Cancer Patient Awareness and Attitudes about Tobacco Cessation

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Conflict of Interest Disclosure
Lawson Eng, MD, FRCPC

Has no real or apparent conflicts of interest to report.
Presentation Outline:

• Continued Smoking and Cancer Outcomes
• Awareness of the Harms of Continued Smoking
• Cancer Patient Perceptions of Continued Smoking
• Patient Preferences Towards Tobacco Assessment
• Second-Hand Smoke and Smoking Cessation
• Take Home Points

• Questions and Discussion
Introduction

- Smoking is a known risk factor for cancer
- Many cancer patients have a smoking history
  - Up to 45% continue to smoke after diagnosis, and up to 40% of ex-smokers relapse after diagnosis
- Continued smoking after diagnosis leads to poorer treatment efficacy, increased complications, reduced overall survival, and poor quality of life
The Bigger Picture on Cancer Survivors

The Bigger Picture

  - 475 low risk
  - 636 intermediate risk
  - 243 high risk

Cause of Death in Low Risk Pts


Presented By Graham Warren at 2013 ASCO Annual Meeting
# The Bigger Picture

**Cause of Death** | **% of Total Deaths** | **HR for Current Smokers**
--- | --- | ---
Cardiopulmonary disease | 50.3% | 3.05
Other | 15.5% | 5.52
Gastrointestinal cancer | 12.4% | 4.09
Lung cancer | 9.9% | 
Other cancers | 3.1% | 
Prostate cancer | 8.7% | 

Treatment (surgery, radiotherapy, androgen deprivation and duration) all focus on optimizing a relatively low percentage of deaths.


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*Presented By Graham Warren at 2013 ASCO Annual Meeting*
Introduction

• Smoking is a known risk factor for cancer

• Many cancer patients have a smoking history
  – Up to 45% continue to smoke after diagnosis, and up to 40% of ex-smokers relapse after diagnosis

• Continued smoking after diagnosis leads to poorer treatment efficacy, increased complications, reduced overall survival, and poor quality of life

• Many clinicians are aware of the benefits of quitting and feel that cessation is important
### Initial Tobacco Assessment Practices
(Always/Most of the time)

<table>
<thead>
<tr>
<th>Parameter</th>
<th>IASLC</th>
<th>ASCO</th>
</tr>
</thead>
<tbody>
<tr>
<td>Ask if use tobacco</td>
<td>90.2%</td>
<td>89.5%</td>
</tr>
<tr>
<td>Ask if will quit</td>
<td>78.9%</td>
<td>80.2%</td>
</tr>
<tr>
<td>Advise to quit</td>
<td>80.6%</td>
<td>82.4%</td>
</tr>
<tr>
<td>Discuss medications</td>
<td>40.2%</td>
<td>44.3%</td>
</tr>
<tr>
<td>Actively treat</td>
<td>38.8%</td>
<td>38.6%</td>
</tr>
</tbody>
</table>
## Tobacco Assessment Perceptions
(Agree/Strongly Agree)

<table>
<thead>
<tr>
<th>Parameter</th>
<th>IASLC</th>
<th>ASCO</th>
</tr>
</thead>
<tbody>
<tr>
<td>Tobacco affects outcomes</td>
<td>91.7%</td>
<td>87.0%</td>
</tr>
<tr>
<td>Cessation should be standard</td>
<td>90.2%</td>
<td>85.8%</td>
</tr>
<tr>
<td>“I have adequate training”</td>
<td>32.7%</td>
<td>29.1%</td>
</tr>
<tr>
<td>Clinicians need more training</td>
<td>82.3%</td>
<td>75.3%</td>
</tr>
</tbody>
</table>

Warren GW et al. 2013 ASCO Annual Meeting

Presented By Graham Warren at 2013 ASCO Annual Meeting
Introduction

- Smoking is a known risk factor for cancer

- Many cancer patients have a smoking history
  - Up to 45% continue to smoke after diagnosis, and up to 40% of ex-smokers relapse after diagnosis

- Continued smoking after diagnosis leads to poorer treatment efficacy, increased complications, reduced overall survival, and poor quality of life

- Many clinicians are aware of the benefits of quitting and feel that cessation is important
  - Little is known about the patient perspective on awareness

- Patients are aware of the smoking and cancer risk but less has been studied on awareness of benefits/harms after a diagnosis
Objectives of Study

Overall Research Question:
What is the awareness of the harms of continued smoking among cancer survivors?

