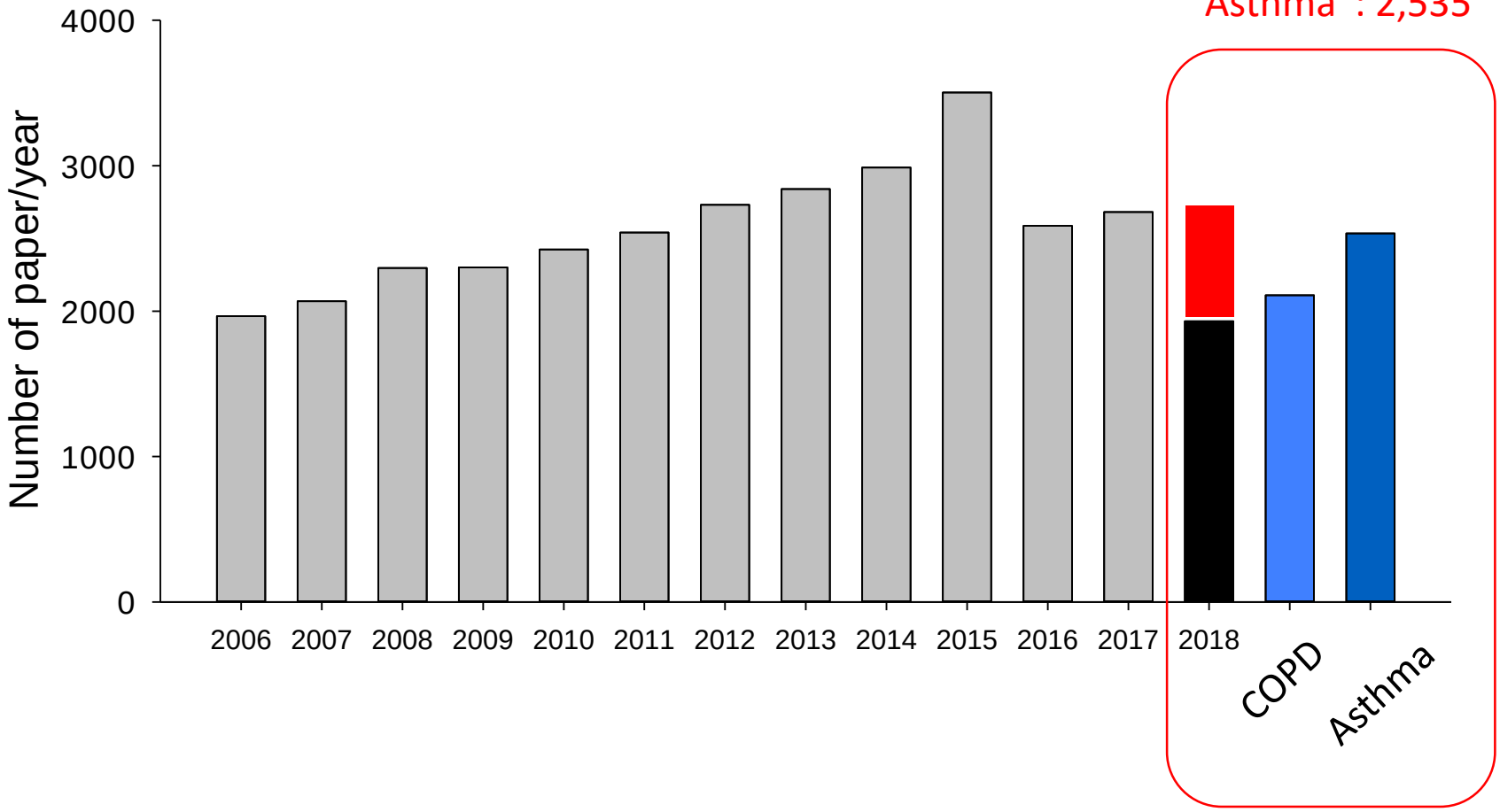
2018 금연연구회 제4차 심포지엄

# Year in Review

강남세브란스병원 박혜정

# 금연 연구 현황

"Smoking": 1,931
"COPD": 2,109
"Asthma": 2,535



# 금연 연구 잡지

- Smoking: 1931 in 2018

- 125: nicotine tobacco research (England, IF 4.291)
- 42: tobacco control  (England, IF 4.151)
- 39: Addiction (England, IF 5.953)

# CONTENTS

- **흡연의 위험인자와 유해성**
- Pregnancy-Children
- Various diseases in adults

- **금연의 이득**

- **금연 방법**
- 약물, 보상금, **“전자담배”**, varenicline, 기타 보조 요법

# 흡연의 위험인자와유해성

Pregnancy-children

# National, regional, and global prevalence of smoking during pregnancy in the general population: a systematic review and meta-analysis

## 임신 중 흡연 문제가 심각

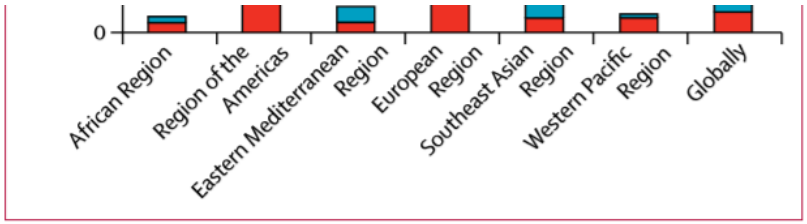



*Figure 4:* Prevalence of daily smoking in women and pregnant women in the general population and estimated proportion of women who smoke daily who continue to smoke daily during pregnancy, by WHO region

*Figure 3:* Proportion of pregnant women who smoked during pregnancy, by frequency and quantity, globally
Frequency was categorised as occasional smoking (at least one cigarette per occasion, but less than daily) or daily smoking (at least one cigarette every day). Quantity was categorised as light smoking (1–10 cigarettes per smoking day), moderate smoking (11–19 cigarettes per smoking day), and heavy smoking (≥20 cigarettes per smoking day).

ORIGINAL ARTICLE

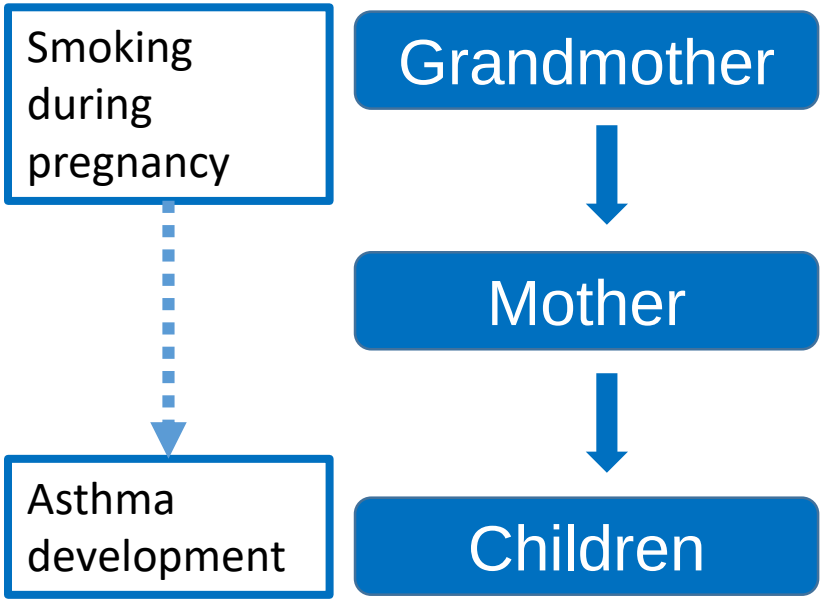
Epidemiology of Allergic Disease

WILEY

*Clin Exp Allergy*

# Grandmaternal smoking increases asthma risk in grandchildren: A nationwide Swedish cohort

C. J. Lodge[1,2,3] | L. Bråbäck[3] | A. J. Lowe[1,2,3] | S. C. Dharmage[1,2] | D. Olsson[3] | B. Forsberg[3]




Giving birth to a female child in Sweden between 1982-1986 (n=44,583)

Giving birth to at least one child in Sweden between 1996-2010 (n=46,197)

(n=66,271)

**TABLE 3** Grandmaternal smoking (GMS) and the odds of any asthma medication use in the child

| GMS at 10-12 wks gestation | | | |
|---|---|---|---|
| 0 (ref) | 1-9 cigs/d | 10+ cigs/d | *P* trend |
| Odds of asthma medication use in the child (unadjusted) odds ratio & 95% CI, [*P*] (n/N) N = 65 956 | | | |
| 1 (7416/38 992) | 1.20 (1.14-1.26) [.000] (3456/15 680) | 1.25 (1.19-1.32) [.000] (2571/11 284) | .002 |
| Odds of asthma medications in the child (adjusted for any maternal nicotine exposure) odds ratio & 95% CI, [*P*] (n/N) N = 63 580 | | | |
| 1 (7149/37 627) | 1.17 (1.11-1.23) [.000] (3319/15 070) | 1.19 (1.12-1.25) [.000] (2451/10 883) | .004 |
| Odds of asthma medications in the child (adjusted[a]) odds ratio & 95% CI, [*P*] (n/N) N = 48 971 | | | |
| 1 (5496/29 165) | 1.13 (1.07-1.20) [.000] (2490/11 391) | 1.15 (1.08-1.23) [.000] (1911/8415) | .069 |
| Odds of asthma medications in the child (adjusted for confounders identified by DAG) odds ratio & 95% CI, [*P*] (n/N) N = 62 899 | | | |
| 1 (7154/37 678) | 1.18 (1.12-1.24) [.000] (3247/14 800) | 1.23 (1.17-1.30) [.000] (2382/10 421) | .013 |

DAG adjustments—grandmother's years of education, grandmother's social allowance, grandmother's asthma and proxy for grandfather's smoking.

[a]Adjusted for child's gender, child's birth order, mother's years of education, mother's family allowance, maternal nicotine exposure (smoking and snus), mothers birth order, mother's residence at child birth, mothers age (quartiles), grandmother's residence at child birth, grandmother's years of education, grandmother's social allowance, grandmother's asthma, grandmother's age(quartiles), grandmother's BMI, proxy for grandfather's smoking. Partially and Fully adjusted models have reduced numbers due to incomplete information on included covariates.

# 할머니의 임신 중 흡연이 손주한테!

Addiction. 2018 Apr 30. doi: 10.1111/add.14261. [Epub ahead of print]

# Does early exposure to caffeine promote smoking and alcohol use behavior? A prospective analysis of middle school students.

Kristjansson AL[1,2], Kogan SM[3], Mann MJ[1], Smith ML[1], Juliano LM[4], Lilly CL[5], James JE[6].

Author information

카페인 일찍 노출
-> 흡연률 ↑

## Abstract

**BACKGROUND AND AIMS:** Despite the negative consequences associated with caffeine use among children and youth, its use is increasingly widespread among middle school students. Cross-sectional studies reveal links between caffeine and other substance use. The potential for caffeine use to confer increased vulnerability to substance use, however, has not been investigated using prospective designs. We hypothesized that caffeine use at baseline would be associated positively with increased alcohol use, drunkenness, smoking and e-cigarette use.

**DESIGN:** Prospective cohort study with 12 months separating baseline from follow-up.

**SETTING:** West Virginia, USA.

**PARTICIPANTS:** Middle school students (6th and 7th grades; n = 3932) in three West Virginia (WV) counties provided data at baseline and follow-up 12 months later.

**MEASUREMENTS:** Youth self-reported their use of caffeine from multiple sources (e.g. soda, energy drinks, coffee and tea), cigarette smoking, electronic cigarette use, alcohol use and drunkenness.

**FINDINGS:** Cross-lagged path models for individual substance use categories provided a good fit to the data. Controlling for demographic variables and other substance use at baseline, caffeine at time 1 (T1) was associated positively with T2 cigarette smoking ($\beta = 0.27$, $P = 0.001$), e-cigarette use ($\beta = 0.21$, $P = 0.001$), alcohol use ($\beta = 0.17$, $P = 0.001$) and drunkenness ($\beta = 0.15$, $P = 0.001$). Conversely, non-significant relations emerged between three of four substances at T1 and caffeine at T2. Positive relations were found between e-cigarette use at T1 and caffeine use at T2 ($\beta = 0.07$, $P = 0.006$). These findings were supported by an omnibus model with all substances included. Specifically, significant relations were observed between caffeine at T1 and all substance use outcomes at T2, whereas no significant relations were observed between substance use and caffeine over time.

