Nicotine addiction, tobacco use and cessation strategies for people with mental illness and living in poverty

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STANFORD UNIVERSITY

Financial Disclosures:
• Principal Investigator on US Federal and State research awards:
  • NHLBI R01, NIMH R01, NIDA P50 Component, TRDRP Pilot CARA
  • Ad hoc consultant with Pfizer
  • Expert witness in litigation against tobacco companies
Science of nicotine addiction
Prevalence of smoking among those with mental illness and those living in poverty
Tobacco use mortality and morbidity
Integrating cessation with person-centered health care
State policy implications

Nicotine Addiction

[Image of brain and neurotransmitters]
The Pleasure-Reward Pathways

Nicotine enters brain
Stimulation of nicotine receptors
Dopamine release
Prefrontal cortex
Nucleus accumbens
Ventral tegmental area
Nicotine enters brain

NEUROCHEMICAL and RELATED EFFECTS of NICOTINE

- **Dopamine**
  - Pleasure, appetite suppression
- **Norepinephrine**
  - Arousal, appetite suppression
- **Acetylcholine**
  - Arousal, cognitive enhancement
- **Glutamate**
  - Learning, memory enhancement
- **Serotonin**
  - Mood modulation, appetite suppression
- **β-Endorphin**
  - Reduction of anxiety and tension
- **GABA**
  - Reduction of anxiety and tension

NICOTINE: WITHDRAWAL EFFECTS

- Irritability/frustration/anger
- Anxiety
- Difficulty concentrating
- Restlessness/impatience
- Depressed mood/depression
- Insomnia
- Impaired performance
- Increased appetite/weight gain
- Cravings

Most symptoms manifest within the first 1–2 days, peak within the first week, and subside within 2–4 weeks.


DSM-V TOBACCO USE DISORDERS

Alignment of nicotine criteria with those for other substances

<table>
<thead>
<tr>
<th>Hazardous use</th>
<th>DSM-IV Abuse*</th>
<th>DSM-IV Dependence*</th>
<th>DSM-IV Substance Use Disorders*</th>
</tr>
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<tbody>
<tr>
<td>X</td>
<td>--</td>
<td>--</td>
<td>X</td>
</tr>
<tr>
<td>Social/interpersonal problems related to use</td>
<td>X</td>
<td>--</td>
<td>--</td>
</tr>
<tr>
<td>Neglected major roles to use</td>
<td>X</td>
<td>--</td>
<td>--</td>
</tr>
<tr>
<td>Legal problems</td>
<td>X</td>
<td>--</td>
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</table>

<table>
<thead>
<tr>
<th>Nonspecific symptoms</th>
<th>DSM-IV Dependence*</th>
<th>DSM-IV Substance Use Disorders*</th>
</tr>
</thead>
<tbody>
<tr>
<td>Withdrawal*</td>
<td>--</td>
<td>X</td>
</tr>
<tr>
<td>Tolerance</td>
<td>X</td>
<td>--</td>
</tr>
<tr>
<td>Used larger amounts/longer</td>
<td>X</td>
<td>--</td>
</tr>
<tr>
<td>Repeated attempts to quit/control use</td>
<td>X</td>
<td>--</td>
</tr>
<tr>
<td>Much time spent using</td>
<td>X</td>
<td>--</td>
</tr>
<tr>
<td>Physical/psychological problems related to use</td>
<td>X</td>
<td>--</td>
</tr>
<tr>
<td>Activities given up to use</td>
<td>X</td>
<td>--</td>
</tr>
<tr>
<td>Craving</td>
<td>--</td>
<td>--</td>
</tr>
</tbody>
</table>
WHAT is ADDICTION?

“Compulsive drug use, without medical purpose, in the face of negative consequences”

Alan I. Leshner, Ph.D.
Former Director, National Institute on Drug Abuse
National Institutes of Health

MODEL of ADDICTION

Impulse control disorders
- regret / guilt / self-reproach
- tension / arousal
- impulsive acts

Compulsive disorders
- obsessions
- anxiety / stress
- repetitive behaviors

Positive Reinforcement

Negative Reinforcement

Source: GF Koob et al. (2004) Neuroscience and Biobehavioral Reviews
The Nicotine Cycle

PLASMA NICOTINE CONCENTRATIONS for NICOTINE-CONTAINING PRODUCTS

Tobacco Dependence

**Physiologic**
- The addiction to nicotine
  - Treatment
  - Medications for cessation

**Behavioral**
- The habit of using tobacco
  - Treatment
  - Behavior change program

Treatment should address the physiologic and the behavioral aspects of dependence.

**SMOKING as a HEALTH DISPARITY ISSUE**
in Mental Health and Substance Use Disorder Populations
“My doctor told me I’m too stressed out to quit smoking....
Well, 43 years later, I’m still stressed and I’m still smoking.”
-- Woman diagnosed with severe depression

DEATH of a 56-YEAR-OLD MAN with SERIOUS MENTAL ILLNESS

* A 56-year-old, gay-identified Caucasian man
* >15 psychiatric hospitalizations over a 10-year span
* Severe depressive symptoms, suicidal ideation, and auditory hallucinations criticizing him and/or commanding him to commit suicide
* Tested positive for stimulants
* Diagnosed with schizoaffective disorder, major depression with or without psychotic features, posttraumatic stress disorder, and polysubstance or stimulant dependence

DEATH of a 56-YEAR-OLD MAN with SERIOUS MENTAL ILLNESS

- Smoked 2 packs of cigarettes per day for 25 years
- 10 attempts to quit smoking, 2 in the past year
  - Each attempt was unassisted, without clinical support or use of FDA-approved cessation medications
- Longest period of being tobacco-free was 7 days
- No advice to quit smoking in the past year by a mental health or general medical provider

Died 20 years prematurely from complications of pulmonary emphysema due to smoking

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SMOKING & MENTAL ILLNESS: A HEALTH DISPARITY ISSUE

- Elevated prevalence of use
- Targeted marketing by the industry
- Serious health consequences
- Significant costs & social isolation
- Enabling environments
- Lower access to treatment
- Inadequate research base
SMOKING & MENTAL ILLNESS: A HEALTH DISPARITY ISSUE

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A meta-analysis of 42 studies on tobacco smoking among schizophrenia subjects found an average smoking prevalence of 62% (range=14-88%)

Studies reporting higher smoking rates were more commonly cited in the research literature

- A 10% increase in reported smoking prevalence was associated with a 61% increase in citation rate
- This bias was mirrored on the Internet

SMOKING PREVALENCE by PSYCHIATRIC DIAGNOSIS

National Comorbidity Survey 1991-1992
Source: Lasser et al., 2000 JAMA

% Current Smokers

SMOKING & MENTAL ILLNESS: PREVALENCE over TIME

National Comorbidity Survey, Lasser et al. JAMA 2000
Healthcare for Communities survey Ong et al. AJPH 2010
National Survey of American Life, Hickman et al. NTR 2010
CDC Vital Signs MMWR, 2012
SMOKING in PSYCHIATRY: ADULTS in SAN FRANCISCO, CA

Cigarettes/day

<table>
<thead>
<tr>
<th>Group</th>
<th>Prevalence</th>
<th>Cigarettes/day M(SD)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Public Psych Inpatient</td>
<td>60%</td>
<td></td>
</tr>
<tr>
<td>Private Psych Inpatient</td>
<td>45%</td>
<td>21 (15)</td>
</tr>
<tr>
<td>Private Psych Outpatient</td>
<td>28%</td>
<td>17 (12)</td>
</tr>
<tr>
<td>SF Adults</td>
<td>14%</td>
<td>15</td>
</tr>
</tbody>
</table>

Acton, Prochaska, Kaplan, Small & Hall. (2001) Addict Behav

POST-MORTEM STUDY with YOUNG ADULTS in FINLAND (N=1623)

Launiainen et al. (2011) NTR
Twice as likely to smoke as those without mental illness (16%) \(^1\)

Smoking rates increase with severity of mental illness \(^2,3\)
- Depression: 36%
- Bipolar disorder: 61%
- Schizophrenia: 70%