Aims:
1. To identify awareness of the harms of continued smoking among cancer survivors at Princess Margaret Cancer Centre
2. To identify socio-demographic and clinico-pathological factors associated with patient awareness
3. To determine if patient awareness is associated with tobacco cessation after a cancer diagnosis
Patient Awareness of the Harms of Continued Smoking

- Cross Sectional Survey Study (2014-2016) (n=1118) across all disease sites
- Assessed patient awareness of the harms of continued smoking on 6 cancer outcomes:
  - Impact on surgical complications
  - Impact on side-effects from radiation therapy
  - Impact on quality of life after systemic therapy
  - Treatment efficacy
  - Prognosis
  - Development of second primary cancers
- Patients provided with 5 point Likert scale (Disagree to Agree) and “Don’t Know” option for each statement
Patient Awareness of the Harms of Continued Smoking

All Patients Included in Analysis
n = 1118

Current Smokers
n = 261 (23%)
- Continued Smoking
  n = 119
- Quit Smoking
  n = 142

Ex-Smokers
n = 367 (33%)

Never Smokers
n = 490 (44%)

Distribution by disease site: Lung (23%), Head and Neck (27%), Non-tobacco related cancers (50%)

86% of patients curative at diagnosis and 78% curative at follow-up
Are Patients Aware that Smoking is Harmful?

<table>
<thead>
<tr>
<th>Statement on Harms of Continued Smoking</th>
<th>Agree</th>
<th>Don’t Know</th>
<th>Disagree</th>
</tr>
</thead>
<tbody>
<tr>
<td>Smoking Increases Surgical Complications</td>
<td>36%</td>
<td>46%</td>
<td>18%</td>
</tr>
<tr>
<td>Smoking Increases Radiation Side Effects</td>
<td>27%</td>
<td>54%</td>
<td>18%</td>
</tr>
<tr>
<td>Smoking Reduces Quality of Life After Chemotherapy</td>
<td>37%</td>
<td>43%</td>
<td>20%</td>
</tr>
<tr>
<td>Smoking Reduces Efficacy of Chemotherapy/Radiation</td>
<td>31%</td>
<td>49%</td>
<td>20%</td>
</tr>
<tr>
<td>Smoking Increases Risk of Death</td>
<td>45%</td>
<td>33%</td>
<td>22%</td>
</tr>
<tr>
<td>Smoking Increases Risk of Second Primary Cancers</td>
<td>48%</td>
<td>30%</td>
<td>22%</td>
</tr>
</tbody>
</table>

- Most patients self-report either not being aware of or disagreeing that smoking is harmful on outcomes
- More patients were aware of the impact of continued smoking on prognosis versus its impact on treatment related outcomes
- Being a current smoker at diagnosis, exposure to second-hand smoke and having a non-tobacco related cancer were each associated with increased unawareness of some of these outcomes (P < 0.05)
- Among current smokers, smoking less, having curative/localized disease were each associated with less awareness (P < 0.05)

Eng et al, ASCO 2016
What About Their Perceptions?