**CONCLUSIONS:** Caffeine may promote early use of other types of substances among middle school-aged adolescents.

RESEARCH



# Role of obesity in smoking behaviour: Mendelian randomisation study in UK Biobank

Cite this as: *BMJ* 2018;361:k1767
http://dx.doi.org/10.1136/bmj.k1767

Accepted: 5 April 2018

Robert Carreras-Torres,[1] Mattias Johansson,[1] Philip C Haycock,[2] Caroline L Relton,[2] George Davey Smith,[2] Paul Brennan,[1] Richard M Martin[3,4]

UK biobank cohort (n=372,791)
TAG consortium (n=74,035)

## Supplementary tables

**Supplementary table A – SNP parameters and summary statistics describing their association with the exposure and the outcomes.**

| | | | | | | | | | Association parameters to exposure | | Association parameters to outcome | | | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | | | | | | | | | UK Biobank | | | | | | TAG consortium | | | | | | | |
| | | | | | | | | | | | Ever vs Never smoker | | Former vs Current smokers | | CPD ever smokers | | Age of smoking initiation* | | Ever vs Never smoker | | Former vs Current smokers | | CPD ever smokers | | Age of smoking initiation* | |
| SNP | Chr | Bp | Info | Adiposity parameter | Neuronal pathway | Tdi P Value | Effect allele | Other allele | Beta | SE | Beta | SE | Beta | SE | Beta | SE | Beta | SE | Beta | SE | Beta | SE | Beta | SE | Beta | SE |
| rs657452 | 1 | 49,589,847 | 0.99 | BMI | - | 0.04 | A | G | 0.023 | 0.003 | 0.015 | 0.005 | -0.020 | 0.009 | 0.081 | 0.042 | -0.001 | 0.001 | 0.020 | 0.012 | 0.012 | 0.016 | 0.095 | 0.084 | 0.000 | 0.002 |
| rs3101336 | 1 | 72,751,185 | 1.00 | BMI | Yes | 0.48 | C | T | 0.033 | 0.003 | -0.009 | 0.005 | -0.033 | 0.008 | -0.111 | 0.042 | 0.000 | 0.001 | 0.029 | 0.012 | 0.048 | 0.017 | 0.100 | 0.085 | 0.000 | 0.002 |
| rs12566985 | 1 | 75,002,193 | 0.99 | BMI | - | 3.0E-04 | G | A | 0.024 | 0.003 | 0.026 | 0.005 | -0.002 | 0.008 | 0.071 | 0.041 | -0.003 | 0.001 | 0.017 | 0.012 | -0.012 | 0.016 | 0.066 | 0.085 | -0.007 | 0.002 |
| rs12401738 | 1 | 78,446,761 | 1.00 | BMI | Yes | 0.05 | A | G | 0.021 | 0.003 | -0.002 | 0.005 | 0.019 | 0.009 | -0.015 | 0.042 | 0.002 | 0.001 | -0.004 | 0.012 | 0.007 | 0.017 | 0.213 | 0.086 | -0.007 | 0.002 |
| rs11165643 | 1 | 96,924,097 | 1.00 | BMI | Yes | 0.58 | T | C | 0.022 | 0.003 | -0.019 | 0.005 | -0.010 | 0.008 | 0.018 | 0.042 | 0.001 | 0.001 | 0.013 | 0.012 | -0.017 | 0.016 | -0.044 | 0.083 | 0.004 | 0.002 |
| rs17024393 | 1 | 110,154,688 | 0.99 | BMI | - | 0.12 | C | T | 0.066 | 0.009 | -0.028 | 0.015 | -0.022 | 0.026 | -0.142 | 0.128 | 0.000 | 0.003 | 0.003 | 0.035 | -0.023 | 0.045 | 0.194 | 0.232 | -0.003 | 0.006 |
| rs543874 | 1 | 177,889,480 | 1.00 | BMI | - | 2.8E-04 | G | A | 0.048 | 0.004 | -0.015 | 0.006 | 0.016 | 0.010 | -0.058 | 0.050 | 0.000 | 0.001 | -0.001 | 0.015 | -0.028 | 0.021 | 0.223 | 0.107 | -0.002 | 0.003 |
| rs2820292 | 1 | 201,784,287 | 1.00 | BMI | Yes | 0.02 | C | A | 0.020 | 0.003 | -0.003 | 0.005 | 0.014 | 0.008 | 0.041 | 0.041 | 0.001 | 0.001 | -0.002 | 0.012 | -0.016 | 0.016 | 0.190 | 0.082 | 0.000 | 0.002 |
| rs10182181 | 2 | 25,150,296 | 1.00 | BMI | Yes | 0.33 | G | A | 0.031 | 0.003 | -0.020 | 0.005 | -0.003 | 0.008 | -0.034 | 0.041 | -0.001 | 0.001 | 0.025 | 0.012 | 0.002 | 0.016 | 0.088 | 0.081 | 0.004 | 0.002 |
| rs11126666 | 2 | 26,928,811 | 1.00 | BMI | Yes | 0.65 | A | G | 0.021 | 0.003 | 0.004 | 0.005 | 0.013 | 0.010 | 0.023 | 0.047 | 0.001 | 0.001 | -0.021 | 0.013 | -0.005 | 0.018 | 0.053 | 0.092 | 0.001 | 0.003 |
| rs1016287 | 2 | 59,305,625 | 0.99 | BMI | - | 0.44 | T | C | 0.023 | 0.003 | 0.005 | 0.005 | -0.003 | 0.009 | -0.060 | 0.044 | 0.000 | 0.001 | -0.013 | 0.013 | 0.009 | 0.017 | 0.055 | 0.090 | -0.002 | 0.003 |
| rs11688816 | 2 | 63,053,048 | 0.98 | BMI | - | 0.73 | G | A | 0.017 | 0.003 | -0.014 | 0.005 | 0.002 | 0.008 | 0.033 | 0.041 | 0.002 | 0.001 | -0.020 | 0.012 | 0.010 | 0.016 | 0.067 | 0.082 | 0.002 | 0.002 |
| rs2121279 | 2 | 143,043,285 | 0.99 | BMI | - | 0.35 | T | C | 0.025 | 0.004 | 0.013 | 0.007 | -0.005 | 0.013 | 0.030 | 0.062 | 0.000 | 0.001 | -0.030 | 0.017 | 0.025 | 0.024 | 0.044 | 0.121 | 0.000 | 0.003 |
| rs1528435 | 2 | 181,550,962 | 1.00 | BMI | - | 0.10 | T | C | 0.018 | 0.003 | -0.002 | 0.005 | -0.002 | 0.009 | -0.039 | 0.042 | 0.000 | 0.001 | -0.001 | 0.012 | -0.002 | 0.017 | 0.046 | 0.085 | 0.002 | 0.002 |
| rs7599312 | 2 | 213,413,231 | 0.97 | BMI | Yes | 0.55 | G | A | 0.022 | 0.003 | 0.000 | 0.005 | 0.012 | 0.009 | 0.027 | 0.046 | 0.000 | 0.001 | 0.018 | 0.013 | -0.016 | 0.018 | -0.023 | 0.092 | 0.003 | 0.003 |
| rs6804842 | 3 | 25,106,437 | 0.99 | BMI | Yes | 0.83 | G | A | 0.019 | 0.003 | -0.018 | 0.005 | -0.004 | 0.008 | -0.066 | 0.041 | 0.001 | 0.001 | -0.007 | 0.013 | -0.015 | 0.017 | 0.028 | 0.088 | -0.003 | 0.002 |
| rs2365389 | 3 | 61,236,462 | 0.99 | BMI | - | 0.29 | C | T | 0.020 | 0.003 | 0.005 | 0.005 | -0.010 | 0.009 | -0.024 | 0.042 | -0.002 | 0.001 | -0.002 | 0.012 | 0.022 | 0.016 | 0.124 | 0.083 | 0.002 | 0.002 |
| rs3849570 | 3 | 81,792,112 | 0.99 | BMI | Yes | 0.11 | A | C | 0.019 | 0.003 | 0.007 | 0.005 | -0.006 | 0.009 | -0.011 | 0.043 | 0.003 | 0.001 | -0.004 | 0.012 | -0.039 | 0.017 | -0.185 | 0.086 | 0.004 | 0.002 |
| rs13078960 | 3 | 85,807,590 | 0.99 | BMI | Yes | 0.17 | G | T | 0.030 | 0.004 | -0.037 | 0.006 | -0.011 | 0.010 | 0.065 | 0.051 | -0.001 | 0.001 | 0.015 | 0.015 | 0.040 | 0.020 | -0.095 | 0.103 | -0.001 | 0.003 |
| rs16851483 | 3 | 141,275,436 | 1.00 | BMI | - | 0.66 | T | G | 0.048 | 0.008 | 0.000 | 0.009 | 0.014 | 0.017 | 0.014 | 0.082 | 0.002 | 0.002 | -0.027 | 0.024 | -0.018 | 0.032 | -0.054 | 0.166 | -0.002 | 0.005 |
| rs1516725 | 3 | 185,824,004 | 0.99 | BMI | Yes | 0.15 | C | T | 0.045 | 0.005 | -0.013 | 0.007 | 0.014 | 0.012 | 0.026 | 0.060 | -0.004 | 0.001 | 0.017 | 0.017 | -0.023 | 0.024 | 0.198 | 0.122 | 0.003 | 0.003 |
| rs10938397 | 4 | 45,182,527 | 0.99 | BMI | Yes | 0.97 | G | A | 0.040 | 0.003 | 0.006 | 0.005 | -0.015 | 0.008 | -0.015 | 0.041 | 0.002 | 0.001 | -0.003 | 0.012 | -0.004 | 0.017 | 0.049 | 0.087 | 0.001 | 0.002 |

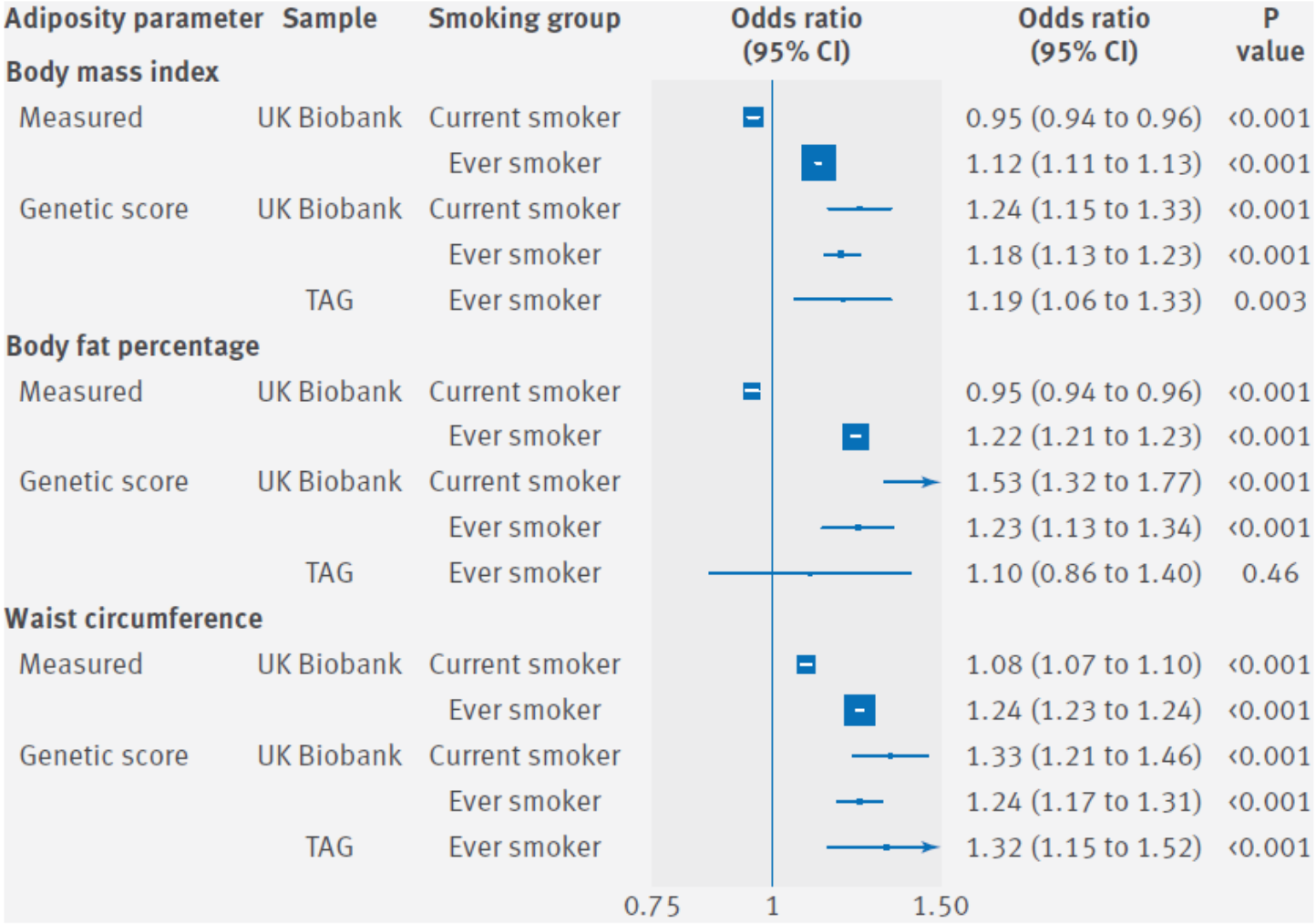
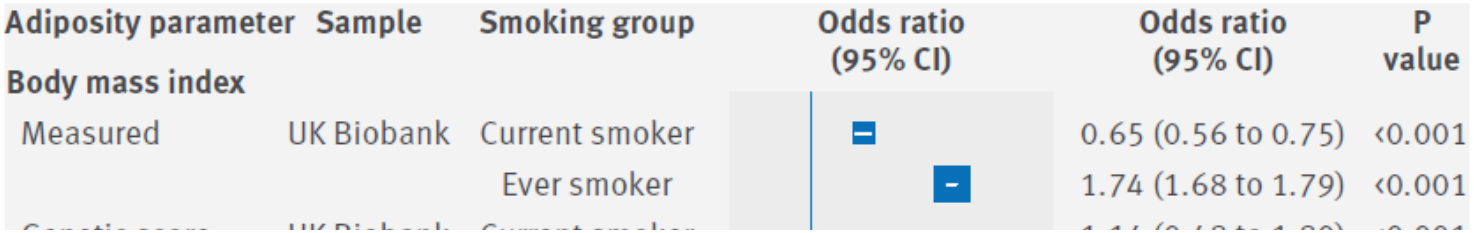



