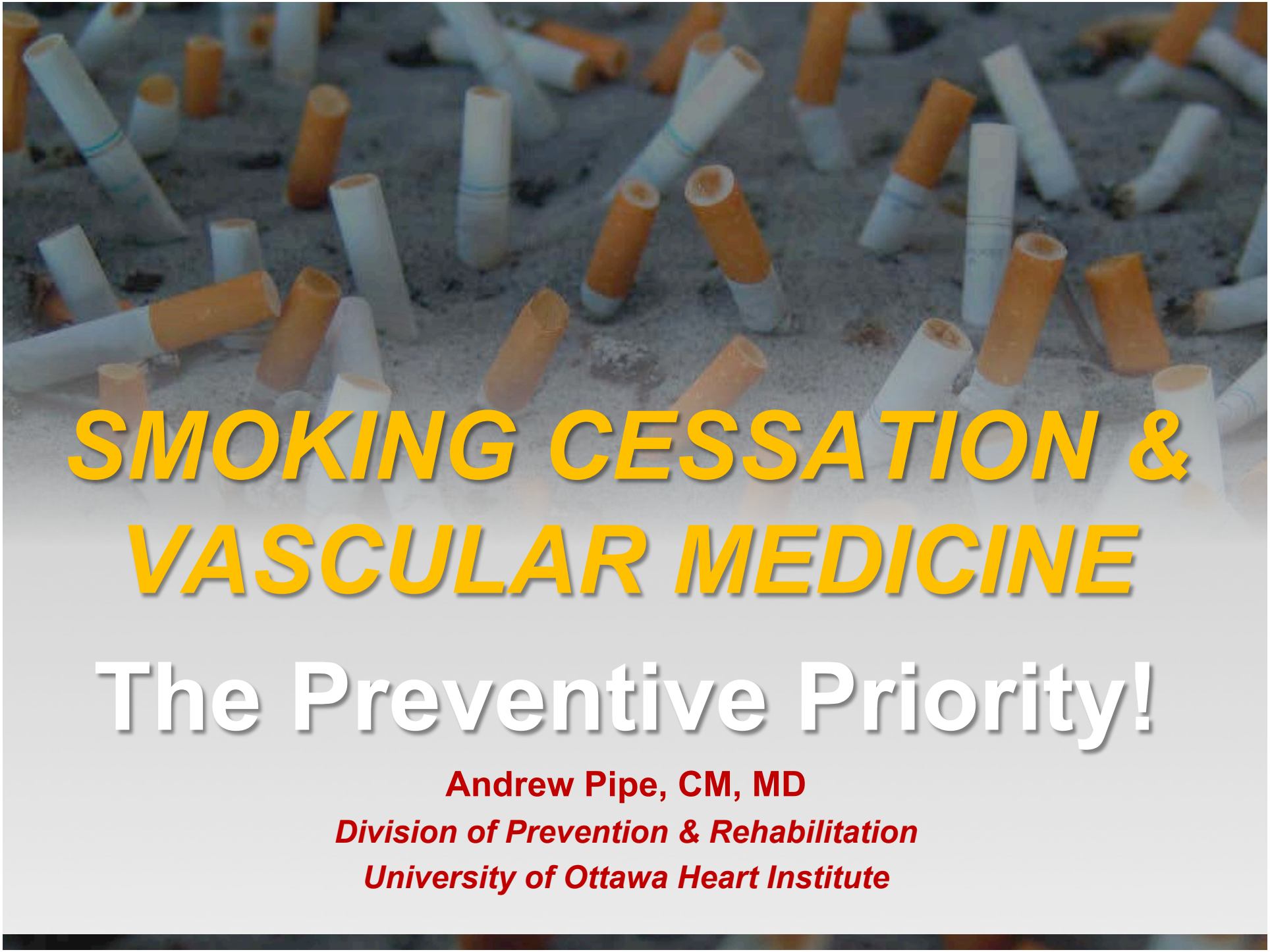

SMOKING CESSATION & VASCULAR MEDICINE

The Preventive Priority!

Andrew Pipe, CM, MD

Division of Prevention & Rehabilitation

University of Ottawa Heart Institute

Declaration of Interest

In the past I have received research and educational support from, and/or served as a consultant to:

PFIZER

JOHNSON & JOHNSON

Further Declaration

I will discuss the 'off-label' use of medications.

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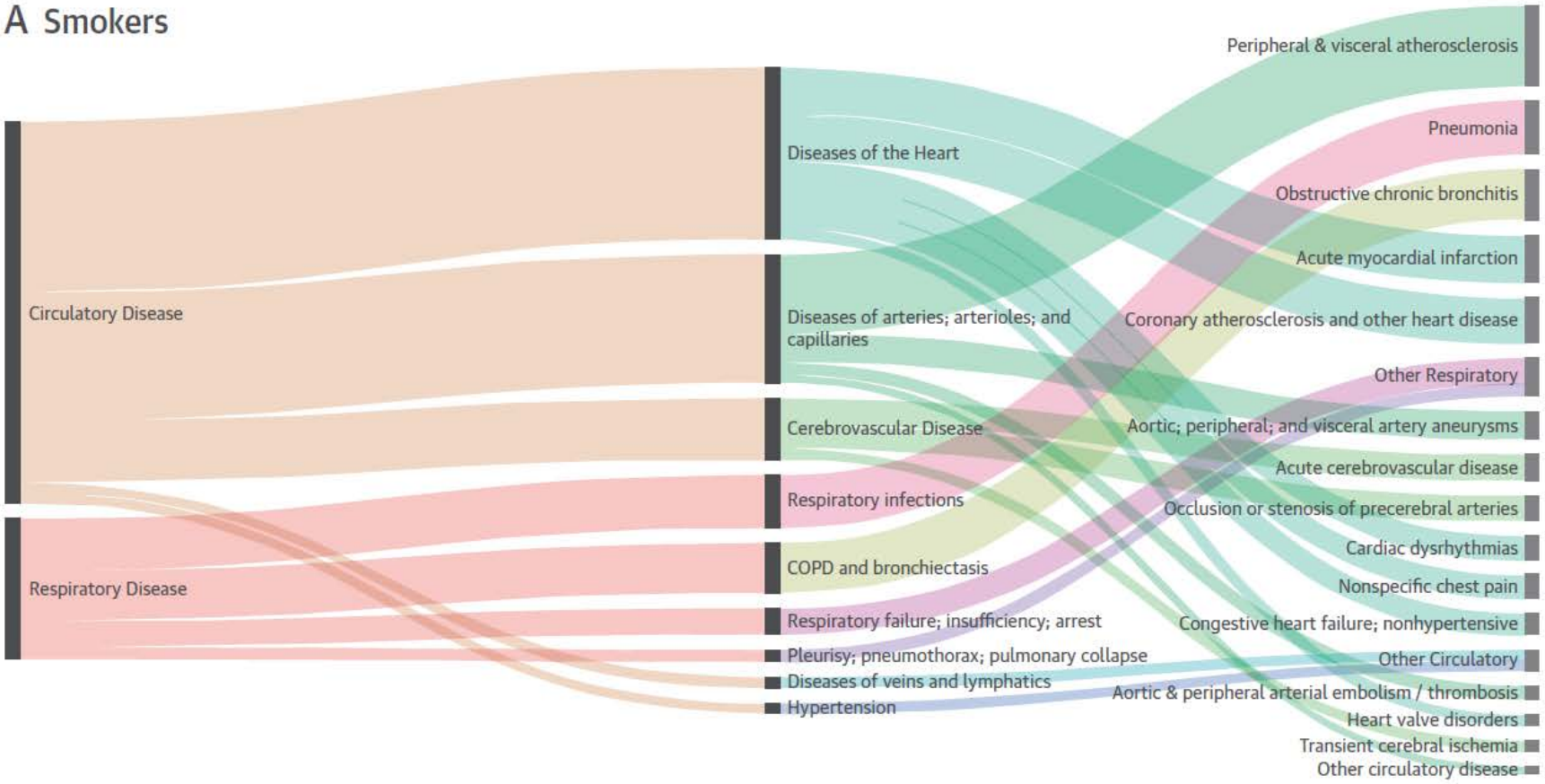
OTTAWA MODEL
FOR SMOKING CESSATION
MODÈLE D'OTTAWA
POUR L'ABANDON DU TABAC

Smoking Cessation

"The single, most powerful, preventive intervention in clinical practice."

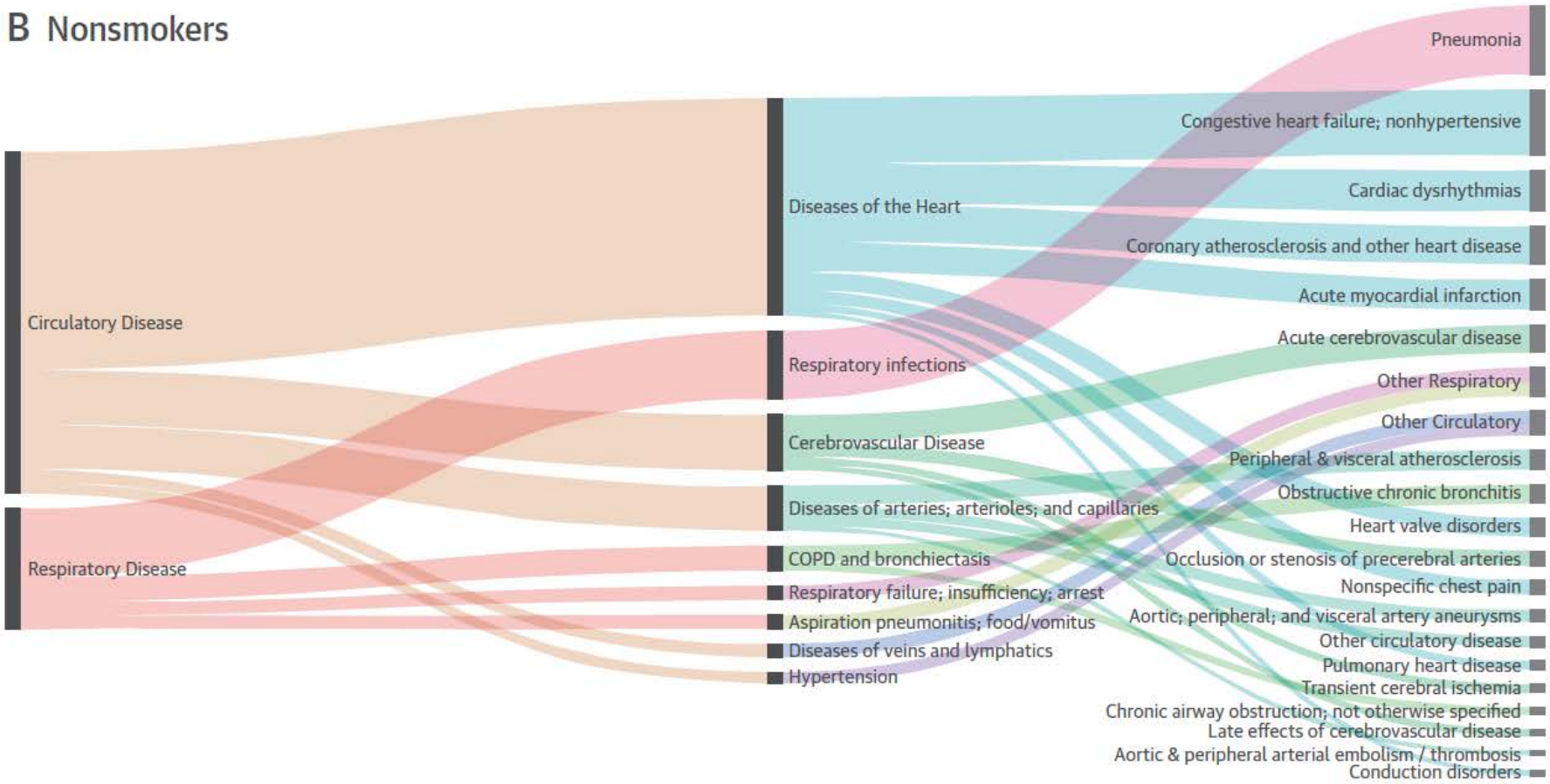
Woolf SH. *JAMA* 1999;282(24):2358-65.

Reasons for Hospitalization



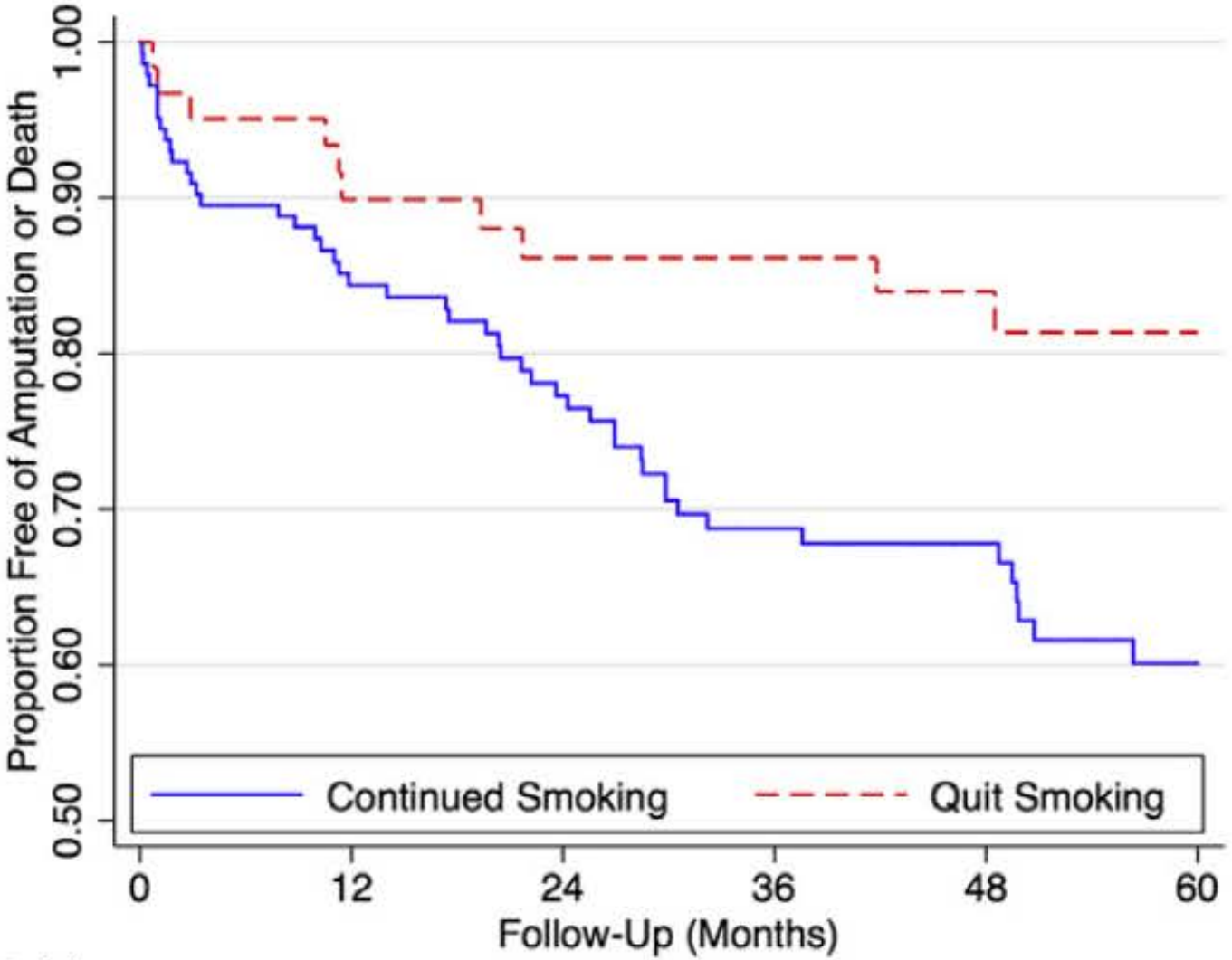
Duval S et al. *J Am Coll Cardiol* 2015;66:1566-74

Reasons for Hospitalization



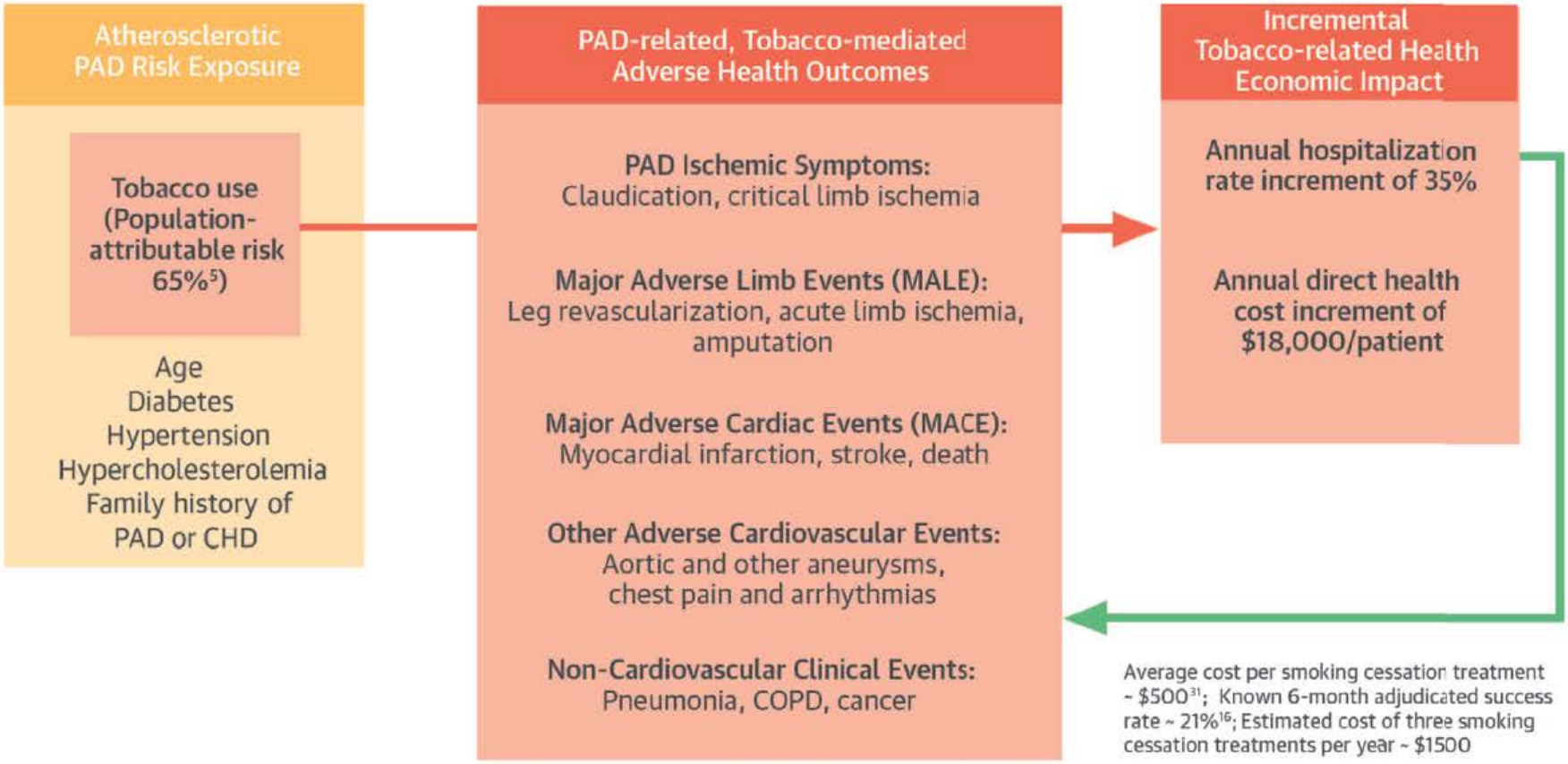
Duval S et al. *J Am Coll Cardiol* 2015;66:1566-74

Amputation-free survival among patients who continued vs quit smoking



Armstrong EJ et al. *J Vasc Surg* 2014;60:1565-71

Impact of Tobacco on PAD Clinical Events and Cost



Tobacco is the single most powerful modifiable cause of atherosclerotic PAD, markedly increasing the risk of CVD (MACE and MALE) and non-CVD clinical events and hospitalizations. This is associated with an immense increase in annual health care costs. Smoking cessation is effective and costs very little.

Duval S et al. *J Am Coll Cardiol* 2015;66:1566-74

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Tobacco Addiction

"...it is difficult to identify any other condition that presents such a mix of lethality, prevalence ... and neglect

...despite effective and readily available interventions."

Treating Tobacco Use and Dependence. Clinical Practice Guideline. US DHHS. 2000.


Smoking Cessation
The Most Important
CVD Intervention !

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Smoking diminishes benefit of blood pressure control

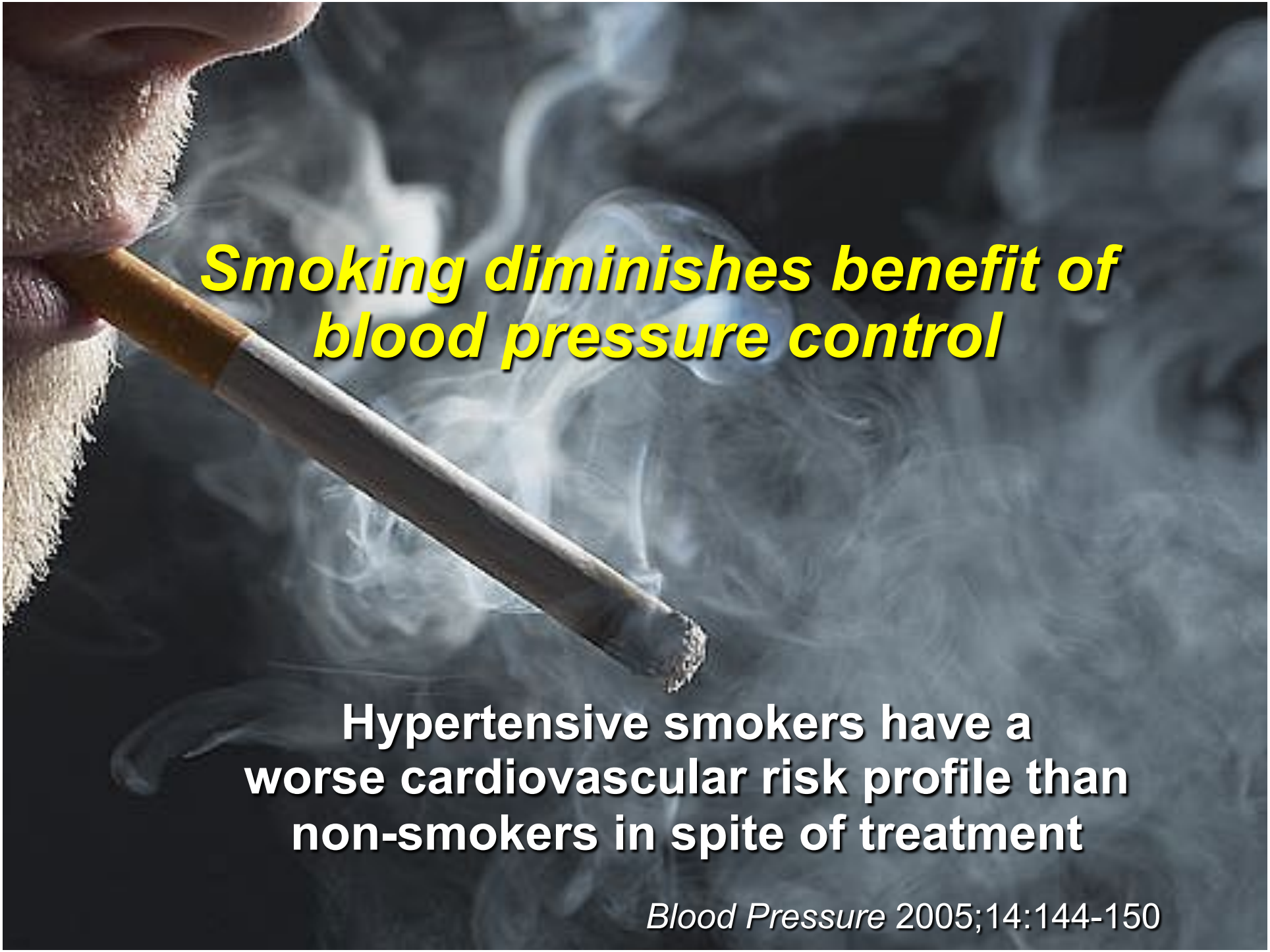
Journath G, et al. Blood Press. 2005; 14(3):144-150.

