Smoking and Secondhand Tobacco Smoke Exposure: Prevalence, Prevention, Protection, and Treatment

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Smoking & Secondhand Tobacco Smoke Exposure: Prevalence, Prevention, Protection, & Treatment

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Acknowledgements

Chang Gung Institute of Technology

Formosa Plastics Group
Outline

- Prevalence and Disease Burden of Smoking (普及和吸菸導致的疾病)
- Strategies for Prevention and Protection (預防策略)
- Approaches to Tobacco Dependence Treatment (治療戒菸的方法)
- Example of a Smoking Cessation Program (戒菸方案的例子)
Prevalence and Disease Burden
（普及和吸菸導致的疾病）
Global Prevalence of Smoking Among Males

Male Smoking Stats:
• 1 billion worldwide (全球約占一億)
• 35% in high-resource countries
• 50% in low-resource countries

(WHO Tobacco Atlas online, 2010 [http://www.tobaccoatlas.org/home.html])
Global Prevalence of Smoking Among Females

Female Smoking Stats:
- 250 million daily smokers worldwide (全球每日吸菸者約占 2 億 5 千萬)
- 22% in high-resource countries
- 9% in low-resource countries

(Who Tobacco Atlas online, 2010 http://www.tobaccoatlas.org/home.html)
Prevalence of Current Smoking in Canada (age 15+)

Total: 18.0%
Male: 19.2%
Female: 15.9%

Smoking Prevalence Among Men in Taiwan, 2008

2008 Adult Smoking Behaviour Survey (Prevalence = Smoked more than 100 cigarettes in lifetime)

Average = 52.3%
(Past month smoking = 39%)
Smoking Prevalence Among Women in Taiwan, 2008

Average = 6.2%
(Past month smoking = 5%)

2008 Adult Smoking Behaviour Survey (Prevalence = Smoked more than 100 cigarettes in lifetime)
Second Hand TobaccoSmoke (二手菸)

“Class A” or “Known Human” Carcinogen (U.S EPA, 1993)

“No risk free level of SHS exposure”

(U.S Surgeon General Report, 2006)
Smoking-Attributable Causes of Death

1. Lung cancer
2. Ischemic heart disease
3. Chronic airways obstruction

Cancers
- Lung, Bronchus, Lip, Oral cavity/pharynx, Esophagus, Larynx, trachea, Cervix uteri, Urinary bladder, Stomach, Colon, Leukemia, Pancreas, Kidney, Liver, other urinary

Cardiovascular disease
- Ischemic heart disease
- Cerebrovascular disease
- Rheumatic heart disease
- Atherosclerosis
- Hypertension
- Aortic aneurysm
- Pulmonary heart disease
- Other arterial disease

Respiratory disease
- Chronic airways obstruction
- Asthma
- Bronchitis/emphysema
- Pneumonia/influenza
- Respiratory tuberculosis

Paediatric disease
- Low birth weight
- Respiratory conditions-newborn
- Respiratory distress syndrome
- Sudden Infant Death Syndrome

Reproductive Problems
- Reduced fertility
- Spontaneous Abortion
- Placental abruption

Global Annual Death from tobacco-related illness, 2003 (2003全球吸菸者之死亡率)

Canada 45,000
USA 440,000
South America 221,000
Africa 158,000
Russia 330,000
China 800,000
South-East Asia 1,035,000
Taiwan 19,000
Australia 18,700

Wen, Ching Pan (2003). The Taiwan Tobacco Atlas, United medical Foundation, National Health Research Institutes

Estimated tobacco-related deaths:
2005: 5.4 million → 2015: 6.4 million → 2030: 8.3 million

Summary of Prevalence & Burden of Disease

Prevalence

- 35%-50% of men globally, 9%-22% of women globally
- (52.3% of men in Taiwan, 6.2% of women in Taiwan)
- Shifting global trends from high-resource to low-resource countries

Burden of Disease

- 1 in 2 smokers die from a smoking related illness
- 20% of smokers develop lung cancer
- Average smoker loses 22+ years of life
- 5.4 million deaths world-wide.
Strategies for Prevention and Protection

（預防策略）
### Global Youth Smoking & Secondhand Smoke Exposure (SHS) by global region, 2000-2007 (13-15 yrs)

[2000-2007年全球年輕吸菸者與二手菸者 (13-15歲)]

