

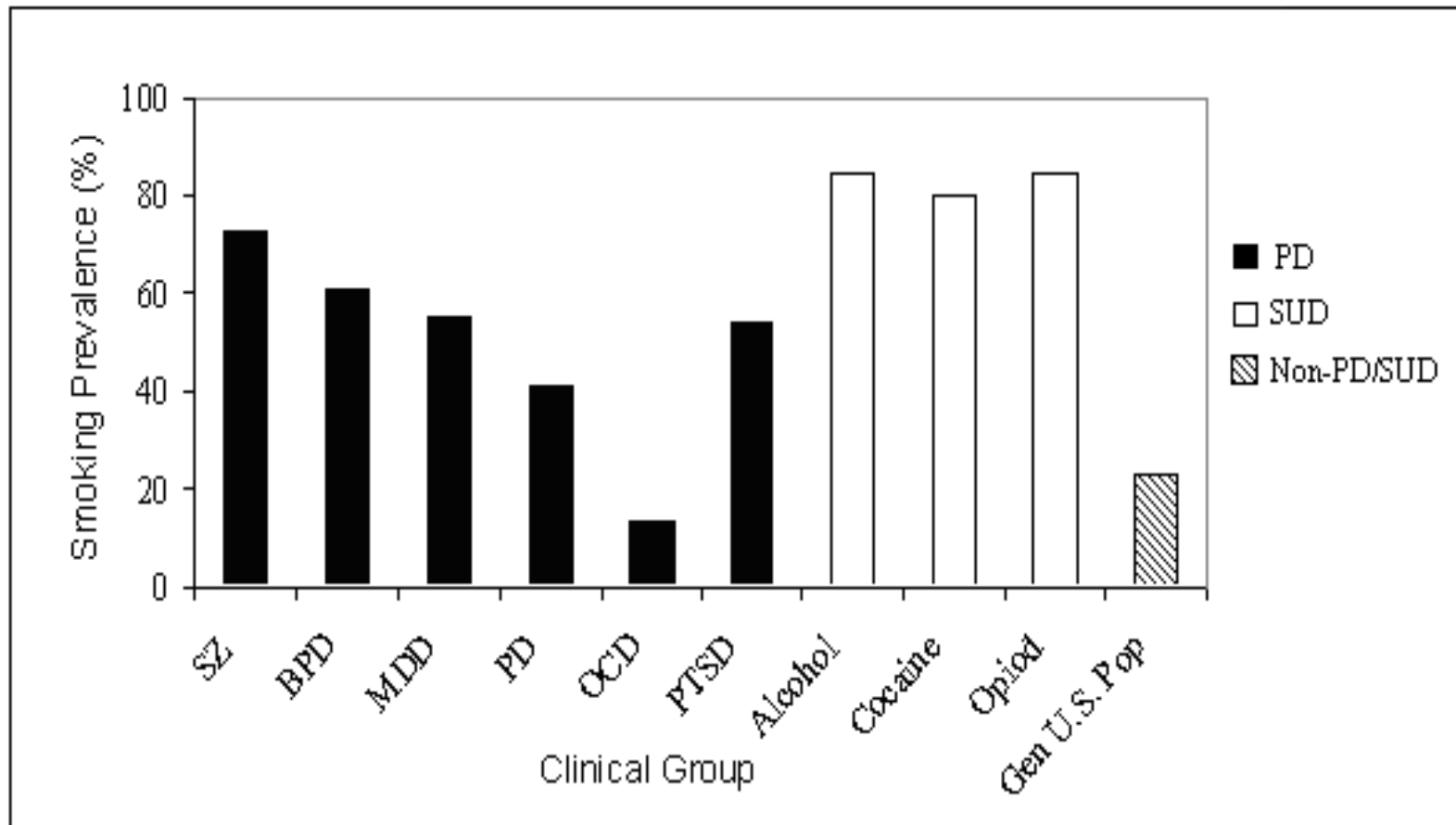
Mental illness, Substance abuse, and Tobacco



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Background and Significance



Kalman, Morissette and George (2005), Am. J. Addict., 14: 106-123

Cancer Risk

- Less likely to obtain cancer screenings (**Substance use**); but also more likely to obtain cancer screenings (**Mental illnesses**)
- Have higher incidence of cancer
- Have higher rates of co-morbid medical illnesses and mortality



Lasser KE, Kim TW, Alford DP, Cabral H, Saitz R, Samet JH. Is unhealthy substance use associated with failure to receive cancer screening and flu vaccination? A retrospective cross-sectional study. *BMJ Open*. 2011;1(1)

Abrams MT, Myers CS, Feldman SM, et al. Cervical Cancer Screening and Acute Care Visits Among Medicaid Enrollees With Mental and Substance Use Disorders. *Psychiatric Services*. 2012;63(8):815-822

Lichtermann D, Ekelund J, Pukkala E, Tanskanen A, Lönnqvist J. Incidence of cancer among persons with schizophrenia and their relatives. *Archives of General Psychiatry*. 2001;58(6):573-578.