- Cross-Sectional Survey Study (2015-2016) surveying 1121 patients (261 current smokers at Dx, 50% had lung or head and neck cancer)
- Outcomes: Smoking cessation among smokers at diagnosis
- Predictors: Perceptions of the harms of continued smoking on quality of life, overall survival and fatigue on a 5 point Likert scale

<table>
<thead>
<tr>
<th>Variable</th>
<th>Comparison</th>
<th>% Believing Worsens</th>
<th>Multivariate Analysis</th>
</tr>
</thead>
<tbody>
<tr>
<td>Quality of Life</td>
<td>Worsens vs No Effect/Improves</td>
<td>68%</td>
<td>aOR (95% CI)</td>
</tr>
<tr>
<td>Overall Survival</td>
<td>Worsens vs No Effect/Improves</td>
<td>72%</td>
<td>3.35 (1.90 to 5.91)</td>
</tr>
<tr>
<td>Fatigue</td>
<td>Worsens vs No Effect/Improves</td>
<td>69%</td>
<td>2.87 (1.68 to 4.91)</td>
</tr>
</tbody>
</table>

- Most patients perceived that smoking can worsen cancer outcomes
- Patient perceptions were consistently associated with smoking cessation after diagnosis

What About Their Perceptions?

- What factors predict for reduced risk perceptions among patients?

<table>
<thead>
<tr>
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<th>Multivariate Analysis</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
<td>aOR (95% CI)</td>
</tr>
<tr>
<td><strong>Outcome: Perceiving Smoking Worsens Quality of Life</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Pack Years Smoked</td>
<td>Per Pack-Year increase</td>
<td>0.99 (0.98 to 0.99)</td>
</tr>
<tr>
<td><strong>Outcome: Perceiving Smoking Worsens Overall Survival</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Pack Years Smoked</td>
<td>Per Pack-Year increase</td>
<td>0.99 (0.98 to 0.99)</td>
</tr>
<tr>
<td><strong>Outcome: Perceiving Smoking Worsens Fatigue</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Pack Years Smoked</td>
<td>Per Pack-Year increase</td>
<td>0.99 (0.98 to 0.99)</td>
</tr>
<tr>
<td>Having an Annual Physical</td>
<td>Yes vs No</td>
<td>2.00 (1.39 to 2.94)</td>
</tr>
</tbody>
</table>

- Patients with a greater smoking history were more likely to have reduced risk perceptions of smoking on cancer outcomes

Do Patients Want to be Screened?

- Cross-sectional survey of 501 cancer patients (2016-2017); 21% current smokers

<table>
<thead>
<tr>
<th>Response</th>
<th>All Patients</th>
<th>Current Smokers</th>
<th>Ex/Never Smokers</th>
<th>P Value</th>
</tr>
</thead>
<tbody>
<tr>
<td>Only at first visit</td>
<td>40%</td>
<td>22%</td>
<td>45%</td>
<td>&lt;0.01</td>
</tr>
<tr>
<td>At a few visits</td>
<td>32%</td>
<td>35%</td>
<td>31%</td>
<td></td>
</tr>
<tr>
<td>Half of visits or more</td>
<td>29%</td>
<td>42%</td>
<td>24%</td>
<td></td>
</tr>
</tbody>
</table>

- Lack of regular follow-up screening in current smokers for smoking status

<table>
<thead>
<tr>
<th>Question</th>
<th>All Patients</th>
<th>Current Smokers</th>
<th>Ex/Never Smokers</th>
<th>P Value</th>
</tr>
</thead>
<tbody>
<tr>
<td>Should smoking status be assessed at the first visit?</td>
<td>95%</td>
<td>89%</td>
<td>97%</td>
<td>0.003</td>
</tr>
<tr>
<td>Should smoking status be assessed at every clinic visit?</td>
<td>58%</td>
<td>51%</td>
<td>60%</td>
<td>0.09</td>
</tr>
<tr>
<td>I am comfortable with healthcare providers asking me about my tobacco use</td>
<td>96%</td>
<td>88%</td>
<td>98%</td>
<td>&lt;0.001</td>
</tr>
<tr>
<td>I feel that it is important that health care providers know if I use tobacco</td>
<td>98%</td>
<td>99%</td>
<td>98%</td>
<td>0.37</td>
</tr>
</tbody>
</table>

- Most patients feel assessment is important and should at least be done at first visit

L Eng et al. ESMO Sept 2017, ASCO Survivorship 2018
How and When to be screened?