<table>
<thead>
<tr>
<th>Region</th>
<th>Current Smoking %</th>
<th>SHS Exposure %</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Total</td>
<td>Boys</td>
</tr>
<tr>
<td>Africa</td>
<td>8.0</td>
<td>13.5</td>
</tr>
<tr>
<td>Americas</td>
<td>14.3</td>
<td>13.0</td>
</tr>
<tr>
<td>U.S</td>
<td>19.2</td>
<td>13.5</td>
</tr>
<tr>
<td>Eastern Mediterranean</td>
<td>4.9</td>
<td>7.3</td>
</tr>
<tr>
<td>European</td>
<td>19.2</td>
<td>21.0</td>
</tr>
<tr>
<td>South-East Asia</td>
<td>5.9</td>
<td>9.5</td>
</tr>
<tr>
<td>Western-Pacific</td>
<td>13.4</td>
<td>18.5</td>
</tr>
</tbody>
</table>

Wen, Ching Pan (2003). The Taiwan Tobacco Atlas, United medical Foundation, National Health Research Institutes
## Risk Factors for smoking initiation (吸菸之危險因子)

<table>
<thead>
<tr>
<th>Socio-demographic (社會人口特性)</th>
<th>Psychosocial (社會心理方面)</th>
</tr>
</thead>
<tbody>
<tr>
<td>• Low income family</td>
<td>• Having parents and peers who smoke</td>
</tr>
<tr>
<td>• Neighbourhood disadvantage</td>
<td>• Perception that tobacco use is the norm</td>
</tr>
<tr>
<td>• Differences by age and gender</td>
<td>• Lack of parental support and involvement</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Environmental (環境因子)</th>
<th>Genetic (遺傳)</th>
</tr>
</thead>
<tbody>
<tr>
<td>• Secondhand smoke exposure</td>
<td>• Stress, anxiety, depression</td>
</tr>
<tr>
<td>• Availability/accessibility of tobacco products</td>
<td>• Susceptibility to other drug use</td>
</tr>
<tr>
<td>• Low price of tobacco products</td>
<td></td>
</tr>
</tbody>
</table>
Why Do youth initiate (導致年輕人吸菸之因素)

- Curiosity (‘to see what it is like’) (好奇心)
- Peer pressure (‘to be accepted by others’) (同儕壓力)
- Parents, movie stars, role models (‘to imitate the behaviour of others’)（父母, 電影明星, 崇拜的人）
- Loneliness, depression, stress, anxiety (寂寞, 憂鬱, 壓力, 焦慮)
- Marketing by the tobacco industry (菸草公司行銷策略)
How does the Tobacco Industry promote Youth Smoking?

- Advertising
- Event sponsorship
- Retail displays
- Electronic and print promotions
- Brand placement in movies and TV
- Influence of movie actors
Prevention Interventions must be part of a comprehensive tobacco control approach that includes prevention, protection, and cessation and tobacco industry denormalization strategies.
Best-Practice Guidelines

- Youth Advocacy (提唱年輕人不抽菸)
- Education (教育)
  - School-based programs
  - Community-based initiatives
  - Mass media campaigns
  - Package warnings
  - Tobacco Industry education programs
- Tobacco promotion restriction (限制菸草廣告)
- Youth access interventions (禁止年輕人購買菸草之法律)

- Tax policies (稅收政策)
- Tobacco industry denormalization (阻礙菸草行業規範化)
- Smoke-free environments (無菸環境)
Youth Advocacy Interventions

- Peers are a key influence on youth
- Address several key issues
  - Health effects of tobacco
  - Sales to minors
  - How industry targets youth

Youth are the program leaders

（提唱年輕人不抽菸）
School-Based programs (學校基礎課程)
- Produce consistent short-term decreases in smoking rates
- Youth more likely to have anti-tobacco attitudes
- Long-term studies suggest the benefits erode after 1-4 years

Effectiveness of school-based programs is enhanced by community initiatives (從社區介入方案來提升學校教育之成效)

Community Based programs (社區基礎課程)
- Involves individuals and organizations working together
  - Education
  - Mass Media Campaigns
  - Advocacy for Policy
  - Enforcement of existing laws
Mass Media (多媒體)
- Effective counter-advertising can:
  - reduce youth smoking
  - Increase quitting
  - Prevent initiation