Newcomer JW, Hennekens CH. Severe mental illness and risk of cardiovascular disease. *JAMA: The Journal of the American Medical Association*. 2007;298(15):1794-1796

Reasons for Smoking among individuals with co-morbid SUD and PD

- Genetic



- Bio-behavioral



- Psychosocial



Substance use and smoking: Genetic



Familial Transmission of Substance Dependence: Alcohol, Marijuana, Cocaine, and Habitual Smoking

A Report From the Collaborative Study on the Genetics of Alcoholism

Laura Jean Bierut, MD; Stephen H. Dinwiddie, MD; Henri Begleiter, MD; Victor Hesselbrock, PhD; John I. Nurnberger, Jr, MD, PhD; Benjamin R. Crowley, MD; Theodore Reich, MD; Marc A. Schuckit, MD

Common Genetic Vulnerability for Nicotine and Alcohol Dependence in Men

William R. True, PhD, MPH; Hong Xian, PhD; Jeffrey F. Scherrer, MA; Pamela A. F. Madden, PhD; Kathleen K. Bucholz, PhD; Andrew C. Heath, DPhil; Seth A. Eisen, MD, MSc; Michael J. Lyons, PhD; Jack Goldberg, PhD; Ming Tsuang, MD, PhD, DSc

- Both common and specific addictive factors for alcohol, marijuana, cocaine, and habitual smoking transmitted in families
- This specificity suggested independent causative factors for the development of each substance dependence
- **68%** of the association between nicotine and alcohol dependence explained by shared genetic effects.

Smoking and mental health: Genetic



(1,566 female twin pairs) life-time daily cigarette consumption was associated with life-time prevalence of major depression, **suggesting that the relationship between smoking and major depression resulted solely from genes which predispose to both conditions.**



(8,169 male twins) shared genetic disorders **further predispose to major depression and nicotine dependence.**





Smoking and mental health: Genetic

A Twin Registry Study of the Relationship Between Posttraumatic Stress Disorder and Nicotine Dependence in Men

Karestan C. Koenen, PhD; Brian Hitsman, PhD; Michael J. Lyons, PhD; Raymond Niaura, PhD; Jeanne McCaffery, PhD; Jack Goldberg, PhD; Seth A. Eisen, MD; William True, MD; Ming Tsuang, MD

- **63%** of the association between post traumatic stress disorder and nicotine dependence co-morbidity explained by shared genetic effects.

A Novel Permutation Testing Method Implicates Sixteen Nicotinic Acetylcholine Receptor Genes as Risk Factors for Smoking in Schizophrenia Families

Stephen V. Faraone^{a,b} Jessica Su^b Levi Taylor^c Marsha Wilcox^c
Paul Van Eerdewegh^{c,d} Ming T. Tsuang^{a,b,c,e}

- A group of **16 candidate genes** significantly linked to smoking behaviors among individuals with schizophrenia.

Substance use and Smoking: Bio-behavioral



Marijuana use reduces cessation of tobacco smoking in adults

Ford, Vu, Anthony. (2002) Drug and Alcohol Dependence; 67:243-248

Nicotine increases alcohol self-administration in non-dependent male smokers.

Barrett, Tichauer, Leyton, et al. (2006). Drug and Alcohol Dependence; 81:197-204

Increases in methadone dose could increase nicotine craving and cigarette consumption for individuals with opioid-dependence

Story & Stark. (1991). Journal of psychoactive drugs, 23:203-215

Cigarette smoking can prime the brain to cocaine use

Levine et al. (2011). Science translational medicine, 3, 107, 107-109

Mental health and smoking: Bio-behavioral



Nicotine reduces sensorimotor gating deficits in smokers with schizophrenia

Postma et al. (2006). Psychopharmacology, 184: 589–599

Brain levels of monoamine oxidase A (MAO-A) (an enzyme associated with depression) were reduced in smokers relative to nonsmokers; suggesting that people with affective disorders may smoke to reduce elevated MAO-A levels in the brain

Fowler, Volkow, Wang, et al. (1996). Proceedings of the National Academy of Sciences of the United States of America, 93:14065-14069

Smokers with a primary diagnosis of anxiety disorder reported greater levels of general anxiety, distress, and depression as compared to nonsmokers.

