

Early Stage Lung Cancer Survival in Kentucky: Exploring the Influence of Smoking Cessation and Mental Health Status

Claudia Hopenhayn, MPH, PhD

W. Jay Christian, MPH

Amy Christian, MSPH

Jaclyn Nee, MPH

Jamie Studts, PhD

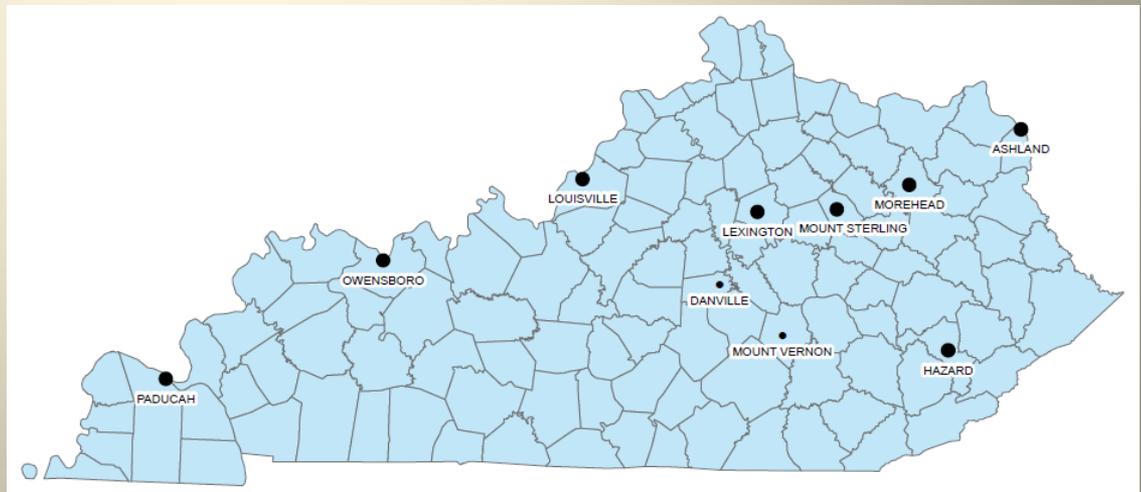
Tim Mullett, MD

Background –U.S.

- Estimated 221,130 new cases in U.S. for 2011
- 14% of all diagnosed cancers
- Relative survival:
 - 1 year: increased from 35% in 1975-79 to 43% in 2003-06
 - 5 year:
 - » Overall = 16%
 - » Localized = 53%
- Early stage only 15% of cases
- But...that represents about 33,170 cases
 - Total ovarian and uterine cancers combined

Background - Study

- *Lung cancer survival in Kentucky: a multifactorial approach (Kentucky Lung Cancer Program)*
- Ongoing at 9 sites, through Kentucky Clinical Trials Network (KCTN)
- Investigating variations in survival among early stage lung cancer patients
 - Smoking & ETS
 - Geography
 - Health behaviors
 - Family history
 - SES
 - Comorbidities
 - Occupation
 - Psychosocial



Eligibility Criteria

- Post-resection, histologically-confirmed stage
- Stages I, II (and IIIa)
- No prior history of cancer in last 5 years
- Kentucky residents
- Adults (≥ 18)
- Recruited at study sites

Research Protocol

- **Enrollment, consent, Q1 (max 10 wks after dx)**
 - Demographics, SES
 - Tobacco use (lifetime and current for cigarettes, cigars, pipes, marijuana)
 - Family history of cancer (all types)
 - ETS exposure (lifetime and current)
 - Occupational history
 - Comorbidities
 - Alcohol consumption
 - Potential exposure to lung carcinogens
 - Social support
 - Diet and exercise

Research Protocol (cont)

Q2 at 3 months post-enrollment

- Current tobacco use
- Current ETS exposure
- Alcohol consumption
- HADS (anxiety and depression)
- IES-R (distress)
- Diet and exercise

Q3 at 6 months post-enrollment

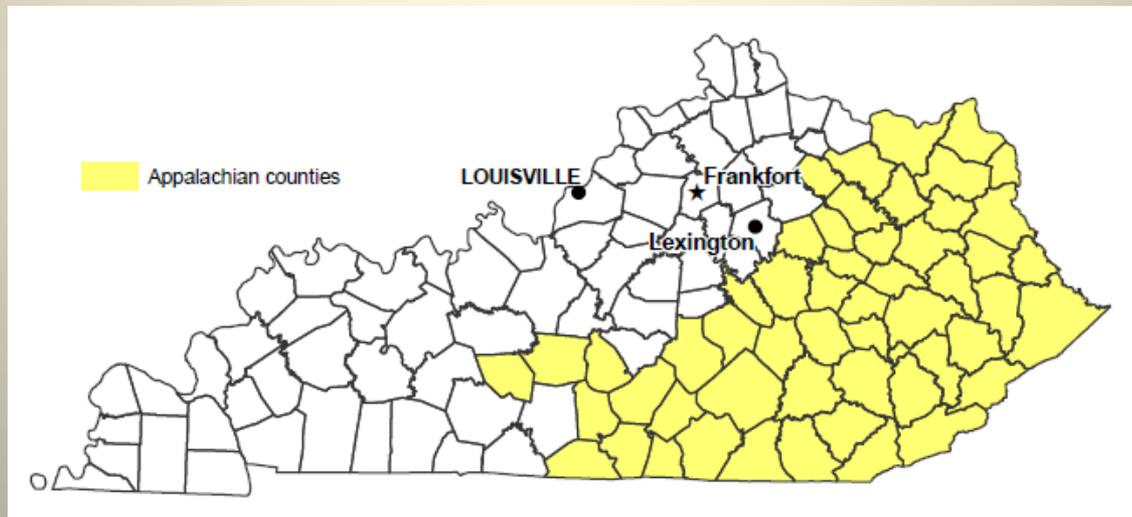
- Current tobacco use
- Current ETS exposure
- Alcohol consumption
- HADS (anxiety and depression)
- Diet and exercise

A yellow starburst graphic with a black outline, containing text.