Package Warnings (包裝上的警語)
- Increases awareness of health risks
- May not be as effective in the long-term

Tobacco Industry Led Education (菸草公司所提供的教育課程)
- Emphasize youth choice whether to smoke or not
- Focus on youth attitudes and not health risks of smoking
- May ultimately reinforce smoking while making Industry look ‘responsible’
Tobacco Promotion Restrictions (阻止菸草公司行銷行為)

- **Banning Tobacco Advertising** (禁止菸草公司廣告)
  - Banning advertising results in a fall in smoking prevalence
  - Must be comprehensive to be effective

- **Removing Movie and TV Influences** (移除電影及電視中所出現的相關行為畫面)
  - Lobbying for an R-rating for any movie with tobacco
  - Ban the portrayal of smoking in films
  - Require existing films with smoking to carry a prominent warning
  - Prohibit onscreen tobacco product logos
**Youth Access Laws**

- **Access Law Compliance**
  - Rigorous and sustained enforcement can increase retailer compliance.
  - High compliance is associated with reduction in youth tobacco use when part of a comprehensive plan.

- **Possession Laws**
  - Possession laws may play a role in decreasing access to tobacco and youth smoking rates.
  - Possession laws need to be adequately enforced in order to be effective.
Tobacco Taxation

• Results in substantial short-term smoking declines; declines in smoking rate correspond to tax increases

• For every price increase of 10% on cigarettes, youth smoking is reduced by about 8%

• This may be due to indirect effects on youth such as:
  • Increased taxes decreases adult prevalence, and correspondingly more non-smoking role modeling for youth
  • Increased cost of cigarettes may affect sharing between peers or reduce parental source

Tobacco Taxation is a central tool of prevention and cessation efforts
Tobacco Industry De-normalization

- Tobacco Industry De-normalization shifts the focus from individual smokers to the policy environment and corporate entity

Goals:
- Demonstrate that tobacco products are not ‘normal’ consumer products
- Educate the public, opinion leaders, and legislators about the industry's responsibility for the tobacco epidemic
- Generate support for legislation reforms to control the industry

**TID is about making the shift from ‘Smoking kills’ to ‘Tobacco Industry Products kill’**

(吸菸是不正常的行为)
Smoke-free Environments

- Smoke-free legislations lead to lower adolescent smoking rates
- A total home smoking ban has the strongest protective effects on youth smoking rates
- Public bans reduce the social acceptability of smoking and discourage youth from initiating
- School no-smoking policy is most effective when it has:
  - Total ban for students, staff and visitors inside and outside on school premises
  - Evidence-based tobacco prevention education
  - Cessation support
  - Good communication about the policy and its rational
  - Effective enforcement
Summary of Prevention and Protections

- Must be part of a comprehensive tobacco control intervention (including prevention, protection, and cessation and tobacco industry denormalization strategies)

- Can prevent youth initiation, reduce youth smoking, and enhance smoking cessation

- Should involve both individual, community, and policy level approaches

- Be cautious of tobacco-industry education programs
Approaches to Tobacco Dependence Treatment

Smoking Cessation

- Allen Carr’s Easy Way to Stop Smoking
- Quit & Win: A Smoke-Free Life!
Understanding Smoking

- Nicotine is addictive
- Tobacco plays a role in people’s lives
- People may be in different stages of readiness to change
  - Pre-contemplation
  - Contemplation
  - Preparation
  - Action
  - Maintenance
  - Relapse
The Cycle of Nicotine Addiction

- Nicotine binding causes an increase in release of dopamine
- Dopamine gives feelings of pleasure and calm
- The dopamine decrease between cigarettes leads to withdrawal symptoms of irritability and stress
- The smoker craves nicotine to restore pleasure and calmness
- Smokers generally titrate their smoking to achieve maximal stimulation and avoid symptoms of withdrawal and craving
Nicotine Withdrawal Syndrome (尼古丁戒断症状)

- Nicotine withdrawal syndrome consists of both somatic and affective symptomatology

Withdrawal Syndrome
- Irritability, frustration, or anger
- Anxiety (may increase or decrease with quitting)
- Restlessness or impatience
- Difficulty concentrating
- Dysphoric or depressed mood
- Increased appetite or weight gain
- Insomnia/sleep disturbance

It is never too late to quit smoking

Short-term benefits:

- After 8 hours carbon monoxide levels are reduced by half
- After 48 hours no nicotine remains in the body
- After 72 hours bronchial tubes begin to relax
Potential Lifetime Health Benefits of Quitting

Cardiovascular heart disease (CHD) risk is similar to never smokers
Lung cancer risk is 30-50% that of continuing smokers
CHD: excess risk is reduced by 50% among ex-smokers
Stroke risk returns to the level of people who have never smoked at 5-15 years post-cessation
Lung function may start to improve with decreased cough, sinus congestion, fatigue, and shortness of breath

Treatment Approaches: Brief Clinical Interventions
（治療方法: 短期方案）

- It is essential to provide at least a brief intervention to ALL tobacco users at EACH clinical visit.
- Patients willing to try to quit should be provided treatments.
- Patients unwilling to quit should be provided with a brief intervention designed to increase their motivation.
Treatment Approaches: Counselling

There is a dose-response relationship between intensity of tobacco dependence counselling and its effectiveness.

Three types of counselling are particularly effective:
- Practical counselling (direct treatment)
- Support
- Helping to secure support outside of treatment
### The 5 “A’s” for Brief Intervention

<table>
<thead>
<tr>
<th><strong>ASK:</strong></th>
<th>about tobacco use</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>ADVISE:</strong></td>
<td>every tobacco user to quit</td>
</tr>
<tr>
<td><strong>ASSESS:</strong></td>
<td>assess readiness to quit</td>
</tr>
<tr>
<td><strong>ASSIST:</strong></td>
<td>self-help material, offering pharmacotherapy</td>
</tr>
<tr>
<td><strong>ARRANGE:</strong></td>
<td>follow up or referral</td>
</tr>
</tbody>
</table>
Recommend Use of Approved Pharmacotherapy
（使用適當的藥物）

- All smokers trying to quit, except in special circumstances, should receive pharmacotherapy

- First-line pharmacotherapy – nicotine replacement (patch, gum, spray) and Oral medications (bupropion SR, Varenicline)
Nicotine Replacement Therapy

- Provides the body with sufficient nicotine to help minimize w/d symptoms and cravings
- Shown to almost double quit rates
- Most effective when combined with behavioural counselling
- Role in forced or temporary abstinence
Zyban
(Bupropion, Wellbutrin)

- Originally designed to treat depression
- Shown to double chances of quitting
- Minimizes weight gain associated with quitting smoking
- A relatively weak inhibitor of the neuronal uptake of dopamine, serotonin and norepinephrine – inhibits craving.
- Dosage – 150 mg q am for 3 days then bid

Contraindications
- Seizure History
- Eating Disorder
- MAOI Medications
- Using Bupropion, sensitivity to Bupropion
Varenicline: An α4β2 Nicotinic Acetylcholine Receptor Partial Agonist and Antagonist

• ACTIVITY 1: Partial agonist
  • Varenicline binds to the receptor, partially stimulating dopamine release

• ACTIVITY 2: Antagonist
  • Because varenicline is bound to the receptor, it prevents the binding of nicotine

Varenicline: Indication and Dosing Information

- Indicated for smoking cessation treatment in adults in conjunction with smoking cessation counselling
- Treatment period is 12 weeks
- An additional course of 12 weeks of treatment may be considered for patients who have successfully quit at the end of 12 weeks
- Main s/e: nausea (possible psychiatric side-effects)
- Varenicline is supplied for oral administration in 2 strengths: 0.5 and 1.0 mg
### What if patient is unwilling to Quit?: The 5 R’s

<table>
<thead>
<tr>
<th><strong>RELEVANCE:</strong></th>
<th>Consider why quitting may be personally relevant</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>RISKS:</strong></td>
<td>Identify negative consequences of tobacco use</td>
</tr>
<tr>
<td><strong>REWARDS:</strong></td>
<td>Identify potential benefits of quitting</td>
</tr>
<tr>
<td><strong>ROADBLOCKS:</strong></td>
<td>Explore impediments to quitting</td>
</tr>
<tr>
<td><strong>REPITITIONS:</strong></td>
<td>Repeat intervention as needed</td>
</tr>
</tbody>
</table>

Main idea is to move smokers from pre-contemplation to contemplation.
Relapse Prevention
(預防再度吸菸之方法)