Fig 1 | Association between measured and genetically determined increase in one standard deviation in adiposity parameters and smoking status (ever *v* never smokers). TAG=Tobacco and Genetics consortium




# (유전적) 비만 -> 흡연률 ↑


Fig 3 | Association between measured and genetically determined increase in one standard deviation in adiposity parameters and number of cigarettes smoked per day. TAG=Tobacco and Genetics consortium

# 흡연의 위험인자와 유해성

## Various diseases in adults

[ Original Research **Lung Cancer** ]

CHEST

# Tobacco Dependence Predicts Higher Lung Cancer and Mortality Rates and Lower Rates of Smoking Cessation in the National Lung Screening Trial



*Alana M. Rojewski, PhD; Nichole T. Tanner, MD; Lin Dai, PhD; James G. Ravenel, MD; Mulugeta Gebregziabher, PhD; Gerard A. Silvestri, MD; and Benjamin A. Toll, PhD*

National Lung Screening Trial (NLST)
53,452 current and former smokers ages 55 to 74 years with a minimum of a 30 PY cigarette smoking history
-> American College of Radiology Imaging Network **(ACRIN) arm (n=14,125)**

**Dependence on cigarettes**

1) Fagestrom Test for Nicotine Dependence **(FTND)**
2) Heaviness of smoking index **(HIS)**
3) Time to first cigarette **(TTFC)**

**TABLE 5** ] HRs With 95% CIs According to Level of Dependence

| Variable | Lung Cancer | | | All-Cause Mortality | | | Lung Cancer-Specific Mortality | | |
|---|---|---|---|---|---|---|---|---|---|
| | HR | 95% CI | *P* Value | HR | 95% CI | *P* Value | HR | 95% CI | *P* Value |
| FTND | | | | | | | | | |

# 의존성 높을수록 위험

| | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|
| 31-60 min | 2.05 | 1.14-3.70 | .02 | 1.51 | 1.03-2.22 | .04 | 3.43 | 1.17-10.10 | .03 |
| 6-30 min | 2.19 | 1.29-3.74 | < .01 | 1.55 | 1.11-2.18 | .01 | 3.51 | 1.28-9.65 | .01 |
| ≤ 5 min | 2.56 | 1.49-4.41 | < .01 | 2.19 | 1.55-3.09 | < .01 | 4.46 | 1.63-12.21 | < .01 |
| Likelihood trend | | | < .01 | | | < .01 | | | < .01 |

Reference group: very low dependence for FTND and HSI, and > 60 min for TTFC; likelihood ratio test for trend. HR = hazard ratio. See Table 1 legend for expansion of other abbreviations.

*** Adjusted with sex, age, race, PY, treatment arm, presence of lung nodule

ORIGINAL ARTICLE

# Lung Microbiota Is Related to Smoking Status and to Development of Acute Respiratory Distress Syndrome in Critically Ill Trauma Patients

Ariane R. Panzer[1], Susan V. Lynch[1], Chaz Langelier[2], Jason D. Christie[3], Kathryn McCauley[1], Mary Nelson[4,5], Christopher K. Cheung[4,5], Neal L. Benowitz[5,6], Mitchell J. Cohen[7,8], and Carolyn S. Calfee[9,10,11,12]

[1]Division of Gastroenterology, Department of Medicine, [2]Division of Infectious Diseases, Department of Medicine, [4]Department of Surgery, [6]Division of Clinical Pharmacology, Department of Medicine, [9]Division of Pulmonary and Critical Care Medicine, Department of Medicine, [10]Department of Anesthesia, [11]Cardiovascular Research Institute, and [12]Center for Tobacco Control Research and Education, University of California, San Francisco, San Francisco, California; [3]Division of Pulmonary and Critical Care Medicine, Department of Medicine, University of Pennsylvania, Philadelphia, Pennsylvania; [5]Zuckerberg San Francisco General Hospital, San Francisco, California; [7]Department of Surgery, Denver Health Medical Center, Denver, Colorado; and [8]Department of Surgery, University of Colorado, Aurora, Colorado

Samples obtained on ICU addition after severe blunt trauma (n=74)
At 48 hours after admission (n=30)

Cigarette smoke exposure (quantified using plasma cotinine)
ARDS development
Lung microbiota composition
Other clinical parameters

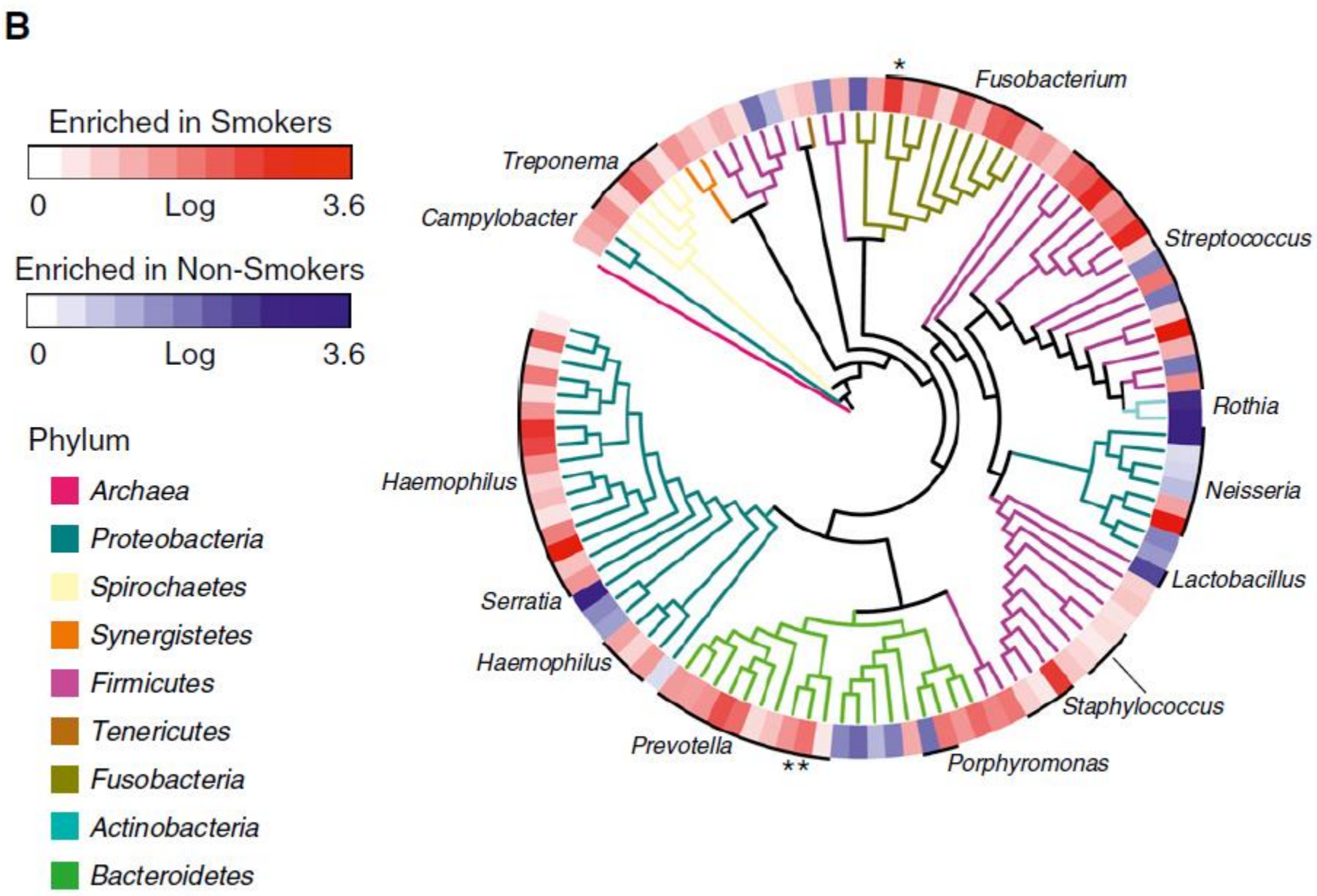

B
Enriched in Smokers
0
Log
3.6
Enriched in Non-Smokers
0
Log
3.6
Phylum
Archaea
Proteobacteria
Spirochaetes
Synergistetes
Firmicutes
Tenericutes
Fusobacteria
Actinobacteria
Bacteroidetes
*
Fusobacterium
Treponema
Campylobacter
Streptococcus
Rothia
Haemophilus
Neisseria
Lactobacillus
Serratia
Haemophilus
Staphylococcus
Prevotella
**
Porphyromonas

**Table 3.** Taxa Significantly Enriched in Smokers Compared with Nonsmokers at Both 0 h and 48 h

| OTU | Phylum | Family | Genus | Average Relative Abundance* (%) in Smokers at 0 h | Average Relative Abundance* (%) in Nonsmokers at 0 h | Mean Read Count in Smokers at 0 h | Mean Read Count in Nonsmokers at 0 h | *P* Value† |
|---|---|---|---|---|---|---|---|---|
| 956702 | *Proteobacteria* | *Pasteurellaceae* | *Haemophilus* | 1.22 | 0.0024 | 732.89 | 1.43 | 1.48E-15 |
| 4471251 | *Proteobacteria* | *Pasteurellaceae* | *Haemophilus* | 6.85 | 0.1727 | 4,108.19 | 103.57 | 4.39E-14 |
| 4469359 | *Proteobacteria* | *Pasteurellaceae* | *Haemophilus* | 0.58 | 0.0188 | 346.98 | 11.29 | 1.53E-12 |
| 4416265 | *Proteobacteria* | *Pasteurellaceae* | *Haemophilus* | 0.05 | 0.0017 | 29.4 | 1 | 1.88E-11 |
| 4443574 | *Proteobacteria* | *Pasteurellaceae* | *Haemophilus* | 0.10 | 0.0060 | 62.85 | 3.62 | 6.24E-08 |
| 4407433 | *Proteobacteria* | *Pasteurellaceae* | *Haemophilus* | 0.01 | 0.0005 | 7.87 | 0.29 | 1.57E-05 |
| 1059655 | *Firmicutes* | *Streptococcaceae* | *Streptococcus* | 5.93 | 0.7744 | 3,557.62 | 464.33 | 2.83E-05 |
| 3678349 | *Firmicutes* | *Streptococcaceae* | *Streptococcus* | 0.33 | 0.0458 | 199.13 | 27.48 | 3.61E-05 |
| 4428060 | *Bacteroidetes* | *Prevotellaceae* | *Prevotella* | 0.06 | 0.0054 | 38.47 | 3.24 | 0.0005 |
| 747980 | *Bacteroidetes* | *Prevotellaceae* | *Prevotella* | 0.21 | 0.0325 | 124.68 | 19.48 | 0.002 |
| 4423790 | *Bacteroidetes* | *Porphyromonadaceae* | *Porphyromonas* | 0.18 | 0.0357 | 109.53 | 21.43 | 0.003 |
| 32546 | *Proteobacteria* | *Campylobacteraceae* | *Campylobacter* | 0.02 | 0.0027 | 11.53 | 1.62 | 0.012 |