1. Australian National Survey of Mental Health and Wellbeing. ABS 2008  
2. Cooper J. Aust NZ J Psych 2012  
3. AIHW. National Drug Strategy Household Surveys  
4. Bowden J. ANZJ Psych 2011

No change in smoking prevalence among those with psychosis from 1997/8 to 2010 \(^1,2\)

2. Cooper J. Aust NZ J Psych 2012
SMOKING by HOUSING STATUS


Menthol Use & Serious Mental Distress: National Sample

* 2008-2009 National Survey on Drug Use and Health (NSDUH)
* 24,157 adult smokers
* Severe psychological distress associated with menthol use: adj-OR = 1.23, p=0.02
  * Controlling for sociodemographic factors: ethnicity, SES, gender, age, education, marital, health insurance, cpd

Hickman, Delucchi, Prochaska (2014) Tobacco Control
MENTHOL SMOKING:
US vs. Psychiatric Sample (N=1042)

WHAT ABOUT E-CIGARETTES?
(vape pens, e-hookahs, hookah pens)

* Cigarette-shaped device consisting of a battery and a cartridge containing an atomizer to heat a solution, often with nicotine

By January 2014 there were 466 brands (each with its own website) and 7764 unique flavors (Zhu, 2014)
E-CIGARETTES, VAPE PENS, E-HOOKAHS

* Rapidly expanding market, est $1.7 billion in sales
* Market growth appears to coincide with declines in use of traditional cessation pharmacotherapies
* Not shown to be effective for quitting smoking
* Dual use is common
* Re-normalizing smoking behavior
* Attractive to youth (flavors, colors, marketing)
* Perceived as a nontoxic inhaled nicotine delivery device
* Not currently regulated, > 450 products on market

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Do E-cigarettes Help Smokers Quit Conventionals?

N=657 smokers interested in quitting

<table>
<thead>
<tr>
<th></th>
<th>Using @ 1 mo</th>
<th>Continuous Abst</th>
</tr>
</thead>
<tbody>
<tr>
<td>Placebo EC</td>
<td>0%</td>
<td>0%</td>
</tr>
<tr>
<td>Nicotine EC</td>
<td>10%</td>
<td>10%</td>
</tr>
<tr>
<td>Nicotine Patch</td>
<td>20%</td>
<td>20%</td>
</tr>
</tbody>
</table>

E-CIGARETTES and MENTAL HEALTH

* N=10,041
* 28% of current smokers self-reported mental health conditions vs. 13% of non-smokers

Cummins et al. (2014)
Tobacco Control

E-CIG USE: SMOKERS with SERIOUS MENTAL ILLNESS (N=956)

Growth in Reported E-cig Use by Year of Study Enrollment

Prochaska & Grana (2014) PLOS ONE
**PREDICTORS of E-CIG USE**

- **Later year of enrollment**: OR=29.2 (95% CI 10.5 - 80.7)
- **Younger age** (18-25): OR =2.6 (1.2 - 5.7)
- **nonHispanic** vs. Hispanic: OR=4.0 (1.8 - 8.9)
- **Preparation** vs. precontemplation: OR=2.7 (1.4 - 5.2)

NS: gender, race, employment status, hospital site, study condition, psychiatric or substance use diagnosis, mental health severity, time to 1st AM cig, cigs/day

Prochaska & Grana (2014) PLOS ONE

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**E-CIG USE & SMOKING (N=956)**

- **Not more likely to be tobacco abstinent** @ follow-up:
  - 21% for EC users and 19% for non-EC users, p=.726

- **Not more likely to reduce cigarettes/day** @ follow-up:
  - >50% reduction in cigarettes/day (cpd)
    - EC (51%) vs. non-EC users (51%), p=.978
    - Median reduction in cpd: 7.1 (EC) vs. 6.6 (non-EC), p=.730
  - CPD at latest FU: 10.0 (EC) vs. 10.1 (non-EC), p=.915

- **All smoking outcomes NS by EC use** in adjusted models

Prochaska & Grana (2014) PLOS ONE
SMOKING & MENTAL ILLNESS: A HEALTH DISPARITY ISSUE

* Elevated prevalence of use
* **Targeted marketing by the industry**
* Serious health consequences
* Significant costs & social isolation
* Enabling environments
* Lower access to treatment
* Inadequate research base

MAJOR TARGET MARKET

Schizophrenic.

* Estimates that 44% to 46% of cigarettes consumed in US by smokers with psychiatric or addictive disorders (Lasser, 2000; Grant, 2002)
* 175 billion cigarettes and **$39 billion** in annual tobacco sales (USDA, 2004)
Project SCUM
1995-1997

* RJ Reynolds’ SubCulture Urban Marketing Campaign for
  * Gay people in the Castro and “street people” in the Tenderloin
  * Noted the high incidence of smoking and drugs in these subcultures

- Plan was to introduce Camel cigarettes into less traditional retail outlets, like "head shops"
- Eventually changed the campaign to Project Sourdough

ECs for Jails/Prisons

The ONLY electronic cigarette designed by a jailer specifically for use in correctional facilities.
Are e-cigarettes good for your mental health?

Patients with mental health problems are far more likely than others to become dependent on cigarettes. Can ‘vaping’ reduce symptoms without the risks?

— Jack Dutton

theguardian.com, Monday 5 May 2014 12:17 EDT

“Giving psychiatric patients access to e-cigarettes, particularly on closed wards, is definitely something to consider.”

PAIRED with ALCOHOL USE
SMOKING & MENTAL ILLNESS: A HEALTH DISPARITY ISSUE

- Elevated prevalence of use
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COMPOUNDS in TOBACCO SMOKE

An estimated 4,800 compounds in tobacco smoke

<table>
<thead>
<tr>
<th>Gases (~500 isolated)</th>
<th>Particles (~3,500 isolated)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Carbon monoxide</td>
<td>Nicotine</td>
</tr>
<tr>
<td>Hydrogen cyanide</td>
<td>Nitrosamines</td>
</tr>
<tr>
<td>Ammonia</td>
<td>Lead</td>
</tr>
<tr>
<td>Benzene</td>
<td>Cadmium</td>
</tr>
<tr>
<td>Formaldehyde</td>
<td>Polonium-210</td>
</tr>
<tr>
<td></td>
<td>Arsenic</td>
</tr>
</tbody>
</table>

11 proven human carcinogens
HEALTH CONSEQUENCES of SMOKING

* Cancers
  - Acute myeloid leukemia
  - Bladder and kidney
  - Cervical
  - Esophageal
  - Gastric
  - Laryngeal
  - Lung
  - Oral cavity and pharyngeal
  - Pancreatic
* Pulmonary diseases
  - Acute (e.g., pneumonia)
  - Chronic (e.g., COPD)
  - Tuberculosis

* Cardiovascular diseases
  - Abdominal aortic aneurysm
  - Coronary heart disease
  - Cerebrovascular disease
  - Peripheral arterial disease
  - Sudden death
  - Heart failure

* Reproductive effects
  - Reduced fertility in women
  - Poor pregnancy outcomes
  - Infant mortality

* Other effects: type 2 diabetes, peptic ulcer, cataract, osteoporosis, periodontitis, poor surgical outcomes (occlusion of bypass grafts & stents)


COMPARATIVE CAUSES of ANNUAL DEATHS in the UNITED STATES

Source: CDC
* Individuals with mental illness die, on average, 25 years prematurely (Colton & Manderscheid, 2006)
* elevated risk for respiratory and cardiovascular diseases and cancer, compared to age-matched controls (Brown et al., 2000; Bruce et al., 1994; Dalton et al., 2002; Himelhoch et al., 2004; Lichtermann et al., 2001; Sokal, 2004)

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**SMOKING KILLS HOMELESS PEOPLE**

![Graph showing smoking-attributable mortality, 35-64 year old men and women](image)

Baggett et al. (2015) AJPH
SECONDHAND SMOKE

- Secondhand smoke (SHS) causes premature death and disease in nonsmokers:
  - Immediate adverse effects on the CV system – same effects as active smoking
  - Increased risk for heart disease & lung cancer
  - Bans on smoking in public places reduce exposure to SHS and reduce heart attacks

There is no safe level of secondhand smoke

SMOKING & MENTAL ILLNESS: A HEALTH DISPARITY ISSUE

- Elevated prevalence of use
- Targeted marketing by the industry
- Serious health consequences

Significant costs & social isolation

- Enabling environments
- Lower access to treatment
- Inadequate research base
TOBACCO USE ISOLATES and is COSTLY

* 75% of psychiatric patients who smoke report smoking most or all of their cigarettes while alone (Prochaska et al., 2005)

* Median of $142.40 per month spent on cigarettes among an outpatient sample of smokers with schizophrenia (Steinberg et al., 2004)

* 27% of their monthly incomes

SMOKING & MENTAL ILLNESS: A HEALTH DISPARITY ISSUE

* Elevated prevalence of use
* Targeted marketing by the industry
* Serious health consequences
* Significant costs & social isolation
* **Enabling environments**
* Lower access to treatment
* Inadequate research base
BEHAVIOR DURING THE INTERVIEW

Should the therapist smoke during the interview? Why not? It will help drain the small amount of undischarged tension which is always present during an interview, and it contributes to the naturalness of his behavior.