Linked to
Kentucky
Cancer
Registry
data

Today's Presentation: 3 Factors

- **Smoking cessation** after diagnosis
- Mental health: **anxiety and depression**
- Residence in **Appalachian Kentucky**



Smoking Cessation

- Evidence of **better survival among lung cancer patients who quit smoking** after diagnosis (e.g., Baser et al. 2006, Sardari Nia et al. 2005, Dresler 2003)
- Little research on **smoking cessation patterns among lung cancer patients**
- This study collects data on **smoking at several time points:**
 - Lifetime history
 - 6 months prior to enrollment (Q1)
 - At enrollment (Q1)
 - 3 months post-enrollment (Q2)
 - 6 months post-enrollment (Q3)

Smoking Cessation, cont.

- Of 112 patients with complete smoking data:
 - 58 had quit smoking at least 6 months before enrollment
 - 30 out of 54 smokers quit smoking by 6 months post-enrollment:

N	6-months prior to enrollment?	At enrollment	3 months post-enrollment	6 months post-enrollment
26	Yes	No	No	No
15	Yes	Yes	Yes	Yes
5	Yes	No	No	Yes
3	Yes	No	Yes	Yes
2	Yes	Yes	No	No
1	Yes	No	Yes	No
1	Yes	Yes	No	Yes
1	Yes	Yes	Yes	No

Environmental Tobacco Smoke (ETS) and Smoking Patterns

- ETS exposure at home at enrollment is associated with continuing to smoke at 6 months post-enrollment

ETS at home	Smoking Status Post-enrollment		
	Former	Quit	Smoking
No	35 46.05	26 34.21	15 19.74
Yes	1 8.33	3 25.00	8 66.67

P=0.02

Anxiety & Depression

- Research demonstrates **higher rates of anxiety and depression among smokers** (Bonnet et al. 2005, Covey et al. 1998)
 - Smokers with **higher levels of anxiety and depression** also have **more difficulty quitting**
- **Lung cancer patients** also experience high levels of anxiety and depression (Massie 2004, Uchitomi et al. 2003)
- This study included the **Hospital Anxiety and Depression Scale (HADS)** at Q2

Anxiety & Depression, cont.

- **The HADS contains 14 questions (coded 0-3).**

Some examples:

- I feel tense or “wound up”
 - Most of the time
 - A lot of the time
 - From time to time, occasionally
 - Not at all
- I can laugh and see the funny side of things
 - As much as I always could
 - Not quite so much now
 - Definitely not so much now
 - Not at all
- Subscales for anxiety and depression separately
 - 0-7 = non case
 - 8-10 = borderline
 - 11+ = case

HADS Sub-scales & Smoking

- Mean **depression** score **higher among continuing smokers** (at 6 months post-enrollment):
 - Former (n=45) 4.8
 - Quit (n=30) 4.9
 - Smoking (n=24) 8.2 p=0.001
- Mean **anxiety** score **higher among continuing smokers**:
 - Former (n=45) 5.7
 - Quit (n=30) 7.3
 - Smoking (n=24) 10.6 p<0.0001

HADS Sub-scales & Smoking

- **Depression** (HADS ≥ 11) associated with continued smoking (comparing quitters to continuing):

- Normal/borderline: 64 vs. 36%

- Depression/severe: 20 vs. 80%

P<0.02

Anxiety (HADS ≥ 11)

- Normal/borderline: 64 vs. 36%

- Anxiety/severe: 39 vs. 61%

P<0.10

Appalachia

- **The Appalachian region** is known for poor health, low educational attainment, and high poverty
- Previous analysis demonstrates **lower survival** among Appalachian lung cancer patients **relative to the rest of Kentucky**
 - HR=1.25 after adjustment for several other relevant factors (Christian & Hopenhayn 2010)
- **Almost two-thirds (64%) of our sample** are residents of Appalachia

Appalachia, Smoking and Anxiety/Depression

- Patients from Appalachia seem to be **less likely to quit smoking** after diagnosis ($p=0.015$):
 - Appalachian: 57.6% (19/33)
 - Non-Appalachian: 23.1 % (5/21)
- But patients from Appalachia
 - did **not** have higher HADS score for anxiety or depression
 - were **not** more likely to be exposed to ETS at home

Multivariate Regression

- Preliminary multivariate analysis suggests **Appalachian residence is associated with continued smoking** at 6 months post-enrollment, even after adjustment for other significant factors:
 - Stage of disease
 - Presence of comorbid conditions
 - Anxiety & depression
 - ETS exposure at home
- Age and gender were not significant predictors of continued smoking after adjustment for the above factors

Conclusions

- So far, 21% of early lung cancer patients were smoking 6-8 months after diagnosis
- ETS at home was associated with continued smoking after diagnosis
- Continuing smokers were more likely to have higher HADS total scores
- Appalachian study participants were more likely to continue to smoke, but not to be exposed to ETS
- Anxiety/depression, stage, ETS, Appalachian residence and co-morbidities all seem to be independently associated with continued smoking