**Options for Assessment**

<table>
<thead>
<tr>
<th>Option</th>
<th>%</th>
</tr>
</thead>
<tbody>
<tr>
<td>Oncologist/Physician Asking Me</td>
<td>88%</td>
</tr>
<tr>
<td>Other Healthcare Provider Asking Me</td>
<td>44%</td>
</tr>
<tr>
<td>Assessment through paper questions</td>
<td>29%</td>
</tr>
<tr>
<td>Assessment through electronic surveys</td>
<td>32%</td>
</tr>
</tbody>
</table>

**Options for when to discuss smoking cessation**

<table>
<thead>
<tr>
<th>Option</th>
<th>%</th>
</tr>
</thead>
<tbody>
<tr>
<td>At the first visit</td>
<td>76%</td>
</tr>
<tr>
<td>After treatments has started</td>
<td>7%</td>
</tr>
<tr>
<td>After treatments or surgery is completed</td>
<td>5%</td>
</tr>
<tr>
<td>Other</td>
<td>12%</td>
</tr>
</tbody>
</table>

- Patients preferred being asked about smoking status through their physician.
- Patients preferred discussing about tobacco cessation during the first clinic visit.

L Eng et al. ESMO Sept 2017, ASCO Survivorship 2018
By systematically offering a smoking cessation intervention to every ambulatory cancer patient, the Regional Cancer Program Smoking Cessation Initiative will help to ensure that cancer patients in Ontario achieve the best possible health benefits from their cancer treatments.

Regional cancer centers started to routinely screen new patients on their smoking status at first clinic visit as of late 2013.
Bridging the Gap to Practice

• Development of UHN-PMCC Smoking Cessation Program (2014)

  - Completed by all new PMCC patients
  - Routine Statistics captured for CCO
  - Part of all cancer centres starting in late 2013
Bridging the Gap to Practice

• Development of UHN-PMCC Smoking Cessation Program (2014)

To be completed by healthcare providers:

IF NOT READY TO QUIT:
  ❖ Patient accepted information package Y N

IF READY TO QUIT:
  ❖ Patient accepted Pharmacy referral
  ❖ Patient accepted Smokers’ Helpline referral
  ❖ Patient accepted CAMH referral
  ❖ Patient accepted Other: ___________
  ❖ Patient not ready to accept referral

• Point of Care Referral to Cessation Resources

1) Pharmacy Referral – Counselling + Meds
2) Smoker’s Helpline
3) CAMH – Expedited Counselling within 2 weeks of their first PMCC appointment

Dr. Peter Selby - CAMH
Translating Knowledge to Practice

- Can we improve patient screening and referral rates?
- Development of CEASE (Smoking Cessation E-referral System) – Funded by OICR-CCO Grant (2015)
- Point-of-care screening, education and automated referral system at first visit using iPAd
Translating Knowledge to Practice

- Evaluating impact of CEASE on screening and referral rates
- Interrupted time series analysis: 6 months (PRE), 8 month transition period, 6 month (POST)

<table>
<thead>
<tr>
<th></th>
<th>Pre-Implementation (n=5343)</th>
<th>Post-Implementation (n=5383)</th>
<th>P Value</th>
</tr>
</thead>
<tbody>
<tr>
<td>Screening Rates</td>
<td>44%</td>
<td>66%</td>
<td>&lt;0.01</td>
</tr>
<tr>
<td>Referrals Offered</td>
<td>19%</td>
<td>99%</td>
<td>&lt;0.01</td>
</tr>
<tr>
<td>Accepted Referrals</td>
<td>41%</td>
<td>20%</td>
<td>&lt;0.01</td>
</tr>
<tr>
<td>Accepted Referrals Among Interested</td>
<td>8%</td>
<td>20%</td>
<td>&lt;0.01</td>
</tr>
<tr>
<td>Engagement with Resource</td>
<td>0%</td>
<td>78%</td>
<td>&lt;0.001</td>
</tr>
</tbody>
</table>

- Increased screening and referral rates, but less accepted referrals
- Overall increased engagement with selected cessation resource

ME Giuliani et al. JMIR April 2019
Translating Across Institutions

- Can we expand this platform to other centres and programs?