- Intervene with all patients who have recently quit
- Congratulate them
- Discuss problems that they might be encountering
- Help reformulate slips as mistakes rather than as a sign of failure
Common Problems (常見問題)

- Weight Gain (體重增加)
- Depression (憂鬱)
- Cravings (菸癮)
- Lack of Support (無支持系統)
- Low Motivation (無動力)
Special Populations

- Adolescents (青少年) - NRT not recommended by US Clinical guidelines

- Those with substance use and psychiatric disorders (藥物成癮者, 精神病患) - May need more intensive treatment (longer duration, more medication)

- Pregnant and breast feeding women (孕婦及哺乳者) - NRT can be teratogenic
Example of a Smoking Cessation Program:
（戒菸方案的範例）

Outcomes of an Intensive Tobacco Dependence Treatment Approach Among Individuals with Substance Use Disorders & Mental Illness
Nearly 70%-90% of individuals in drug treatment programs concurrently use tobacco (Best et al, 1998; Clark et al, 2001)
Reasons for smoking among Individuals with SUD’s (藥物成癮者的吸菸原因)

- Nicotine (尼古丁):
  - Increases alertness (有精神)
  - Helps with relaxation (放鬆感)
  - Antidepressant effect (使開心)
  - Synergistic effect with other psychoactive substances (藥物成癮者吸菸時會有協同效應的產生)
Arguments for Not Providing Tobacco Treatment....
(為何不提供菸草治療之理由)

• “these patients don’t want to quit” (這些病患不想要戒菸)

• “these patients will relapse if they try to quit”
(藥物成癮者就算試著戒菸,還是會持續用藥)

• “these patients have more important issues in their lives ....they should just be allowed to smoke...”
(這些病患在生活中可能有其他重要的問題,所以他們覺得應該可以抽菸)

• “these patients are unable to quit” (這些病患沒辦法戒菸)
Most smokers (80%) in a methadone maintenance treatment population were “somewhat” or “very” interested in quitting.

In an outpatient program for “alcohol abusers”, more than 75% were willing to consider stopping smoking.

Richter KP et al. (2001) Tobacco Use and Quit Attempts Amongst Methadone Clients. AJPH
Smoking Cessation Does Not Impair Addiction Treatment
（戒煙治療不防礙藥物濫用治療）

- Meta-analysis of 19 studies demonstrated that smoking cessation efforts delivered during addictions treatment appeared to ENHANCE rather than compromise long term sobriety.

These Patients CAN Quit But... (這些病人可以戒煙但是)

- Meta-analysis (n = 19 studies) addressing smoking cessation among individuals in addiction treatment and recovery found:
  - Increased cessation at end of 12 weeks treatment
  - BUT NO SIGNIFICANT EFFECT AT 6 MONTHS!

The Tobacco Dependence Clinic

Program Overview

- 26 weeks (8 weeks structured, up to 18 weeks of support)
- Tailored pharmacotherapy for up to 26 weeks at no cost
- Vancouver Coastal Health (VH) Mental Health & Addiction Services
- Program is run with a team of nurses, counsellors, respiratory therapists, and a physician
Criteria

Eligibility:
• 19 years or older
• Tobacco dependent
• Have a history of substance use disorder (SUD) and/or psychiatric disorder (PD)
• Financially disadvantaged

Assessment:
• 1 hour evaluation of medical, psychiatric, substance and tobacco use history
• Expired air CO is determined and a treatment plan is developed in consultation with client
Phases of Treatment

Behavioral Counseling
Tailored Pharmacotherapy
8 Weeks

Support Group
Tailored Pharmacotherapy
Up to 26 Weeks
Behavioural Counseling (Weeks 1-8)

- **Phase 1**: engagement in the process – weeks 1-2
- **Phase 2**: planning for change – weeks 3-4
- **Phase 3**: sustaining change – weeks 5-8
Combination Pharmacotherapy

Nicotine Replacement Therapy

- Patch
- Gum
- Lozenge
- Inhaler

Oral Medications

- Zyban
- Champix
## Site description

<table>
<thead>
<tr>
<th>Clinic Site</th>
<th>Begin Date</th>
<th>Total Attendance</th>
</tr>
</thead>
<tbody>
<tr>
<td>Pacific Spirit</td>
<td>Sept, 2007</td>
<td>216</td>
</tr>
<tr>
<td>Three Bridges</td>
<td>March, 2008</td>
<td>169</td>
</tr>
<tr>
<td>DCHC</td>
<td>Sept, 2008</td>
<td>185</td>
</tr>
<tr>
<td>Raven Song</td>
<td>Sept, 2010</td>
<td>28</td>
</tr>
</tbody>
</table>
### Site description contd...