Smoking cessation is superior to other proven cardiovascular interventions

Critchley JA, Capewell S. JAMA. 2003;290(1):86-97.

Impact of Smoking on Cardiovascular Events in Patients With Coronary Disease Receiving Contemporary Medical Therapy (from the Treating to New Targets [TNT] and the Incremental Decrease in End Points Through Aggressive Lipid Lowering [IDEAL] Trials)

Paul Frey, MD[a], David D. Waters, MD[a,*], David A. DeMicco, PharmD[c], Andrei Breazna, PhD[c], Larry Samuels, PhD[c], Andrew Pipe, CM, MD[d], Chuan-Chuan Wun, PhD[c], and Neal L. Benowitz, MD[b]

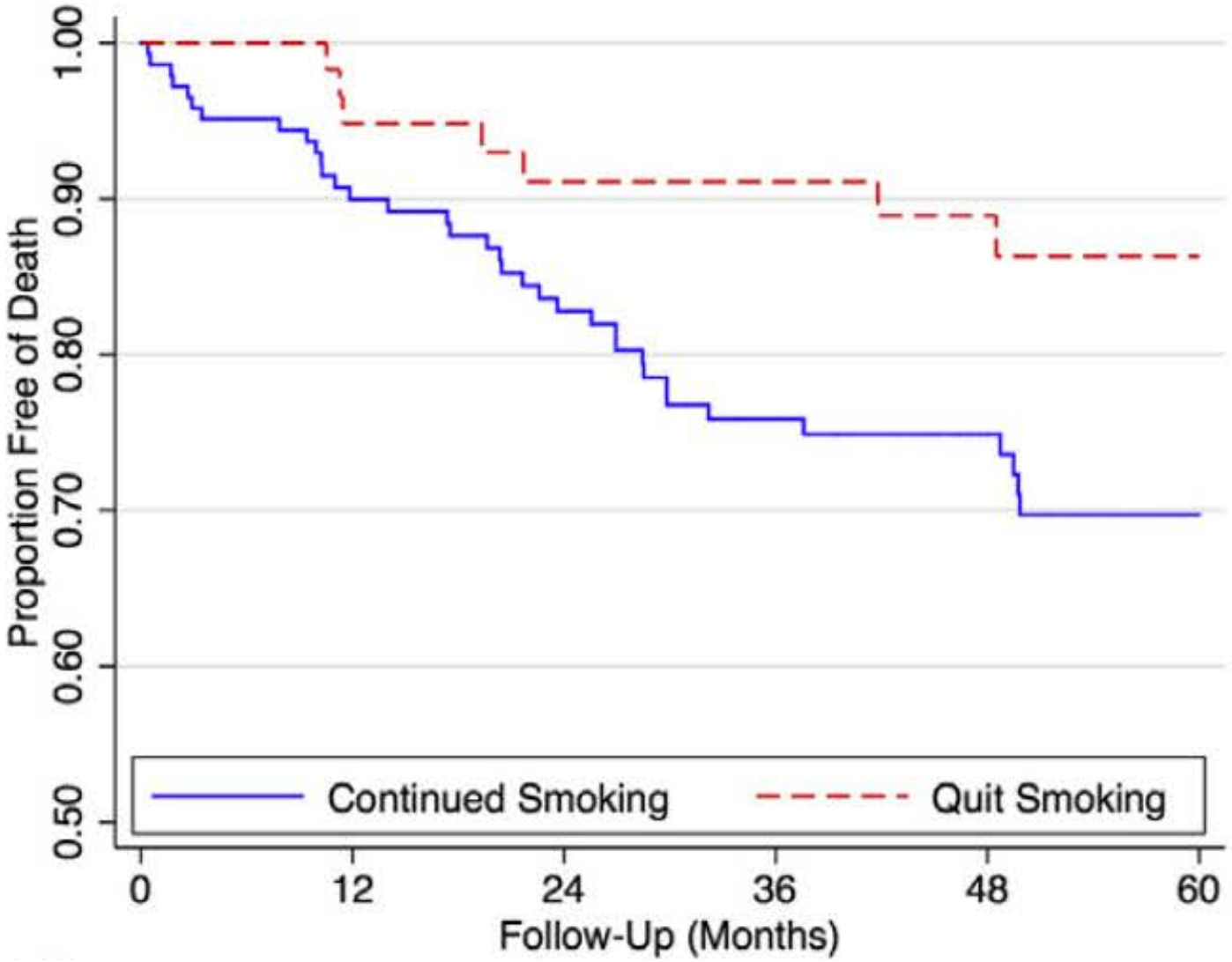

Smoking diminishes benefit of blood pressure control
Hypertensive smokers have a worse cardiovascular risk profile than non-smokers in spite of treatment
Blood Pressure 2005;14:144-150

Smoking diminishes benefits of statins

61% higher risk
of events for smokers compared with nonsmokers treated with statins for secondary prevention

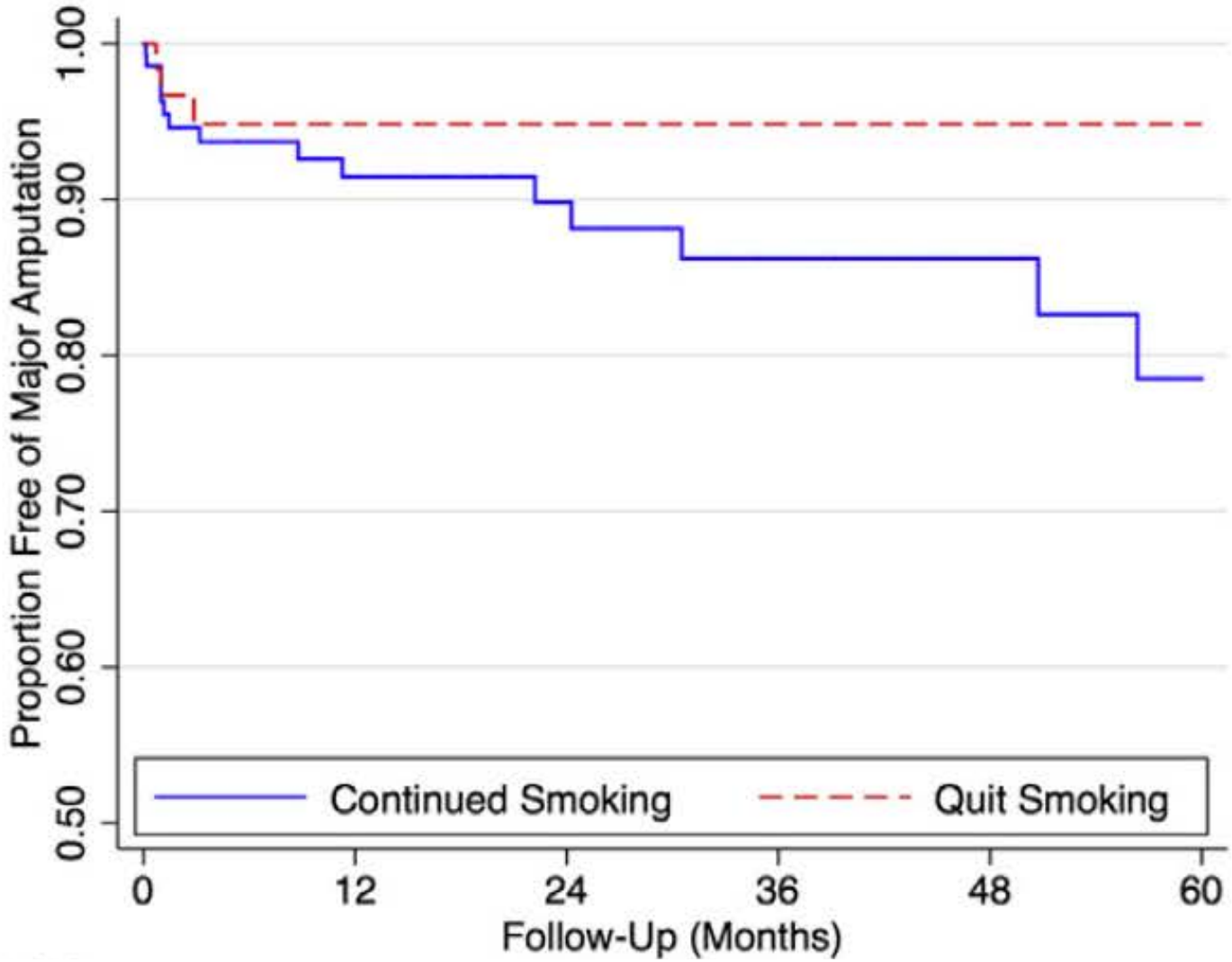
Milionis HJ et al. *Angiology* 2001;52:575-587

Mortality among patients who continued vs quit smoking



Armstrong EJ et al. *J Vasc Surg* 2014;60:1565-71

Rates of major amputation among patients who continued vs quit smoking



Armstrong EJ et al. *J Vasc Surg* 2014;60:1565-71

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OTTAWA MODEL FOR SMOKING CESSATION
MODÈLE D'OTTAWA POUR L'ABANDON DU TABAC

Cost Effectiveness

per life-year saved:

Smoking Cessation	***$ 2,000 – 6,000***
R_x of Hypertension	***$ 9,000 – 26,000***
R_x of Hyperlipidemia	***$ 50,000 – 196,000***

Benowitz NL *Prog Cardiovasc Dis* 2003;46:91-111

The NEW ENGLAND JOURNAL of MEDICINE

SPECIAL ARTICLE

21st-Century Hazards of Smoking and Benefits of Cessation in the United States

Prabhat Jha, M.D., Chinthanie Ramasundarahettige, M.Sc., Victoria Landsman, Ph.D., Brian Rostron, Ph.D., Michael Thun, M.D., Robert N. Anderson, Ph.D., Tim McAfee, M.D., and Richard Peto, F.R.S.

CONCLUSIONS

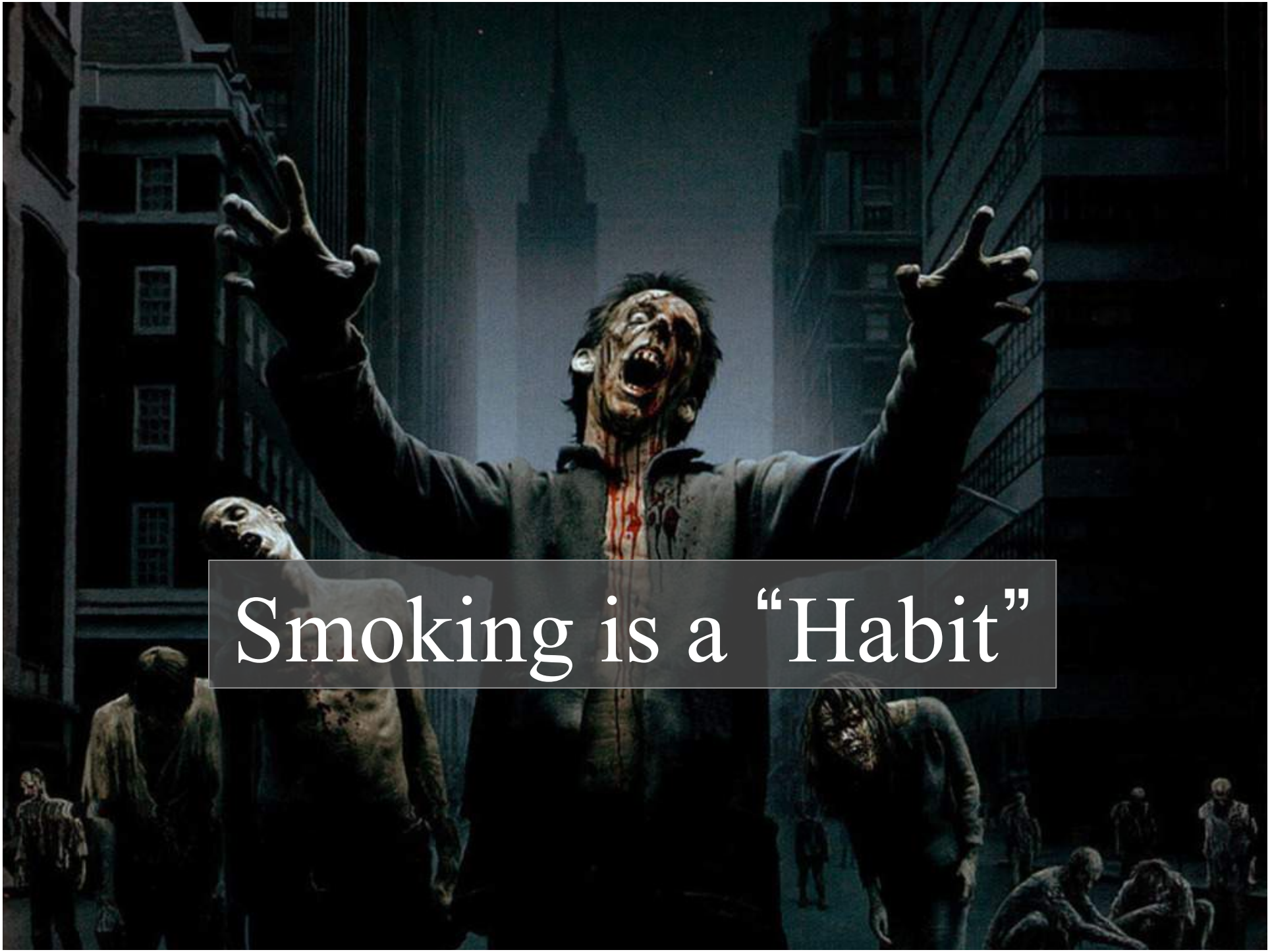
Smokers lose at least one decade of life expectancy, as compared with those who have never smoked. Cessation before the age of 40 years reduces the risk of death associated with continued smoking by about 90%.

Smoking cessation at age 60, 50, 40, & 30 increases life expectancy by 3, 6, 9, 10 years, respectively

Chen D, Wu LT. *Drug Alcohol Depend* 2015;154:14-24


Slaying Zombies!
“Zombie Concepts”


Zombies are everywhere!


Smoking is a “Habit”

Probability of dependence after trying a substance at least once

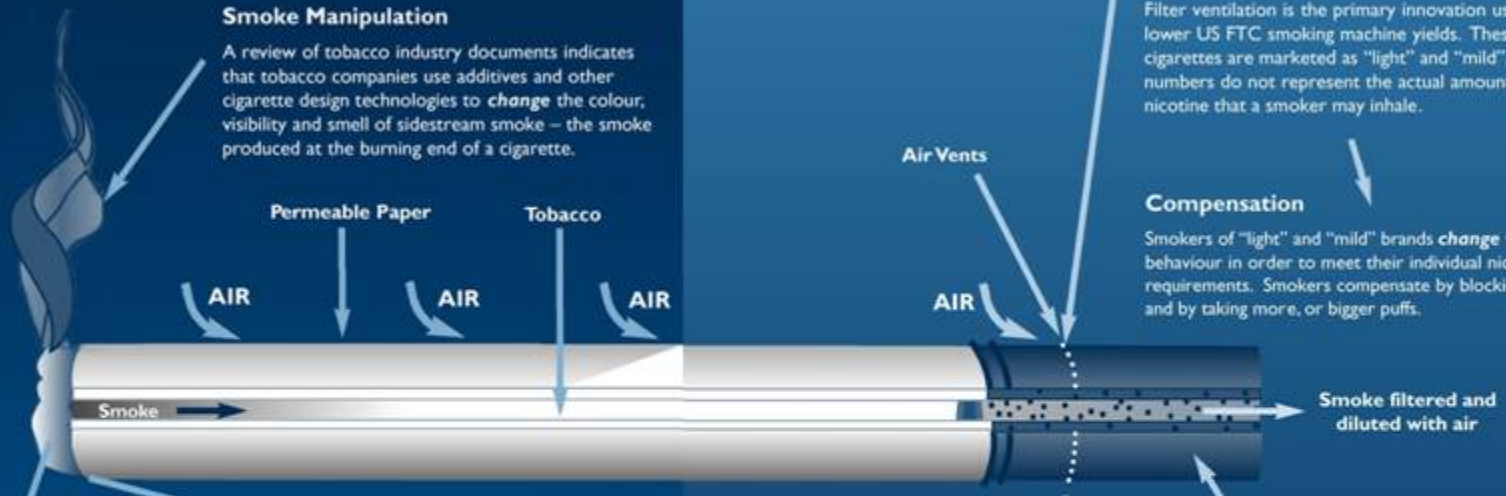
Tobacco	32%
Heroin	23%
Cocaine	17%
Alcohol	15%
Stimulants	11%
Anxiolytics	9%
Cannabis	9%
Analgesics	8%
Inhalants	4%

Stahl's Essential Psychopharmacology, 3rd ed. 2008


“A Cigarette is just a Cigarette”


A Drug Delivery Device

Cigarette engineering



Smoke Manipulation

A review of tobacco industry documents indicates that tobacco companies use additives and other cigarette design technologies to ***change*** the colour, visibility and smell of sidestream smoke – the smoke produced at the burning end of a cigarette.

Filter Ventilation

A cigarette filter has tiny holes in it that allows air to be drawn in when a smoker takes a puff.

"Light" and "Mild"

Filter ventilation is the primary innovation used to achieve lower US FTC smoking machine yields. These lower yield cigarettes are marketed as "light" and "mild", but the numbers do not represent the actual amounts of tar and nicotine that a smoker may inhale.

Compensation

Smokers of "light" and "mild" brands ***change*** their smoking behaviour in order to meet their individual nicotine requirements. Smokers compensate by blocking vent holes and by taking more, or bigger puffs.

Front-End Lift

Cigarettes can be designed and packed with tobacco to deliver more nicotine and better taste during the first few puffs.

Ash

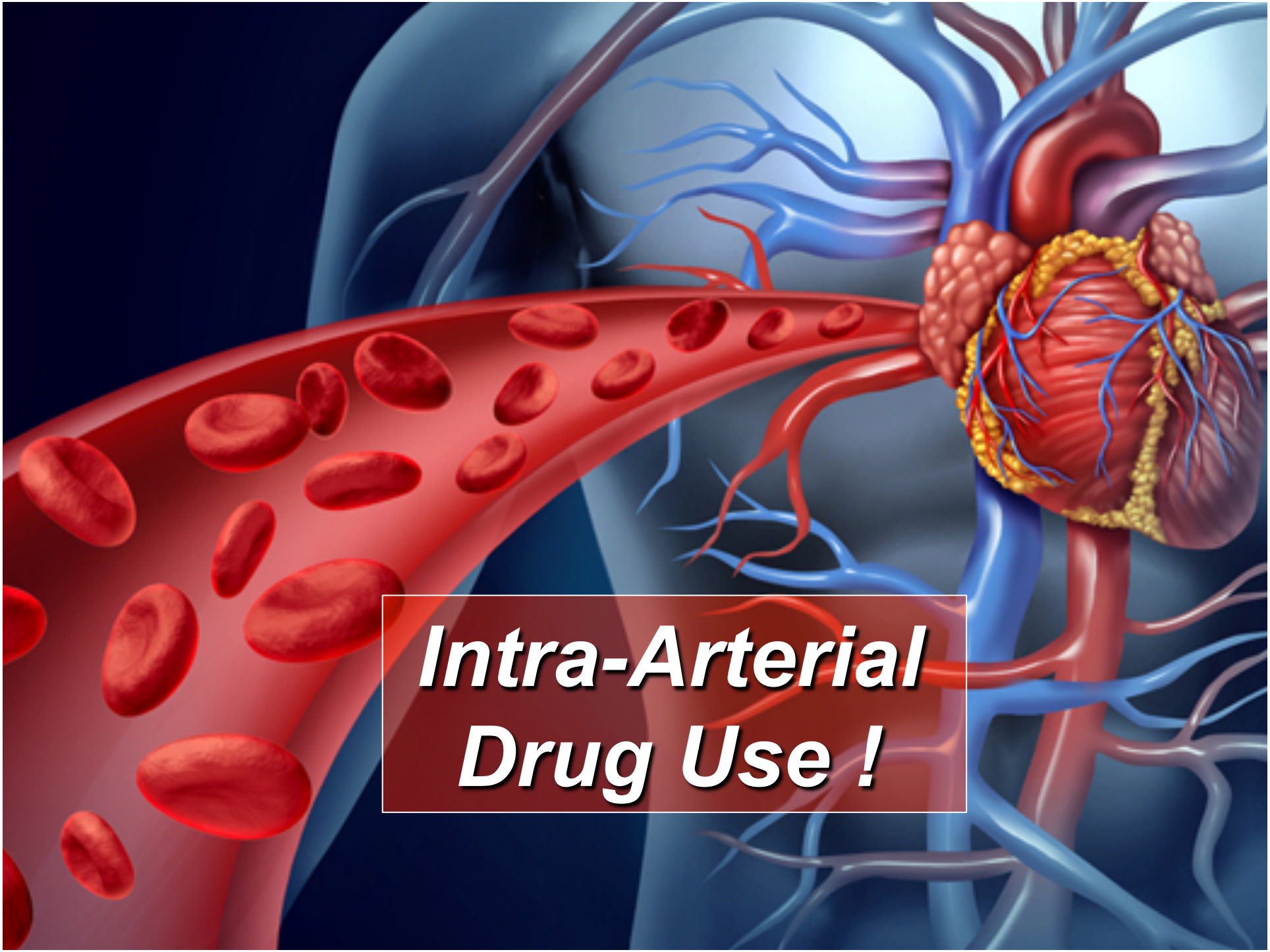
Chemicals added to the cigarette paper can ***change*** the colour of the ash and how well it holds together.