These 3 studies, plus the remaining 3 planned for next year promise to bear fruitful findings. It is particularly interesting that the psychiatrists, who are medical professionals, are very aware of the role of tobacco use in patients and are very interested in these studies. If tobacco can be shown to be an efficient form of "self-medication" for these patients then this would be significant bonus for the tobacco industry.

Dr. Knott has been sponsored by CTMC for some years. Up to last year his own salary was paid by us - so he was totally dependent on CTMC funding. He became, however, a permanent member of the Royal Ottawa Hospital in 1984, and since then we only support the cost of his assistants.

The latest request is addressing the problems that restriction on smoking in the workplace or elsewhere may have on inducing stress on the smoker. Once again he seems to be looking at this from our point of view.
Department of Health, Education, and Welfare  
National Institute of Mental Health  
Washington, DC  
August 4, 1980

Dear Mr. Long:

I am writing to request a donation of cigarettes for long-term psychiatric patients... because of recent changes in the DHHS regulations, Saint Elizabeth Hospital can no longer purchase cigarettes for them.

The low income group of patients who smoke consists of mostly patients who have no funds with which to purchase their own. Of our 240 patients, approximately 30 are in this category. The result has been nicotine withdrawal (which can be very unpleasant) and the loss of one of the greatest pleasures for patients who have very few, if any, alternatives. Many of the staff have been providing patients with cigarettes out of their own pocket, but this gets

I am therefore requesting a donation of approximately 5,000 cigarettes a week (8 per day for each of the 100 patients without funds).

Sincerely yours,

N. Ruber, M.D.  
Medical Director  
A. F. Boyce Division

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March 21, 1991

Dear Larry:

This letter is to inform you that the smoking in restaurants bill (LD 693) is now set for hearing on Wednesday, April 3, 1991, at 9:30 a.m. at the Elks Lodge in Augusta. In fact, the following smoking bills also have been set for hearing on that day:

LD 463 - An Act to Exempt Substance Abuse and Psychiatric Patients from the Prohibition against Smoking in Hospitals

3. LD 542 - An Act to Ban Smoking in Launderoms
4. LD 663 - An Act to Amend the Laws Concerning Smoking in Restaurants
5. LD 1134 - An Act to Protect Citizens from the Effects of Environmental Tobacco Smoke

With the above bills all scheduled on one day, it is difficult to know exactly when each of them will be reached. It is vital that you, or a representative, attend the hearing to speak on the legislation and we would appreciate it if you would either give me a call or my paralegal, Susan Mitchell.

Thank you.

Kind regards,

JON R. DOYLE

[Signature]

[Date]
HOSPITAL SMOKING BAN EXEMPTION for MENTAL HEALTH

THE WALL STREET JOURNAL TUESDAY, OCTOBER 11, 1994

Mental Patients Fight to Smoke When They Are in the Hospital

“It’s one of the very very few pleasures that schizophrenics and people with major depression have,” says Helen Konopka, a 71-year-old retired New York teacher who organized a tidal wave of letters and petitions to the Joint Commission. She says

Ms. Konopka’s crusade is backed by the National Alliance for the Mentally Ill, an influential advocacy group of patients and their families. The group says it hasn’t had any contact with the tobacco industry.

The New York Times
SUNDAY, FEBRUARY 19, 1995

JCAHO ultimately “yielded to massive pressure from mental patients and their families, relaxing a policy that called on hospitals to ban smoking.”

NY TIMES COMMENTING
FEB 2013

• ...Seem arrogant and cruel to take that [smoking breaks] away. If you were incarcerated in one of these institutions, you might not see it as a problem to shave 5-10 years off your sentence.

• let’s see: these people are in a sense terminally ill. there is no cure for their mental disease. they will not have enjoyable, productive, creative lives. so their cigarettes should be withheld so they can live LONGER?
Secondhand Smoke in Mental Healthcare Settings

PM$_{2.5}$ of 10 $\mu$g/m$^3$ is the lowest level at which total cardiopulmonary and lung cancer mortality has been shown to increase in response to long-term exposure (WHO).

![Graph showing PM$_{2.5}$ levels in different settings.]

**Balbe et al. (2013) Int J Epi**

TOBACCO BANS & STATE PSYCHIATRIC HOSPITALS (2005-2011)

![Graph showing percent of smoke-free state psychiatric hospitals.]

NASMHPD Surveys 2005-2011
* Langley Porter, 100% smokefree since 1988
* N=100 smokers
* 70% used NRT during hospitalization
* 1 patient had tobacco on their treatment plan
* 2 were advised to quit smoking
* 3 received a DSM-IV diagnosis of Nicotine Dependence or Withdrawal
* 4 were provided NRT at discharge

RESIDENTIAL EXPOSURES

Tobacco retailer density near persons with Serious Mental Illness living in SF Bay Area – 2xs more dense than average

Young-Wolf, Henriksen, Delucchi & Prochaska (in press). AJPH

![Map showing tobacco retailer density near SF Bay Area]

Median # of retailers within the service areas of participants’ residences was:
3 (within 500m) and 12 (within 1km)

Median distance to a retailer was:
247m (IQR: 115, 527)

TOBACCO RETAILERS & MH

- Retailer density associated with greater:
  - Psychosis 500m: $B = 2.9, p < .01$; 1km: $B = 2.5, p = .01$
  - Self-harm 500m: $B = 2.6, p = .01$; 1km: $B = 2.1, p = .03$
  - Interpersonal problems 500m: $B = 2.0, p = .04$
  - Nicotine dependence 500m: $B= 3.0, p<.01$; 1km: $B= 2.5, p=.01$

- Retailer density associated with lower:
  - Self-efficacy 500m: $B = -2.1, p = .01$; 1km: $B = -2.3, p = .03$
  - Motivation/Stage of Change: $PC vs. C^1, P^2$
    - $500m: OR = 1.5, p = .04$; 1km: $B = 2.1, p < .01$
    - $1km: B = 2.0, p = .02$
  - Proximity x Sex interaction ($B = 2.8, p = .01$)
    - Living closer associated with greater nicotine dependence for men ($r = .12, p < .01$) but not women ($r = -.03, p = .45$)
SMOKING & MENTAL ILLNESS: A HEALTH DISPARITY ISSUE

* Elevated prevalence of use
* Targeted marketing by the industry
* Serious health consequences
* Significant costs & social isolation
* Enabling environments
* **Lower access to treatment**
* Inadequate research base

2006 AAMC PRACTICE SURVEY: PSYCHIATRISTS

- **62%** Ask about tobacco & Advise to quit
- **44%** Assess readiness to quit
- **13-23%** Assist
  - NRT (23%), other Rx (20%), cessation materials (13%)
- **14%** Arrange follow up
- **11%** Refer to others

Psychiatrists least likely to address tobacco use with their patients relative to other specialties (family medicine, internal medicine, OB/GYN)
SMOKERS with BIPOLAR DISORDER: ONLINE SURVEY (N=685)

* Few reported a psychiatrist (27%), therapist (18%), or case manager (6%) ever advised them to quit smoking