<table>
<thead>
<tr>
<th>Clinic Site</th>
<th>Begin Date</th>
<th>Total Attendance</th>
</tr>
</thead>
<tbody>
<tr>
<td>Pender Clinic</td>
<td>Sept, 2010</td>
<td>35</td>
</tr>
<tr>
<td>Centre for Concurrent Disorders</td>
<td>Feb, 2011</td>
<td>15</td>
</tr>
<tr>
<td>Ranier Hotel</td>
<td>March, 2011</td>
<td>~15</td>
</tr>
</tbody>
</table>
Referral Sources (N = 647)

- VCH community clinics: 50.7%
- Health care providers: 10.2%
- Self/Friend/Partner: 24.4%
- Other community resources (e.g., gospel union mission, daytox e.t.c): 14.7%
Gender (N = 647)

- Female: 39.1%
- Male: 60.9%
Substance Use Disorder History
(either past or current use, N = 647)

Percent %

- None: 11.0%
- Alcohol: 35.9%
- Heroin: 8.8%
- Cocaine: 25.5%
- Marijuana: 14.5%
- Metamphetamine: 4.3%
Psychiatric Disorder History (either past or current, N = 647)

- Mood (n = 266)
- Psychotic (n = 42)
- Anxiety (n = 98)
- None (n = 141)
Co-occurring Disorders history (either past or current, N = 647)

- Both (n = 458) 70.8%
- Substance Use only (n = 118) 18.2%
- Psychiatric only (n = 48) 7.4%
- None (n = 23) 3.6%
### Sample Characteristics (N = 647)

<table>
<thead>
<tr>
<th>Characteristic</th>
<th>Mean</th>
<th>Stand. Dev.</th>
</tr>
</thead>
<tbody>
<tr>
<td>Age of participant (years)</td>
<td>47.3</td>
<td>11.4</td>
</tr>
<tr>
<td>Age at smoking initiation (years)</td>
<td>14.7</td>
<td>4.9</td>
</tr>
<tr>
<td>Importance of quitting (scale of 0 ‘low’ to 10 ‘high’)</td>
<td>9.0</td>
<td>1.3</td>
</tr>
<tr>
<td>Confidence in quitting (scale of 0 ‘low’ to 10 ‘high’)</td>
<td>7.3</td>
<td>2.2</td>
</tr>
<tr>
<td>Number of cigarettes smoked per day</td>
<td>20.9</td>
<td>10.5</td>
</tr>
<tr>
<td>Fagerstrom Test for Nicotine Dependence</td>
<td>6.1</td>
<td>2.1</td>
</tr>
<tr>
<td>(scale of 0 ‘low’ to 10 ‘high’)</td>
<td></td>
<td></td>
</tr>
<tr>
<td>CO level at baseline (ppm)</td>
<td>20.5</td>
<td>12.6</td>
</tr>
</tbody>
</table>
Sample for Outcomes Assessment

647
Completed intake and orientation
(Sept 2007 to February 2011)

240
• Not engaged in the program (i.e., had two or less contacts with the program)
• Enrolled in program after October, 2010

407
Intent to treat

100
Program non-completers

307
Program completers

Smoking cessation: 7-day point-prevalence of abstinence at end of treatment (i.e., anytime between 8 weeks to 26 weeks) verified by expired CO levels
Program Completion (n = 307/407)

Completed program?

Yes: 75%
No: 25%
Smoking Cessation Outcomes at end-of-treatment*

- Intent-to-treat (N = 407):
  - Quit: 32.7%
  - Not quit: 67.3%

- Program completers (n = 307):
  - Quit: 43.3%
  - Not quit: 56.7%

*End-of-treatment (i.e., anytime between 8 weeks to 26 weeks) verified by expired CO levels
Smoking cessation by length of stay in the program (among program completers, n = 307)
Smoking cessation by Substance use history (among program completers, n = 307)