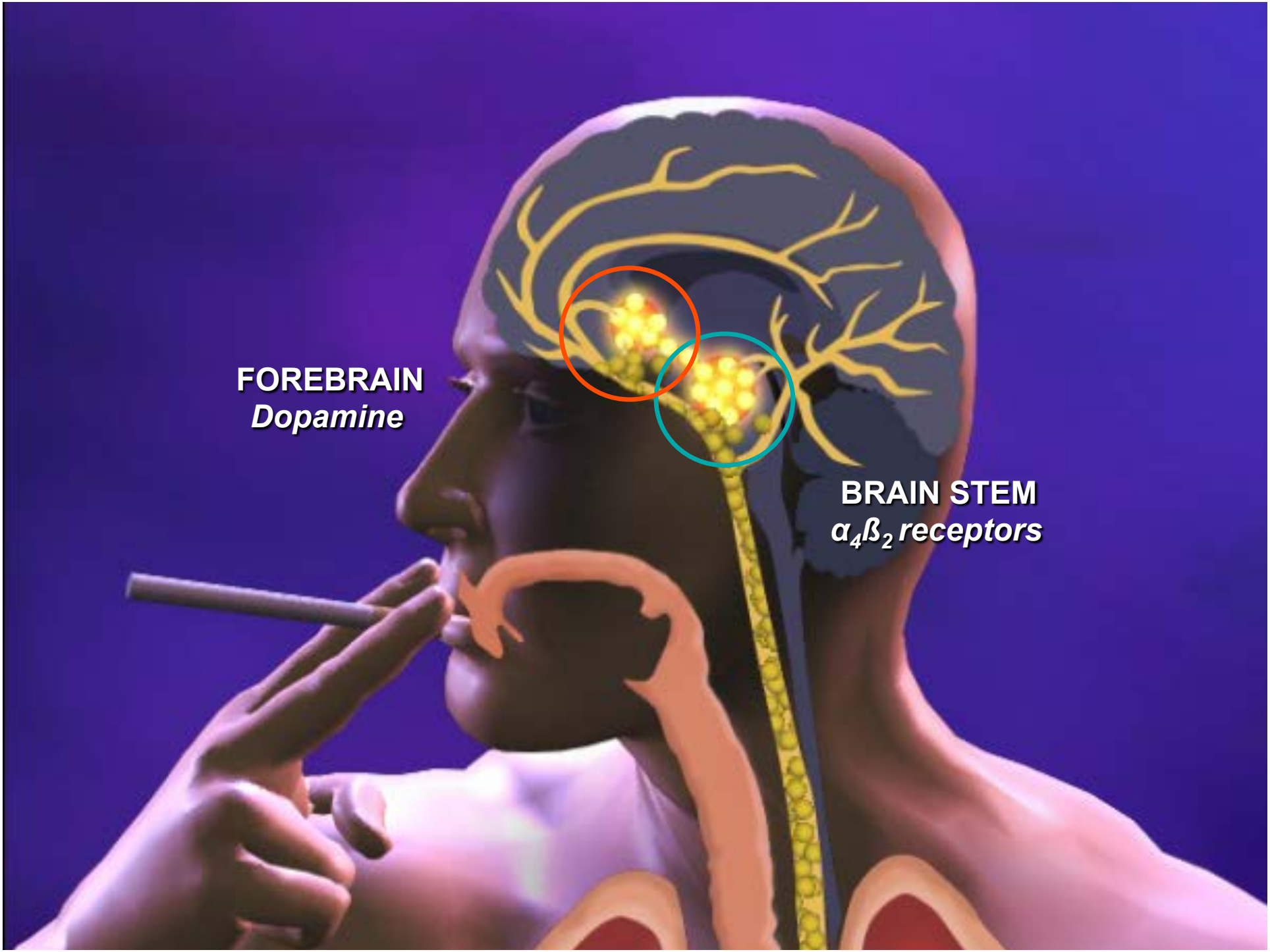
Temperature

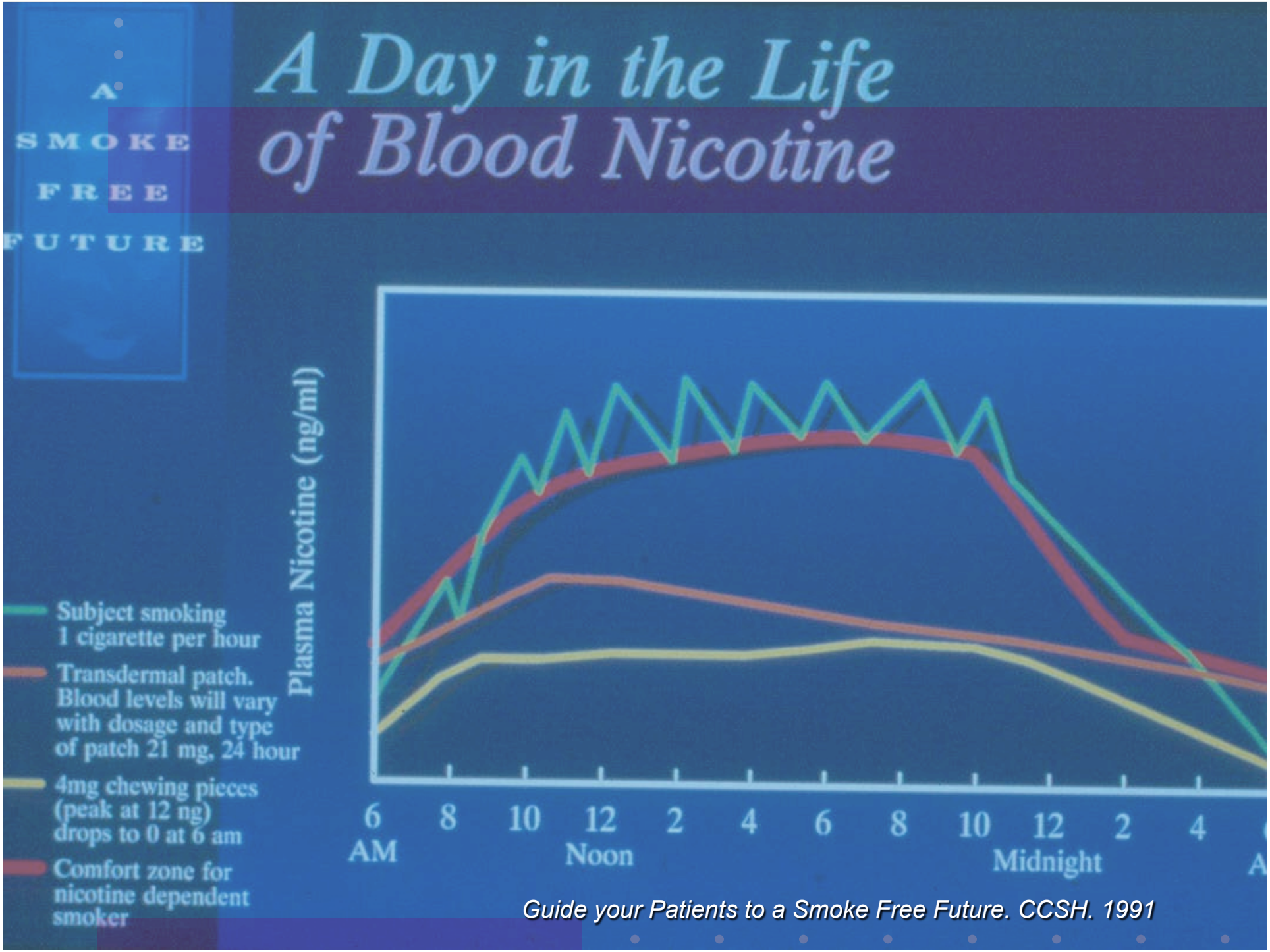
The temperature of a burning cigarette during inhalation reaches 850-900 degrees Celsius.

Ventilation Methods

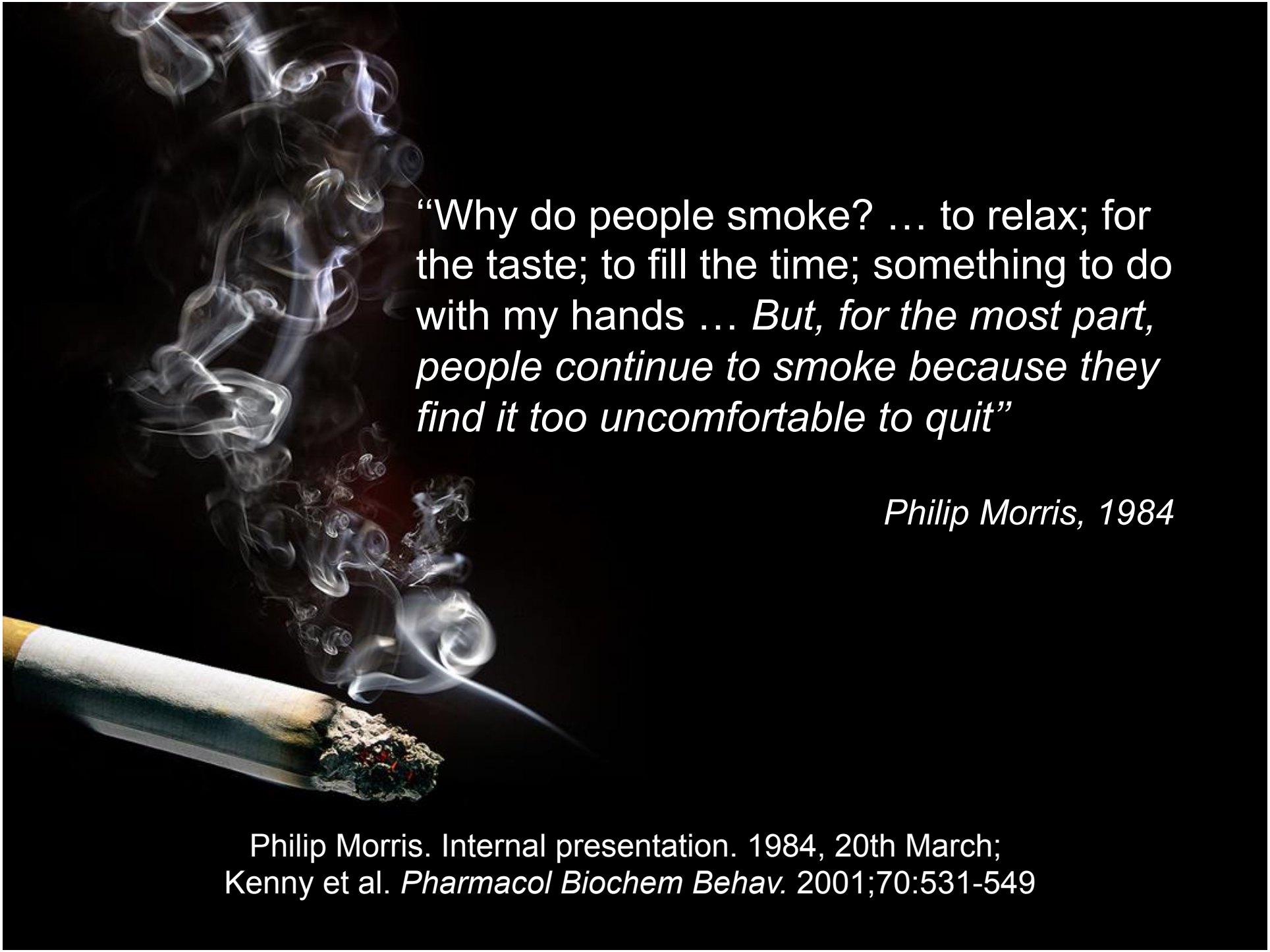
There are three different ways to ventilate a filter – electrostatic perforation, mechanical perforation, or laser perforation. Different ventilation methods can ***change*** the amount of tar and nicotine delivered to the smoker.


Intra-Arterial
Drug Use !

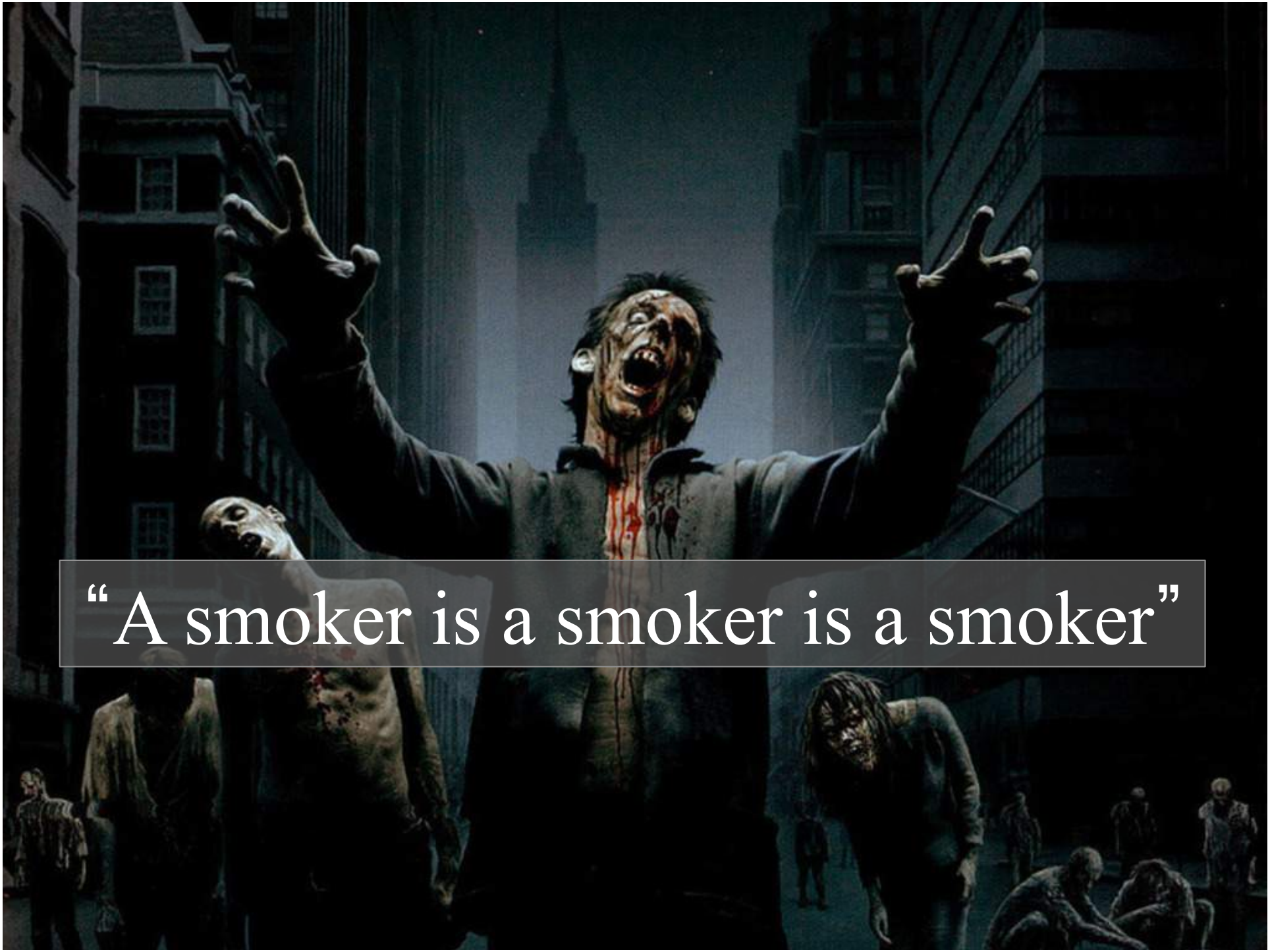

FOREBRAIN
Dopamine
BRAIN STEM
$\alpha_4ß_2$ receptors



Guide your Patients to a Smoke Free Future. CCSH. 1991



Philip Morris. Internal presentation. 1984, 20th March;
Kenny et al. *Pharmacol Biochem Behav.* 2001;70:531-549


“A smoker is a smoker is a smoker”

CANNABIS USE IN CANADA

Canada has one of the highest rates of cannabis use in the world.

40%

OF CANADIANS HAVE USED CANNABIS

10%

OF CANADIANS HAVE USED CANNABIS IN THE PAST YEAR

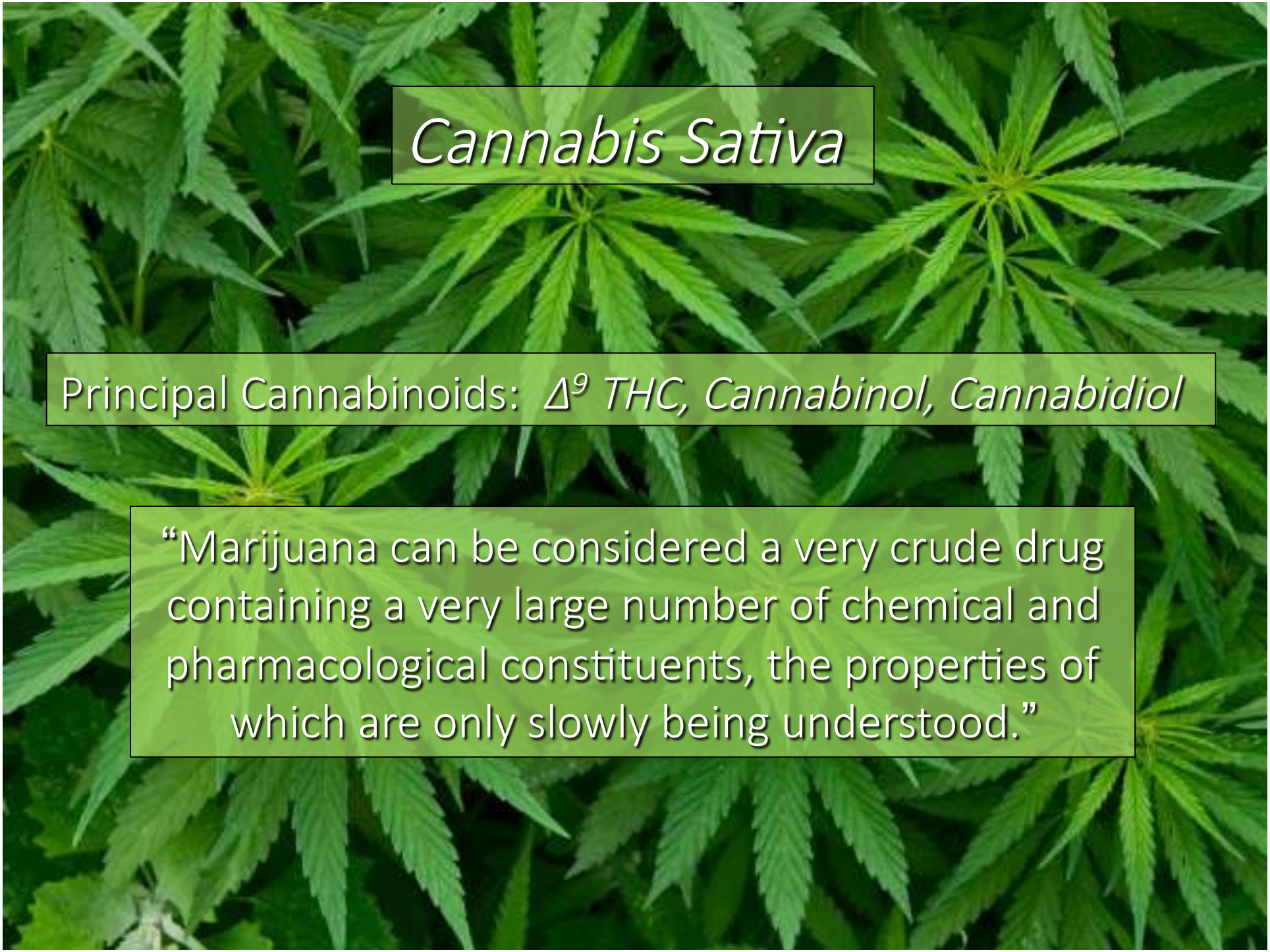
20%

OF CANADIANS AGED 15-24 YEARS USED CANNABIS IN THE PAST YEAR

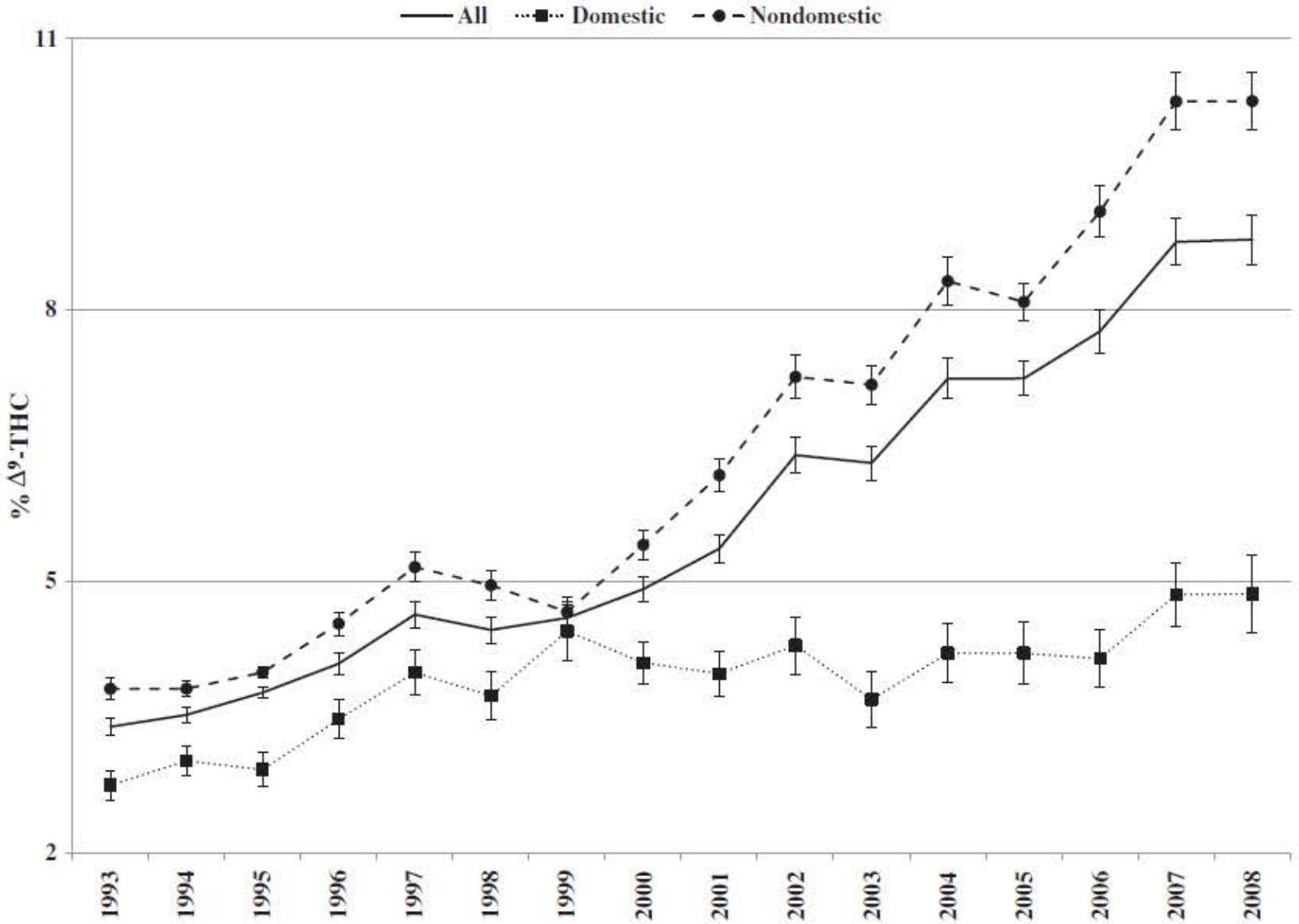
70%

OF CANADIAN CANNABIS USERS ARE AGE 25 OR OLDER

Centre for Addiction and Mental Health (CAMH)


Cannabis Sativa
Principal Cannabinoids: *Δ^9 THC, Cannabinol, Cannabidiol*
"Marijuana can be considered a very crude drug containing a very large number of chemical and pharmacological constituents, the properties of which are only slowly being understood."