CEASE at PMCC Oncology Program

CEASE at OCC Oncology Program

CEASE at SMH Oncology Program

CEASE at Lung Cancer Screening Program

SMH Inner City Family Health Team

- Funded by Division Strategic Priority Fund (Nov 2017) and CCSRI Knowledge to Action Grant. (Oct 2017). Ongoing project

T. Afazzal, L Chen et al ASCO Survivorship 2018
Can we be doing more for patients?

The Role of Second-Hand Smoke
Lung Cancer Diagnosis

Patient

Smoke

Stress
Social Support
Other Social Factors

Smoker

Nicotine Dependence

Household & Spouse Smoking

Social Smoking Environment

Peer Smoking
Objectives of Study

Overall Research Question:
What is the effect of the second hand smoke on smoking cessation rates in cancer patients?

Aims:

1. To identify smoking cessation rates after cancer diagnosis in Princess Margaret Cancer Centre patients

2. To identify whether second hand smoke influences smoking cessation in (i) lung, (ii) head and neck, and (iii) non-tobacco related cancers

3. To determine if there are any temporal relationships between cancer diagnosis and smoking cessation
Three Studies

• Lung Cancer: 2011-2012

• Head and Neck Cancer: 2011-2012

• Non-Tobacco Related Cancers: 2012-2014
  – Eng et al, Cancer. 2015 Aug 1;121(15):2655-63
Research Methodology

Princess Margaret Cancer Centre

Lung Cancer Cohort
- Baseline Questionnaire at diagnosis (2006 – 2011): Socio-demographics, smoking history, co-morbidities

Head & Neck Cohort

Non-TRC Patients
- One Time Questionnaire Summer 2012/13 (n=926)
  Combines both baseline and follow-up questions

SAS Enterprise 9.2
1) Multivariate Logistic Regression Analysis of Second Hand Smoke and Smoking Cessation
2) Kaplan Meier Curves: Time to Quitting analysis and Cox-Proportional Hazard Models
Lung Cancer Cohort

Completed Baseline and Follow Up Questionnaire
n = 721

Current Smokers
n = 242 (34%)
- Continued Smoking 44%
- Quit Smoking 56%

Ex-Smokers
n = 337 (46%)
- Relapsers 1%
- Continued Quitters 99%

Never Smokers
n = 142 (20%)
- Started Smoking 0%
- Remained Abstinent 100%
### The Role of SHS in Lung Cancer