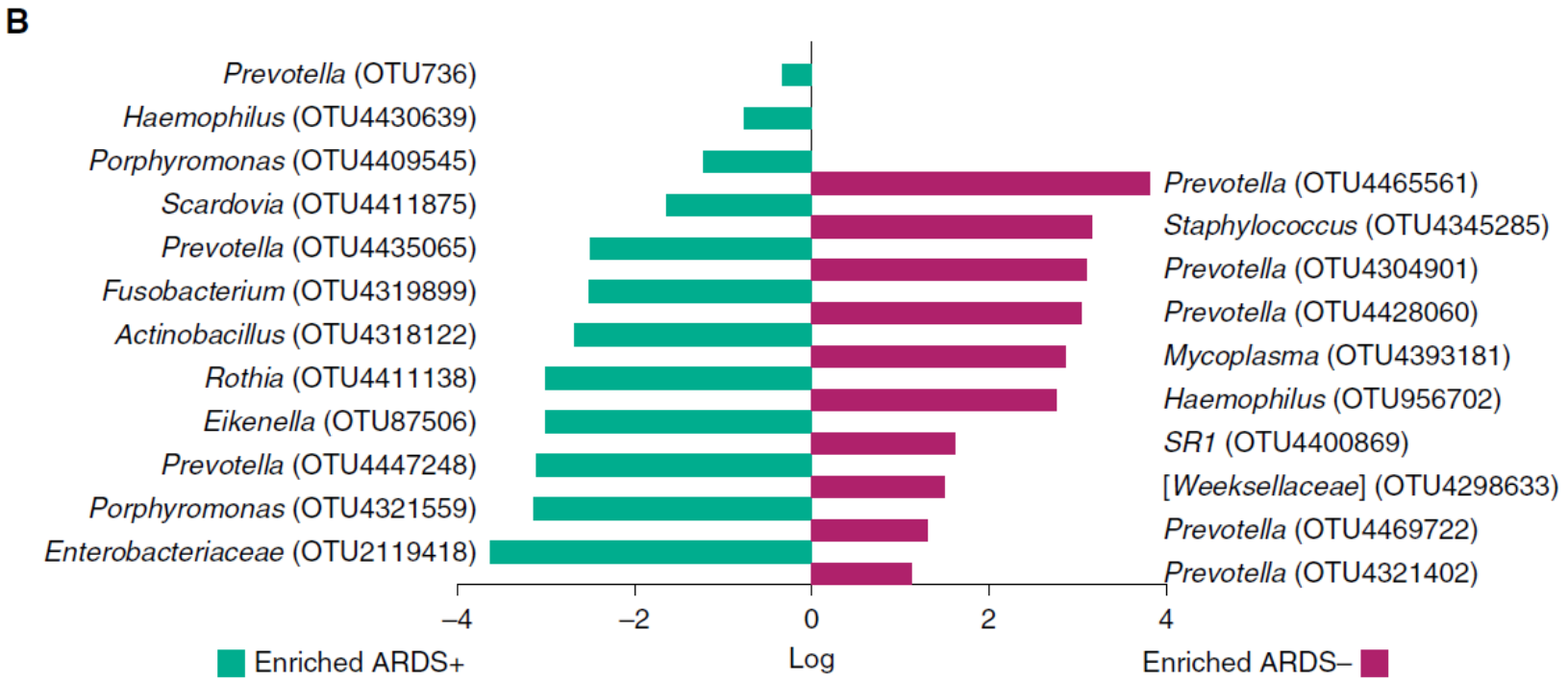



**Figure 3.** (*A*) Principal coordinates analysis plot (weighted UniFrac distance) of 48-hour samples colored by acute respiratory distress syndrome (ARDS) status. The $r^2$ value represents the percent variance explained, and the *P* value denotes the significance of this percentage. (*B*) Discriminatory taxa (48-h three-model analysis comparing ARDS-positive [ARDS+] with ARDS-negative [ARDS−] patients) labeled by genus. OTU = operational taxonomic unit; PC = principal component.

**Conclusions:** After severe blunt trauma, a history of smoking is related to lung microbiota composition, both at the time of ICU admission and at 48 hours. ARDS development is also correlated with respiratory microbial community structure at 48 hours and with taxa that are relatively enriched in smokers at ICU admission. The data derived from this pilot study suggest that smoking-related changes in the lung microbiota could be related to ARDS development after severe trauma.

ORIGINAL ARTICLE

# Smoking duration alone provides stronger risk estimates of chronic obstructive pulmonary disease than pack-years

Surya P Bhatt,[1,2] Young-il Kim,[3] Kathy F Harrington,[1] John E Hokanson,[4] Sharon M Lutz,[4] Michael H Cho,[5] Dawn L DeMeo,[5,6,7] James M Wells,[1,2] Barry J Make,[8] Stephen I Rennard,[9,10] George R Washko,[6,7] Marilyn G Foreman,[11] Donald P Tashkin,[12] Robert A Wise,[13] Mark T Dransfield,[1,2,14] William C Bailey,[1,2] On behalf of the COPDGene Investigators

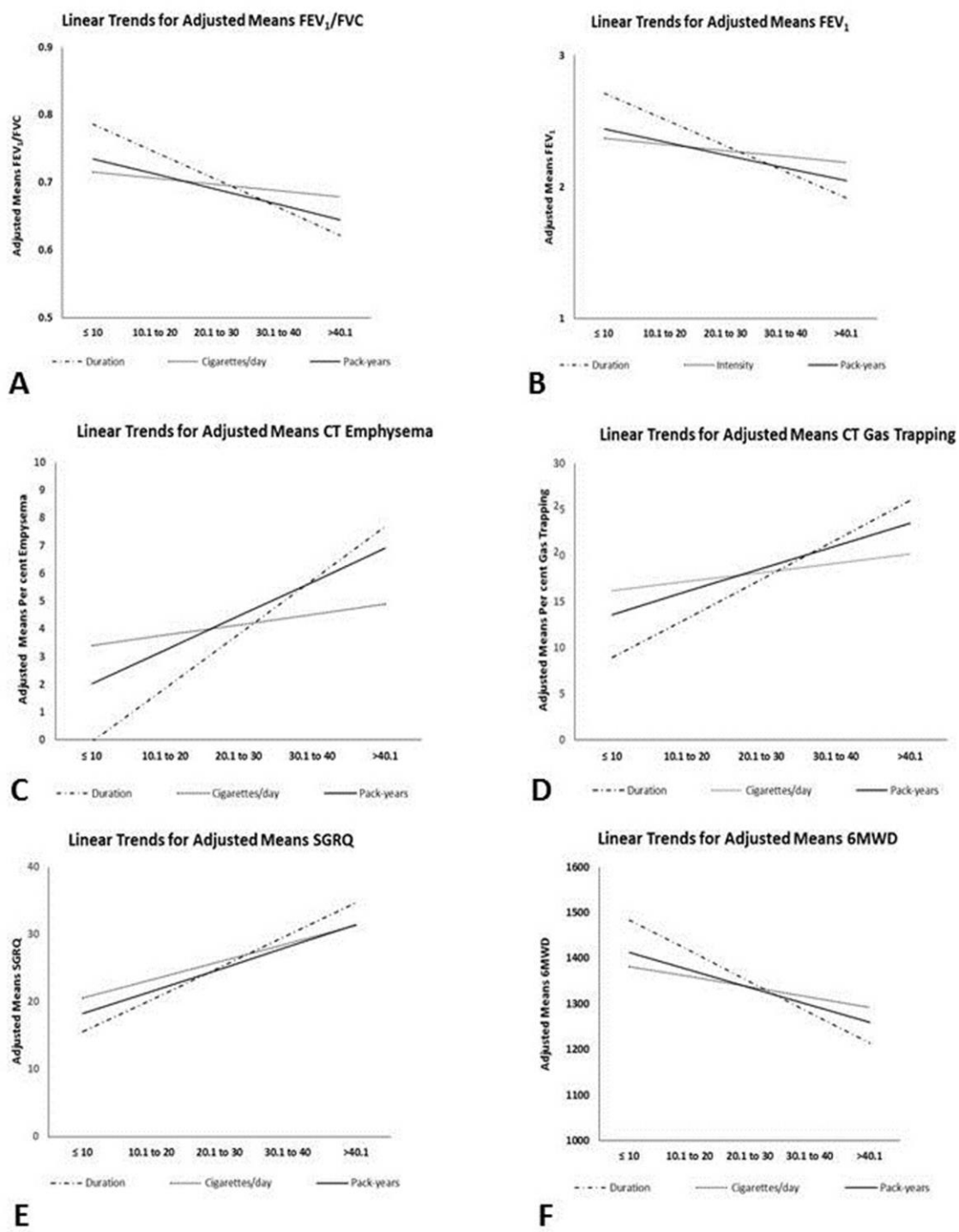
Thorax: first published as 10.1136/thoraxjnl

**COPDgene cohort (n=10,187)**

Smoking history
1) cigarettes/day
2) Duration
3) PY

→

Clinical outcomes
1) FEV1/FVC
2) Emphysema
3) Gas trapping
4) FEV1
5) 6MWD
6) SGRQ



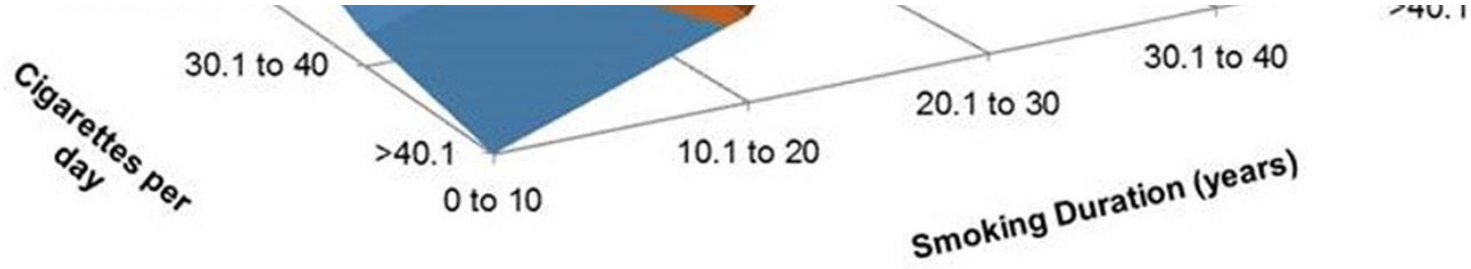

Coefficient for smoking **duration** was greater than for cigarettes/day and PY ($P<0.001$).

**Table 2** Generalised linear models comparing adjusted effect size of smoking variables on outcomes

| Outcome | Predictor | Standardised *b* | SE of standardised *b* | Z value | P value |
|---|---|---|---|---|---|
| $FEV_1$/FVC | Duration | −0.310 | 0.012 | | |
| | Cigarettes/day | −0.080 | 0.009 | −15.442 | <0.001 |
| | Pack-years | −0.183 | 0.009 | −8.353 | <0.001 |
| $FEV_1$ | Duration | −0.253 | 0.011 | | |
| | Cigarettes/day | −0.077 | 0.008 | −12.853 | <0.001 |
| | Pack-years | −0.165 | 0.009 | −6.32 | <0.001 |
| CT emphysema | Duration | 0.219 | 0.012 | | |
| | Cigarettes/day | 0.058 | 0.009 | 10.385 | <0.001 |
| | Pack-years | 0.128 | 0.010 | 5.754 | <0.001 |
| CT gas trapping | Duration | 0.247 | 0.012 | | |
| | Cigarettes/day | 0.077 | 0.009 | 11.009 | <0.001 |
| | Pack-years | 0.159 | 0.010 | 5.566 | <0.001 |
| 6MWD | Duration | −0.186 | 0.012 | | |
| | Cigarettes/day | −0.082 | 0.009 | −7.055 | <0.001 |
| | Pack-years | −0.150 | 0.009 | −2.387 | 0.008 |
| SGRQ | Duration | 0.227 | 0.013 | | |
| | Cigarettes/day | 0.148 | 0.010 | 4.907 | <0.001 |
| | Pack-years | 0.230 | 0.010 | 0.042 | 0.483 |

Estimated standardised regression coefficient *b* is adjusted for age, race, sex, body mass index, scanner type, centre, age of smoking onset and current smoking status.
P value obtained by Z-test for comparing standardised *b* of smoking duration with that of cigarettes/day and pack-years of smoking.
6MWD, 6 min walk distance; SGRQ, St George's Respiratory Questionnaire.