McCabe, Chudzik, Antony, et al. (2004). Journal of Anxiety Disorders, 18:7-18

Substance use and Smoking: Psychosocial



- Tobacco use may foster the use of other substances; and vice versa



- Drug treatment facilities may provide an environment that supports tobacco use or a factor for delayed tobacco use cessation.



- Factors such as neighborhood disadvantage and early exposure to substance use may present an 'exposure opportunity' for subsequent substance use.



Glautier S, Clements K, White JAW, et al. Alcohol and the reward value of cigarette smoking. Behavioural Pharmacology 1996; 7:144-154

King AC, Epstein AM. Alcohol Dose-Dependent Increases in Smoking Urge in Light Smokers. Alcoholism: Clinical & Experimental Research 2005; 29:547-552

Friend KB, Pagano ME. Smoking initiation among nonsmokers during and following treatment for alcohol use disorders. Journal of Substance Abuse Treatment 2001; 21:101-106

Bobo JK, Husten C. Sociocultural Influences on Smoking and Drinking. Alcohol Research & Health 2000; 24:225-232

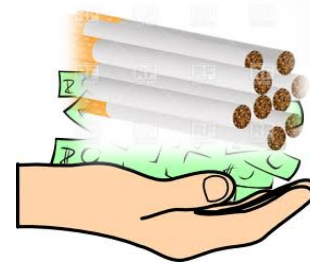
Crum RM, Lillie-Blanton M, Anthony JC. Neighborhood environment and opportunity to use cocaine and other drugs in late childhood and early adolescence. Drug and Alcohol Dependence 1996; 43:155-161

Wagner FA, Anthony JC. Into the world of illegal drug use: Exposure opportunity and other mechanisms linking the use of alcohol, tobacco, marijuana, and cocaine. Am. J. Epidemiol. 2002; 155:918-925

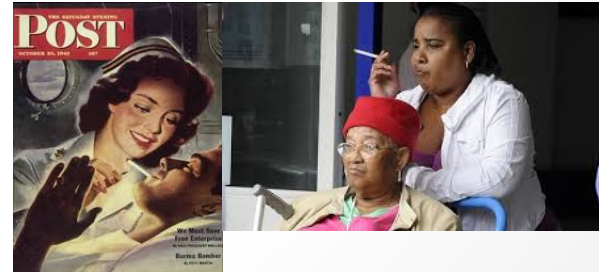
Mental health and smoking: Psychosocial



- History of tobacco use as a **token economy**-- cigarettes used as a 'reward' for appropriate behavior (i.e., smoking privileges)



- Smoking among clients and staff to encourage '**socialization**'



Kawachi I, Berkman L. Social ties and mental health. *Journal of Urban Health* 2001; 78:458-467

Lawn S. Cigarette smoking in psychiatric settings: occupational health, safety, welfare and legal concerns. *Australian and New Zealand Journal of Psychiatry* 2005; 39:886-891

Keizer I, Eytan A. Variations in Smoking during Hospitalization in Psychiatric In-Patient Units and Smoking Prevalence in Patients and Health-Care Staff. *International Journal of Social Psychiatry* 2005; 51:317-328

Morisano D, Bacher I, Audrain-McGovern J, et al. Mechanisms underlying the comorbidity of tobacco use in mental health and addictive disorders. *Canadian Journal Of Psychiatry. Revue Canadienne De Psychiatrie* 2009; 54:356-367

Treatment Approaches

- “All smokers with psychiatric disorders, including substance use disorders, should be offered tobacco dependence treatment, and clinicians must overcome their reluctance to treat this population.... Treating tobacco dependence in individuals with psychiatric disorder is made more complex by the potential for multiple psychiatric disorders and multiple psychiatric medications.”

(Treating Tobacco Use and Dependence: 2008 Update. Clinical Practice Guideline)

Future studies are required to examine- importance and effectiveness of specialized assessment and tailored interventions in these populations

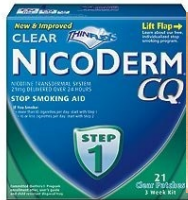
NEED for Tailored Treatments

- Exclusion criteria for efficacy studies establishing product monographs for pharmacotherapy includes mental illnesses
- **Varenicline :**
 - “Other **exclusion criteria** were **major depressive disorder within the past year requiring treatment; history of panic disorder, psychosis, bipolar disorder, or eating disorders; alcohol or drug abuse/dependency within the past year**....” (Gonzales et al 2006., pg 48).
 - “...**history of alcohol or other drug abuse or dependence in the previous 12 months (nicotine excepted); treatment for major depression in the previous 12 months; history of or current panic disorder, psychosis, or bipolar disorder**...” (Jorenby et al., 2006, pg 57).
 - (Varenicline + NRT): “**History of drug or alcohol abuse or dependence within the past 12 months...any antidepressants, including bupropion; antipsychotic agents; mood stabilizers; naltrexone**....” (Koegelenberg et al., 2014, pg 156).
- **Nicotine Patch:**
 - “...**under psychiatric care or medication; alcohol or any other drug abuse**... (Tonnessen et al., 1999, pg 239)