<table>
<thead>
<tr>
<th>Variable</th>
<th>Comparison</th>
<th>Univariate Analysis</th>
<th>Multivariate Analysis*</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
<td>OR (95% CI)</td>
<td>P Value</td>
</tr>
<tr>
<td></td>
<td></td>
<td>aOR (95% CI)</td>
<td>P Value</td>
</tr>
<tr>
<td>Home Exposure</td>
<td>No vs Yes</td>
<td>5.69 (2.72-11.90)</td>
<td>4.7E-8</td>
</tr>
<tr>
<td></td>
<td></td>
<td>6.18 (2.83-13.47)</td>
<td>7.3E-8</td>
</tr>
<tr>
<td>Spousal Smoking</td>
<td>No vs Yes</td>
<td>5.93 (2.73-12.90)</td>
<td>2.9E-6</td>
</tr>
<tr>
<td></td>
<td></td>
<td>6.01 (2.63-13.76)</td>
<td>1.5E-5</td>
</tr>
<tr>
<td>Peer Smoking</td>
<td>Less than a few vs More than a few</td>
<td>2.65 (1.47-4.77)</td>
<td>1.1E-4</td>
</tr>
<tr>
<td></td>
<td></td>
<td>2.49 (1.33-4.66)</td>
<td>0.008</td>
</tr>
<tr>
<td>Home Exposure Hours</td>
<td>0 hours vs 5+ hours</td>
<td>14.38 (4.16-49.71)</td>
<td>5.6E-7</td>
</tr>
<tr>
<td></td>
<td>1-4 hours vs 5+ hours</td>
<td>3.83 (0.88-16.71)</td>
<td>5.86 (1.05-32.59)</td>
</tr>
<tr>
<td></td>
<td></td>
<td>21.45 (4.85-94.93)</td>
<td>2.3E-6</td>
</tr>
<tr>
<td></td>
<td></td>
<td>5.86 (1.05-32.59)</td>
<td>2.3E-6</td>
</tr>
<tr>
<td>Second Hand Smoke Risk</td>
<td>0 vs 1</td>
<td>2.98 (1.61-5.50)</td>
<td>1.1E-7</td>
</tr>
<tr>
<td>Score</td>
<td></td>
<td>3.06 (1.59-5.86)</td>
<td>2.9E-6</td>
</tr>
<tr>
<td></td>
<td>0 vs 2</td>
<td>7.62 (2.62-22.14)</td>
<td>8.82 (2.73-28.54)</td>
</tr>
<tr>
<td></td>
<td></td>
<td>9.57 (2.50-36.64)</td>
<td>2.9E-6</td>
</tr>
<tr>
<td></td>
<td>0 vs 3</td>
<td>10.32 (2.80-38.09)</td>
<td>8.82 (2.73-28.54)</td>
</tr>
</tbody>
</table>

*Multivariate results are adjusted for depression

- Second hand smoke (SHS) is an exceedingly strong predictor of smoking cessation in lung cancer patients
- Dose effect observed based on hours of exposure and cumulative exposure
Time to Quitting Analysis

- Our current smoker population over time based on continued smoking rates

- Now, let’s segregate by predictor variables (e.g., home smoking)
• Our current smoker population over time based on continued smoking rates

• Most quitting (>65%) occurred in the peri-diagnosis period

• Interventions should target this period
The same trend exists among our other SHS variables.
Head and Neck Quit Rates

Completed Baseline and Follow-Up Questionnaire
n = 531

Current Smokers
n = 145 (27%)
- Continued Smoking 50%
- Quit Smoking 50%

Ex-Smokers
n = 153 (29%)
- Relapsed 2%
- Continued Quitting 98%

Never Smokers
n = 233 (44%)
- Started Smoking 0%
- Remained Abstinent 100%

- In head and neck cancer, the prevalence of current smokers is less than lung cancer
- Quit rates and relapse rates are similar to lung cancer
## The Role of SHS in HNC

<table>
<thead>
<tr>
<th>Variable</th>
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<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Home Exposure</td>
<td>No vs Yes</td>
<td>9.70 (4.33-21.80)</td>
<td>&lt;0.0001</td>
</tr>
<tr>
<td>Spousal Smoking</td>
<td>No vs Yes</td>
<td>3.87 (1.81-8.29)</td>
<td>0.0005</td>
</tr>
<tr>
<td>Peer Smoking</td>
<td>Less than a few vs More than a few</td>
<td>3.71 (1.79-7.67)</td>
<td>0.0004</td>
</tr>
<tr>
<td>Home Exposure Hours</td>
<td>0 hours vs 5+ hours</td>
<td>20.3 (6.52-63.2)</td>
<td>&lt;0.0001</td>
</tr>
<tr>
<td></td>
<td>1-4 hours vs 5+ hours</td>
<td>5.57 (1.37-22.6)</td>
<td>0.05</td>
</tr>
<tr>
<td>Second Hand Smoke Risk Score</td>
<td>0 vs 1</td>
<td>2.86 (1.19-6.87)</td>
<td>5.35E-6</td>
</tr>
<tr>
<td></td>
<td>0 vs 2</td>
<td>12.0 (3.40-42.4)</td>
<td></td>
</tr>
<tr>
<td></td>
<td>0 vs 3</td>
<td>20.0 (5.10-78.4)</td>
<td></td>
</tr>
</tbody>
</table>