Δ^9-THC concentration of domestic and nondomestic samples with 95% confidence intervals.



***J Forensic Sci* 2010 Sep;55(5):1209-17**


Many studies focusing on the duration of impairment were conducted when marijuana typically had a much lower concentration.
The applicability of these studies to today's more potent varieties is questionable as the duration of effect may be longer.

Adverse Effects of Short-Term Use of Marijuana

Impaired short-term memory, making it difficult to learn and to retain information

Impaired motor coordination, interfering with driving skills and increasing the risk of injuries

Altered judgment, increasing the risk of sexual behaviors that facilitate the transmission of sexually transmitted diseases

In high doses, paranoia and psychosis

Adverse Effects of Long-Term or Heavy Use of Marijuana

Addiction (in about 9% of users overall, 17% of those who begin use in adolescence, and 25 to 50% of those who are daily users)*

Altered brain development*

Poor educational outcome, with increased likelihood of dropping out of school*

Cognitive impairment, with lower IQ among those who were frequent users during adolescence*

Diminished life satisfaction and achievement (determined on the basis of subjective and objective measures as compared with such ratings in the general population)*

Symptoms of chronic bronchitis

Increased risk of chronic psychosis disorders (including schizophrenia) in persons with a predisposition to such disorders

* The effect is strongly associated with initial marijuana use early in adolescence.

***N Engl J Med* 2014;370:2219-2227**

Level of Confidence in the Evidence for Adverse Effects of Marijuana on Health and Well-Being

Effect	Overall Level of Confidence*
Addiction to marijuana and other substances	High
Abnormal brain development	Medium
Progression to use of other drugs	Medium
Schizophrenia	Medium
Depression or anxiety	Medium
Diminished lifetime achievement	High
Motor vehicle accidents	High
Symptoms of chronic bronchitis	High
Lung cancer	Low

* The indicated overall level of confidence in the association between marijuana use and the listed effects represents an attempt to rank the strength of the current evidence, especially with regard to heavy or long-term use and use that starts in adolescence.

N Engl J Med 2014;370:2219-2227


“Impaired short-term memory, making it difficult to learn and retain information.”


4 Hours after smoking
6 hours after eating.
8 hours after ‘getting high’

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OTTAWA MODEL FOR SMOKING CESSATION
MODÈLE D'OTTAWA POUR L'ABANDON DU TABAC

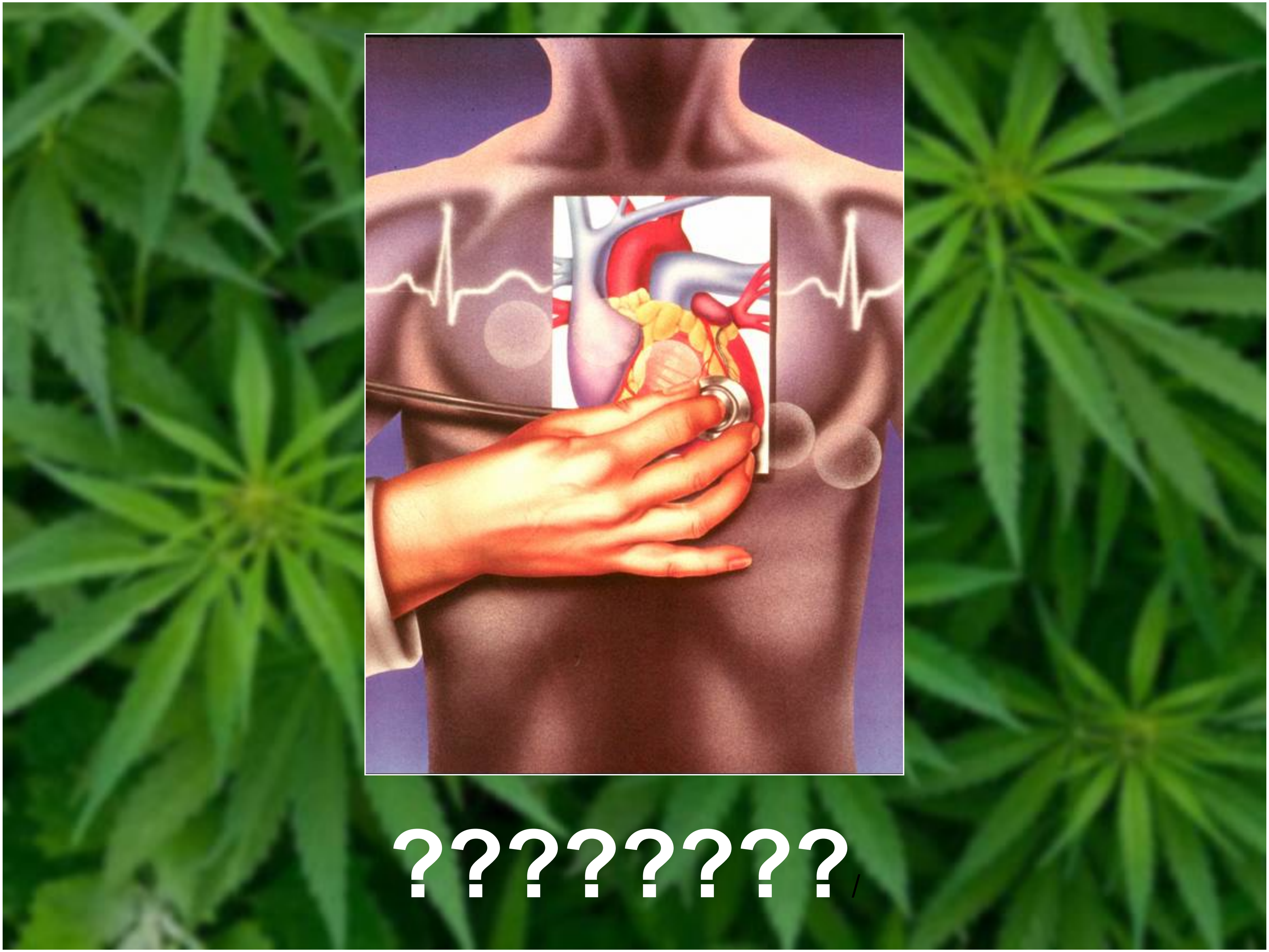
University of Ottawa Heart Institute Quit Smoking Programme

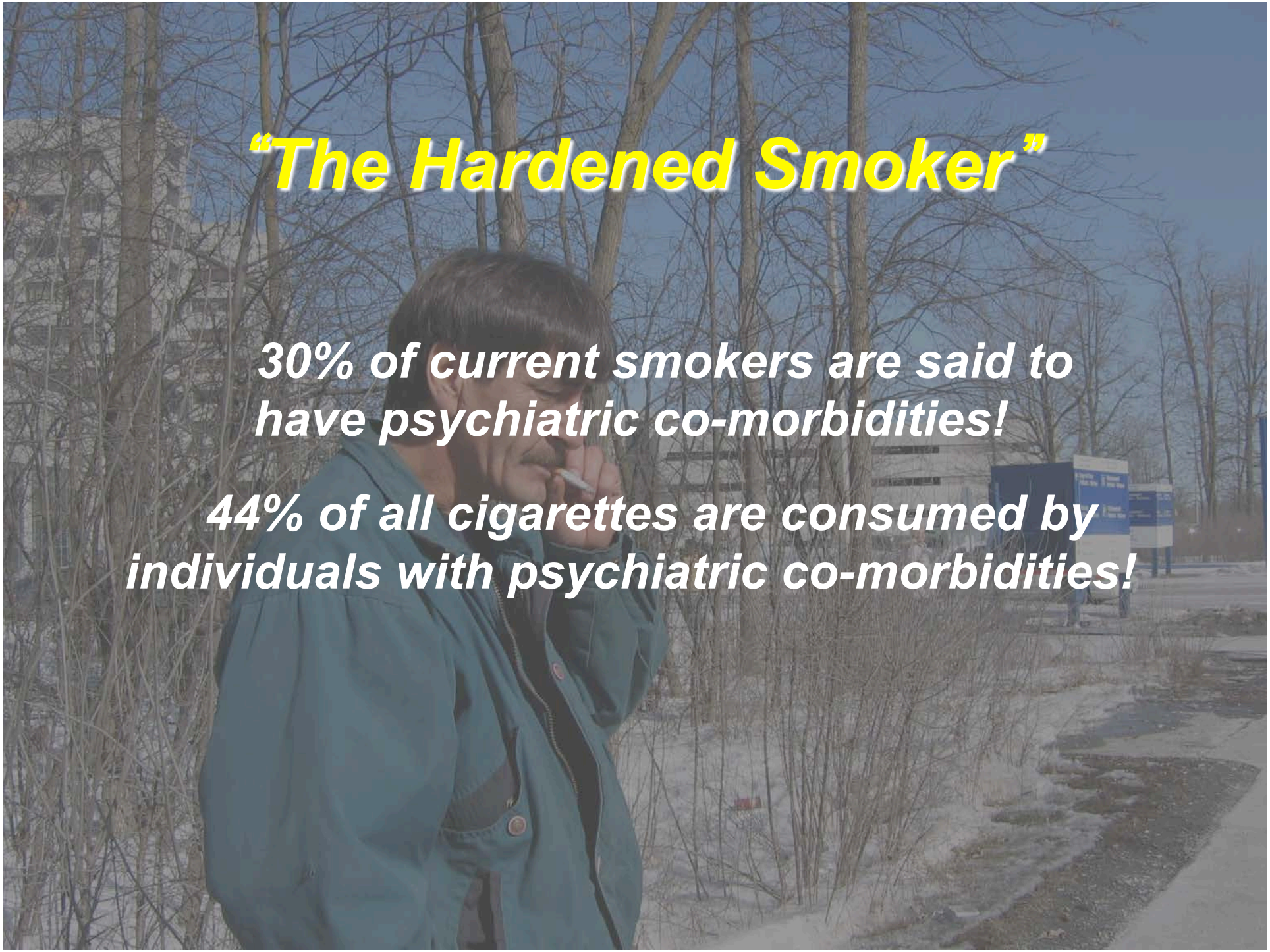
Characteristics of Marijuana Users (18% of QSP patients)

56% Male **Average Age 49**

Grade 9-11	16%	Working	49%
Grade 12	19%	Unemployed	12%
Some post-secondary	42%	Disability	31%
No response	23%	Retired	7%


"Addiction (in about 9% overall, 17% of those who began use in adolescence and 25-50% of daily users)."



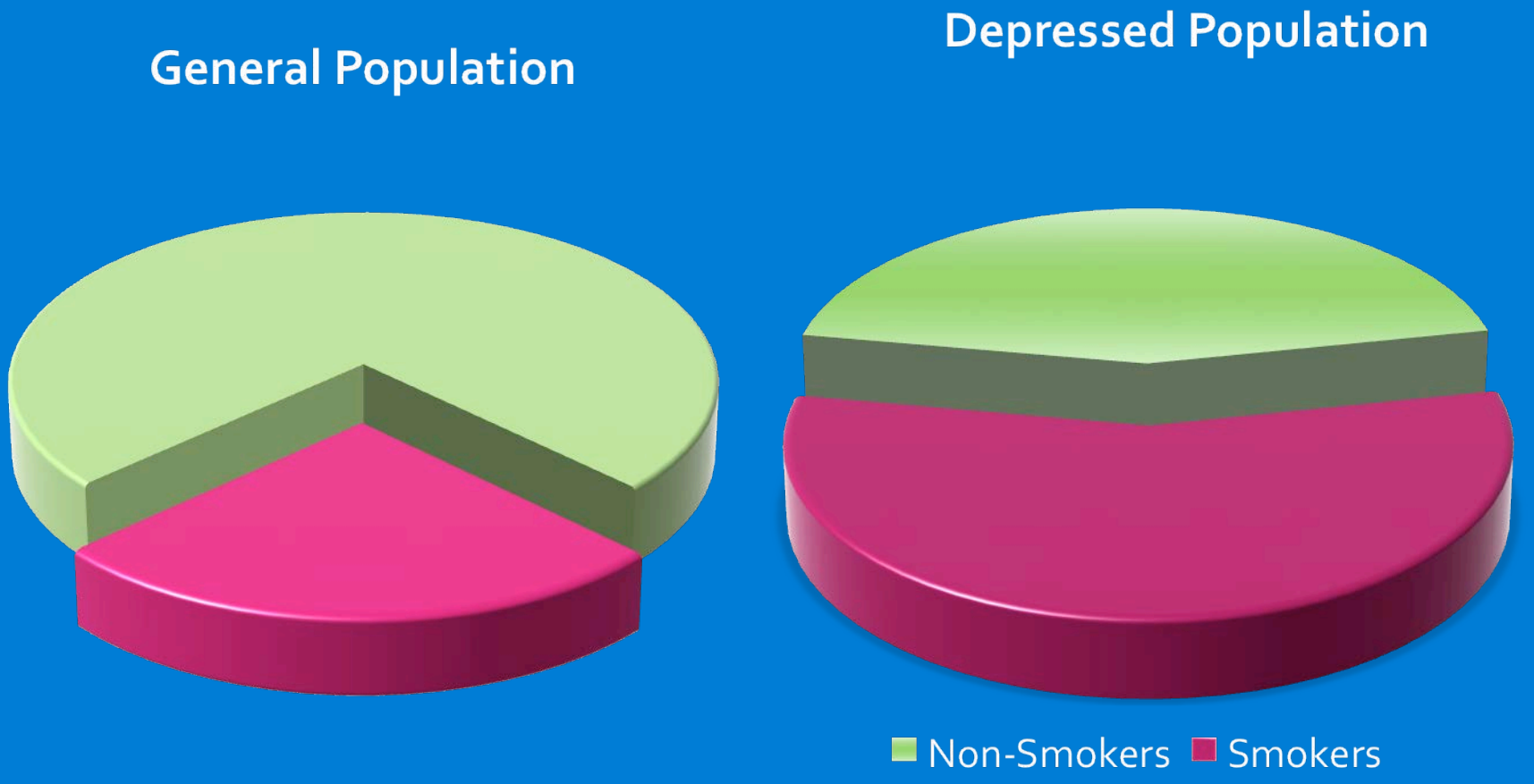

"The Hardened Smoker"
30% of current smokers are said to have psychiatric co-morbidities!
44% of all cigarettes are consumed by individuals with psychiatric co-morbidities!

Persons with chronic mental illness die 25 years earlier than others …

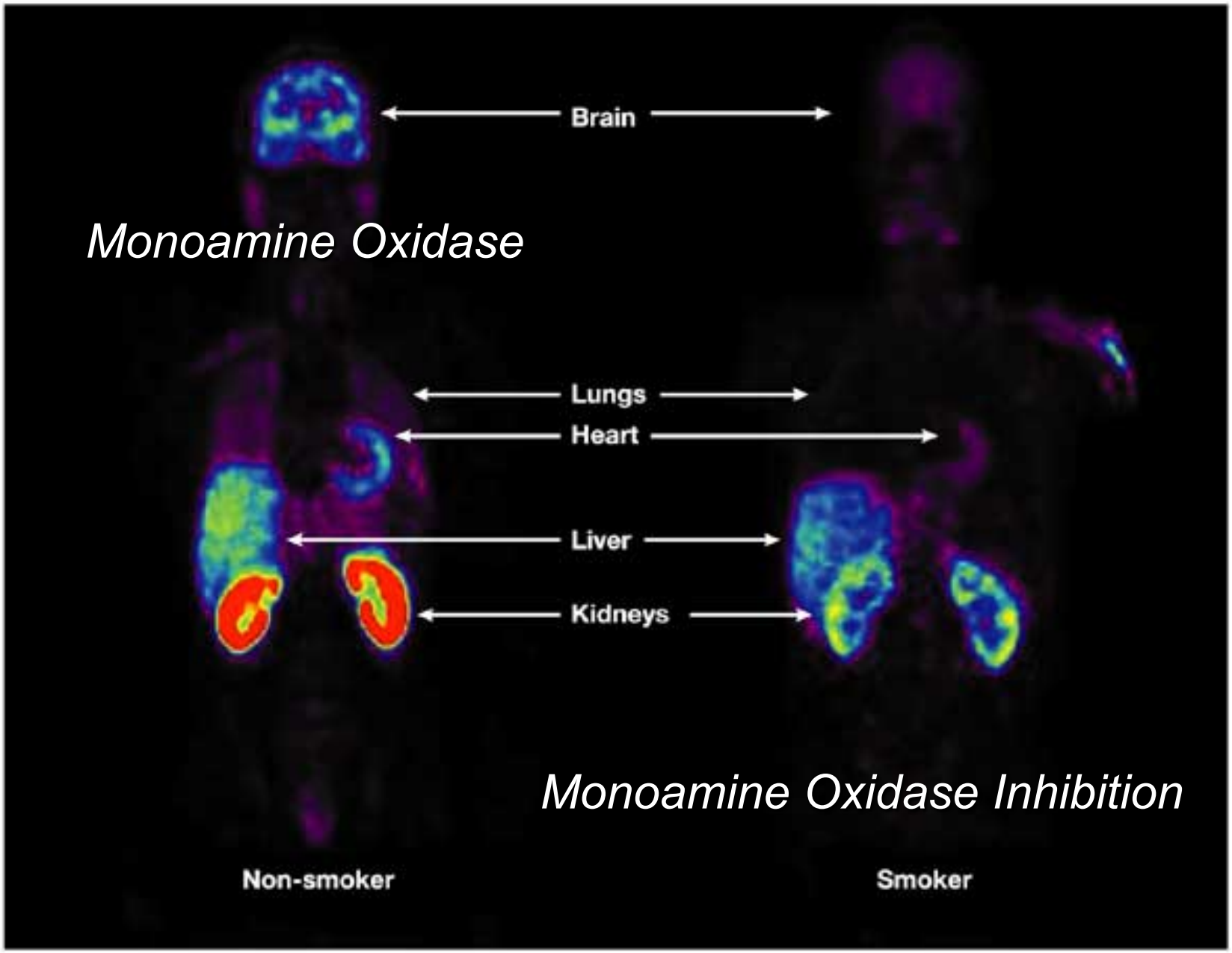
… Tobacco addiction is the major contributor to that premature mortality.

Annu Rev Public Health 2010;31:297-314

Depression and Smoking

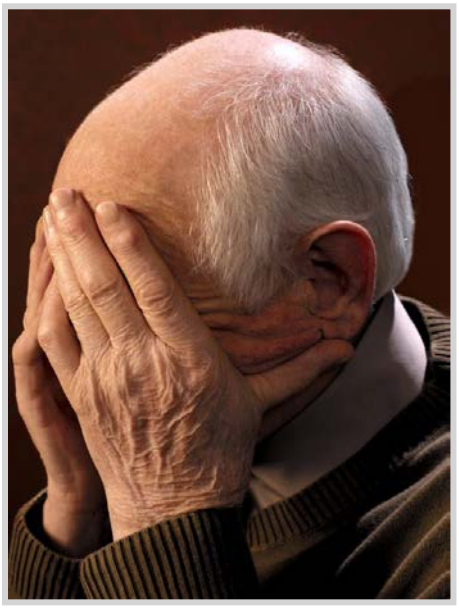


Farrell et al. *Int Rev Psychiatry*. 2003;15:43-49; Mackay et al. *The Tobacco Atlas.* 2nd ed. 2006.