# PY 보다 흡연 기간이 중요



Nicotine Tob Res. 2018 Jul 24. doi: 10.1093/ntr/nty155. [Epub ahead of print]

# The Combined Effect of Cigarette Smoking and Fitness on Injury Risk in Men and Women.

Brooks RD[1,2], Grier T[2], Dada EO[2], Jones BH[2].

Author information

흡연자
-> 운동시 Injury 가능성 ↑

## Abstract

**BACKGROUND:** Prior studies have identified cigarette smoking and low fitness as independent risk factors for injury; however, no studies have evaluated the combined effect of cigarette smoking and fitness on injury risk.

**OBJECTIVE:** To evaluate the combined effect of cigarette smoking and fitness on injury risk in men and women.

**DESIGN:** This is a secondary analysis of data collected from U.S. Army recruits (n=2000) during basic combat training (BCT) within the United States in 2007. Physical training and fitness, cigarette smoking and prior injury were obtained from questionnaires, while demographic and injury data were obtained from medical and BCT unit records. Chi-squared tests were used to assess differences in injury risk by fitness level and cigarette smoking. Relative Risk (RR) were calculated with 95% confidence intervals.

**RESULTS:** The primary findings showed that smokers experienced 20-30% higher risk of injury than non-smokers. In addition, higher aerobic and muscular fitness were generally not protective against injury between least fit and more fit smokers. However, higher fitness was protective against injury between least and more fit non-smokers, with least fit non-smokers being 30-50% more likely to experience an injury than fit non-smokers.

**CONCLUSION:** This study revealed that higher aerobic and muscular fitness was not protective against injury among smokers; however, it was protective against injury among non-smokers. Further implementation of smoking cessation programs may be beneficial for military and civilian personnel who are required to be physically fit in order to carry out their job responsibilities.

**IMPLICATIONS/HIGHLIGHTS:** Male and female smokers experienced significantly higher risk of injury than non-smokers. While higher fitness is protective against injury in non-smokers, the protective effect of fitness is lost among smokers. In an attempt to reduce injury risk among military and emergency personnel, smoking cessation programs should be further implemented among both more fit and less fit smokers.

Smokers experience significantly **higher (20-30%) risk of injury** on fitness than non-smokers

# 금연의 이점

## 생존률 향상

The NEW ENGLAND JOURNAL of MEDICINE

ORIGINAL ARTICLE

# Smoking Cessation, Weight Change, Type 2 Diabetes, and Mortality

Yang Hu, S.M., Geng Zong, Ph.D., Gang Liu, Ph.D., Molin Wang, Ph.D., Bernard Rosner, Ph.D., An Pan, Ph.D., Walter C. Willett, M.D., Dr.P.H., JoAnn E. Manson, M.D., Dr.P.H., Frank B. Hu, M.D., Ph.D., and Qi Sun, M.D., Sc.D.

Does weight gain after smoking cessation attenuates the health benefits of quitting???

# 금연, 체중변화, Type 2 Diabetes, Mortality

- 3 Cohorts
  - the Nurses' Health study (NHS)
  - the Nurses's Health study II (NHS II)
  - the Health Professional Follow-up Study (HPFS)

- Outcome
  - Self-reported diabetes (n=162,807)
  - mortality (n=170,723) assessed by National Death Index

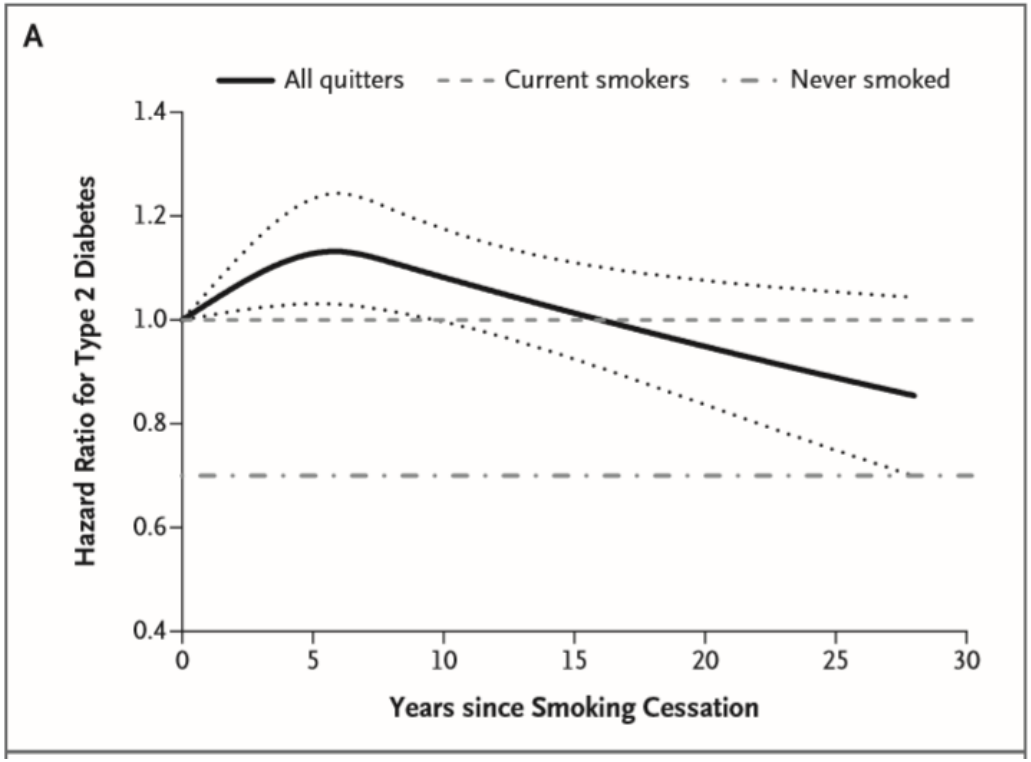
**Table 2. Pooled Hazard Ratios for Association between Smoking Cessation and the Incidence of Type 2 Diabetes, Death from Cardiovascular Disease, and Death from Any Cause.***

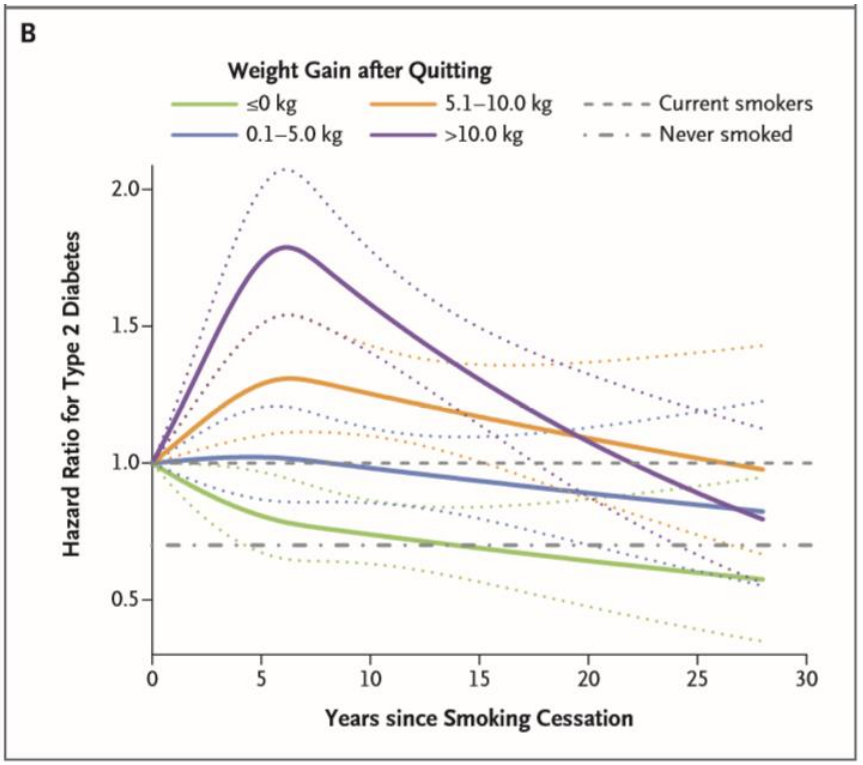
| Variable | Cases/Person-yr | Hazard Ratio (95% CI) | | |
|---|---|---|---|---|
| | | Adjusted for Age | Adjusted for Baseline BMI | Adjusted for Multiple Variables |
| **Type 2 diabetes** | | | | |
| Current smokers | 1,547/395,872 | 1.00 (reference) | 1.00 (reference) | 1.00 (reference) |
| Recent quitters† | 836/148,082 | 1.35 (1.24–1.47)‡ | 1.25 (1.14–1.36)‡ | 1.22 (1.12–1.32)‡ |
| No weight gain | 204/37,444 | 1.27 (1.10–1.48)‡ | 1.09 (0.94–1.27) | 1.08 (0.93–1.26) |
| Weight gain of 0.1–5.0 kg | 206/52,147 | 0.96 (0.83–1.11) | 1.14 (0.99–1.32) | 1.15 (0.99–1.33) |
| Weight gain of 5.1–10.0 kg | 188/29,767 | 1.52 (1.30–1.77)‡ | 1.44 (1.23–1.68)‡ | 1.36 (1.16–1.58)‡ |
| Weight gain of >10.0 kg | 196/19,424 | 2.58 (2.22–2.99)‡ | 1.66 (1.43–1.94)‡ | 1.59 (1.36–1.85)‡ |
| Long-term quitters | 1,168/185,838 | 1.15 (1.07–1.25)‡ | 1.03 (0.96–1.12) | 1.02 (0.94–1.10) |
| Transient quitters | 54/12,853 | 1.12 (0.85–1.47) | 1.09 (0.83–1.44) | 1.09 (0.83–1.44) |
| Never smoked | 8,779/2,451,805 | 0.91 (0.86–0.96)‡ | 0.77 (0.72–0.81)‡ | 0.72 (0.68–0.76)‡ |

*** Multivariate analyses were adjusted for age (in months, continuous), cohort (Nurses' Health Study, Nurses' Health Study II, or Health Professionals Follow-up Study), sex (male or female), race (white, black, Asian, or other), physical activity (in quintiles), baseline body-mass index (BMI, in continuous and quadratic terms), alcohol intake (0, <5.0, 5.0 to 9.9, 10.0 to 14.9, 15.0 to 29.9, or ≥30.0 g per day), hypertension (yes or no), hypercholesterolemia (yes or no), family history of diabetes (yes or no), multivitamin use (yes or no), Alternative Healthy Eating Index score (in quintiles), and total energy intake (in quintiles).