*Multivariate results are adjusted for years smoked, alcoholic drinks per week, follow up time, smoking other non-cigarette products

- Second hand smoke (SHS) remains an exceedingly strong predictor of smoking cessation in head and neck cancer patients
- Dose effect also observed in head and neck cancer
Time to Quitting Analysis – HNC

- 68% of patients quit during the peri-diagnosis period
Non-Tobacco Related Cancer Sites

Completed One Time Questionnaire  
\( n = 926 \)

Current Smokers  
\( n = 161 \) (17%)
  - Continued Smoking  
    \( n = 84 \)
  - Quit Smoking  
    \( n = 77 \)
  - Relapsers  
    \( n = 1 \)

Ex-Smokers  
\( n = 279 \) (30%)
  - Continued Quitters  
    \( n = 278 \)

Never Smokers  
\( n = 486 \) (52%)
  - Started Smoking  
    \( n = 0 \)
  - Remained Abstinent  
    \( n = 486 \)

• Prevalence of current smokers is less than both lung and head and neck cancers
• Quit rates and relapse rates are comparable to both groups
Time to Quitting Analysis – Non-TRC Sites

- Peer/Spousal Smoking were not significantly associated with cessation

### Multivariate Regression Analysis results

<table>
<thead>
<tr>
<th></th>
<th>Home Smoking</th>
<th>Hours of Home Exposure</th>
</tr>
</thead>
<tbody>
<tr>
<td>aOR (95% CI)</td>
<td>4.28 (1.56-11.78)</td>
<td>2.79 (1.41-5.49)</td>
</tr>
<tr>
<td>PValue</td>
<td>0.005</td>
<td>0.003</td>
</tr>
</tbody>
</table>

*Multivariate results are adjusted for pack-years*
## Overall Study Results

### Current Smoking Prevalence and Quit Rates

<table>
<thead>
<tr>
<th>Site</th>
<th>Lung (n=721)</th>
<th>Head &amp; Neck (n=531)</th>
<th>Non-TRC (n=926)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Smoking Prevalence</td>
<td>34%</td>
<td>27%</td>
<td>17%</td>
</tr>
<tr>
<td>Quit Rate</td>
<td>56%</td>
<td>50%</td>
<td>48%</td>
</tr>
</tbody>
</table>

### Home Smoke Exposure

<table>
<thead>
<tr>
<th>Site</th>
<th>Lung</th>
<th>Head and Neck</th>
<th>Non-TRC</th>
</tr>
</thead>
<tbody>
<tr>
<td>No vs Yes</td>
<td>6.18 (2.83-13.47)</td>
<td>7.44 (3.04-18.2)</td>
<td>4.28 (1.56-11.78)</td>
</tr>
<tr>
<td></td>
<td>P = 7.3E-8</td>
<td>P &lt;0.0001</td>
<td>P = 0.005</td>
</tr>
</tbody>
</table>

### Spousal Smoking

<table>
<thead>
<tr>
<th>Site</th>
<th>Lung</th>
<th>Head and Neck</th>
<th>Non-TRC</th>
</tr>
</thead>
<tbody>
<tr>
<td>No vs Yes</td>
<td>6.01 (2.63-13.76)</td>
<td>4.25 (1.70-10.6)</td>
<td>1.56 (0.61-3.98)</td>
</tr>
<tr>
<td></td>
<td>P = 1.5E-5</td>
<td>P = 0.002</td>
<td>P = 0.35</td>
</tr>
</tbody>
</table>

### Peer Smoke Exposure

<table>
<thead>
<tr>
<th>Site</th>
<th>Lung</th>
<th>Head and Neck</th>
<th>Non-TRC</th>
</tr>
</thead>
<tbody>
<tr>
<td>Less than a few vs more than a few</td>
<td>2.49 (1.33-4.66)</td>
<td>2.32 (1.00-5.37)</td>
<td>1.57 (0.72-3.42)</td>
</tr>
<tr>
<td></td>
<td>P = 0.008</td>
<td>P = 0.05</td>
<td>P = 0.26</td>
</tr>
</tbody>
</table>
Is there an opportunity for primary prevention?

