<td>(95% CI 0.54-0.68)</td>
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</tbody>
</table>

4 year LCSS

<table>
<thead>
<tr>
<th></th>
<th>SBRT</th>
<th>CRT</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>53.2%</td>
<td>28.3%</td>
</tr>
<tr>
<td>HR</td>
<td>0.48</td>
<td>(95% CI 0.38-0.60)</td>
</tr>
<tr>
<td>Variable</td>
<td>Cox Univariate Analysis</td>
<td></td>
</tr>
<tr>
<td>--------------------------------</td>
<td>-------------------------</td>
<td>-------------------------</td>
</tr>
<tr>
<td></td>
<td>HR</td>
<td>95% CI</td>
</tr>
<tr>
<td>SBRT vs CRT</td>
<td>0.60</td>
<td>0.54-0.68</td>
</tr>
<tr>
<td>PET vs No PET</td>
<td>0.80</td>
<td>0.72-0.88</td>
</tr>
<tr>
<td>Treatment Era</td>
<td>2001-2005</td>
<td>-</td>
</tr>
<tr>
<td>SCC vs Non-SCC</td>
<td>1.16</td>
<td>1.02-1.33</td>
</tr>
<tr>
<td>Stage IA vs IB</td>
<td>0.67</td>
<td>0.60-0.74</td>
</tr>
<tr>
<td>CCI</td>
<td>0</td>
<td>-</td>
</tr>
<tr>
<td></td>
<td>1</td>
<td>1.17</td>
</tr>
<tr>
<td></td>
<td>2</td>
<td>1.34</td>
</tr>
<tr>
<td>Age, per year</td>
<td>1.01</td>
<td>1.00-1.02</td>
</tr>
</tbody>
</table>
Conclusions

• Overall survival for Stage I NSCLC patients in the VHA treated with radiation more than doubled from 2001-2010

• Overall survival and lung cancer specific survival are significantly improved with SBRT compared to conventional fractionation

• Increased use of SBRT strongly associated with improved survival
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Radiotherapy Utilization in Middle Income Countries: International Atomic Energy Agency Study

E. Rosenblatt¹, E. Fidarova¹, E. Zubizarreta¹, M. B. Barton², W. MacKillop³, G. W. Jones⁴, L. A. Cordero⁵, J. Yarney⁶, G. C. Lim⁷, J. Gan⁸, V. Cernea⁹, S. Stojanovic-Rundic¹⁰, P. Strojan¹¹, L. Kochbati², and A. Quarneti¹³

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Background

• Planning national radiotherapy (RT) services is a complex task and above all, requires reliable data on the demand for RT

• Unmet need for RT can be estimated based on knowledge about optimal and actual radiotherapy utilization (oRTU and aRTU)

• Data on RTU is mainly available for high-income countries (HICs); for low- and middle-income countries (LMICs) more evidence is needed

• International Atomic Energy Agency (IAEA) conducted a study on RTU in nine MICs around the world
Method

- 9 MICs from Africa, Asia, Latin America and Europe (World Bank classification of economies, 2012)

- oRTU calculated using epidemiological evidence-based method:
  - Cancer incidence data from GLOBOCAN 2012
  - Radiotherapy indication trees from the CCORE group*

- aRTU calculated using:
  - Data on total number of cases treated with RT in 2012 (provided by participating countries)
  - Total number of new cancer cases diagnosed in 2012 (GLOBOCAN 2012)

- Unmet RT need calculated using:
  - oRTU and aRTU country data

*Delaney et al, Cancer 2005
*Barton et al, Radiother Oncol 2014
Results

- Unmet RT need:
  - 82.3% (GHA) to 18% (TUN)
- Most difficult situation (unmet RT need >80%) in countries with large population and low number of teletherapy machines (GHA, PHI)

Median oRTU rate: 52%
Median aRTU rate: 28%

Actual RTU vs. optimal RTU rates in 9 MICs

Correlation between % unmet RT need and number of TT machines/1000 cancer cases
Conclusions

• Optimal RTU rates in MICs are similar to those in HICs

• Nearly half of eligible cancer patients in nine MICs do not have access to RT

• Underutilization of RT could be explained by inadequate radiotherapy capacity and obstacles in access to existing RT services

• National radiotherapy services should be rationally planned in order to improve access to RT
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Q & A

Online attendees: Please use the question function to submit questions.
Additional questions and interview requests:

ASTRO’s On-site Press Office in Boston
Room 151A, Boston Convention and Exhibition Center
September 25-27, 8am-4pm ET; September 28, 8am-12pm ET
703-286-1600
press@astro.org

Slides, photos, and audio will be available following the briefing at
www.astro.org/AMpress