| | | | | |
|---|---|---|---|---|
| **Death from cardiovascular disease§** | | | | |
| Current smokers | 1,488/524,182 | 1.00 (reference) | 1.00 (reference) | 1.00 (reference) |
| Recent quitters† | 167/154,259 | 0.44 (0.37–0.51)‡ | 0.44 (0.37–0.51)‡ | 0.48 (0.41–0.56)‡ |
| No weight gain | 68/39,637 | 0.63 (0.49–0.80)‡ | 0.63 (0.49–0.80)‡ | 0.69 (0.54–0.88)‡ |
| Weight gain of 0.1–5.0 kg | 46/53,969 | 0.39 (0.29–0.52)‡ | 0.41 (0.31–0.55)‡ | 0.47 (0.35–0.63)‡ |
| Weight gain of 5.1–10.0 kg | 14/30,926 | 0.23 (0.14–0.39)‡ | 0.23 (0.14–0.40)‡ | 0.25 (0.15–0.42)‡ |
| Weight gain of >10.0 kg | 11/20,670 | 0.36 (0.20–0.65)‡ | 0.32 (0.18–0.59)‡ | 0.33 (0.18–0.60)‡ |
| Long-term quitters | 656/256,194 | 0.46 (0.42–0.51)‡ | 0.46 (0.42–0.50)‡ | 0.50 (0.46–0.55)‡ |
| Never smoked | 3,181/3,003,966 | 0.34 (0.32–0.36)‡ | 0.31 (0.29–0.33)‡ | 0.34 (0.32–0.37)‡ |
| **Death from any cause§** | | | | |
| Current smokers | 6,537/519,569 | 1.00 (reference) | 1.00 (reference) | 1.00 (reference) |
| Recent quitters† | 880/153,642 | 0.53 (0.49–0.57)‡ | 0.53 (0.49–0.57)‡ | 0.58 (0.54–0.62)‡ |
| No weight gain | 360/39,386 | 0.75 (0.67–0.83)‡ | 0.74 (0.67–0.83)‡ | 0.81 (0.73–0.90)‡ |
| Weight gain of 0.1–5.0 kg | 236/53,815 | 0.44 (0.39–0.51)‡ | 0.46 (0.40–0.52)‡ | 0.52 (0.46–0.59)‡ |
| Weight gain of 5.1–10.0 kg | 115/30,826 | 0.42 (0.35–0.50)‡ | 0.42 (0.35–0.51)‡ | 0.46 (0.38–0.55)‡ |
| Weight gain of >10.0 kg | 76/20,616 | 0.51 (0.40–0.64)‡ | 0.48 (0.38–0.61)‡ | 0.50 (0.40–0.63)‡ |
| Long-term quitters | 3,252/253,822 | 0.50 (0.48–0.53)‡ | 0.50 (0.48–0.52)‡ | 0.57 (0.54–0.59)‡ |
| Never smoked | 13,198/2,994,849 | 0.32 (0.31–0.33)‡ | 0.31 (0.30–0.32)‡ | 0.35 (0.34–0.37)‡ |

# Number 9.


A
All quitters
Current smokers
Never smoked
Hazard Ratio for Type 2 Diabetes
1.4
1.2
1.0
0.8
0.6
0.4
0
5
10
15
20
25
30
Years since Smoking Cessation


B
Weight Gain after Quitting
≤0 kg
0.1–5.0 kg
5.1–10.0 kg
>10.0 kg
Current smokers
Never smoked
Hazard Ratio for Type 2 Diabetes
2.0
1.5
1.0
0.5
0
5
10
15
20
25
30
Years since Smoking Cessation

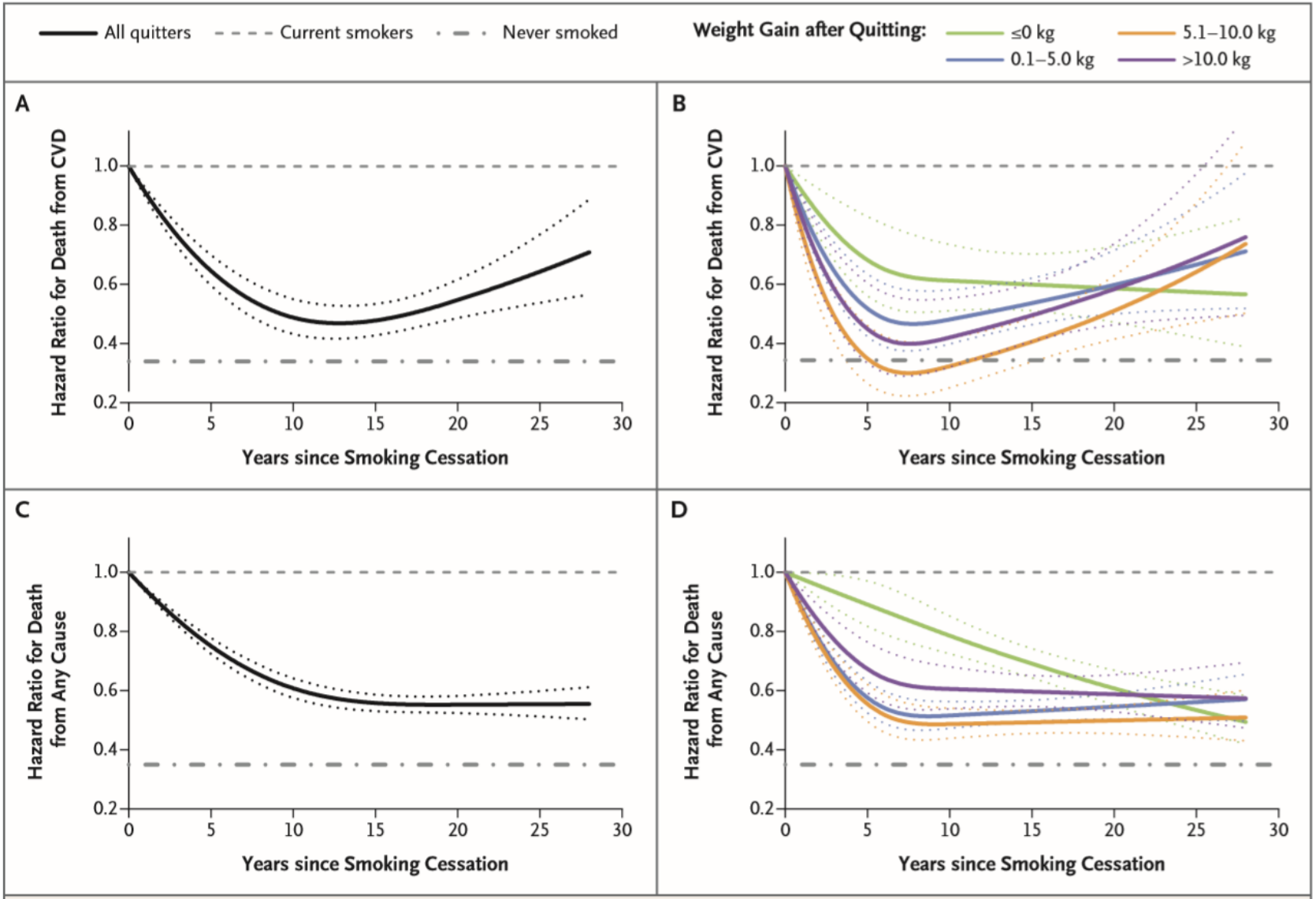



**Figure 2.** Association between Duration of Smoking Cessation and Risk of Death from Cardiovascular Disease (CVD) and Death from Any Cause.

# Conclusions

- Smoking cessation that was accompanied by substantial weight gain was associated with an increased **short-term risk of type 2 diabetes** but **did not mitigate the benefits of quitting smoking** on reducing cardiovascular and all-cause **mortality.** (Funded by the National Institutes of Health.

# 금연 방법

## 다양한 방법

The NEW ENGLAND JOURNAL of MEDICINE

SPECIAL ARTICLE

# A Pragmatic Trial of E-Cigarettes, Incentives, and Drugs for Smoking Cessation

Scott D. Halpern, M.D., Ph.D., Michael O. Harhay, Ph.D., Kathryn Saulsgiver, Ph.D., Christine Brophy, Andrea B. Troxel, Sc.D., and Kevin G. Volpp, M.D., Ph.D.

Does financial incentives, pharmacologic therapies, and electronic cigarettes (e-cigarettes) promote smoking cessation among unselected smokers???

# 실질적인 금연 프로그램: 전자담배, 보상, 약...

- Eligible participants

- Emplyees and their spouses at 54 companies

- Outcome

- Sustained smoking abstinence for 6 months

- Survey + biochemical confirmation

1) Nicotine replacement therapy: anabasine in urine sample or blood carboxyhemogrlobin level (<4%)

2) E-cigarettes: cotinine then blood carboxyhemoglobin level

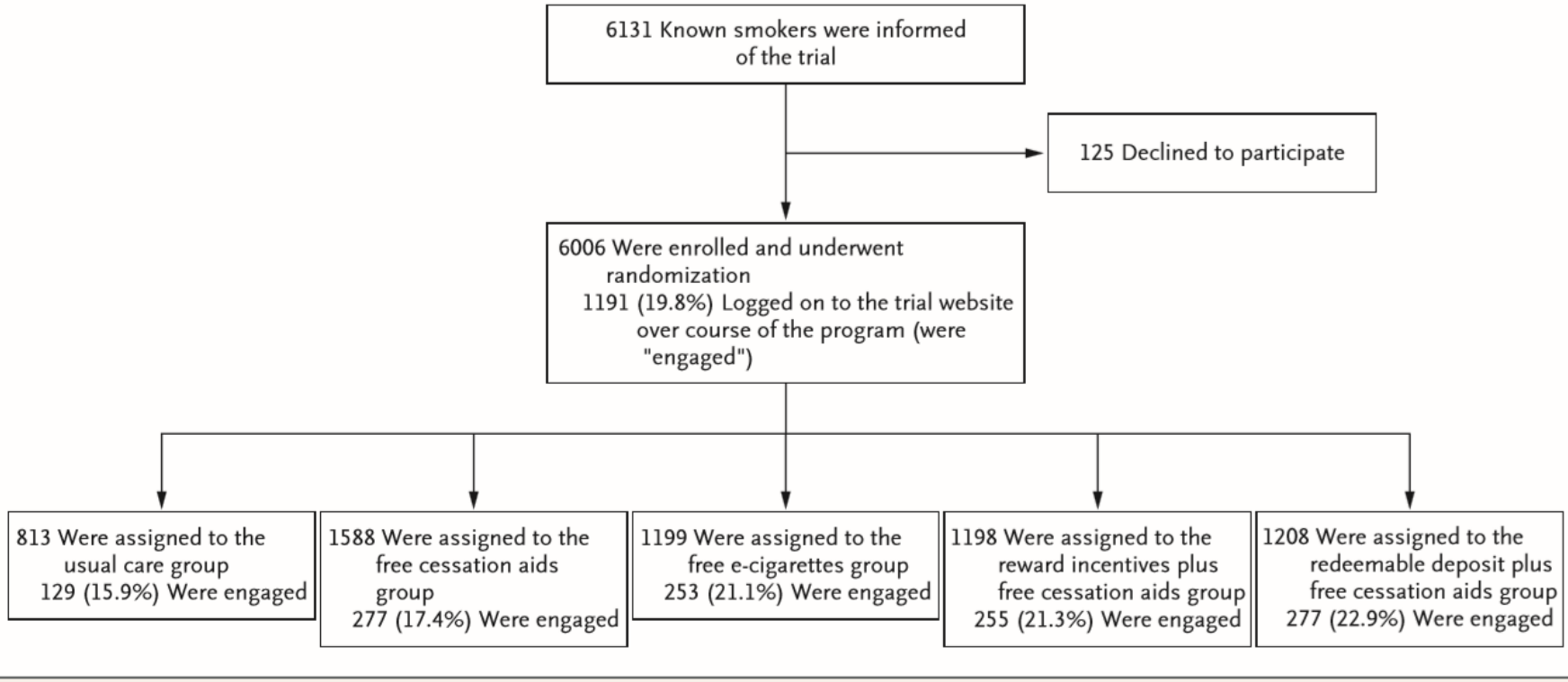



**Figure 1.** Eligibility and Randomization.

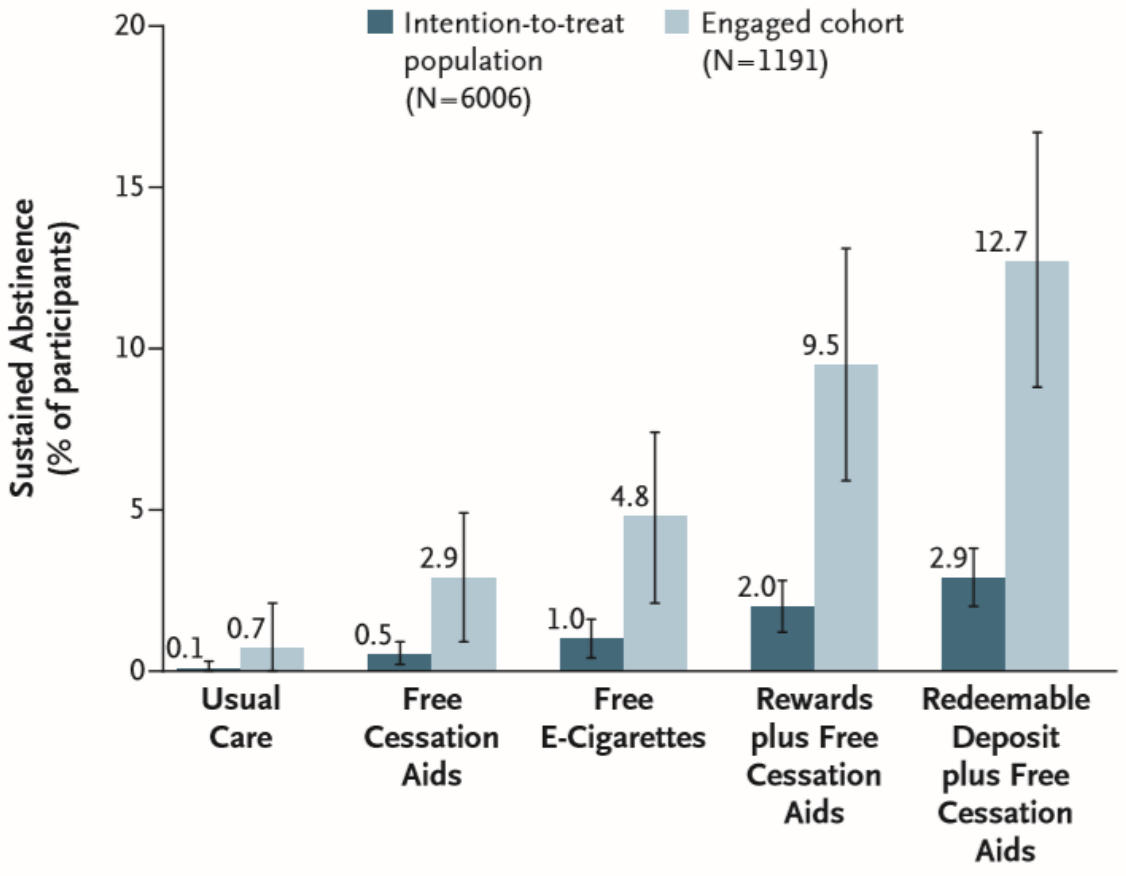



**Figure 2. Sustained Smoking Abstinence at 6 Months after the Target Quit Date.**

Estimates were adjusted for the phase (1 or 2) of enrollment. The engaged cohort consists of participants who logged on to the trial website at least once. I bars indicate 95% confidence intervals.