Several reported *discouragement to quit* from mental health providers

Prochaska, Reyes, Schroeder, et al. (2011). Bipolar Disorders

SMOKING & MENTAL ILLNESS: A HEALTH DISPARITY ISSUE

* Elevated prevalence of use
* Targeted marketing by the industry
* Significant health consequences
* Significant costs & social isolation
* Enabling & stigma
* Smokier environments
* Lower access to treatment
* Inadequate research base
US TOBACCO TREATMENT
CLINICAL PRACTICE GUIDELINES

* Literature base of more than 8,700 research articles
* < 30 randomized clinical trials treating tobacco dependence in smokers with mental illness or addictive disorders


SMOKING & MENTAL ILLNESS
Addressing Myths and Barriers
Top Barriers to Treating Tobacco
2006 AAMC Survey with 701 Psychiatrists

- 89% -- Patients not motivated to quit
- 83% -- More acute problems to address
- 80% -- Few cessation programs available
- 75% -- Patients usually fail to quit
- 72% -- Other practice priorities
- 65% -- Staff are unfamiliar with tobacco treatments
- 61% -- Limited time with patients
- 58% -- Lack of provider knowledge in tobacco cessation
Just as Ready to Quit Smoking as the General Population

<table>
<thead>
<tr>
<th></th>
<th>Intend to quit in next 6 mo</th>
<th>Intend to quit in next 30 days</th>
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<tbody>
<tr>
<td>General Population</td>
<td>40%</td>
<td>20%</td>
</tr>
<tr>
<td>General Psych Outpts</td>
<td>43%</td>
<td>28%</td>
</tr>
<tr>
<td>(Acton et al., 2001 Addict Bx)</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Depressed Outpatients</td>
<td>55%</td>
<td>24%</td>
</tr>
<tr>
<td>(Prochaska et al., 2004, Drug Alc Dep)</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Psych. Inpatients</td>
<td>41%</td>
<td>24%</td>
</tr>
<tr>
<td>(Prochaska et al., 2006, Am J Addict)</td>
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<tr>
<td>Methadone Clients</td>
<td>48%</td>
<td>22%</td>
</tr>
<tr>
<td>(Nahvi et al., 2006, Addict Bx)</td>
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</tr>
</tbody>
</table>

* No relationship between psychiatric symptom severity and readiness to quit

Quitting & MH Symptoms

Meta-analysis found quitting smoking is associated with long term reductions in depression, anxiety, and stress and improved positive mood states and quality of life, including among those with poor mental health. (Taylor et al., 2013 BMJ)
Interest in cessation programs is not significantly different from among low-income smokers seen in community health centers.

<table>
<thead>
<tr>
<th>Currently homeless</th>
<th>Formerly homeless</th>
<th>Never homeless</th>
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</thead>
<tbody>
<tr>
<td>84.3</td>
<td>88.5</td>
<td>81.6</td>
</tr>
</tbody>
</table>

Baggett, Addiction (2013)

• **Individuals with mental illness are just as motivated to quit smoking as the general population**

• **83% -- More acute problems to address**
• 80% -- Few cessation programs available
• 75% -- Patients usually fail to quit
• **72% -- Other practice priorities**
• 65% -- Staff are unfamiliar with tobacco treatments
• 61% -- Limited time with patients
• 58% -- Lack of provider knowledge in tobacco cessation
TOBACCO USE is an ACUTE TREATMENT ISSUE

- Smoking is predictive of future suicidal behavior
  - independent of depressive symptoms, prior suicidal acts, & other substance use (Breslav et al., 2005; Oquendo et al., 2004, Potkin et al., 2003).

- Poorer outcomes among patients with schizophrenia who smoke
  - Greater psychiatric symptoms, more frequent hospitalizations, higher medication doses (Dalack & Glassman, 1993; Desai et al., 2001; Ziedonis et al., 1994)

TOBACCO USE is ASSOCIATED with GREATER AMA RATES

PHARMACOKINETIC DRUG INTERACTIONS with SMOKING

Drugs that may have a *decreased effect* due to induction of CYP1A2:

- Caffeine
- Clozapine
- Fluvoxamine
- Haloperidol
- Olanzapine
- Phenothiazines
- Propanolol
- Tertiary TCAs
- Other medications: estradiol, naproxen, riluzole, ropinirole, tacrine, theophyline, verapamil, r-warfarin (less active), zolmitriptan

*Smoking cessation may reverse the effect.*

ADDRESSING MYTHS & BARRIERS

- *Individuals with mental illness are just as motivated to quit smoking as the general population*
- *Tobacco use is a leading cause of death for those with mental illness & smoking adversely impacts treatment*

- **80% -- Few cessation programs available**
- **75% -- Patients usually fail to quit**
- **65% -- Staff are unfamiliar with tobacco treatments**
- **61% -- Limited time with patients**
- **58% -- Lack of provider knowledge in tobacco cessation**
All patients ought to be screened for tobacco use, advised to quit, and offered intervention.

All patients should be offered pharmacological treatment for quitting smoking, unless contraindicated.

There is a dose response relationship with the amount of contact provided.

American Psychiatric Association, 2006; U.S. Public Health Service, 2008

TOBACCO TREATMENTS with DEMONSTRATED EFFICACY

- Physician advice
- Formal smoking cessation programs
  - Individual counseling
  - Telephone and web counseling:
    * 1-800-QUIT-NOW
    * www.smokefree.gov
- Group programs
- NRT, bupropion, varenicline
- With evidence, but not approved: clonidine, nortriptyline, cytisine
LONG-TERM (≥6 month) QUIT RATES for AVAILABLE CESSATION MEDICATIONS

Data adapted from Cochrane Database Systematic Reviews by Cahill et al. 2012; Stead et al. 2012.; and Hughes et al. 2007

COMPARATIVE DAILY COSTS of PHARMACOTHERAPY

OH average cost/pack of cigarettes, $5.63

Cessation medication coverage via Medicare Part D and recommendations of the Affordable Care Act, when prescribed by a physician
Referring patients to a toll-free quit line is simple and easily integrated into routine patient care

- Takes < 5 minutes
- Toll-free cessation counseling and many states over pharmacotherapy

Tel 800 QUIT NOW

Nearly 1 in 4 callers met criteria for current major depression

- At 2-months, those with depression much less likely to be quit (19%) than callers without depression (28%)

What are the unique challenges?

VA TeleQuitMH COORDINATION PROGRAM EVALUATION

- EMR electronic consult
- Program marketing to providers
- Proactive outreach
- Medication coordination
- Self-help materials
- Smoking cessation counseling
  - VA
  - Quitline w/ warm transfers
- Follow-up

Rogers et al. (2013). Addict Sci Clin Practice (Study protocol)

### Participating Sites:
- NY Harbor HCS, NY/NJ
- Bronx VAMC, NY/NJ
- NJ HCS, NJ
- Bedford VAMC, MA
- White River Junction VAMC, VT/NH
- Providence VAMC, RI

ADDRESSING MYTHS & BARRIERS

- Individuals with mental illness are just as motivated to quit smoking as the general population
- Tobacco use is a leading cause of death for those with mental illness & smoking adversely impacts treatment
- Number of treatments are available including the quitline
- **75% -- Patients usually fail to quit**
- 65% -- Staff are unfamiliar with tobacco treatments
- 58% -- Lack of provider knowledge in tobacco cessation
TREATING TOBACCO USE in INPATIENT PSYCHIATRY

* 100% smoke-free unit
* Stage-tailored expert system, stage-tailored manual, 10 wk nicotine patch vs. Usual care
* 224 patients enrolled
* Full range of psychiatric diagnoses
* 79% recruitment rate
* 81% retention at 18 months

Prochaska et al., 2014, Am J Pub Health

SAMPLE (N=224)

- Dx: 47% unipolar depression, 25% bipolar depression, 15% schizophrenia spectrum, 13% other
- 88% involuntarily admitted
  - Suicidal (75%), homicidal (2%), gravely disabled (10%)
- Functioning (SF12): mental health (M=28±13) physical health (M=49±13)
- Length of hospitalization, M = 7 days ± 6
- Regular smoker M = 20 years (±14)
- Cigarettes/day M = 19 (±13)
- 75% smoked ≤ 30 min of waking
OR=3.15, p=0.018 for condition in a GEE-based logistic regression.