Nature Reviews | Neuroscience

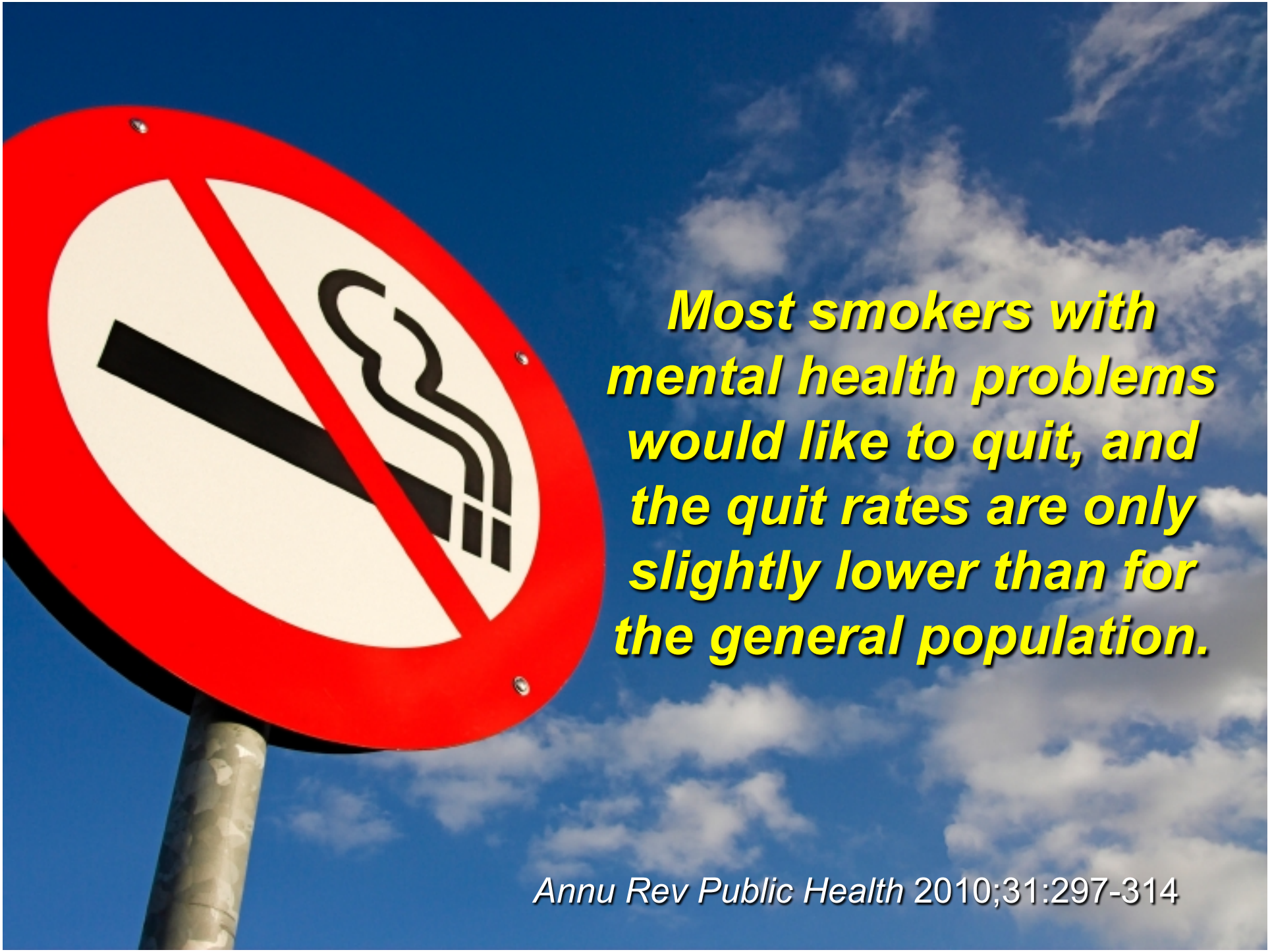
Smoking & Symptomatology

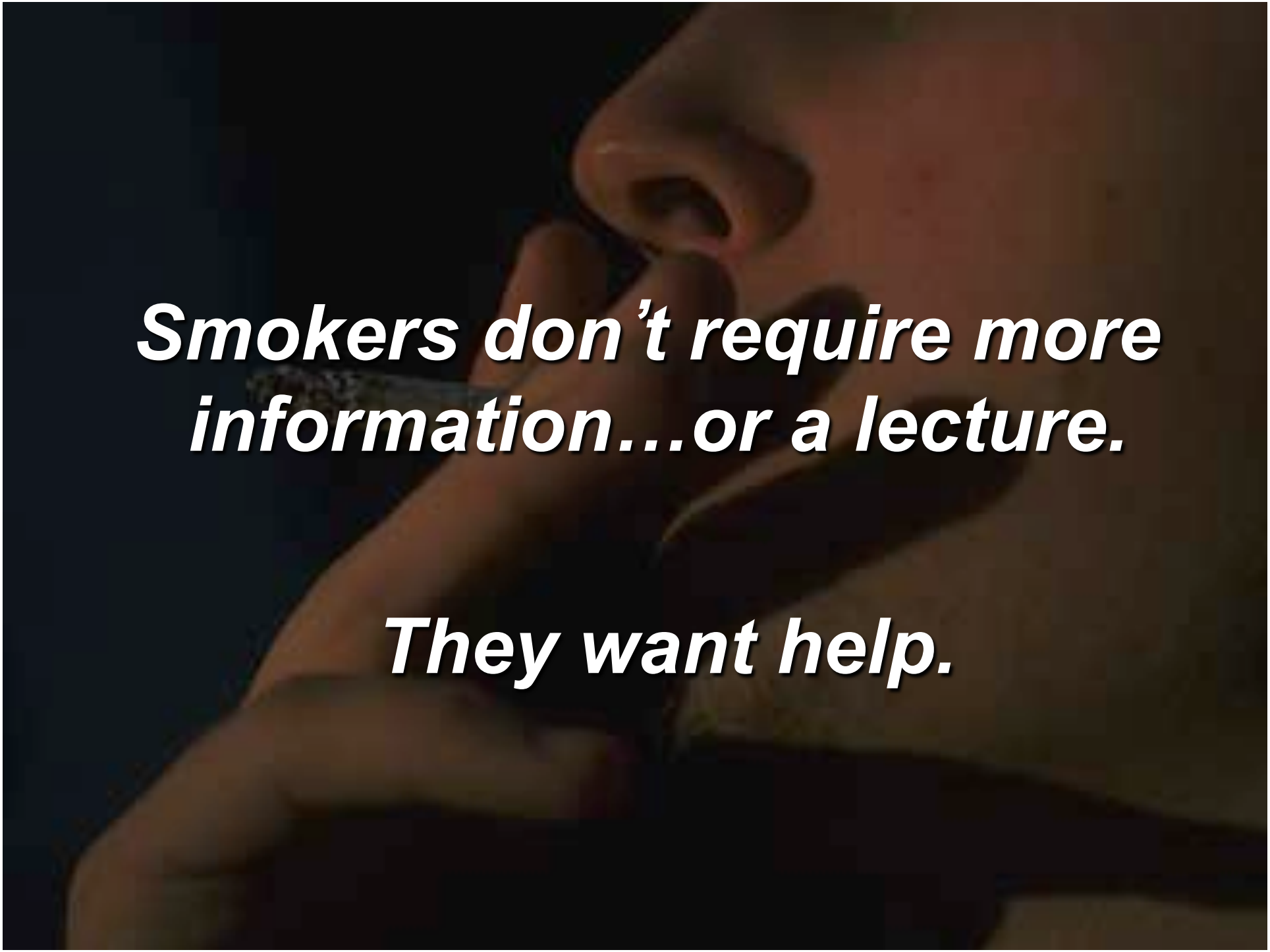


In patients with schizophrenia, smoking may be associated with improvements in specific symptoms and cognitive measures …

Compton et al. *Harv Rev Psychiatry.* 2006;14(4):212-222


Psychiatric patients can't quit smoking.


Most smokers with mental health problems would like to quit, and the quit rates are only slightly lower than for the general population.
Annu Rev Public Health 2010;31:297-314


Smokers don't require more information…or a lecture.
They want help.

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OTTAWA MODEL FOR SMOKING CESSATION
MODÈLE D'OTTAWA POUR L'ABANDON DU TABAC

Clinician's Advice

Clear
Strong
Personalized

"unambiguous and non-judgmental"

Matched by an institutional commitment to "best practice" !

Behavioural Strategies

Tactical
Strategic
Situational

Patient Centred
M-I Approaches

Caffeine Ingestion

- *Caffeine metabolism altered by cessation*
- *Caffeine levels may rise: 2-3 x higher !*
- *Consider reducing caffeine intake*
- *Consider substituting de-caffeinated drinks*
- *Be aware of similarities between 'caffeinism' and withdrawal symptoms*

Pharmacotherapy

3 “First Line Therapies”

NRT
bupropion
varenicline

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Sometimes the doorway has to be opened wider, or held open longer…

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Titrate Therapy:

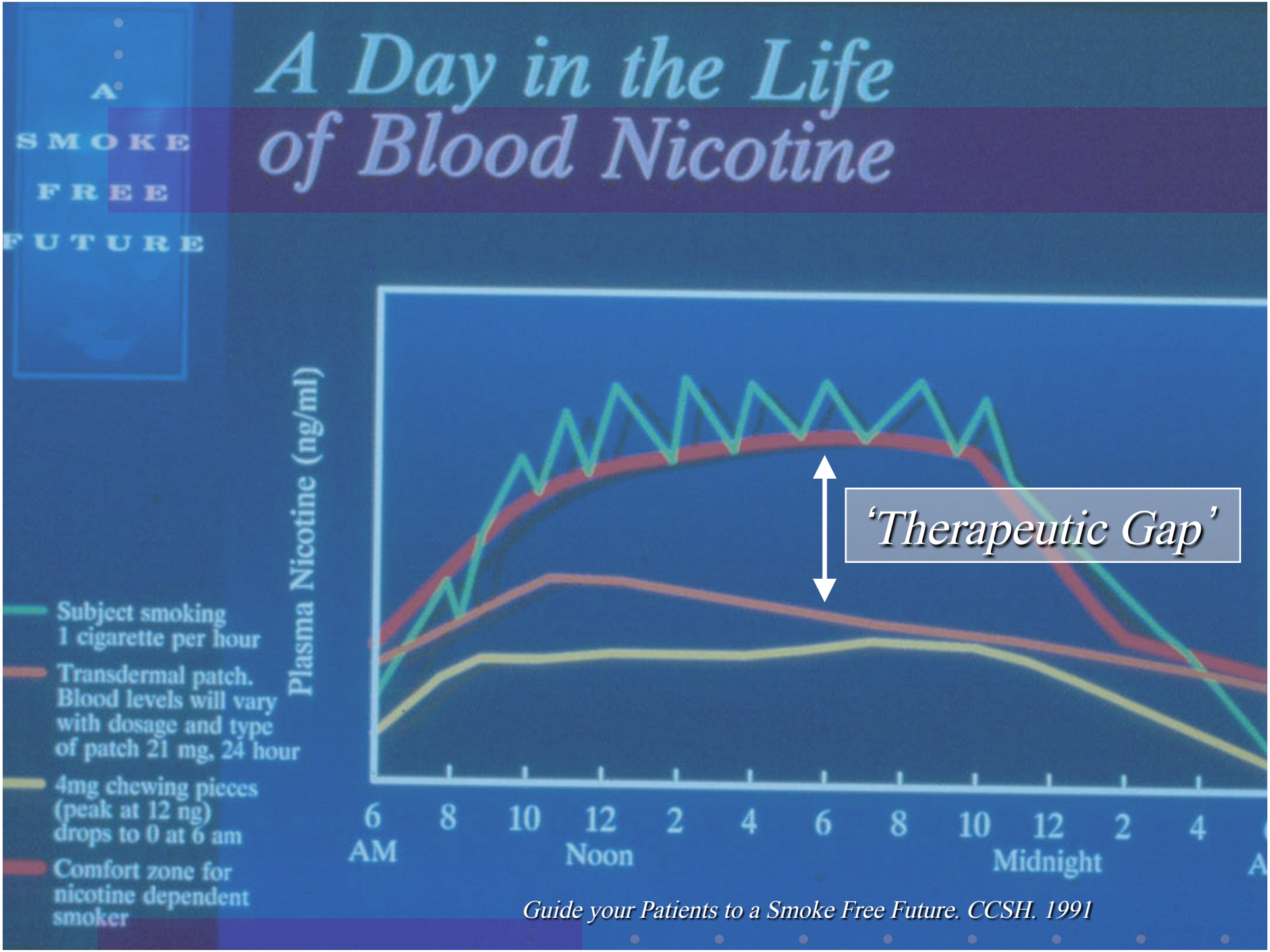
Dose

Duration

Combination

Nicotine Replacement Therapy

- Rationale
- Products
  - The 'Patch'
  - Chewing Pieces
  - Lozenges
  - Nicotine 'Inhaler'
  - Nicotine Spray
- Advantages
- Shortcomings


A
SMOKE
FREE
FUTURE
A Day in the Life of Blood Nicotine
Plasma Nicotine (ng/ml)
'Therapeutic Gap'
Subject smoking 1 cigarette per hour
Transdermal patch. Blood levels will vary with dosage and type of patch 21 mg, 24 hour
4mg chewing pieces (peak at 12 ng) drops to 0 at 6 am
Comfort zone for nicotine dependent smoker
6 8 10 12 2 4 6 8 10 12 2 4
AM
Noon
Midnight
Guide your Patients to a Smoke Free Future. CCSH. 1991

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Standard Orders

OTTAWA MODEL FOR SMOKING CESSATION

1 pack a day	21 mg +	and Inhaler
2 packs a day	42 mg +	and Inhaler
3 packs a day	further titration *prn*	

In <u>every</u> case recognize the need for titration


You can't use NRT in cardiac patients!

"Zombie Concepts"

"The safety of nicotine-replacement therapy in cardiovascular disease patients is supported by data from randomized trials, efficacy studies, observational data and physiologic studies."

Joseph AM, Fu, *Progress in Cardiovascular Diseases* 2003;45:429-441

NRT and CV Risk

"Clinical trials of NRT in patients with underlying, stable cardiovascular disease suggest that nicotine does not increase cardiovascular risk."

Benowitz NL, Gourlay SG. *J Am Coll Cardiol* 1997;29:1422-31.

NRT and CV Risk

"High-dose nicotine treatment, even with concomitant smoking, caused no short-term adverse effects on the cardiovascular system."

Zevin S, Peyton J, Benowitz NL. *Clin Pharmacol Ther* 1998;64:87-95.

NRT and CV Risk

"The use of nicotine patches did not cause aggravation of myocardial ischemia or arrhythmia in coronary patients and therefore can be used as a method to promote smoking cessation in this high-risk group."

Tzivoni D, Keren A, Meyler et al. *Cardiovasc Drugs Ther* 1998;12:239-244.

NRT and CV Risk

"The use of NRT is not associated with any increase in the risk of myocardial infarction, stroke, or death."

N = 33,247

Hubbard R, Lewis S, et al. *Tobacco Control* 2005;14:416-421

NRT and CV Risk

"Patients with pre-existing cardiovascular disease represent one of the groups <u>most likely to benefit from smoking cessation</u> and our results should encourage the use of NRT in these individuals."

Hubbard R, Lewis S, et al. *Tobacco Control* 2005;14:416-421

UOHI Smoking Cessation Programme

Use of NRT in the Cardiac Setting

	Smoking Patients	NRT	Male NRT	Female NRT	ACS	% ACS NRT
2004-2005	1,016 (23%)	194 (19%)	149 (20%)	45 (17%)	176	68 (39%)
2005-2006	1,489	657 (44%)	477 (46%)	180 (41%)	501	318 (63%)
2006-2007	1,065	638 (60%)	453 (60%)	185 (60%)	342	240 (70%)

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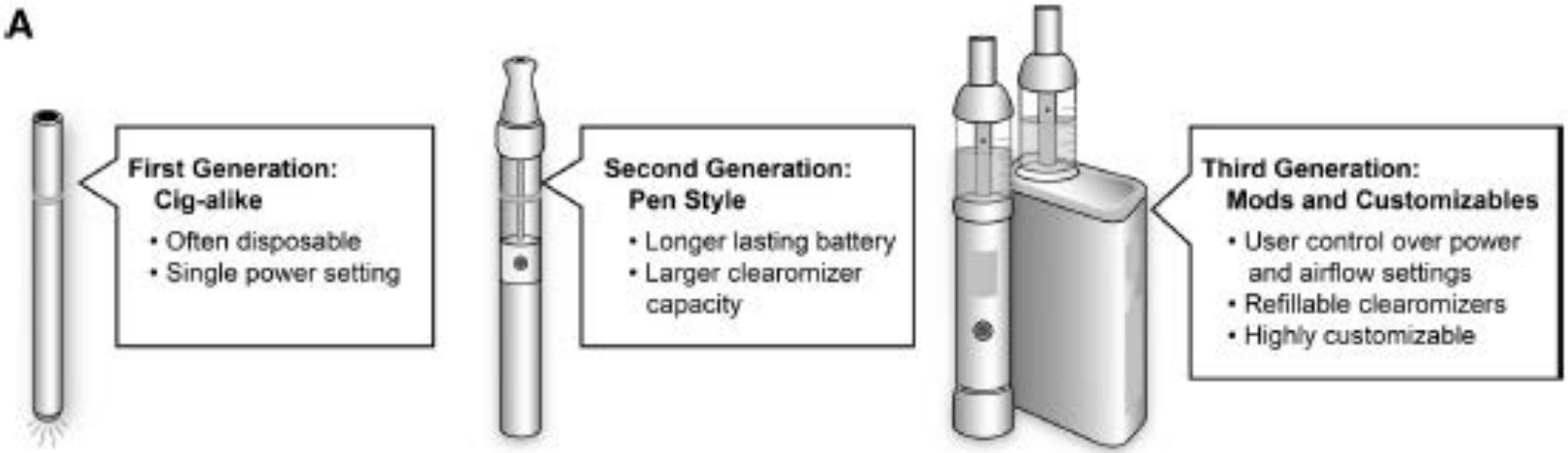
Smoking Cessation

"The single, most powerful, preventive intervention in clinical practice."

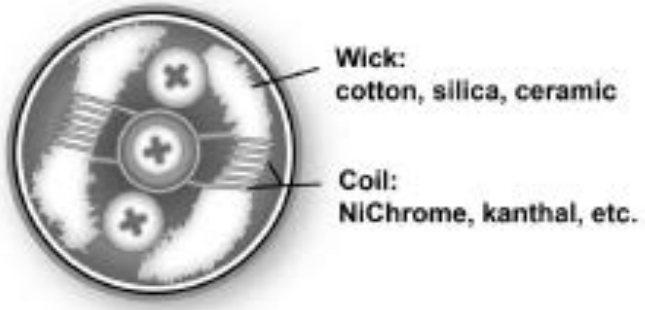
Woolf SH. *JAMA* 1999;282(24):2358-65.

3 Generations of E-Cigarettes

A



B

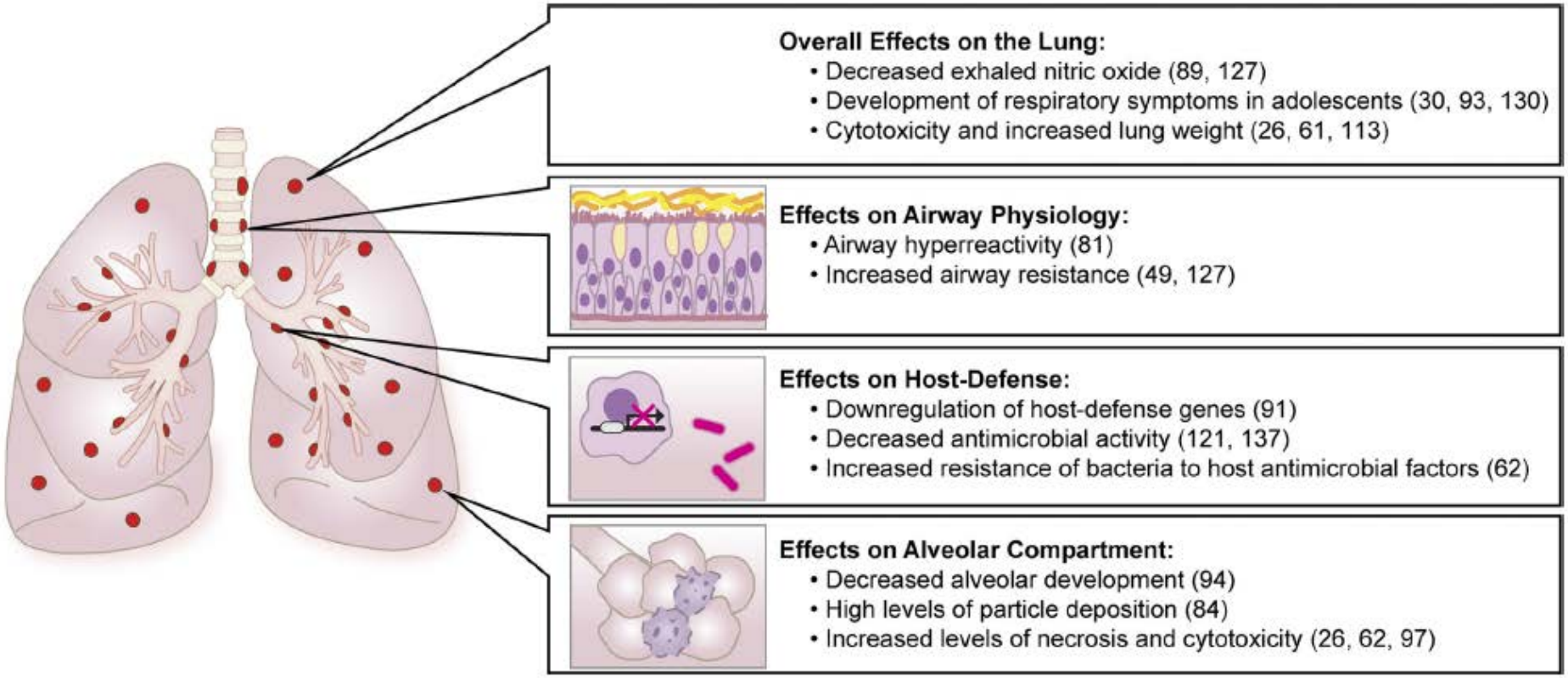


Material	Known Risks
Silica	Silicosis
Nickel	Carcinogenesis, lung injury, immune suppression
Chromium	Carcinogenesis, lung injury, immune suppression, reproductive toxicity

Fig. 1. *A*: the three generations of e-cigarettes. Beginning with the early cig-a-like devices, e-cigs introduced to the market more recently incorporate increased user control over the physics of aerosolization and e-liquid composition. *B*: e-cigarette atomizers contain wicking materials to transfer e-liquids from a storage tank in close proximity to a heating filament made from one of several types of metal alloys. Many of the commonly employed materials have well-described health risks.

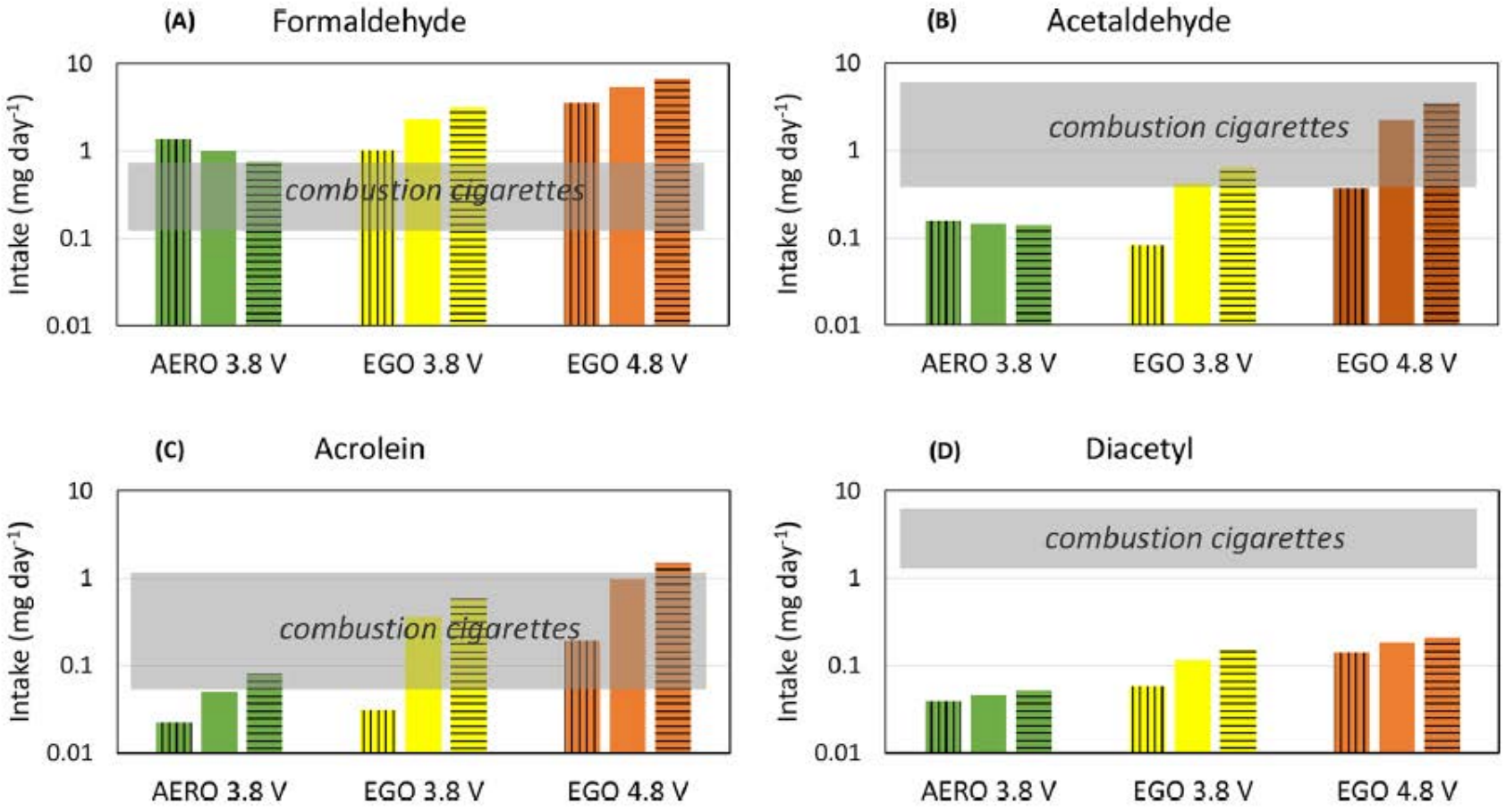
AJP-Lung Cell Mol Physiol • doi:10.1152/ajplung.00071.2017 • www.ajplung.org

