

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

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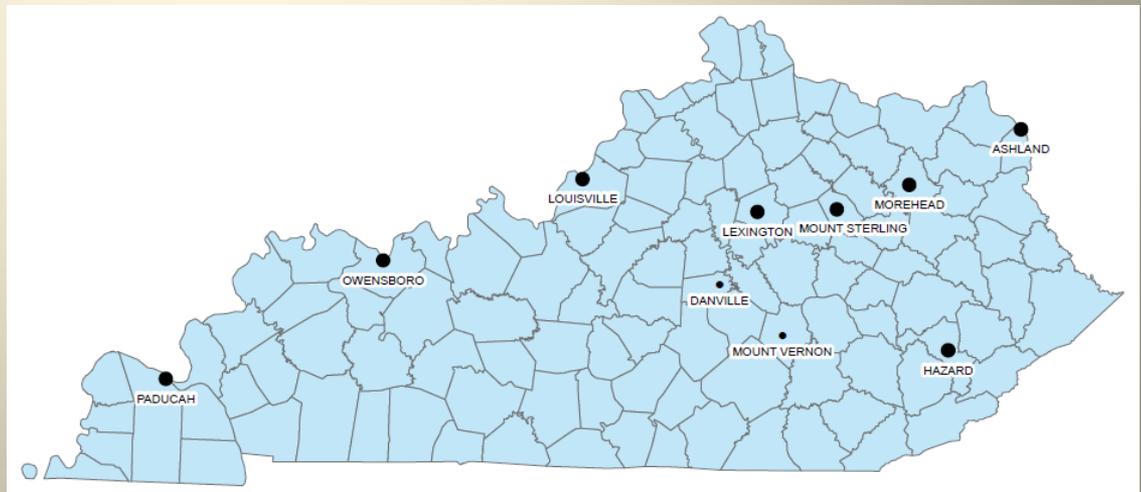
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Background –U.S.

- 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

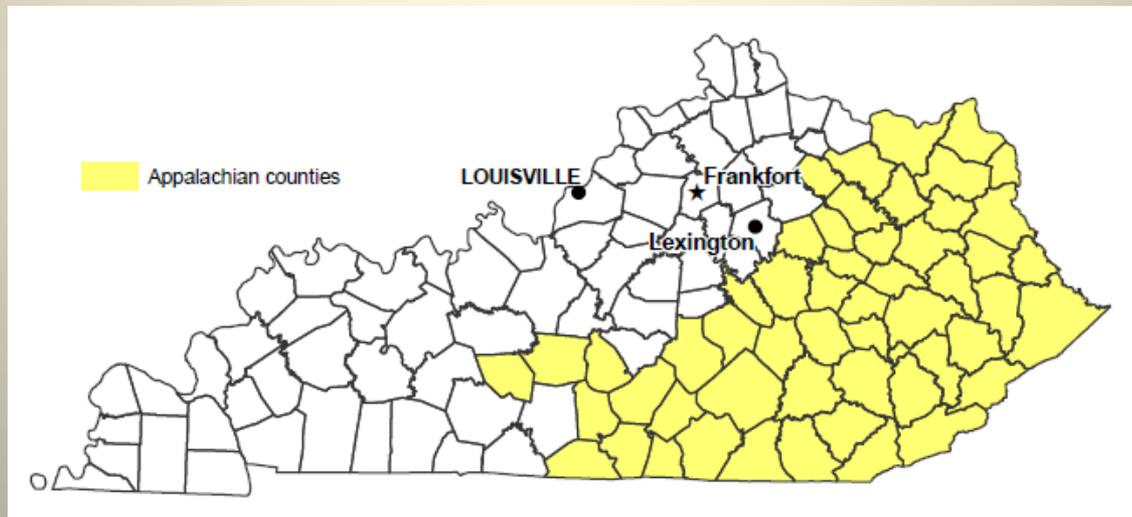
- Current tobacco use
- Current ETS exposure
- Alcohol consumption
- HADS (anxiety and depression)
- Diet and exercise



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