Evidence-based treatment Pharmacotherapy

Nicotine Replacement Therapy

Oral Medications



Patch



Gum



Lozenge



Inhaler



Zyban

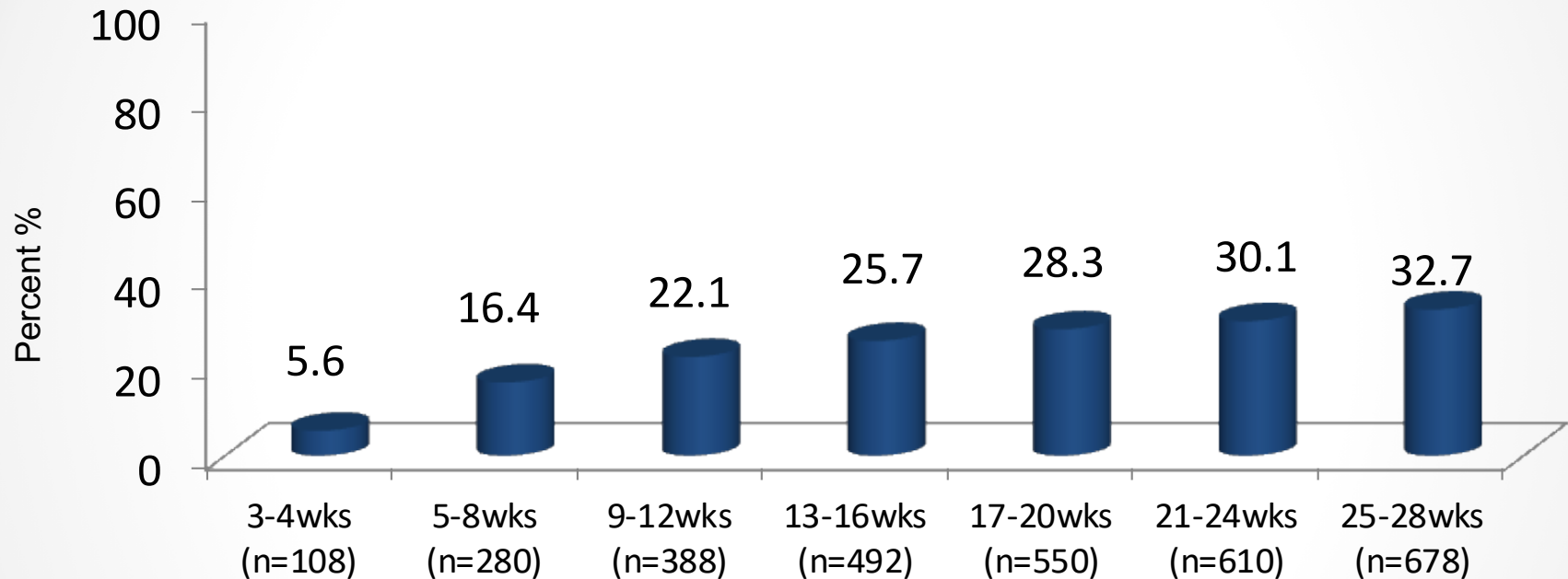


Champix

Special considerations

- Substance use:
 - In most cases, tobacco dependence treatment should be concurrent with substance abuse treatment with the exception of alcohol abuse.
 - Increased availability and delivery of smoking cessation needed in substance abuse and addictions treatment services.
- Mental illness:
 - Tobacco treatment can increase depressive symptoms
 - Tobacco treatment may affect pharmacokinetics of certain psychiatric medications
 - Varenicline not effective in patients with Schizophrenia

Smoking cessation by length of stay in a program for individuals with Substance use and/or mental health disorders(n = 678),*



***Data taken from the Tobacco Dependence Clinic, Vancouver, Canada 2007-2012
Intervention included structured group behavioural counseling + up to 6 months of
combined pharmacotherapy**

Conclusions

- With intensive tobacco dependence treatment individuals with mental illnesses or substance use disorders are able to achieve smoking abstinence.
- Tobacco treatment should include best practices using behavioural counseling combined with pharmacotherapy.
- Treatment durations beyond 12-weeks should be considered to maximize effectiveness of programs

Questions??