Pulmonary Toxicity of E-Cigarettes



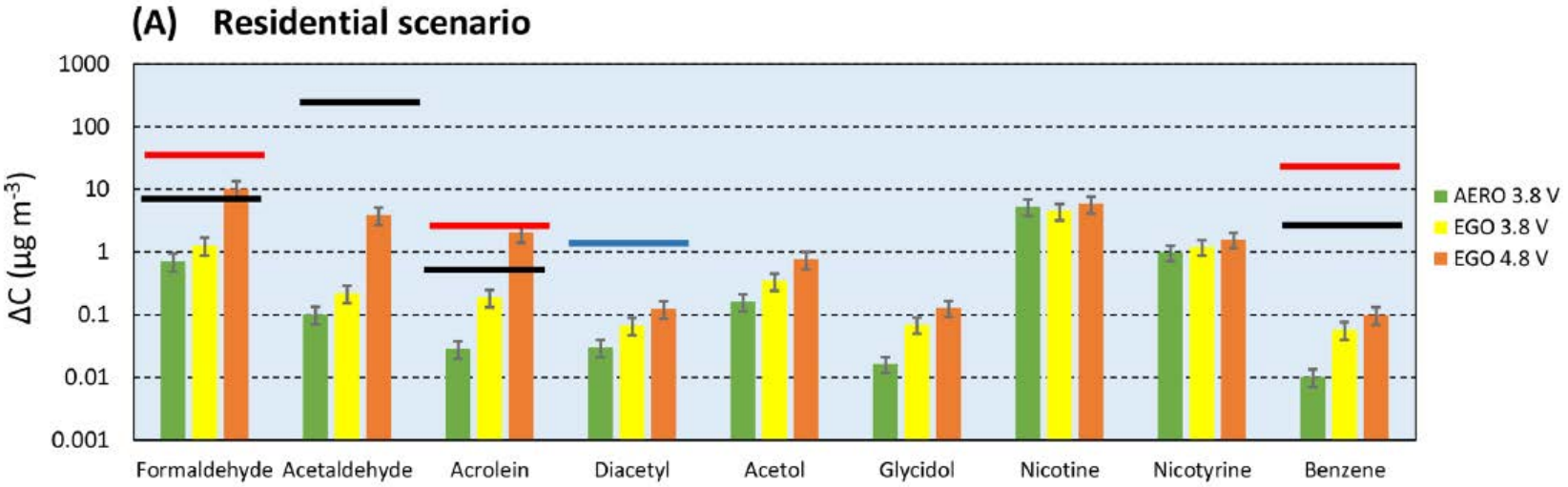
AJP-Lung Cell Mol Physiol • doi:10.1152/ajplung.00071.2017 • www.ajplung.org

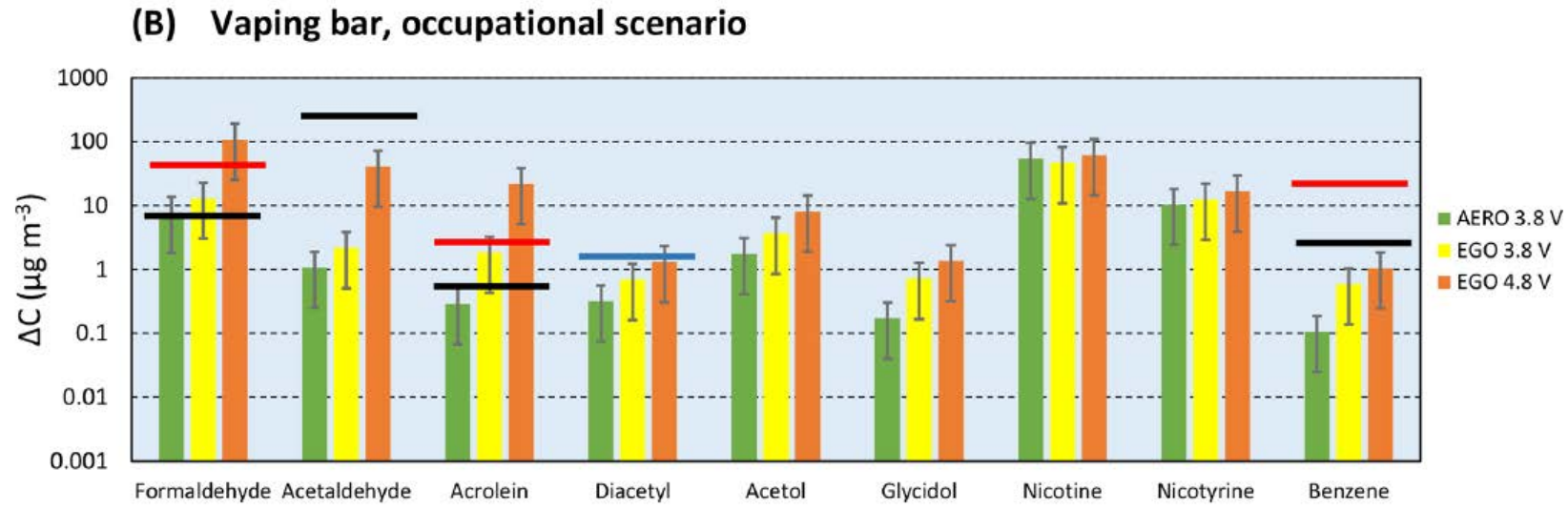
Cigarettes vs E-Devices



Environ. Sci. Technol. 2017, 51, 9271–9279

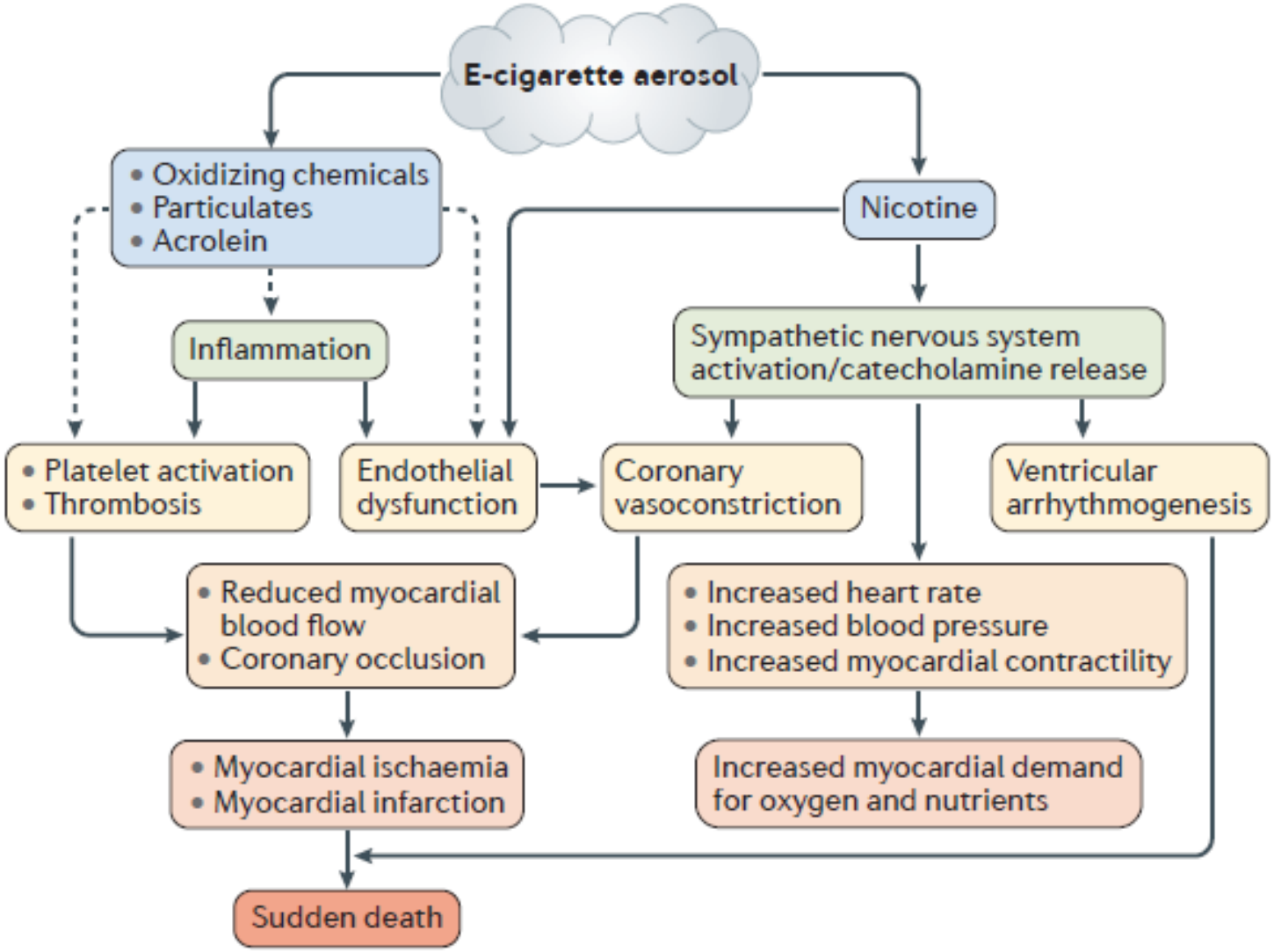
Change in Indoor VOC Concentrations





Environ. Sci. Technol. 2017, 51, 9271−9279

E-Cigarettes & Acute Cardiac Events



Harm reduction potential – Vapour vs. Smoke
Cessation of smoking? Dual-Use?
Tobacco industry – Perpetuation of smoking?
Initiation of smoking? – Adolescents?

The E-cigarette.

UNIVERSITY OF OTTAWA HEART INSTITUTE
INSTITUT DE CARDIOLOGIE DE L'UNIVERSITÉ D'OTTAWA

OTTAWA MODEL FOR SMOKING CESSATION
MODÈLE D'OTTAWA POUR L'ABANDON DU TABAC

Brief report

A Descriptive Report of Electronic Cigarette Use After Participation in a Community-Based Tobacco Cessation Trial

Elana Curry BS[1], Julianna M. Nemeth PhD[1], Amy Wermert MPH[1], Sara Conroy MS[2], Abigail Shoben PhD[3], Amy K. Ferketich PhD[2], Mary Ellen Wewers PhD[1]

"Among adult Appalachian smokers enrolled in community-based tobacco cessation treatment, use of e-cigarettes post-treatment was associated with lower abstinence rates at 12 months."

"Post treatment e-cigarette use was asssociated with less success in achieving abstinence at 12 months, as compared to non-use."

Nicotine & Tobacco Research, 2017, Vol. 00, No. 00

Electronic Cigarettes for Smoking Cessation

Christopher Bullen

Evidence for their efficacy as cessation aids, based on several randomised trials of now obsolete e-cigarettes, suggests a modest effect equivalent to nicotine patch. E-cigarettes are almost certainly far less harmful than tobacco smoking, but the health effects of long-term use are as yet unknown. Dual use is common and almost as harmful as usual smoking unless it leads to quitting.

If patients who smoke are unwilling to quit or cannot succeed using evidence-based approaches, e-cigarettes may be an option to be considered after discussing the limitations of current knowledge.

Curr Cardiol Rep (2014) 16:538

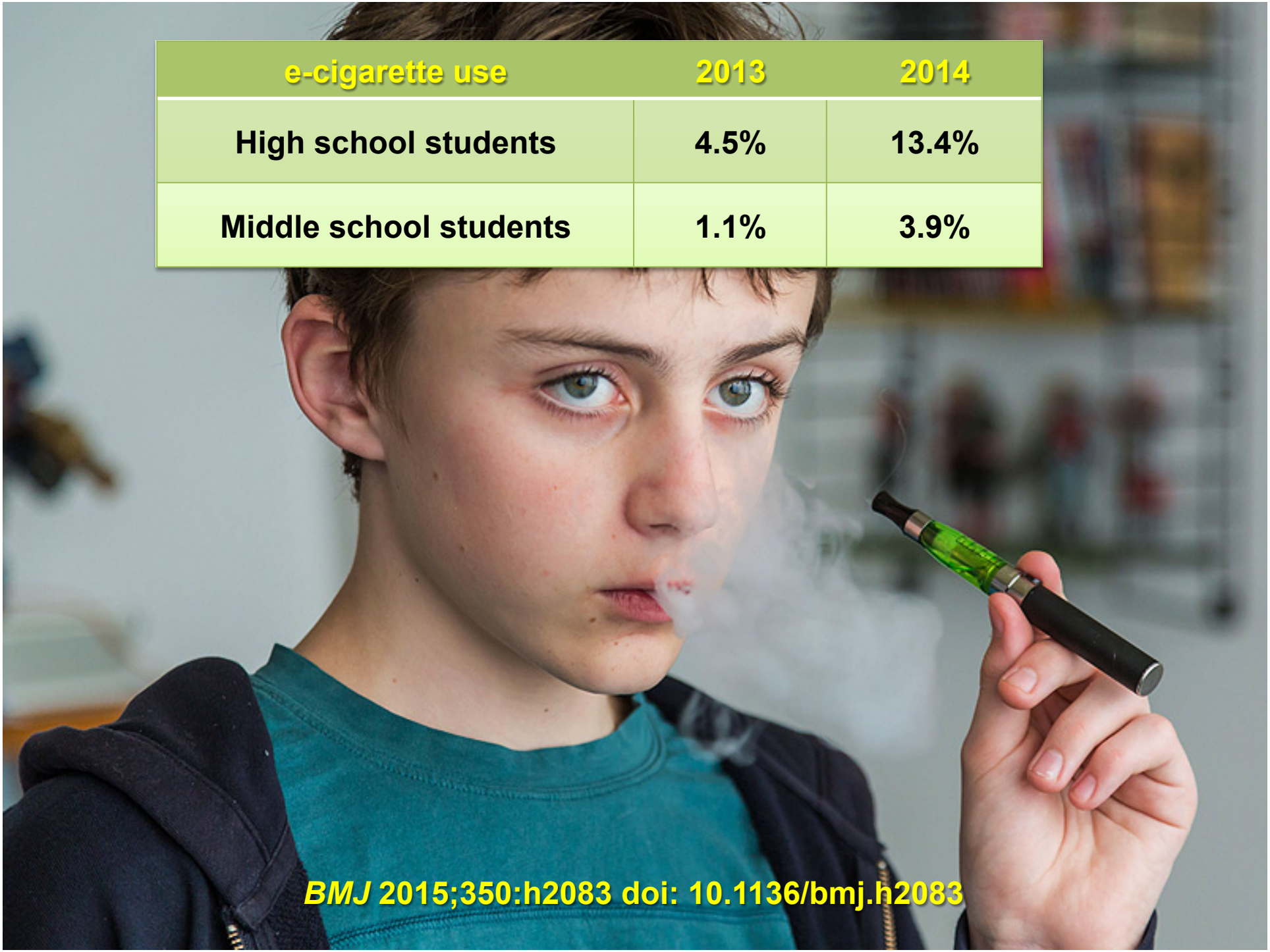
Cochrane Library

Cochrane Database of Systematic Reviews

Electronic cigarettes for smoking cessation (Review)

Citation: Hartmann-Boyce J, McRobbie H, Bullen C, Begh R, Stead LF, Hajek P. Electronic cigarettes for smoking cessation. *Cochrane Database of Systematic Reviews* 2016, Issue 9. Art. No.: CD010216. DOI: 10.1002/14651858.CD010216.pub3.

"We could not determine if EC was better than a nicotine patch in helping people stop smoking…"



e-cigarette use	2013	2014
High school students	4.5%	13.4%
Middle school students	1.1%	3.9%

BMJ 2015;350:h2083 doi: 10.1136/bmj.h2083

E-cigarette use as a predictor of cigarette smoking: results from a 1-year follow-up of a national sample of 12th grade students

Richard Miech, Megan E Patrick, Patrick M O'Malley, Lloyd D Johnston

Results Among youth who had never smoked a cigarette by 12th grade, baseline, recent vapers were more than 4 times (relative risk (RR)=4.78) more likely to report past-year cigarette smoking at follow-up, even among youth who reported the highest possible level of perceived risk for cigarette smoking at baseline.

Conclusions These results contribute to the growing body of evidence supporting vaping as a one-way bridge to cigarette smoking among youth. Vaping as a risk factor for future smoking is a strong, scientifically-based rationale for restricting youth access to e-cigarettes.

Miech R, *et al*. *Tob Control* 2017;**0**:1–6. doi:10.1136/tobaccocontrol-2016-053291

RESEARCH

Electronic cigarette use and smoking initiation among youth: a longitudinal cohort study

David Hammond PhD, Jessica L. Reid MSc, Adam G. Cole MSc, Scott T. Leatherdale PhD

Conclusion

The current study provides strong evidence that e-cigarettes are associated with initiation of cigarette smoking among youth; however, the controversy as to whether e-cigarette use "causes" cigarette-smoking initiation will undoubtedly persist.

CMAJ | OCTOBER 30, 2017 | VOLUME 189 | ISSUE 43


WHY QUIT?
SWITCH TO BLU
blu is the smart choice for smokers wanting a change. Take back your freedom to smoke when and where you want without ash or smell.
blu is everything you enjoy about smoking and nothing else.
Nobody likes a quitter, so make the switch today.
Visit blucigs.com
blu
* New blu Smart Pack


Find Out
How Megan Can...
Smoke
Anywhere
Learn More
Cigarette Technology Alert
New Smoking Technology Featured On:
CNN
NBC
U.S.News
SCIENTIFIC AMERICAN


Wild Candy Flavors
GUMMY BEARS
VAPE Wild .com
Yummy Bear

Electronic cigarettes for smoking cessation and reduction (Review)

McRobbie H, Bullen C, Hartmann-Boyce J, Hajek P

Citation: McRobbie H, Bullen C, Hartmann-Boyce J, Hajek P. Electronic cigarettes for smoking cessation and reduction. *Cochrane Database of Systematic Reviews* 2014, Issue 12. Art. No.: CD010216. DOI: 10.1002/14651858.CD010216.pub2.

Nicotine & Tobacco Research, 2016, 1926–1936
doi:10.1093/ntr/ntw119
Review
Advance Access publication April 25, 2016

SRNT

OXFORD

Review

Electronic Cigarettes for Smoking Cessation: A Systematic Review

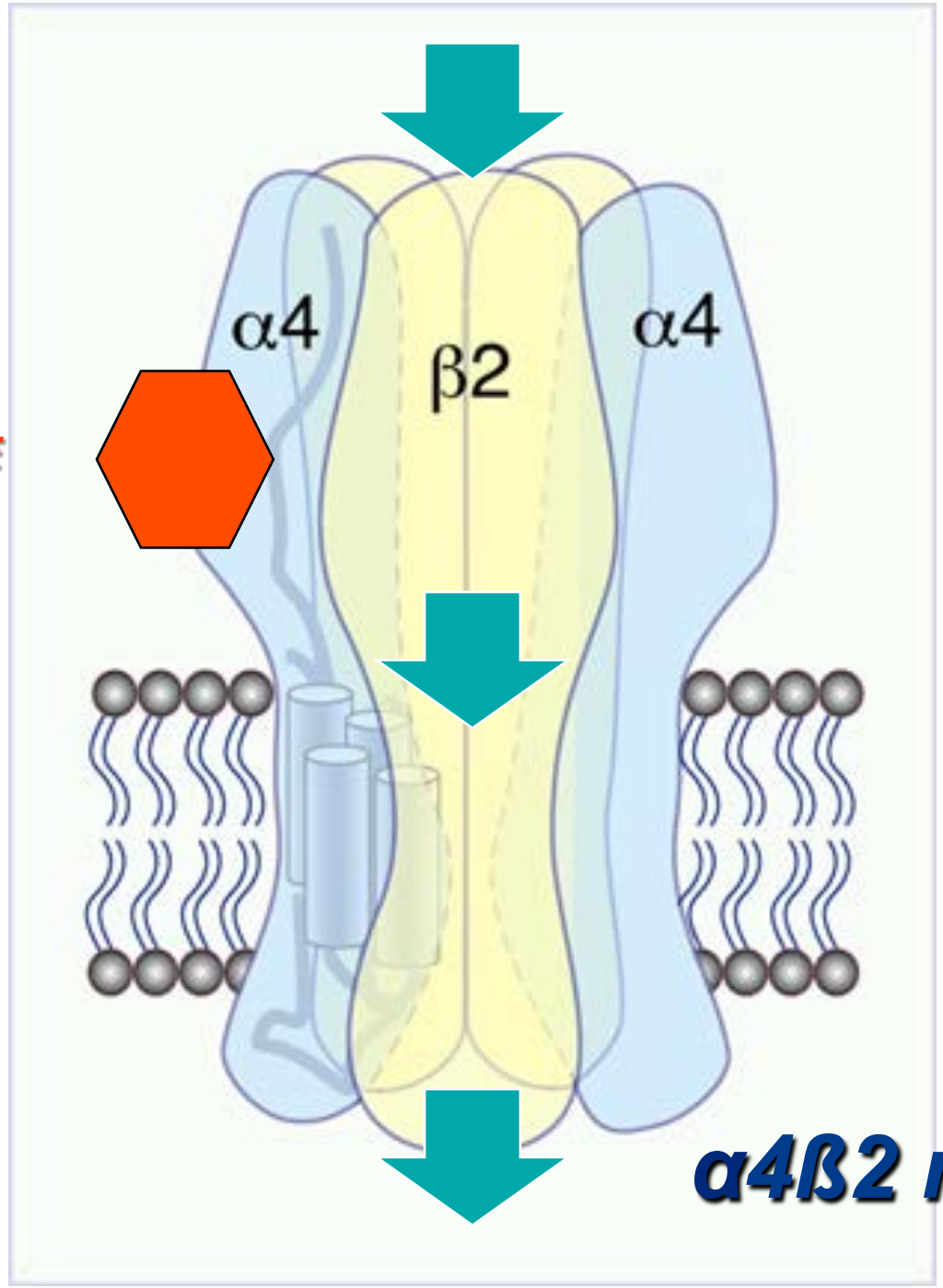
Muhannad Malas MPH[1], Jan van der Tempel MPhil[2], Robert Schwartz PhD[3], Alexa Minichiello MScPI[4], Clayton Lightfoot BA[4], Aliya Noormohamed MSPH[5], Jaklyn Andrews MA[4], Laurie Zawertailo PhD[5], Roberta Ferrence PhD[6]

In accordance with the GRADE system, the quality of the evidence in support of e-cigarettes' effectiveness in helping smokers quit was assessed as very low to low, and the evidence on smoking reduction was assessed as very low to moderate.