Significantly greater rehospitalization rate for UC (140) than Tx (94), p=0.036

Highly cost-effective: $428 per QALY*

* Barnett et al. (in press). J Clinical Psychiatry
IMPACT on MENTAL HEALTH SERVICE UTILIZATION

- 46% psychiatric re-hospitalization rate
- State data: 44% psychiatric re-hospitalization rate

- 234 Re-hospitalizations:
  - Unrelated to quit status
  - Related to African American race, psychosis symptoms at baseline, prior psych hospitalizations, unstable housing, & study condition \( (p=.036) \)
  - Usual care = 140 vs. Treatment = 94

MODEL PREDICTING REHOSPITALIZATION

<table>
<thead>
<tr>
<th>Parameter</th>
<th>OR (95% CI)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Condition (usual care)</td>
<td>1.92 (1.06, 3.49)</td>
</tr>
<tr>
<td>Race (African American)</td>
<td>3.04 (0.97, 9.58)</td>
</tr>
<tr>
<td>Psychotic Symptoms (BASIS-24)</td>
<td>1.43 (1.09, 1.89)</td>
</tr>
<tr>
<td>Education in years</td>
<td>1.06 (0.97, 1.16)</td>
</tr>
<tr>
<td>Unstably housed</td>
<td>2.09 (1.12, 3.92)</td>
</tr>
<tr>
<td>Quit during 18-month trial</td>
<td>0.56 (0.28, 1.14)</td>
</tr>
<tr>
<td>Psychiatric Hospitalization History</td>
<td></td>
</tr>
<tr>
<td>First hospitalization (reference)</td>
<td></td>
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<tr>
<td>1 to 2 prior hospitalizations</td>
<td>1.60 (0.70, 3.63)</td>
</tr>
<tr>
<td>3 to 7 prior hospitalizations</td>
<td>2.13 (0.95, 4.77)</td>
</tr>
<tr>
<td>8+ prior hospitalizations</td>
<td>3.21 (1.37, 7.54)</td>
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</table>
URBAN PUBLIC HOSPITAL: INPATIENT PSYCHIATRY

Hickman et al. (in press)
Nicotine & Tobacco Research

<table>
<thead>
<tr>
<th></th>
<th>LPPI</th>
<th>SFGH</th>
</tr>
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<tbody>
<tr>
<td>N</td>
<td>224</td>
<td>100</td>
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<tr>
<td>Recruitment Rate</td>
<td>79%</td>
<td>71%</td>
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<tr>
<td>Age in years</td>
<td>40 (14)</td>
<td>40 (11)</td>
</tr>
<tr>
<td>Female</td>
<td>40%</td>
<td>35%</td>
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<tr>
<td>Ethnicity</td>
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<tr>
<td>White</td>
<td>63%</td>
<td>44%</td>
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<tr>
<td>African American</td>
<td>9%</td>
<td>27%</td>
</tr>
<tr>
<td>Hispanic</td>
<td>5%</td>
<td>9%</td>
</tr>
<tr>
<td>Asian American</td>
<td>7%</td>
<td>11%</td>
</tr>
<tr>
<td>Multiethnic/other</td>
<td>16%</td>
<td>9%</td>
</tr>
<tr>
<td>Education in years</td>
<td>14 (3)</td>
<td>13 (3)</td>
</tr>
<tr>
<td>Income &lt;$20,000</td>
<td>60%</td>
<td>81%</td>
</tr>
<tr>
<td>Homeless</td>
<td>5%</td>
<td>39%</td>
</tr>
<tr>
<td>Private/self-pay</td>
<td>53%</td>
<td>1%</td>
</tr>
</tbody>
</table>

Replication Study in County Hospital

Private Hospital, N=224

Public Hospital, N=100

0%  3.9%  13.9%  19.4%
Baseline 3 mo 6 mo 12 mo
0%  2.5%  7.3%  16.7%
Baseline 3 mo 6 mo 12 mo

Intervention
Usual Care
TREATING TOBACCO DEPENDENCE in DEPRESSED SMOKERS

322 depressed smokers recruited from four outpatient psychiatry clinics

Stepped Care Intervention
- Stage-based expert system counseling
- Nicotine patch
- 6 session individual counseling

Brief Contact Control

Hall et al., 2006. Am J Public Health

ABSTINENCE RATES by TREATMENT CONDITION

Likelihood of quitting was unrelated to baseline depression severity

* p<.05 for group comparison
**DEPRESSION & QUITTING SMOKING**

- No increase in suicidality
  - Quit: 0% vs Smoking: 1-4%
- No increase in hospitalization
  - Quit: 0-1% vs. Smoking: 2-3%
- Comparable improvement in emotional problems
- No difference in use of THC, stimulants, opiates
- Less alcohol use among those who quit smoking

Prochaska et al., 2008, Am J Public Health

**TREATING DEPRESSED OUTPATIENTS & PSYCHIATRIC INPATIENTS**

- Efficacious for smokers with clinical depression (N=322)
- Efficacious for smokers hospitalized for severe mental illness (N=224)
- Comparable quitting to general population
- No harm to mental health recovery
- Comparable effects in a diverse sample (N=100)

Hall et al. (2006) AJPH; Prochaska et al. (2008) AJPH
INTEGRATING TOBACCO TREATMENT within PTSD SERVICES

* RCT with 66 clients from VA Medical Center

* Integrated care (IC)
  * Manualized treatment delivered by PTSD clinician and case manager (3-hr training)
  * Behavioral counseling 1x a week for 5 weeks + 1 follow-up
  * Bupropion, nicotine patch, gum, spray

* Usual care (UC): referral to VA quit smoking clinic

McFall et al. (2005) Am J Psychiatry

INTEGRATING TOBACCO TREATMENT within PTSD SERVICES

* Cessation Medication Use
  * Integrated Intervention: 94%
  * Usual Care: 64%

* Counseling Sessions Attended
  * Integrated Intervention: M=5.5
  * Usual Care: M=2.6

* At all assessments, the odds of abstinence were 5 times greater for integrated care vs. usual care

McFall et al. (2005) Am J Psychiatry
INTEGRATING TOBACCO TREATMENT within PTSD SERVICES

- Multi-site RCT with 943 clients from 10 VA Medical Centers, train-the-trainer model
- Integrated care (IC) vs. Usual care (UC)
- Cessation outcomes: **2-fold increase in quitting**
  * 18-mo 7 day PPA: IC 18.2% vs. UC 10.8%
- Strongest predictor of tx effect: # of counseling sessions received
- Quitting had no detriment on PTSD symptoms
  
  McFall et al. (2010) JAMA

VARENICILINE USE in SMokers with DEPRESSION

- 525 adults smokers with stably treated or past depression
- Significant treatment effects at all time points (p<.001)
- NS difference in suicidal ideation or worsening
- Most frequent AE:
  * Nausea in 27%
- 2 deaths in varenicline group during non-tx phase

  Anthenelli et al. (2013)
  Arch Intern Med
VARENICLINE USE in SMOKERS with SCHIZOPHRENIA

* 12wk open label trial, N=112 stable outpatients
  * 28-day continuous abstinence = 34%
  * Improved psychiatric, depressive & NW sx
    * Pachas, Cather, Pratt et al. 2012 J Dual Diag

* 12 wk RCT
  N=127 stable outpatients
  varenicline was well tolerated
  no evidence of sx exacerbation
  Williams et al. (2012) J Clin Psychiatry

VARENICLINE for RELAPSE PREV in SCHIZOPHRENIA & BIPOLAR

* N = 87 participants
* 2+ wks cont abst @ wk 12 of open treatment
* Randomized to CBT with varenicline vs. placebo from wks 12-52
* Followed to wk 76
* Significant all time pts

Evins et al. (2014) JAMA
2 META-ANALYSES of BUPROPION FOR QUITTING SMOKING in PERSONS with SCHIZOPHRENIA

* 6 RCTs, N = 260 total (19 – 59)
* EOT: RR = 2.57 (95% CI 1.35, 4.88)
* 6 mo FU: RR = 2.78 (95% CI 1.02, 7.58)
* Gen Pop: RR = 1.69 (95% CI 1.53, 1.85)