**Table 2.** Holm Sequential Analysis of Efficacy for Eight Prespecified Trial-Group Comparisons.*

| Comparator Groups | Adjusted Difference | Raw P Value† | Holm Threshold‡ | Adjusted P Value§ |
|---|---|---|---|---|
| **Intention-to-treat population¶** | | | | |
| Redeemable deposit vs. free cessation aids | 2.4±0.5 | 0.000009 | 0.00625 | <0.001 |
| Rewards vs. free cessation aids | 1.5±0.4 | 0.0008 | 0.0071 | 0.006 |
| Redeemable deposit vs. free e-cigarettes | 1.9±0.6 | 0.0013 | 0.0083 | 0.008 |
| Free e-cigarettes vs. usual care | 0.9±0.3 | 0.040 | 0.01 | 0.20 |
| Rewards vs. free e-cigarettes | 1.0±0.5 | 0.048 | 0.0125 | 0.20 |
| Free e-cigarettes vs. free cessation aids | 0.5±0.3 | 0.144 | 0.0167 | 0.43 |
| Redeemable deposit vs. rewards | 0.9±0.6 | 0.158 | 0.025 | 0.43 |
| Free cessation aids vs. usual care | 0.4±0.2 | 0.165 | 0.05 | 0.43 |
| **Engaged cohort‖** | | | | |
| Redeemable deposit vs. free cessation aids | 9.8±2.3 | 0.00009 | 0.00625 | <0.001 |
| Redeemable deposit vs. free e-cigarettes | 8.0±2.4 | 0.0019 | 0.0071 | 0.01 |
| Rewards vs. free cessation aids | 6.5±2.1 | 0.0029 | 0.0083 | 0.02 |
| Rewards vs. free e-cigarettes | 4.7±2.3 | 0.043 | 0.01 | 0.21 |
| Free e-cigarettes vs. usual care | 4.0±1.5 | 0.067 | 0.0125 | 0.27 |
| Free cessation aids vs. usual care | 2.2±1.3 | 0.184 | 0.0167 | 0.55 |
| Redeemable deposit vs. rewards | 3.3±2.7 | 0.232 | 0.025 | 0.55 |
| Free e-cigarettes vs. free cessation aids | 1.8±1.7 | 0.279 | 0.05 | 0.55 |

# Conclusions

- In this pragmatic trial of smoking cessation, **financial incentives added to free cessation aids** resulted in a **higher rate of sustained smoking abstinence** than free cessation aids alone. Among smokers who received usual care (information and motivational text messages), the addition of **free cessation aids or e-cigarettes did not provide a benefit.**

# 금연 방법

## 전자담배 → 흡연 조장

Research

JAMA Pediatrics | Original Investigation

# Association of Noncigarette Tobacco Product Use With Future Cigarette Smoking Among Youth in the Population Assessment of Tobacco and Health (PATH) Study, 2013-2015

Shannon Lea Watkins, PhD; Stanton A. Glantz, PhD; Benjamin W. Chaffee, DDS, PhD

To estimate the longitudinal association between **noncigarette tobacco use** and **subsequent cigarette smoking** initiation among US youth.

# 전자담배 → 담배로 연결: PATH study

- Eligible participants
  - Youth who never smoked a conventional cigarette
  - Population Assessment of Tobacco and Health (PATH)

- Exposures
  - e-cigarettes, hookah, noncigarette combustible tobacco, smokeless tobacco at baseline **(WAVE 1)**

- Outcome
  - Ever use and past 30-day use of cigarettes at follow-up (1 yr) **(WAVE 2)**

# [E-cigarettes]

# [Hookah]

# [Noncigarette combustible tobacco: Bidis]

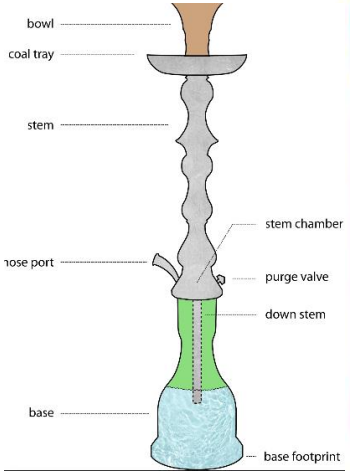



Table 2. Associations of Noncigarette Tobacco Ever Use With Subsequent Cigarette Use

| Wave 1 Use | No. of Observations Before Multiple Imputation | Wave 2 Cigarette Ever Use (n = 10 384)[a] | | | Wave 2 Cigarette Past 30-d Use (n = 10 380)[b] | | |
|---|---|---|---|---|---|---|---|
| | | Weighted, Unadjusted Cigarette Ever Use, % | OR (95% CI) | | Weighted, Unadjusted Cigarette Past 30-d Use, % | OR (95% CI) | |
| | | | Model 1[c] | Model 2[d] | | Model 3[c] | Model 4[d] |
| E-cigarettes | | | | | | | |
| Never | 9923 | 3.9 | 1 [Reference] | 1 [Reference] | 1.8 | 1 [Reference] | 1 [Reference] |
| Ever | 425 | 19.1 | 3.50 (2.48-4.94) | 2.53 (1.80-3.56) | 8.2 | 2.39 (1.42-4.00) | 1.87 (1.15-3.05) |
| Hookah | | | | | | | |
| Never | 10 026 | 4.1 | 1 [Reference] | 1 [Reference] | 1.9 | 1 [Reference] | 1 [Reference] |
| Ever | 339 | 18.3 | 2.67 (1.81-3.93) | 1.79 (1.23-2.62) | 9.4 | 2.85 (1.69-4.79) | 1.92 (1.17-3.17) |
| Noncigarette combustibles | | | | | | | |
| Never | 9818 | 4.2 | 1 [Reference] | 1 [Reference] | 1.9 | 1 [Reference] | 1 [Reference] |
| Ever | 226 | 19.2 | 2.23 (1.42-3.49) | 1.64 (1.06-2.54) | 10.8 | 2.47 (1.36-4.47) | 1.78 (1.00-3.19) |
| Smokeless | | | | | | | |
| Never | 10 101 | 4.4 | 1 [Reference] | 1 [Reference] | 1.9 | 1 [Reference] | 1 [Reference] |
| Ever | 155 | 18.8 | 2.64 (1.60-4.35) | 1.66 (1.00-2.76) | 12.5 | 3.78 (2.07-6.89) | 2.07 (1.10-3.87) |

Abbreviation: OR, odds ratio.

[a] For cigarette use ever, the *F* statistic was 56.1 in model 1 and 24.6 in model 2, and the largest fraction of missing information was 0.011 in model 1 and 0.0186 in model 2.

[b] For past 30-day cigarette use, the *F* statistic was 36.8 in model 1 and 19.7 in model 2, and the largest fraction of missing information was 0.028 in model 1 and 0.032 in model 2.

[c] Model includes all ever tobacco use categories.

[d] Model includes all ever tobacco use categories and the following wave 1 covariates: female, age, race/ethnicity, parental educational level, urban residence, sensation seeking, alcohol ever use, living with tobacco user, notice of cigarette warning labels, tobacco advertising receptivity, and summer season. Coefficient values for adjustment variables are given in eTable 8 in the Supplement.

Table 3. Associations of Noncigarette Tobacco Current and Former Use With Subsequent Cigarette Use[a]

| Wave 1 Use | No. of Observations Before Multiple Imputation | Wave 2 Cigarette Ever Use (n = 10 384)[b] | | | Wave 2 Cigarette Past 30-d Use (n = 10 380)[c] | | |
|---|---|---|---|---|---|---|---|
| | | Weighted, Unadjusted Cigarette Ever Use, % | OR (95% CI) | | Weighted, Unadjusted Cigarette Past 30-d Use, % | OR (95% CI) | |
| | | | Model 1[d] | Model 2[e] | | Model 3[d] | Model 4[e] |
| E-cigarettes | | | | | | | |
| Never | 9923 | 3.9 | 1 [Reference] | 1 [Reference] | 1.8 | 1 [Reference] | 1 [Reference] |
| Former | 319 | 18.6 | 3.66 (2.52-5.32) | 2.58 (1.77-3.76) | 7.5 | 2.42 (1.40-4.19) | 1.84 (1.07-3.15) |
| Past 30 d | 87 | 23.8 | 3.61 (1.82-7.16) | 2.65 (1.38-5.10) | 11.6 | 2.48 (0.91-6.78) | 2.08 (0.81-5.40) |
| Hookah | | | | | | | |
| Never | 10 026 | 4.1 | 1 [Reference] | 1 [Reference] | 1.9 | 1 [Reference] | 1 [Reference] |
| Former | 273 | 16.4 | 2.32 (1.52-3.53) | 1.54 (1.02-2.34) | 8 | 2.39 (1.41-4.05) | 1.57 (0.92-2.68) |
| Past 30 d | 63 | 26.4 | 3.78 (1.69-8.44) | 2.58 (1.20-5.55) | 15 | 3.86 (1.24-12.0) | 2.69 (0.91-7.98) |
| Noncigarette combustibles | | | | | | | |
| Never | 9818 | 4.2 | 1 [Reference] | 1 [Reference] | 1.9 | 1 [Reference] | 1 [Reference] |
| Former | 154 | 15.4 | 1.65 (0.95-2.84) | 1.22 (0.73-2.04) | 7.8 | 1.68 (0.84-3.36) | 1.23 (0.62-2.40) |
| Past 30 d | 59 | 30.6 | 3.98 (1.91-8.32) | 3.05 (1.37-6.77) | 19.7 | 4.99 (1.92-13.0) | 3.55 (1.27-9.93) |
| Smokeless | | | | | | | |
| Never | 10 101 | NR[f] | 1 [Reference] | 1 [Reference] | NR[f] | 1 [Reference] | 1 [Reference] |
| Former | 114 | NR[f] | 3.19 (1.95-5.22) | 2.26 (1.34-3.81) | NR[f] | 4.48 (2.53-7.92) | 2.83 (1.49-5.38) |
| Past 30 d | 56 | NR[f] | 1.42 (0.25-8.00) | 0.62 (0.14-2.77) | NR[f] | 2.60 (0.33-20.3) | 0.93 (0.18-5.38) |

Abbreviations: CI, confidence interval; NR, not reported; OR, odds ratio.

[a] Former use indicates having ever used the product but not within the past 30 days.

[b] For cigarette use ever, the *F* statistic was 30.4 in model 1 and 20.9 in model 2, and the largest fraction of missing information was 0.009 in model 1 and 0.021 in model 2.

[c] For past 30-day cigarette use, the *F* statistic was 17.8 in model 1 and 16.4 in model 2, and the largest fraction of missing information was 0.018 in model 1 and 0.033 in model 2.