- Most patients felt that assessment of second-hand smoke is important and oncologists should help others around the patient quit smoking.

<table>
<thead>
<tr>
<th>Assessment of Second-Hand Smoke</th>
<th>Yes (%)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Oncologists should be screening for second-hand smoke</td>
<td>92%</td>
</tr>
<tr>
<td>Assessment of second-hand smoke is important</td>
<td>93%</td>
</tr>
<tr>
<td>Oncologists should help others around the patient quit smoking</td>
<td>68%</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Outcomes (n=1047, 2016-2017)</th>
<th>Continued Smoking</th>
<th>Second-Hand Smoke</th>
</tr>
</thead>
<tbody>
<tr>
<td>Perception Variables</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Worsens Quality of Life</td>
<td>89%</td>
<td>85%</td>
</tr>
<tr>
<td>Worsens Survival</td>
<td>90%</td>
<td>82%</td>
</tr>
<tr>
<td>Worsens Fatigue</td>
<td>88%</td>
<td>81%</td>
</tr>
<tr>
<td>Implementation Variables</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Feel a program would be beneficial</td>
<td>63%</td>
<td>59%</td>
</tr>
<tr>
<td>Feel a program should be routine care</td>
<td>74%</td>
<td>65%</td>
</tr>
</tbody>
</table>

- Many patients perceive that second-hand smoke can impact their cancer outcomes and feel a program for it may be beneficial.
Translating Knowledge to Practice

- Integration of Second-Hand Smoke screening into program
Looking More “Globally”

- Does density and proximity of tobacco retail outlets to patient homes impact cessation rates?
- Re-analysis of lung and head and neck data with geocoding data

<table>
<thead>
<tr>
<th>Variable</th>
<th>Comparison</th>
<th>Multivariate Analysis*</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
<td>aOR (95% CI)</td>
</tr>
<tr>
<td>Walking Time</td>
<td>Per Minute Increase</td>
<td>1.01 (1.00-1.03)</td>
</tr>
<tr>
<td>Walking Distance</td>
<td>Per 1km Increase</td>
<td>1.18 (1.00-1.41)</td>
</tr>
<tr>
<td>Living Near An Outlet</td>
<td>Not vs Within 250 m</td>
<td>1.89 (1.15-3.10)</td>
</tr>
<tr>
<td></td>
<td>Not vs Within 500 m</td>
<td>1.76 (1.07-2.89)</td>
</tr>
<tr>
<td>Outlet Density</td>
<td>Per Outlet within 500m</td>
<td>0.96 (0.93-1.00)</td>
</tr>
</tbody>
</table>

*Multivariate results are adjusted for SHS, ECOG, Pack Years, Martial Status

- Density and proximity to tobacco retail outlets influenced quit rates in lung and head and neck cancer survivors
Looking into the Future

• Pre-Cancer Setting

• New Products
Conclusions

• Many patients are unaware smoking negatively impacts cancer outcomes.
• Despite significant knowledge gaps on the harms of continued smoking, patient perceptions of the harms of continued smoking can influence tobacco cessation rates.
• Many patients are agreeable to having smoking status assessed and discussing about cessation at least at the first clinic visit, feel it is important and prefer it being done by their oncologist.
• Implementation of routine screening, brief education and automated referral for tobacco cessation is feasible and improves referrals rates.
• Second-hand smoke exposure is a strong predictor of smoking cessation and targeting patients at diagnosis during the “teachable moment” is key.
• Proximity of tobacco outlets may influence success of cessation.
• Future directions should focus on improving patient education on the harms of continued smoking among cancer survivors and consideration of implementing programs targeting the social network.
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– Dr. Kelvin Chan (OCC)
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Thank You! See you in 2022!

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