Bupropion for quitting smoking found to be well tolerated in patients with schizophrenia who are stabilized on an adequate antipsychotic regime

FDA BOXED WARNINGS

- On July 1, 2009, varenicline and bupropion received Boxed WARNINGS concerning the risk of serious neuropsychiatric symptoms:
  - Patients should be advised to stop taking varenicline or bupropion and to contact a health-care provider immediately if they experience agitation, depressed mood, and any changes in behavior that are not typical of nicotine withdrawal, or if they experience suicidal thoughts or behavior.
**Cochrane Network Meta-Analysis: Serious Adverse Events**

* 21 Bupropion studies (n=7859):
  * Event rates for any SAE: 2.5% for bupropion, 2.2% for placebo
  * Neuropsych event rate: 0.8% (B) and 0.9% (P)
  * **No excess** of neuropsychiatric (RR 0.88; 95% CI 0.31 to 2.50)

* 14 Varenicline trials (n=6333):
  * Event rates for any SAE: 2.1% for varenicline, 2.0% for placebo
  * Neuropsych event rate: 0.15% (V) and 0.21% (P)
  * **No excess** of neuropsychiatric (RR 0.53; 95% CI 0.17 to 1.67)

* Cahill et al., 2013 Cochrane Review

**Meta-Analysis: Varenicline & Neuropsychiatric Adverse Events**

* 39 trials, N=10,761 participants
* Relative to placebo, **no increased** risk of:
  * Suicide or attempted suicide: OR=1.67 (.33, 8.57)
  * Suicidal ideation: OR=0.58 (.28, 1.20)
  * Depression: OR=0.96 (0.75, 1.22)
  * Irritability: OR=0.98 (.81, 1.17)
  * Aggression: OR=0.91 (.52, 1.59)
  * Death: OR=1.05 (.47, 2.38)
* **Increased risk** of sleep disorders (1.63, 1.29-2.07), insomnia (1.56, 1.36-1.78), abnormal dreams (2.39, 2.05, 2.77), and fatigue (1.28, 1.06-1.55)
* **Decreased risk** of anxiety (0.75, .61-.93)

* Thomas et al. 2015 BMJ
### Observational Studies: Varenicline & Neuropsychiatric Adverse Effects

<table>
<thead>
<tr>
<th>Study</th>
<th>Sample</th>
<th>Outcome</th>
<th>Group/Analyses</th>
<th>Compare</th>
<th>Effect</th>
</tr>
</thead>
<tbody>
<tr>
<td>Meyer et al. 2013</td>
<td>Var: 19,933</td>
<td>NPS hospital. (prim diag) in 30 days</td>
<td>New user, propensity score (PS) matched</td>
<td>V vs. NRT</td>
<td>1.14 (0.56-2.34)</td>
</tr>
<tr>
<td></td>
<td>NRT: 15,867</td>
<td>NPS hospital. (any diag) in 30 days</td>
<td>New user, PS-matched</td>
<td>V vs. NRT</td>
<td>0.79 (0.50-1.24)</td>
</tr>
<tr>
<td></td>
<td></td>
<td>NPS outpt visits</td>
<td>New user, PS-matched</td>
<td></td>
<td>0.71 (0.60-0.84)</td>
</tr>
<tr>
<td>Pasternak et al. 2013</td>
<td>Var:17,935 Bup:17,935</td>
<td>NPS ER visit or hosp. in 30 days</td>
<td>New user, PS-matched</td>
<td>V vs. Bup</td>
<td>0.85 (0.55-1.30)</td>
</tr>
<tr>
<td>Thomas et al. 2013</td>
<td>Var:31,260 NRT:81,545</td>
<td>Suicide or nonfatal self-harm in 90 days</td>
<td>New user, adjusted models</td>
<td>V vs. NRT</td>
<td>0.88 (0.52-1.49)</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Start antidepressants in 90 days (no prior)</td>
<td>New user, adjusted models</td>
<td>V vs. NRT</td>
<td>0.75 (0.65-0.87)</td>
</tr>
</tbody>
</table>

Fig 3 | Forest plot of risk of suicidal ideation events (Mantel-Haenszel risk difference) associated with varenicline use in 20 placebo controlled randomised trials
SUMMARY: TOBACCO TREATMENT in SMOKERS with MENTAL ILLNESS

* Support for currently available interventions
  * Treatments matched to motivation
  * NRT, bupropion, varenicline

* Tobacco treatment does not appear to harm mental health recovery

* Integration into mental health treatment settings increases receipt of care and abstinence rates

TOBACCO CESSATION DURING ADDICTIONS TREATMENT or RECOVERY

- Meta-analysis of 19 trials
  - 12 in treatment; 7 in recovery
- Findings: Tobacco Cessation
  - In Treatment Studies: Post treatment abstinence rates were intervention=12% vs. control=3%
  - In Recovery Studies: Post treatment abstinence rates were intervention=38% vs. control=22%
  - No significant effect for tobacco cessation at long-term follow-up (> 6 months)

Prochaska, Delucchi & Hall (2004) JCCP
OVERALL SMOKING CESSION RATES

In Treatment In Recovery
7 day PPA

Comparison Intervention
In Treatment Post-Treatment In Recovery
18 studies

12% 28%
3% 38%

In Treatment Long-term FU In Recovery
15 studies

6% 15%
20%

DOES QUITTING SMOKING CAUSE RELAPSE to ALCOHOL and ILLICIT DRUGS?

* At > 6 months follow-up, tobacco treatment with individuals in addictions treatment was associated with a 25% increased abstinence from alcohol and illicit drugs (Prochaska et al., 2004).

* Caveat: One well done study (N=499) of concurrent versus delayed treatment reported (Joseph et al., 2004):
  * Comparable smoking abstinence rates at 18 months (12.4% versus 13.7%)
  * Lower 6-month prolonged alcohol abstinence rates among those offered concurrent compared to delayed tobacco cessation treatment; NS at 12 and 18-months
**Drug Abuse Treatment Settings**

- Prospective study, N=649
- At 12-month follow-up, 13% of the 395 baseline smokers reported quitting smoking and 12% of the 254 baseline nonsmokers reported starting/relapsing to smoking

Kohn et al. (2003) Drug Alc Dep

**PRICE SENSITIVITY**

- Smoking by individuals with substance abuse or mental disorders was significantly **sensitive to cigarette prices**:
  - 10% increase in price associated with 18% decline in smoking participation

- Limitations:
  - Cross-sectional (cannot prove causation)
  - Quantity of use not available
  - Data from 2001 to 2002

Ong et al. (2010) AJPH
**Smoking Bans in Restaurants & Bars**

* Statewide smoking bans in restaurants and bars associated with quitting smoking:
  * 6% decline among men with an alcohol use disorder
  * 10% decline among women with an anxiety disorder
  * No effect for smokers with mood disorders

Smith, Young-Wolff, et al. (2014) NTR

**TOBACCO BANS in DRUG TREATMENT PROGRAMS**

* National survey of drug treatment programs
  * 2006-08: 897 surveyed, 86% screened for tobacco use, 42% provided treatment
  * 2009-2010 follow-up: problems with discontinuing services:
    * Staff disinterest, inadequate staff skills, time demands, and having a less medically-oriented treatment approach
  * 2008 NY State mandated addiction tx facilities ban tobacco & offer cessation treatment
  * Increased screening & cessation treatment practices

National Survey 2006-08

- Med only, 5%
- Med + Counsel, 11%
- Counsel only, 5%
- No formal prog, 58%
**ADDICTION among the UNHOUSED**

- N=58 homeless smokers in NYC
- 12-wk program combining group motivational interviewing (MI) + CBT and pharmacotherapy
- Ave of 7 sessions attended
- 67% used 1+ cessation med
- 75% completed 12-wk EOT survey
- CO-verified abstinence: 12 & 24 wks


---

**RCT: TREATING TOBACCO in the UNHOUSED**

- Tested efficacy of MI + NRT patch
- 430 homeless in Minneapolis/St. Paul, MN
- Six sessions of MI (15-20 min)
  * Smoking cessation
  * Adherence to NRT
- Great interest in treatment
- NS treatment effect size

Okuyemi et al., (2013) Addiction
Adolescents & Tobacco

Gateway In?