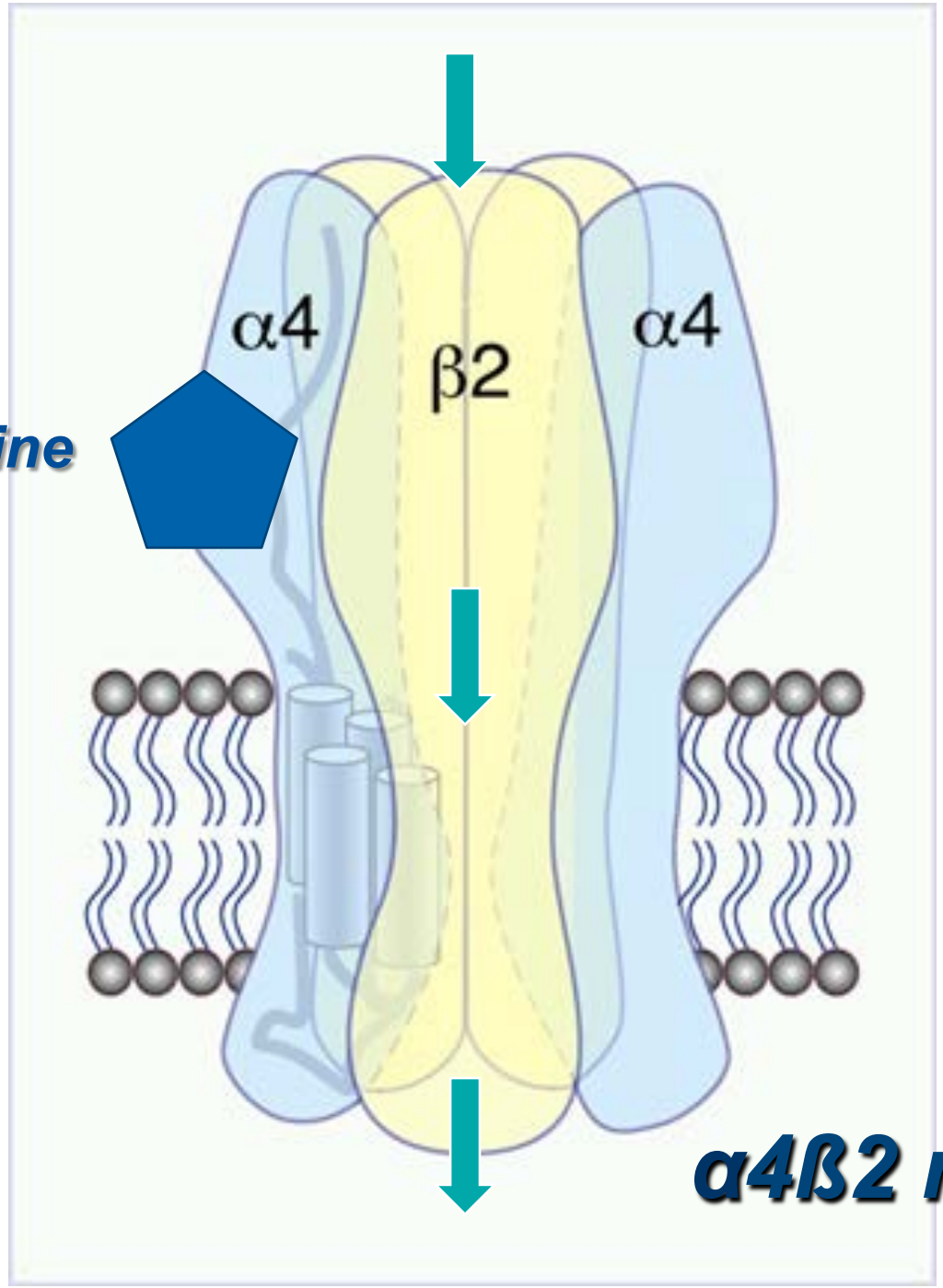
While inconclusive due to low quality, overall the existing literature suggests e-cigarettes may be helpful for some smokers for quitting or reducing smoking.


cytisine
Golden Rain

NICOTINE

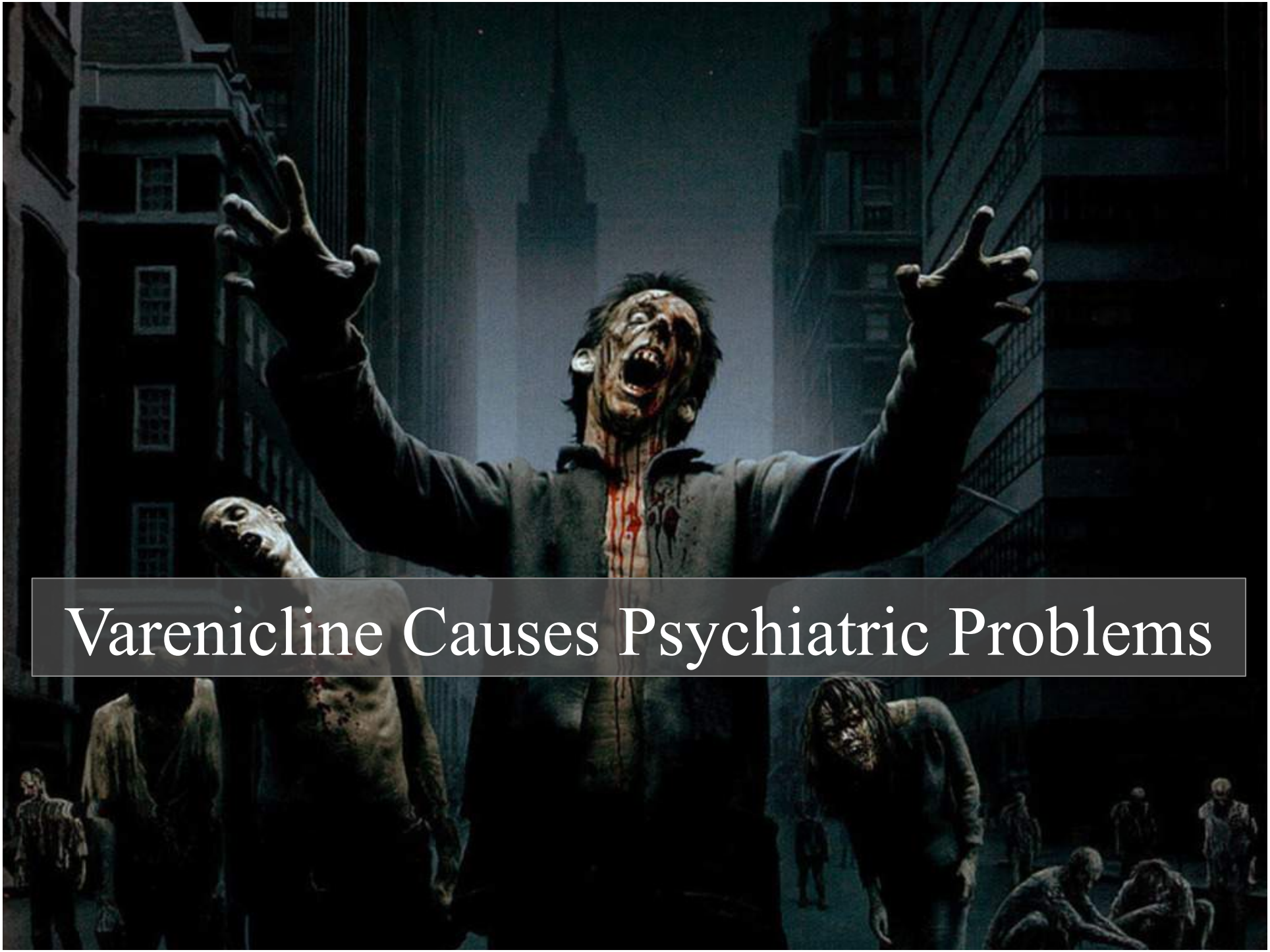


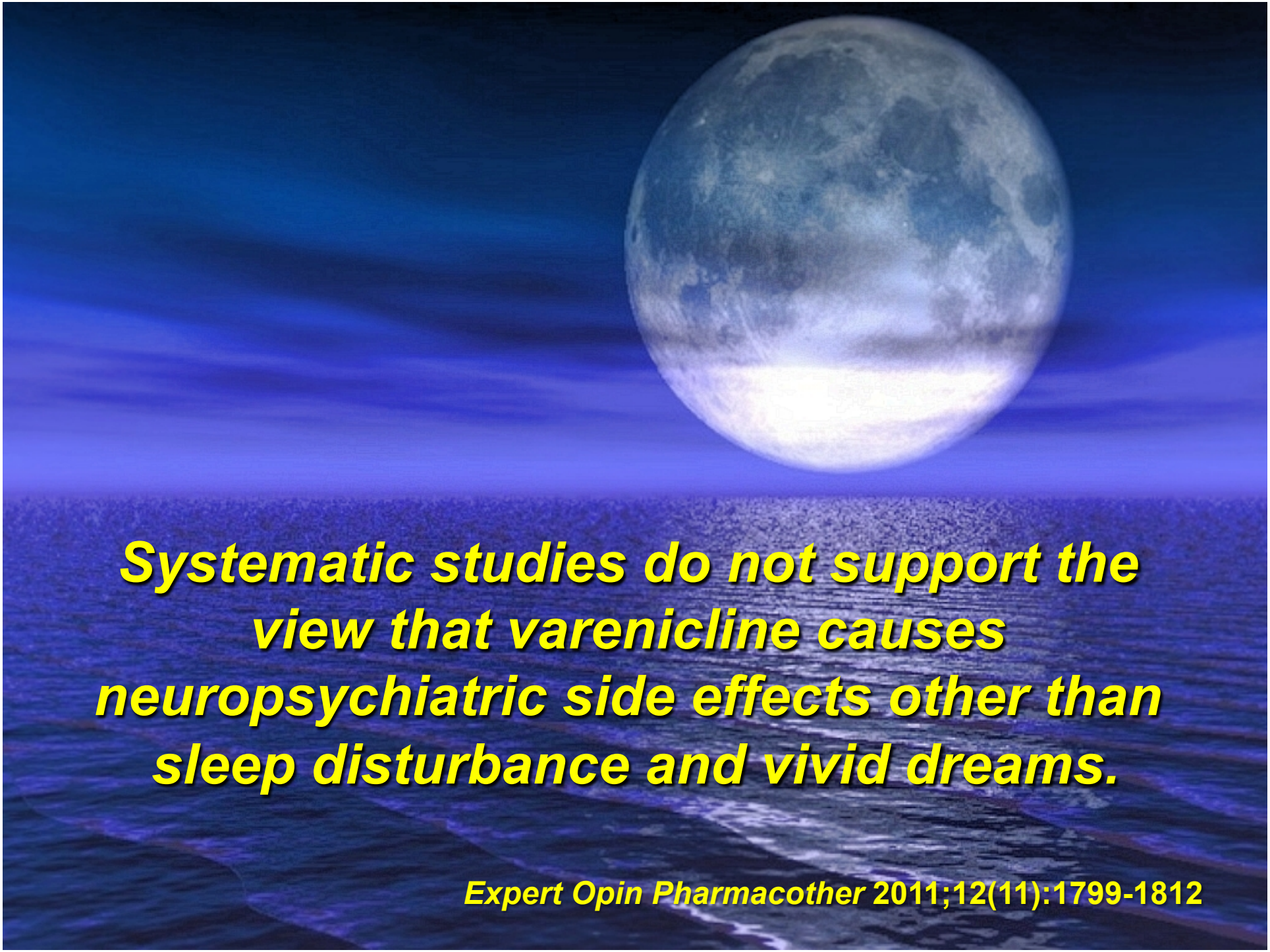
α4ß2 receptor



Varenicline

α4ß2 receptor

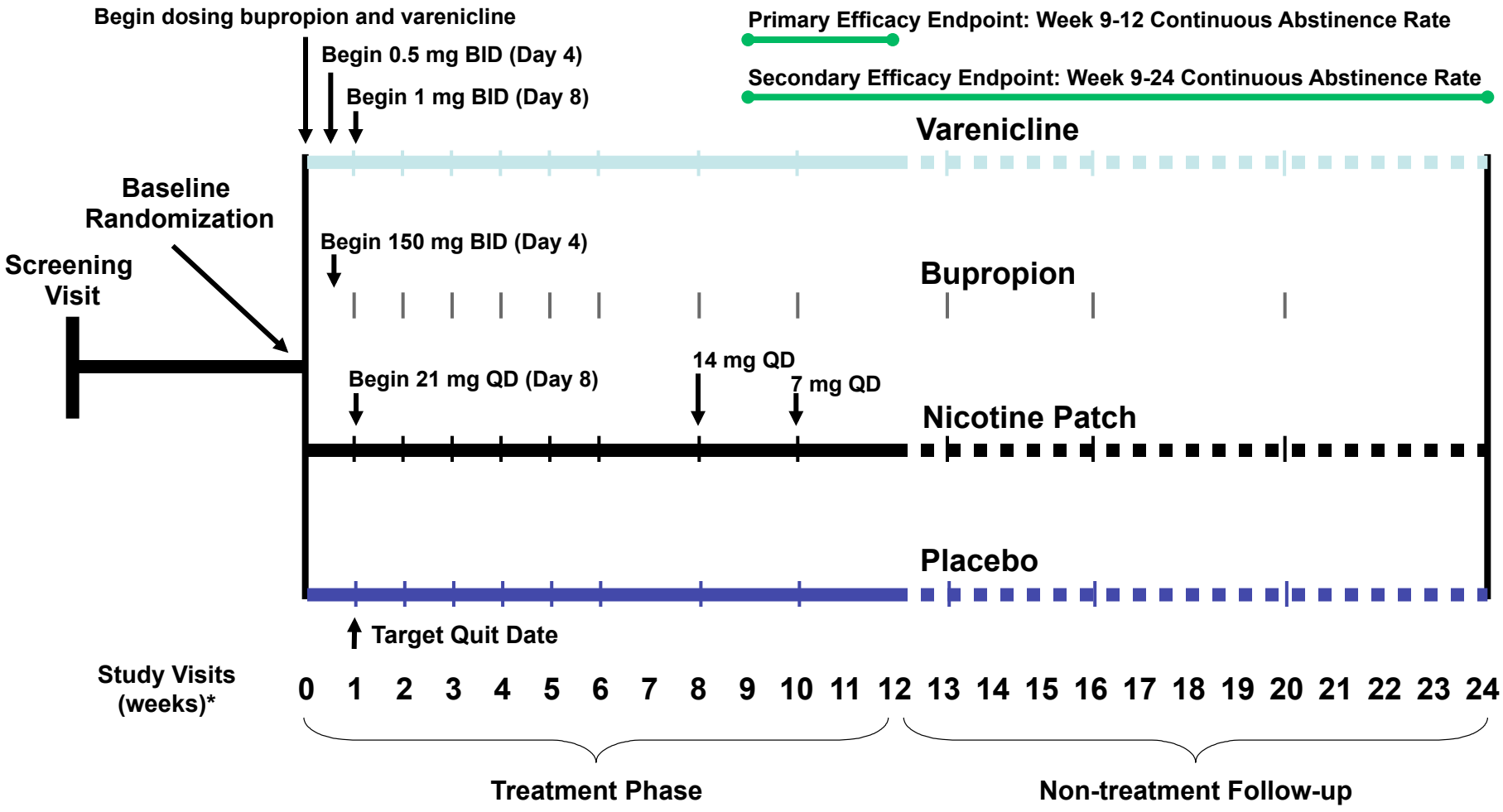

Varenicline Causes Psychiatric Problems


Systematic studies do not support the view that varenicline causes neuropsychiatric side effects other than sleep disturbance and vivid dreams.
Expert Opin Pharmacother 2011;12(11):1799-1812

“EAGLES”

'EAGLES' – Study Design

8000 subjects: 4000 Psychiatric. 4000 Non-Psychiatric.



*** Up to 15 face-to-face visits and 11 telephone visits**

Anthenelli RM, Benowitz NL, West R, et al. Neuropsychiatric safety and efficacy of varenicline, bupropion, and nicotine patch in smokers with and without psychiatric disorders (EAGLES): a double-blind, randomised, placebo-controlled clinical trial. *Lancet* 2016 Apr 22. [Epub ahead of print]

'EAGLES': Severe-Only NPS AEs

	Varenicline	Bupropion	NRT	Placebo
Non-Psychiatric Cohort, N	990	989	1006	999
NPS AE Endpoint, total, n (%)	13 (1.3%)	22 (2.2%)	25 (2.5%)	24 (2.4%)
Severe-only, n (%)	1 (0.1%)	4 (0.4%)	3 (0.3%)	5 (0.5%)
Psychiatric Cohort, N	1026	1017	1016	1015
NPS AE Endpoint, total, n (%)	67 (6.5%)	68 (6.7%)	53 (5.2%)	50 (4.9%)
Severe-only, n (%)	14 (1.4%)	14 (1.4%)	14 (1.4%)	13 (1.3%)

Anthenelli RM, Benowitz NL, West R, et al. Neuropsychiatric safety and efficacy of varenicline, bupropion, and nicotine patch in smokers with and without psychiatric disorders (EAGLES): a double-blind, randomised, placebo-controlled clinical trial. *Lancet* 2016 Apr 22. [Epub ahead of print]

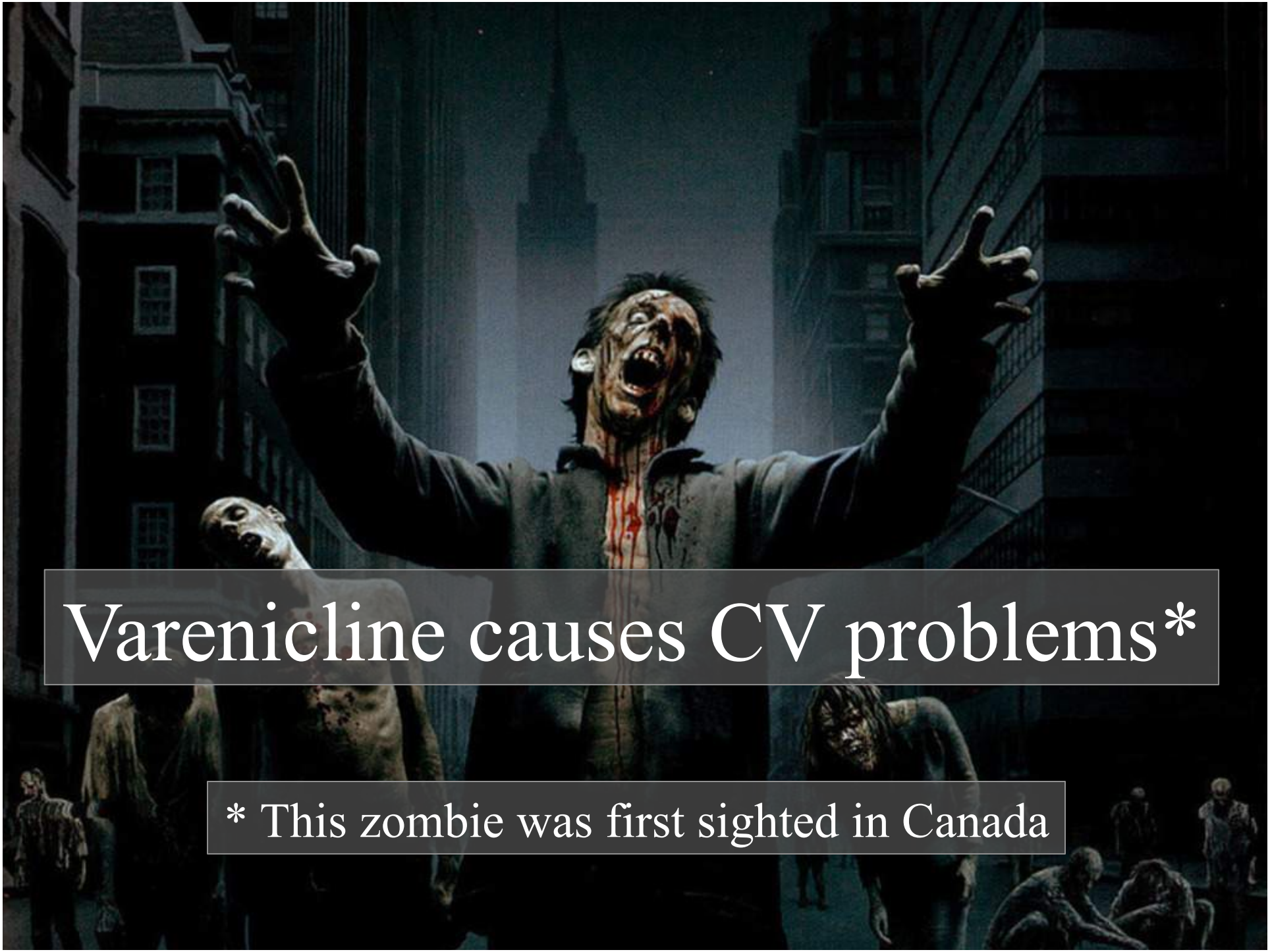
THE LANCET

www.thelancet.com Published online April 22, 2016 http://dx.doi.org/10.1016/S0140-6736(16)30272-0

Neuropsychiatric safety and efficacy of varenicline, bupropion, and nicotine patch in smokers with and without psychiatric disorders (EAGLES): a double-blind, randomised, placebo-controlled clinical trial

Robert M Anthenelli, Neal L Benowitz, Robert West, Lisa St Aubin, Thomas McRae, David Lawrence, John Ascher, Cristina Russ, Alok Krishen, A Eden Evins

"The study did not show a significant increase in neuropsychiatric adverse events attributable to varenicline or placebo relative to nicotine patch or placebo. Varenicline was more effective than placebo, nicotine patch, and bupropion in helping smokers achieve abstinence, whereas bupropion and nicotine patch were more effective than placebo."


Varenicline causes CV problems*
* This zombie was first sighted in Canada

CMAJ RESEARCH

Risk of serious adverse cardiovascular events associated with varenicline: a systematic review and meta-analysis

Sonal Singh MD MPH, Yoon K. Loke MBBS MD, John G. Spangler MD MPH, Curt D. Furberg MD PhD

	Varenicline	*Placebo*
Risk of CV Events:	0.82%	1.06%

The use of varenicline among tobacco users was associated with a 72% increased risk of serious adverse cardiovascular events.

Efficacy and Safety of Varenicline for Smoking Cessation in Patients with Cardiovascular Disease:

A Randomized Controlled Trial

Rigotti NA, Pipe AL, Benowitz NL,

Arteaga C, Garza D, Tonstad S.