- None (n = 42): 52.4%
- Alcohol (n = 95): 38.9%
- Heroin (n = 34): 32.4%
- Cocaine (n = 80): 45.0%
- Marijuana (n = 43): 41.9%
- Metaphetamine (n = 13): 69.2%
Smoking cessation by Psychiatric Disorder history (among program completers, n = 307)

- None (n = 66): 45.5%
- Mood (n = 169): 42.0%
- Anxiety (n = 52): 40.4%
- Psychotic (n = 20): 55.0%
Smoking cessation by Co-occurring Disorder history (among program completers, n = 307)
## Multivariate predictors of smoking cessation at end of treatment (i.e., within 26 weeks) (n = 283)

<table>
<thead>
<tr>
<th>Predictors</th>
<th>Odds Ratio</th>
<th>95%CI</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Substance Use Disorder History</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td>None (reference)</td>
<td>1.0</td>
<td>-</td>
</tr>
<tr>
<td>Alcohol</td>
<td>.35*</td>
<td>.14-.88</td>
</tr>
<tr>
<td>Heroin and other opioids</td>
<td>.22*</td>
<td>.07-.71</td>
</tr>
<tr>
<td>Cocaine</td>
<td>.46</td>
<td>.17-1.19</td>
</tr>
<tr>
<td>Marijuana</td>
<td>.34*</td>
<td>.12-.96</td>
</tr>
<tr>
<td>Methamphetamine and related drugs</td>
<td>1.12</td>
<td>.24-5.23</td>
</tr>
<tr>
<td><strong>CO level at baseline</strong></td>
<td>.96**</td>
<td>.94-.99</td>
</tr>
<tr>
<td><strong>Number of Visits to the TDC</strong></td>
<td>1.12***</td>
<td>1.08-1.17</td>
</tr>
</tbody>
</table>

a. A two-step model building process was employed. Only variables which were significantly predictive of smoking cessation at alpha < .20 in the unadjusted analyses were included in the multivariate model.

* = p < .05, ** = p < .001, *** = p < .001
Summary of Key Findings

- Smoking abstinence at end of program:
  - Intent to treat analysis: **32.7%** (133/407)
  - Among program completers: **43.3%** (133/307)

- Significant predictors of abstinence:
  - Having an alcohol, heroin (or other opioid) or marijuana use history was a significant predictor of being **less** likely to quit smoking when compared to having no history of substance use disorder.
  - Having a lower CO level at program enrolment was a significant predictor of being **more** likely to quit.
  - Attending the TDC program for a longer duration was a significant predictor of being **more** likely to quit.
Conclusions

- The Tobacco Dependence Clinic provides an innovative model of tobacco dependence treatment which combines behavioural counselling with no-cost NRT for individuals with a history of substance use disorders.

- With intensive tobacco dependence treatment provided within addictions services, individuals with a history of substance use disorders are able to achieve smoking abstinence.
The Tobacco-Dependence Clinic: Intensive Tobacco-Dependence Treatment in an Addiction Services Outpatient Setting

Milan Khara, MBChB, CCFP, ABAM,1,2 Chizimuzo T.C. Okoli, PhD, MPH2,3

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2University of British Columbia, Vancouver, British Columbia, Canada
3British Columbia Center of Excellence for Women’s Health, Vancouver, British Columbia, Canada

We present outcomes from an intensive tobacco-dependence treatment program for addiction services clients at three different sites. Data from 202 participants were analyzed. For individuals who completed the program, the abstinence rate was 43%. Not having a primary substance use history and a lower carbon monoxide (CO) level at intake predicted abstinence; whereas being female, the particular site of intervention, receiving both nicotine replacement therapy (NRT) and oral medication, and having a lower CO level at baseline predicted program completion. Drug treatment clients can successfully quit smoking at rates similar to the general population when given access to intensive tobacco-dependence treatment. (Am J Addict 2010;00:1–11)

Given that tobacco use remains the number one preventable cause of morbidity and mortality in Canada,7 [with alcohol, tobacco, and illicit drug use contributing to 3.1%, 16.5%, and .4%, respectively, of total mortality in Canada8], the high rates of tobacco use among individuals with substance use disorders suggests an increased risk for tobacco-related mortality and morbidity in these populations.

Moreover, several studies have documented the benefits of smoking cessation among individuals with concurrent substance use disorders9,10 such as improved quality of life11 and drug abstinence.12–14 Recent reviews of the lit-
Beautiful British Columbia!