In 2013, >263,000 youth who had never smoked a cigarette used an e-cigarette.

In 2014, e-cigarette use tripled: 2.4 million US youth used e-cigs.

4.6 million US youth continue to be exposed to nicotine.
TOBACCO TREATMENT in TEENS

* 48 published RCT with adolescents (Sussman, 2006)
* No unequivocal successes
* Promising Approaches:
  * Stage-based treatments
  * Cognitive behavioral strategies
  * Multicomponent treatments
* Nicotine patch well tolerated, safe, and rarely abused among adolescents (Hyland, 2005; Killen, 2004)

HOSPITAL SMOKING BAN & TEEN ADDICTION TREATMENT

* Chart review
* Sole adolescent hospital-based addictions tx program in northern two thirds of British Columbia, Canada
* Mar 2001-Dec 2005, partial to full to partial ban
* Total smoking ban no effect on adolescent smokers:
  * Seeking treatment at the facility
  * Completing treatment

Callaghan et al. (2007) J Subst Ab Tx
TREATING TOBACCO with YOUTH in INPATIENT PSYCHIATRY

- Randomized trial of motivational interviewing (MI) vs. brief advice for smoking cessation
- Two 45-min sessions and offered 8 weeks NRT
- 191 youth age 13-17 from inpatient psychiatry
- No advantage of MI in smoking outcomes
- MI more likely to increase self-efficacy and intention to change in those with low intention

Brown et al. (2003) Tobacco Control

SPARK STUDY: RCT

Recruited from 17 MH settings in SF Bay Area, 110 screened
- 47 ineligible: lifetime cigarettes < 100, age > 25, lack of contact information, plans to relocate out of area, not in MH treatment
- 3 declined

N=60 randomized

Step 1

usual care

3-mo (94%)
6-mo (87%)
12-mo (90%)

intervention

3-mo (93%)
6-mo (89%)
12-mo (86%)

Step 2

received up to $160 in study incentives

Prochaska et al. (2015) NTR
TREATMENT ADAPTATIONS

* Adapted computer images and tailored feedback
  * e.g., reference to school, parents, peers, clubs/sports
* 12-wk CBT cessation manual (Brown et al., 2003)
  * attended to peer relationships, family influences, and the co-use of alcohol and illicit drugs
* Young adult counselors

Prochaska, Fromont et al. (2013) NTR

---

Sample Descriptives

<table>
<thead>
<tr>
<th></th>
<th>Boys (n = 29)</th>
<th>Girls (n = 31)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Age (years)</td>
<td>19.7 (3.0)</td>
<td>19.3 (2.9)</td>
</tr>
<tr>
<td>Ethnicity</td>
<td></td>
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<tr>
<td>Caucasian</td>
<td>41.4%</td>
<td>38.7%</td>
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<tr>
<td>Hispanic</td>
<td>24.1%</td>
<td>9.7%</td>
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<tr>
<td>African American</td>
<td>6.9%</td>
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<td>Asian American</td>
<td>10.3%</td>
<td>3.2%</td>
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<tr>
<td>Multiracial/other</td>
<td>17.3%</td>
<td>38.7%</td>
</tr>
<tr>
<td>Education (years)</td>
<td>11.2 (3.1)</td>
<td>11.9 (2.1)</td>
</tr>
<tr>
<td>Past month # days with mental health visits</td>
<td>8.5 (8.9)</td>
<td>8.5 (8.0)</td>
</tr>
<tr>
<td>Lifetime psychiatric hospitalization</td>
<td>51.7%</td>
<td>71.0%</td>
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<tr>
<td>Trauma exposed</td>
<td>58.6%</td>
<td>67.7%</td>
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<td>Depression/externalizing scale z-score</td>
<td>-0.23 (.96)</td>
<td>0.21 (.96)</td>
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<td>Hears or sees things others do not</td>
<td>13.8%</td>
<td>27.6%</td>
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<td>Past month substance use</td>
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<tr>
<td>Alcohol</td>
<td>58.6%</td>
<td>58.1%</td>
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<tr>
<td>Marijuana</td>
<td>51.7%</td>
<td>32.3%</td>
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<tr>
<td>Other illicit drug</td>
<td>17.2%</td>
<td>25.8%</td>
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<tr>
<td>Past 30 days treated for alcohol or drugs</td>
<td>6.9%</td>
<td>16.7%</td>
</tr>
<tr>
<td>History of drug overdose</td>
<td>13.8%</td>
<td>35.5%</td>
</tr>
</tbody>
</table>
Smoking Characteristics

RESULTS

* 47% reduced cigarettes/day from baseline
* 20% reduced cpd by 50%+
* 80% made a 24-hr quit attempt
* Abstinence at 3, 6, 12-mo fu
  * 11%, 13%, 17% (missing=missing)
  * 10%, 12%, 15% (missing=smoking)
* No difference by treatment group
  * all p-values > 0.300

<table>
<thead>
<tr>
<th></th>
<th>Boys</th>
<th>Girls</th>
</tr>
</thead>
<tbody>
<tr>
<td>n</td>
<td>29</td>
<td>31</td>
</tr>
<tr>
<td>Age first tried smoking</td>
<td>12.9 (3.2)</td>
<td>13.7 (2.6)</td>
</tr>
<tr>
<td>Years smoking regularly (years)</td>
<td>4.0 (2.6)</td>
<td>3.1 (1.7)</td>
</tr>
<tr>
<td>Daily smoker</td>
<td>51.7%</td>
<td>48.4%</td>
</tr>
<tr>
<td>Cigarettes/day</td>
<td>8.2 (5.7)</td>
<td>6.2 (5.8)</td>
</tr>
<tr>
<td>$ spent past month on tobacco (median, IQR)</td>
<td>$30 (10, 60)</td>
<td>$25 (10, 64)</td>
</tr>
<tr>
<td>Use of tobacco products other than cigarettes*</td>
<td>62.1%</td>
<td>19.4%</td>
</tr>
<tr>
<td>Smoke within 30min of waking</td>
<td>34.5%</td>
<td>41.9%</td>
</tr>
<tr>
<td>Smoking stage of change</td>
<td>55.2%</td>
<td>48.4%</td>
</tr>
<tr>
<td>Precontemplation</td>
<td>27.6%</td>
<td>45.2%</td>
</tr>
<tr>
<td>Contemplation</td>
<td>17.2%</td>
<td>6.5%</td>
</tr>
<tr>
<td>Preparation</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Past year 24-hr quit attempt</td>
<td>48.3%</td>
<td>60.0%</td>
</tr>
<tr>
<td>Thoughts about abstinence</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Desire to quit</td>
<td>5.8 (2.5)</td>
<td>4.5 (2.7)</td>
</tr>
<tr>
<td>Perceived success with quitting</td>
<td>4.9 (2.8)</td>
<td>4.3 (2.4)</td>
</tr>
<tr>
<td>Anticipated difficulty staying quit</td>
<td>6.9 (2.9)</td>
<td>6.5 (2.3)</td>
</tr>
<tr>
<td>No goal to quit</td>
<td>27.6%</td>
<td>19.4%</td>
</tr>
<tr>
<td>Parent smokes</td>
<td>48.3%</td>
<td>44.8%</td>
</tr>
<tr>
<td>Home is smoke-free</td>
<td>41.4%</td>
<td>58.1%</td>
</tr>
<tr>
<td>3 or more of 5 closest friends smoke*</td>
<td>75.9%</td>
<td>48.4%</td>
</tr>
</tbody>
</table>

Note. IQR, interquartile range.
*p ≤ .05 for test of difference by gender.
PREDICTORS of 12-MO ABSTINENCE

* Gender: AOR = 8.9, 95% CI = 1.8, 44.4
* Heaviness of smoking*: AOR = 4.5, 95% CI = 1.0, 21.0
* Condition (p=.477), use of other tobacco products (p=.722), 
  # close friends who smoke (p=.086), hearing voices (p=.760), 
  depression/internalizing symptoms (p=.655), trauma exposure 
  (p=.693), and residing at home (p=.933) all NS
* Entry did not influence strength of associations of gender and 
  heaviness of smoking with abstinence