Circulation 2010;121(2):221-9

BMJ

BMJ 2012;344:e2856 doi: 10.1136/bmj.e2856 (Published 4 May 2012)

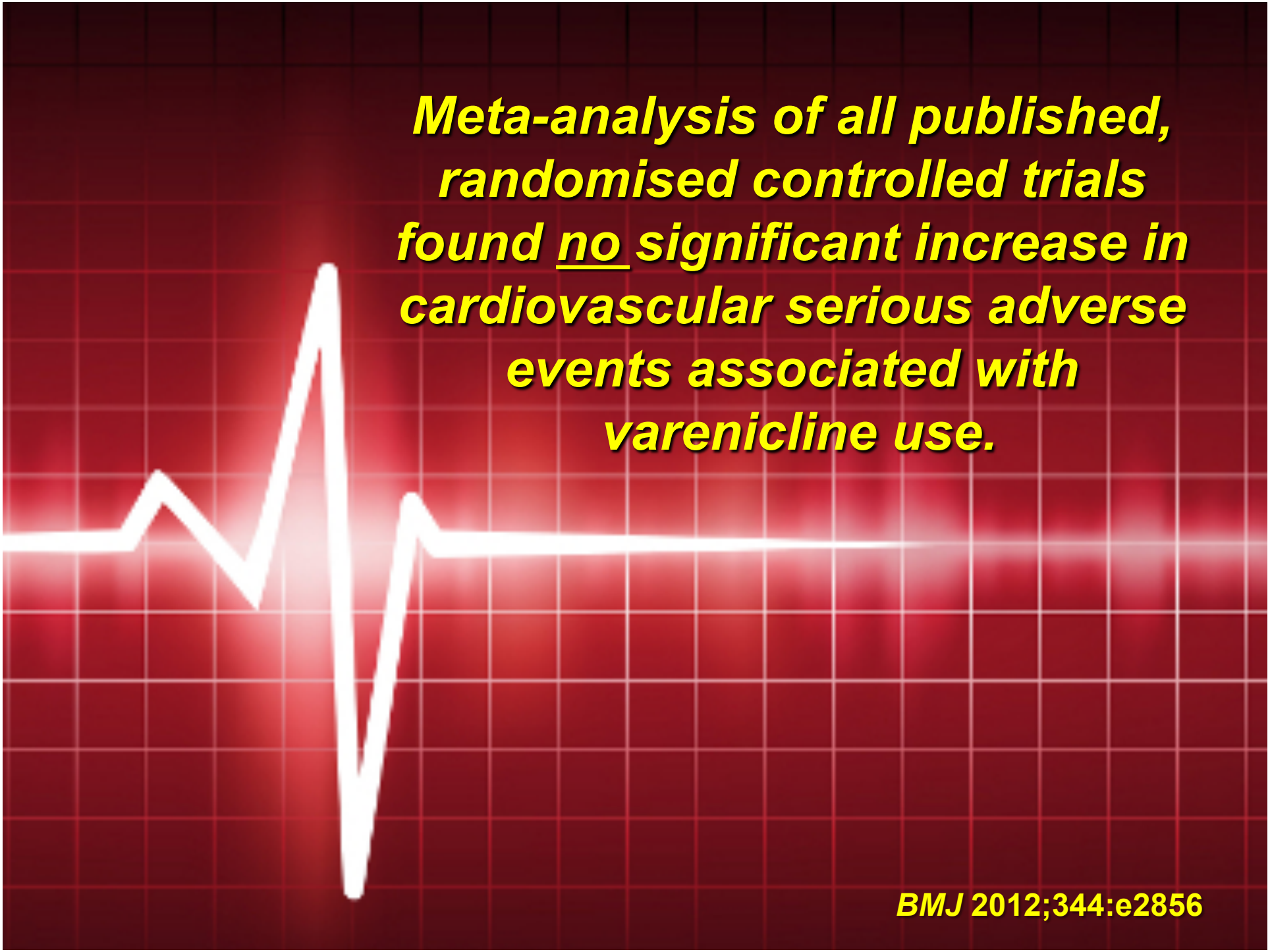
RESEARCH

Risk of cardiovascular serious adverse events associated with varenicline use for tobacco cessation: systematic review and meta-analysis


OPEN ACCESS

Judith J Prochaska *associate professor*[1], Joan F Hilton *professor*[2]

[1]Department of Psychiatry and Center for Tobacco Control Research and Education, University of California, San Francisco, CA 94143-0984;
[2]Department of Epidemiology and Biostatistics, University of California


Meta-analysis of all published, randomised controlled trials found no significant increase in cardiovascular serious adverse events associated with varenicline use.
BMJ 2012;344:e2856

Circulation

American Heart Association.

Cardiovascular Events Associated With Smoking Cessation Pharmacotherapies: A Network Meta-Analysis

Mills EJ et al. *Circulation* 2014;129:28-41

"Smoking cessation therapies do not appear to raise the risk of serious cardiovascular disease events."

UNIVERSITY OF OTTAWA HEART INSTITUTE
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OTTAWA MODEL FOR SMOKING CESSATION
MODÈLE D'OTTAWA POUR L'ABANDON DU TABAC

Medication Effectiveness …

Medication	Number of arms	Estimated odds ratio	% Estimated abstinence rate
Placebo	80	1.0	13.8
Varenicline (2 mg/d)	5	3.1 (2.5-3.8)	33.2 (28.9-37.8)
Nicotine patch	32	1.9 (1.7-2.3)	23.4 (21.3-25.8)
Nicotine gum	15	1.5 (1.2-1.7)	19.0 (16.5-21.9)
Bupropion SR	26	2.0 (1.8-2.2)	24.2 (22.2-26.4)
Patch + Gum (ad lib)	3	3.6 (2.5-5.2)	36.5 (28.6-45.3)
Patch + Bupropion	3	2.5 (1.9-3.4)	28.9 (23.5-35.1)

Treating Tobacco Use and Dependence. Clinical Practice Guideline. US DHHS. 2008.

Chang et al. BMC Public Health (2015) 15:689
DOI 10.1186/s12889-015-2055-0

BMC Public Health

RESEARCH ARTICLE Open Access

Combination therapy of varenicline with nicotine replacement therapy is better than varenicline alone: a systematic review and meta-analysis of randomized controlled trials

Ping-Hsun Chang[1,4†], Chien-Hsieh Chiang[1,2,3†], Wei-Che Ho[1], Pei-Zu Wu[1], Jaw-Shiun Tsai[1,2*] and Fei-Ran Guo[1,2*]

Conclusions

The combination therapy of varenicline with NRT is more effective than varenicline alone in smoking cessation. This effect is more evident if pre-cessation treatment of nicotine patch is administrated. The adverse events of combination therapy are comparable to varenicline mono-therapy with the exception of skin reactions. Larger RCTs are needed to make more robust conclusions.


Smoking is a leading cause of hospitalization and RE-HOSPITALIZATION
Public Health Agency of Canada. 2009.
Canadian Institute for Health Information, Health Indicators 2009

Cessation & The Hospital

- Large numbers of smokers
- Relevance of smoking to admission
- Increased motivation to quit
- Availability of staff
- Opportunity for systematic approach
- Availability of Pharmacotherapy
- Treatment of withdrawal
- Can arrange follow-up
- Influence community practice

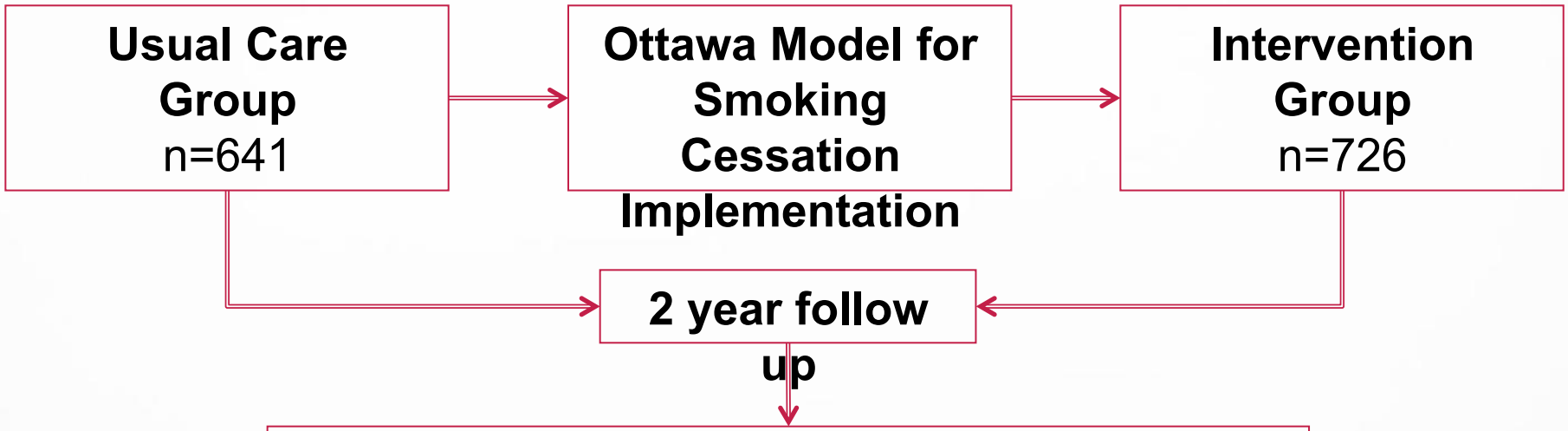
"The Ottawa Model"

Identification
Documentation
Counseling
Pharmacotherapy
Long-term follow-up

Reid RD, Pipe AL, Quinlan B. *Can J Cardiol* 2006;22:775-780


OTTAWA
MODEL
FOR SMOKING
CESSATION

An Evaluation of the Ottawa Model



Outcomes:

- all-cause readmissions (primary)
- smoking-attributable readmissions
- all-cause and smoking-related ER visits
- all-cause and smoking-related physician visits
- mortality
- cost

OTTAWA MODEL FOR SMOKING CESSATION

n= 14 hospitals
K-A Mullen PhD, Unpublished Data.
2015

OTTAWA MODEL FOR SMOKING CESSATION

The Ottawa Model results in significant reductions in 30-day healthcare utilization

All-cause readmissions
(p=.0007)

NNT: 16

Smoking-related readmissions
(p=.0002)

NNT: 38

ER visits
(p=.001)

NNT: 23

OTTAWA MODEL FOR SMOKING CESSATION

The Ottawa Model results in significant reductions in 2-year healthcare utilization and risk of death

All-cause readmissions
(p<.0001)

NNT: 7

Smoking-related readmissions
(p<.0001)

NNT: 10

ER visits
(p=.04)

NNT: 25

Death
(p=.0002)

NNT: 14

Primary Care

OTTAWA MODEL
FOR SMOKING CESSATION
IN PRIMARY CARE

MODÈLE D'OTTAWA
POUR L'ABANDON DU TABAC
EN SOINS PRIMAIRES

THE 3As: ASK, ADVISE, ACT

30 SECONDS
Reception/ Triage Nurse

ASK AND DOCUMENT

Include tobacco use question as one of the patient's vital signs

Have you used any form of tobacco in the last 7 days?

2 MINUTES
Physician/Nurse Practitioner

ADVISE AND REFER

Provide strong, personalized, non-judgmental advice to quit with offer of support

10-20 MINUTES
Smoking Cessation Counsellor (Nurse, NP, Pharmacist, RRT)

ACT

For Patient who is READY TO QUIT:
QUIT PLAN VISIT

- Strategic counselling
- Pharmacotherapy
- Follow-up/OMSC Smoker's Follow-up Program

For Patient who is NOT READY TO QUIT:

- Follow-up/OMSC Smoker's
- Follow-up Program

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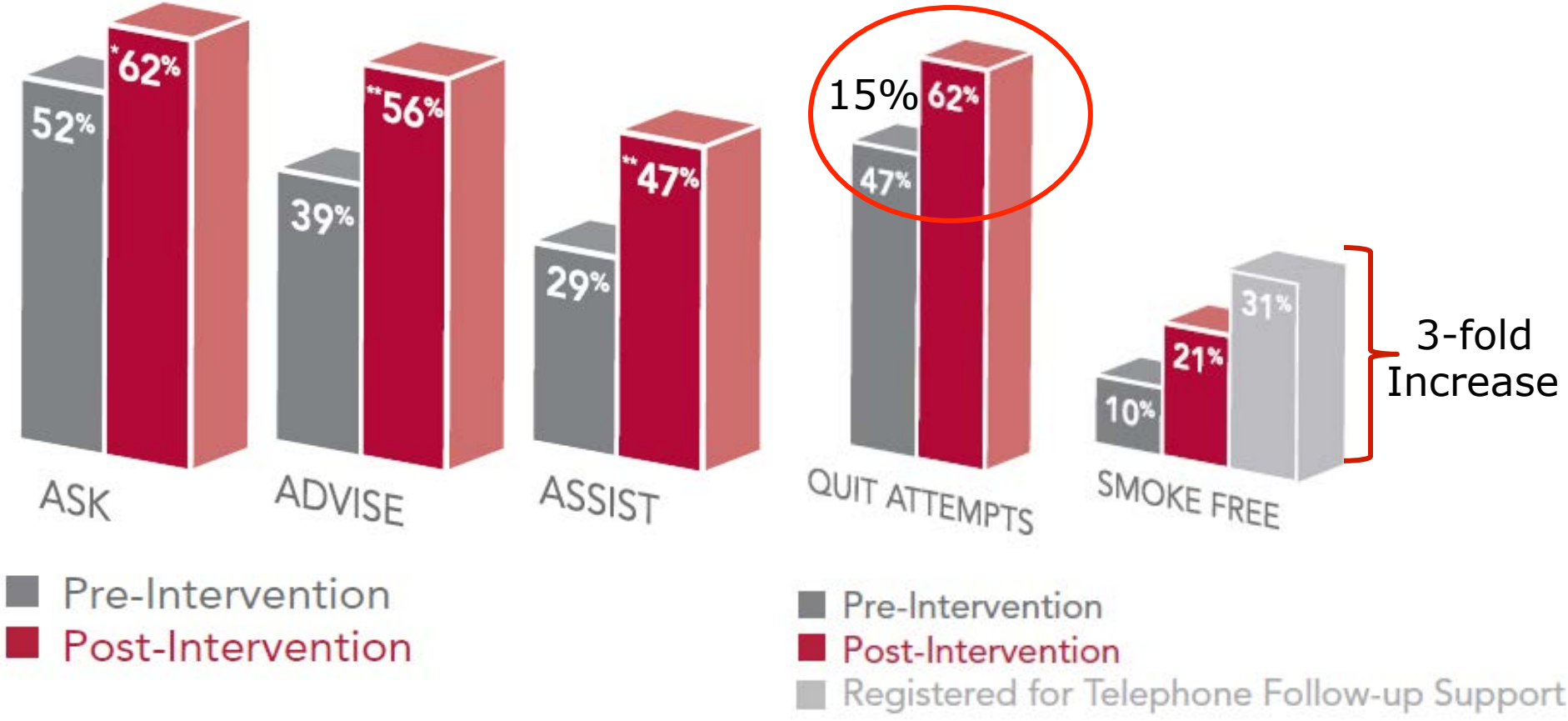
SMOKING CESSATION IN PRIMARY CARE

Delivering evidence-based smoking cessation treatment in primary care practice

Experience of Ontario family health teams

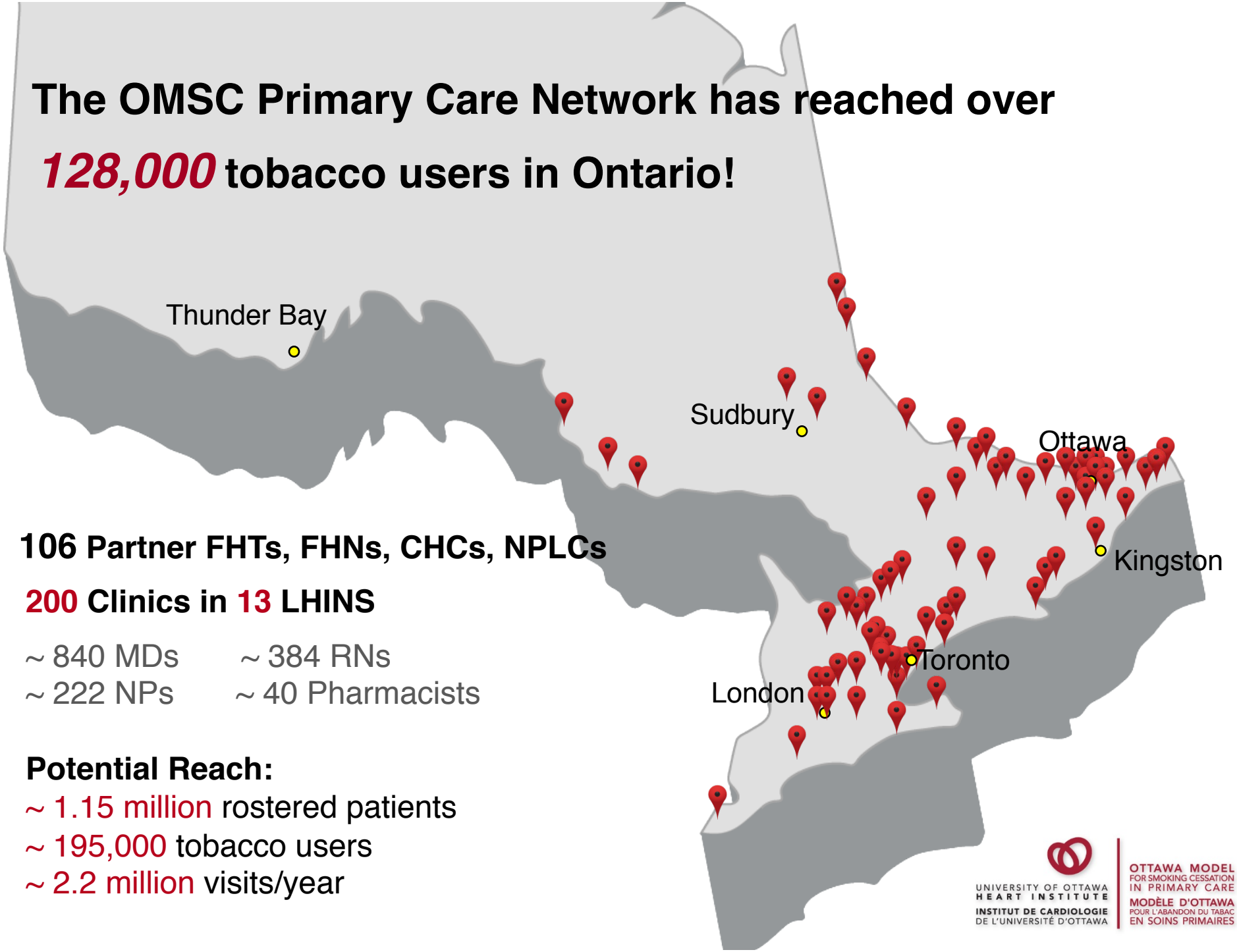
Sophia Papadakis MHA PhD Marie Gharib Josh Hambleton MHA Robert D. Reid PhD MBA Roxane Assi Andrew L. Pipe CM MD

Canadian Family Physician • Le Médecin de famille canadien | VOL 60: JULY • JUILLET 2014



The OMSC Primary Care Network has reached over

128,000 tobacco users in Ontario!



106 Partner FHTs, FHNs, CHCs, NPLCs

200 Clinics in 13 LHINS

~ 840 MDs ~ 384 RNs
~ 222 NPs ~ 40 Pharmacists

Potential Reach:

~ 1.15 million rostered patients
~ 195,000 tobacco users
~ 2.2 million visits/year

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OTTAWA MODEL FOR SMOKING CESSATION IN PRIMARY CARE
MODÈLE D'OTTAWA POUR L'ABANDON DU TABAC EN SOINS PRIMAIRES

"REDUCE TO QUIT"

COMBINATION THERAPY

KEEP CALM AND BE SYSTEMATIC

UNIVERSITY OF OTTAWA
HEART INSTITUTE
INSTITUT DE CARDIOLOGIE
DE L'UNIVERSITÉ D'OTTAWA

Systematic Approaches to Smoking Cessation in EVERY Clinical Setting


Smoking Cessation
The Most Important
Preventive Intervention !

UNIVERSITY OF OTTAWA
HEART INSTITUTE
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DE L'UNIVERSITÉ D'OTTAWA

OTTAWA MODEL FOR SMOKING CESSATION

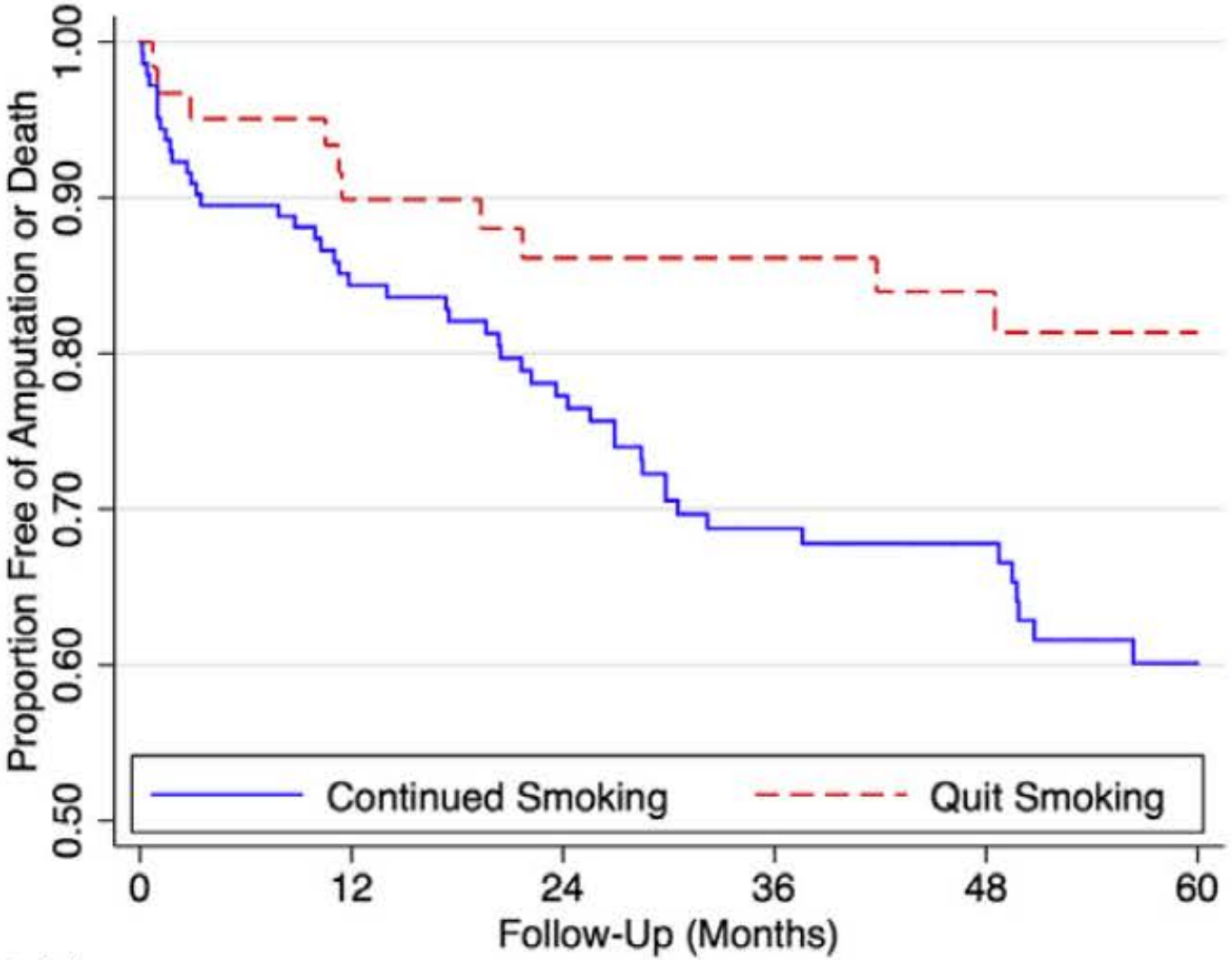
Transforming …

Patient Care

Professional Behaviours

Institutional Practices

Amputation-free survival among patients who continued vs quit smoking



Armstrong EJ et al. *J Vasc Surg* 2014;60:1565-71