*Median split at 7+ cpd vs. < 7 cpd

Results, missing=smoking

[Bar chart showing 7 day PPA by gender and smoking heaviness at 3-mo, 6-mo, and 12-mo]
THOUGHTS about ABSTINENCE

* From baseline to 12-months:
  * **Girls increased in desire to quit** (M = 2.0, SD = 3.3) more than boys (M = 0.3, SD = 2.8)
    
    (p = .033, F(1,59) = 4.78)

* Baseline heaviness of smoking unrelated to thoughts about abstinence, mental health indices, and exposure to parent and peer smoking (all p > .40)

CONCLUSIONS

* Adolescent/young adult smokers with mental illness complex group to engage and effectively treat for tobacco use
  * Particularly heavier smokers and boys
  * Girls increased in desire to quit
  * Girls and lighter smokers quit with minimal support
  * All 9 girls who were quit at 12 mo were residing at home with parents, suggestive of a supportive parenting effect
* Future research: engaging young smokers into cessation programs with larger sample sizes to identify the determinants of gender differences
TREATING TOBACCO with YOUTH in ADDICTIONS TREATMENT

- Randomized, controlled trial of 54 youth age 13-18 in outpatient substance abuse treatment
- 6-session Smoking Reduction and Cessation (SRC) vs. waitlist control
- More teens in the SRC group reported cessation attempts and abstinence at all time points (3 mo FU significant)
- Tobacco cessation intervention appeared to enhance substance abuse treatment outcomes

(Myers & Brown, 2005; Myers & Prochaska, 2008)

ADDRESSING MYTHS & BARRIERS

- Individuals with mental illness are just as motivated to quit smoking as the general population
- Tobacco use is a leading cause of death for those with mental illness & smoking adversely impacts treatment
- Number of treatments are available including the quitline
- Smokers with mental illness can quit
- 65% -- Staff are unfamiliar with tobacco treatments
- 58% -- Lack of provider knowledge
**DISSEMINATION: WESTERN US**

- 28 PROGRAMS REPRESENTED (45 faculty)
  - California: 16 (24)
  - Washington: 4 (7)
  - Arizona: 2 (4)
  - Colorado: 2 (4)
  - Nevada: 1 (2)
  - New Mexico: 1 (2)
  - Utah: 1 (1)
  - Hawaii: 1 (1)

---

**Activity** | **Today** | **Past 7 Days** | **Past 30 Days** | **Totals**
--- | --- | --- | --- | ---
Logins | 3 | 67 | 358 | 35,930
Login Failures | 0 | 61 | 328 | 20,720
Admin Logins | 2 | 3 | 0 | 3,130
User Logins | 0 | 59 | 225 | 26,771
Registrations | 0 | 21 | 10% | 0,820
Petitions | 0 | 1 | 2 | 581
Files Downloaded | 13 | 217 | 2,067 | 194,214

Which of the following versions of Rx for Change do you plan to use?

<table>
<thead>
<tr>
<th>Activity</th>
<th>Totals</th>
</tr>
</thead>
<tbody>
<tr>
<td>Ask-Advise-Refer Rx for Change</td>
<td>6,666</td>
</tr>
<tr>
<td>The 5 A’s Rx for Change</td>
<td>7,771</td>
</tr>
<tr>
<td>Psychiatry Rx for Change</td>
<td>2,270</td>
</tr>
<tr>
<td>Cancer Care Provider curriculum</td>
<td>1,624</td>
</tr>
<tr>
<td>Mental Health Peer Counselor curriculum</td>
<td>2,686</td>
</tr>
<tr>
<td>Surgical Provider curriculum</td>
<td>1,309</td>
</tr>
<tr>
<td>Cardiology Provider curriculum</td>
<td>1,143</td>
</tr>
</tbody>
</table>

http://rxforchange.ucsf.edu
A national effort to increase surveillance, research, and treatment is needed.

Williams et al. (2013) AJPH

THINK GLOBALLY, ACT LOCALLY

A tobacco-free agency is a treatment setting that has policies, training, assessments, and services in place to protect clients and staff from secondhand smoke exposure and smoking cues and is aimed at supporting client and staff efforts to quit smoking and live life tobacco-free. Successful agency attention to tobacco control requires:

1. Written policy **banning tobacco** (and e-cigarettes) from agency setting
2. Written policy requiring **zero evidence** of tobacco use for staff at work
3. **Training of staff** in the treatment of tobacco dependence
4. Availability of **cessation treatment for staff** who smoke
5. **Assessment** of client tobacco use (and e-cigarettes) with documentation
6. Tobacco **treatment planning** for all smokers to include FDA-approved cessation **pharmacotherapy**, such as NRT and **cessation support**
7. **Referrals** for cessation treatment, such as the state quitline
**AGENCY READINESS**

In your opinion, has your agency done what it can to be a tobacco-free agency?
- No, and it does not intend to within the next 6 months.
- No, but it intends to within the next 6 months.
- No, but it intends to within the next 30 days.
- Yes, it has, but for less than 6 months.
- Yes, it has for more than 6 months.

**STAFF READINESS**

Given your role at the agency, have you done what you can to get involved in making your agency tobacco-free?
- No, and I do not intend to within the next 6 months.
- No, but I intend to within the next 6 months.
- No, but I intend to within the next 30 days.
- Yes, I have, but for less than 6 months.
- Yes, I have for more than 6 months.
Individuals with mental illness are just as motivated to quit smoking as the general population.

Tobacco use is a leading cause of death for those with mental illness & smoking adversely impacts treatment.

Treatments are available, including the quitline.

Smokers with mental illness can quit.

MH providers are interested in training to treat tobacco dependence and training improves practice & systems.
Summary

RECOMMENDATIONS to TREAT TOBACCO USE in PSYCHIATRY

In terms of lives saved, quality of life, and cost-efficacy, treating smoking is considered the most important activity a clinician can do.

-- John Hughes, MD
Professor of Psychiatry
University of Vermont
TOBACCO TREATMENTS with DEMONSTRATED EFFICACY

- Physician advice
- Formal smoking cessation programs
  - Individual counseling
  - Web and telephone counseling:
    - www.smokefree.gov
    - 1-800-QUIT-NOW (national toll-free quit line)
  - Group programs
- Aversion therapy
- NRT, bupropion, varenicline, nortriptyline, clonidine, cytisine

TOBACCO TREATMENTS LACKING EVIDENCE of EFFICACY

- SSRIs and SNRI
- Anxiolytics:
  - Sedative, hypnotics, buspirone
- Homeopathic treatments
- E-cigarettes
- Herbal supplements
- Lobeline
- Massage therapy
- Acupuncture
- Hypnotherapy
- Nicotine Anonymous
**SET REALISTIC EXPECTATIONS**

Most quit attempts are not "successful":

- It’s a learning process. Reframe success!
- Most people make multiple quit attempts before they are successful.
- Longer prior quit attempts predict future success.

![Graph showing quit attempts success rates](chart)


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**MH EX-SMOKERS’ CESSATION ADVICE**

“Smoking not only destroys your health, it creates an addiction, which can complicate emotional stability.”

“There is likely to be physical agitation. Walk or do something to “spend” your energy.”

“I never realized until I quit that the nicotine was what made me anxious and the addiction kept me feeling like it was the only way to cope.”

“Discover why smoking calms you and then find something that will come close to that effect, in a good way.”

“A routine benefits a person with mental illness who wants to quit smoking.”

“Keep a quit journal.”

“Avoid alcohol at all costs.”

“Stay away from negative people and fellow smokers until you feel stronger.”

“Don’t think of it as losing a friend, think of it as gaining your freedom.”
MAKE a COMMITMENT...

Address tobacco use with all patients.

At a minimum, commit to incorporating brief tobacco interventions as part of routine patient care:

Ask, Advise, and Refer.

Become an advocate for smoke-free hospitals and clinics, agencies, workplaces, and public places.

‘CIGARETTES ARE MY GREATEST ENEMY’

* Statewide social marketing campaign in California by Billy DeFrank Lesbian and Gay Community Center, the Center OC, and the American Legacy Foundation

* Real-life triumphs over adversities to quit smoking
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