[d] Model includes all former and past 30-day tobacco use categories.

[e] Model includes all former and past 30-day tobacco use categories and the following wave 1 covariates: female, age, race/ethnicity, parental educational level, urban residence, sensation seeking, alcohol ever use, living with tobacco user, notice of cigarette warning labels, tobacco advertising receptivity, and summer season. Coefficient values for adjustment variables are shown in eTable 9 in the Supplement.

[f] Results suppressed because of limited sample size.

Table 4. Associations of Noncigarette Tobacco Single-Product Ever Use and Polyuse With Subsequent Cigarette Use

| Wave 1 Use | No. of Observations Before Multiple Imputation | Wave 2 Cigarette Ever Use (n = 10 384)[a] | | | Wave 2 Cigarette Past 30-d Use (n = 10 380)[b] | | |
|---|---|---|---|---|---|---|---|
| | | Weighted, Unadjusted Cigarette Ever Use, % | OR (95% CI) | | Weighted, Unadjusted Cigarette Past 30-d Use, % | OR (95% CI) | |
| | | | Model 1[c] | Model 2[d] | | Model 3[c] | Model 4[d] |
| Never use | 9058 | 3.5 | 1 [Reference] | 1 [Reference] | 1.6 | 1 [Reference] | 1 [Reference] |
| E-cigarettes only | 255 | 15.3 | 4.98 (3.39-7.31) | 2.99 (1.98-4.53) | 5.4 | 3.59 (1.96-6.60) | 2.12 (1.11-4.03) |
| Hookah only | 189 | 13.6 | 4.35 (2.79-6.76) | 2.35 (1.46-3.77) | 6.3 | 4.17 (2.24-7.78) | 2.15 (1.11-4.16) |
| Combustibles only | 114 | 11.4 | 3.57 (1.96-6.48) | 2.14 (1.14-4.04) | 7.9 | 5.34 (2.65-10.8) | 3.08 (1.43-6.66) |
| Smokeless only | 93 | 12 | 3.77 (1.97-7.24) | 1.88 (0.91-3.86) | 6.4 | 4.28 (1.72-10.6) | 1.53 (0.56-4.19) |
| Polyuse | 200 | 23.7 | 8.57 (6.00-12.20) | 3.95 (2.65-5.90) | 12.4 | 8.86 (5.54-14.20) | 3.81 (2.22-6.54) |

Abbreviation: OR, odds ratio.

[a] For cigarette use ever, the *F* statistic was 46.0 in model 1 and 24.0 in model 2, and the largest fraction of missing information was <0.001 in model 1 and 0.019 in model 2.

[b] For past 30-day cigarette use, the *F* statistic was 24.4 in model 1 and 18.38 in model 2, and the largest fraction of missing information was <0.001 in model 1 and 0.030 in model 2.

[c] Model includes all ever-only and poly–tobacco use categories.

[d] Model includes all ever-only and poly–tobacco use categories and the following wave 1 covariates: female, age, race/ethnicity, parental educational level, urban residence, sensation seeking, alcohol ever use, living with tobacco user, notice of cigarette warning labels, tobacco advertising receptivity, and summer season. Coefficient values for adjustment variables are shown in eTable 10 in the Supplement.

# Conclusions

- Any use of **e-cigarettes**, hookah, noncigarette combustible tobacco, or smokeless tobacco was independently **associated with cigarette smoking 1 year later.** Use of more than 1 product increased the odds of progressing to cigaretteuse.

Nicotine Tob Res. 2018 Jul 9;20(8):923-930. doi: 10.1093/ntr/ntx231.

# Associations Between Early Onset of E-cigarette Use and Cigarette Smoking and Other Substance Use Among US Adolescents: A National Study.

McCabe SE[1], West BT[2], McCabe VV[3].

Author information

초-중학생 시절 전자담배
-> 흡연/다른물질중독 위험 (9.5-70.6배)

## Abstract

**INTRODUCTION:** This study examines the associations between early onset of e-cigarette use and cigarette smoking and other substance use behaviors among US adolescents.

**METHODS:** Data were collected via self-administered questionnaires from a nationally representative sample of 2299 US high school seniors attending public and private high schools during the spring of their senior year in 2015 as part of the Monitoring the Future study.

**RESULTS:** A higher percentage of adolescents who began using e-cigarettes in ninth grade or earlier (early onset) were found to report current and lifetime cigarette smoking and other substance use relative to those individuals who never used e-cigarettes or those who began using e-cigarettes later in the 12th grade. Multivariate logistic regression analyses indicated that the adjusted odds of alcohol use, cigarette smoking, marijuana use, nonmedical prescription drug use, and other illicit drug use among early onset e-cigarette users were significantly greater than those for individuals never having used e-cigarettes (adjusted odds ratios [AORs] ranged 9.5-70.6, $p < .001$). While these associations were significant for both experimental and frequent e-cigarette users, the effects of early onset were stronger among frequent e-cigarette users. Similarly, the odds of these substance use behaviors (except alcohol) among early onset e-cigarette users were also significantly greater than the odds for later onset e-cigarette users (AORs ranged 2.8-4.1, $p < .05$).

**CONCLUSIONS:** Early onset of e-cigarette use was significantly associated with increased odds of cigarette smoking and other substance use behaviors. E-cigarette use is often preceded by alcohol use, cigarette smoking, and marijuana use, suggesting that more long-term prospective studies are warranted.

**IMPLICATIONS:** To date, no studies have examined the probability of cigarette smoking and other substance use behaviors as a function of age at onset of e-cigarette use. In the present study, early onset of e-cigarette use was significantly associated with increased odds of cigarette smoking and other substance use behaviors. The findings reinforce the importance of addressing a wide range of substances including alcohol, traditional cigarettes, and marijuana when developing early primary prevention efforts to reduce e-cigarette use among youth.

Nicotine Tob Res. 2018 Feb 10. doi: 10.1093/ntr/nty030. [Epub ahead of print]

# E-cigarette Advertising Exposure, Explicit and Implicit Harm Perceptions, and E-Cigarette use Susceptibility Among Non-Smoking Young Adults.

Pokhrel P[1], Herzog TA[1], Fagan P[2], Unger JB[3], Stacy AW[4].

Author information

전자담배 광고
-> 청소년들의 잘못된 인식 양산

## Abstract

**INTRODUCTION:** This study tested whether exposure to e-cigarette advertising increases e-cigarette use susceptibility among non-smoking young adults by promoting explicit and implicit attitudes towards e-cigarettes as a safer and healthier alternative to combustible cigarettes.

**METHODS:** Young adult current non-smokers who had never used an e-cigarette (N = 393; Mean age = 22.1, Standard Deviation = 3.9; 66% Women) were randomly assigned to one of the 3 conditions that involved viewing real-world, print e-cigarette ads. Two of the 3 conditions were experimental conditions where ads with different predominant themes [harm-reduction ("Health") vs. social enhancement ("Social") focused] were interspersed among ads of everyday objects. The third condition was the control condition involving ads of everyday objects only. Participants provided data on explicit (i.e., self-reported harm perceptions) and implicit (i.e., Implicit Association Test) attitudes towards e-cigarette use and e-cigarette use intentions. Hypotheses were tested using structural equation modeling.

**RESULTS:** Relative to Control participants, participants in Health and Social conditions were more likely to show higher implicit attitudes towards e-cigarettes as a safer alternative to cigarettes. Only the Social condition, relative to Control, had a significant effect on lower explicit harm perceptions of e-cigarette versus cigarette use. The Social condition had a significant indirect effect on e-cigarette use susceptibility, mediated by explicit harm perceptions.

**CONCLUSIONS:** Social enhancement-themed ads may communicate the reduced-harm messages more strongly among young adults so as to affect both explicit and implicit attitudes and, through these, e-cigarette use susceptibility. Regulatory bodies may need to scrutinize reduced-harm claims communicated through social enhancement-themed ads.

# 금연 방법

## 전자담배 → 금연 보조

Research paper

OPEN ACCESS

# E-cigarette initiation and associated changes in smoking cessation and reduction: the Population Assessment of Tobacco and Health Study, 2013–2015

Kaitlyn M Berry,[1] Lindsay M Reynolds,[2] Jason M Collins,[1] Michael B Siegel,[3] Jessica L Fetterman,[4] Naomi M Hamburg,[4] Aruni Bhatnagar,[5] Emelia J Benjamin,[4,6] Andrew Stokes[1]

***Tob Control***

To evaluate the role of electronic cigarettes (e-cigarettes) in product transitions

# 전자담배의 금연효과

- Eligible participants
- Population Assessment of Tobacco and Health (PATH) with WAVE 1 & 2
- Current cigarette smokers aged 25+ years who were not current e-cigarette users at WAVE 1.

- Outcome
- 30-day cigarette cessation
- substantial reduction in cigarette consumption

**Table 2** Logistic regression: 30-day cigarette cessation at wave 2, PATH (2013–2015) (n=5124)

| | 30-Day cigarette cessation at wave 2 | | |
|---|---|---|---|
| | Adjusted OR | (95% CI) | P value |
| Sex | | | |
| Male | Ref | – | – |
| Female | 1.14 | (0.91 to 1.41) | 0.250 |
| Age | | | |
| 25–34 years | Ref | – | – |
| 35–44 years | 0.93 | (0.65 to 1.32) | 0.670 |
| 45–54 years | 0.95 | (0.63 to 1.44) | 0.803 |
| 55–64 years | 1.09 | (0.71 to 1.68) | 0.681 |
| 65–74 years | 1.32 | (0.73 to 2.38) | 0.354 |
| ≥75 years | 1.68 | (0.63 to 4.47) | 0.294 |
| Race/ethnicity | | | |
| Non-Hispanic white | Ref | – | – |
| Non-Hispanic black | 0.61 | (0.40 to 0.92) | 0.018 |
| Hispanic | 0.83 | (0.57 to 1.21) | 0.323 |
| Non-Hispanic other | 1.07 | (0.60 to 1.92) | 0.810 |
| Region | | | |
| Northeast | Ref | – | – |
| Midwest | 1.04 | (0.68 to 1.59) | 0.865 |
| South | 1.36 | (0.94 to 1.95) | 0.099 |
| West | 1.05 | (0.70 to 1.58) | 0.797 |
| Household income | | | |
| Below poverty level | Ref | – | – |
| At or near poverty level | 1.12 | (0.79 to 1.59) | 0.514 |
| ≥Twice poverty level | 1.31 | (0.92 to 1.86) | 0.131 |
| Education | | | |
| Less than high school | Ref | – | – |
| High school or equivalent | 0.90 | (0.59 to 1.39) | 0.638 |
| Some college | 0.99 | (0.66 to 1.49) | 0.975 |
| Bachelor's/advanced degree | 0.91 | (0.53 to 1.57) | 0.732 |
| Lived in a smoking household as a child | | | |
| No | Ref | – | – |
| Yes | 0.81 | (0.57 to 1.14) | 0.225 |
| Currently lives with a cigarette smoker | | | |
| No | Ref | – | – |
| Yes | 0.98 | (0.73 to 1.32) | 0.886 |
| Frequency of cigarette use at wave 1 | | | |
| Some-day cigarette smoker | Ref | – | – |
| Everyday cigarette smoker | 0.27 | (0.19 to 0.38) | <0.001 |
| Intensity of cigarette smoking at wave 1 | | | |
| <1 pack per day | Ref | – | – |
| 1–2 packs per day | 0.88 | (0.61 to 1.26) | 0.480 |
| ≥2 packs per day | 0.85 | (0.30 to 2.36) | 0.748 |

| | | | |
|---|---|---|---|
| Time to first cigarette in morning | | | |
| ≤5 min | Ref | – | – |
| 6–29 min | 1.28 | (0.86 to 1.91) | 0.221 |
| 30–59 min | 1.88 | (0.69 to 5.12) | 0.212 |
| ≥60 min | 1.88 | (1.21 to 2.93) | 0.005 |
| Tried to quit smoking cigarettes in year prior to wave 1 | | | |
| No | Ref | – | – |
| Yes | 1.25 | (1.00 to 1.57) | 0.049 |
| New e-cigarette use at wave 2 | | | |
| Non-user | Ref | – | – |
| Experimental e-cigarette user | 0.51 | (0.26 to 1.00) | 0.050 |
| Some-day e-cigarette user | 0.51 | (0.17 to 1.47) | 0.207 |
| Everyday e-cigarette user | 7.88 | (4.45 to 13.95) | <0.001 |

e-cigarette, electronic cigarette; PATH, Population Assessment of Tobacco and Health; Ref, reference.

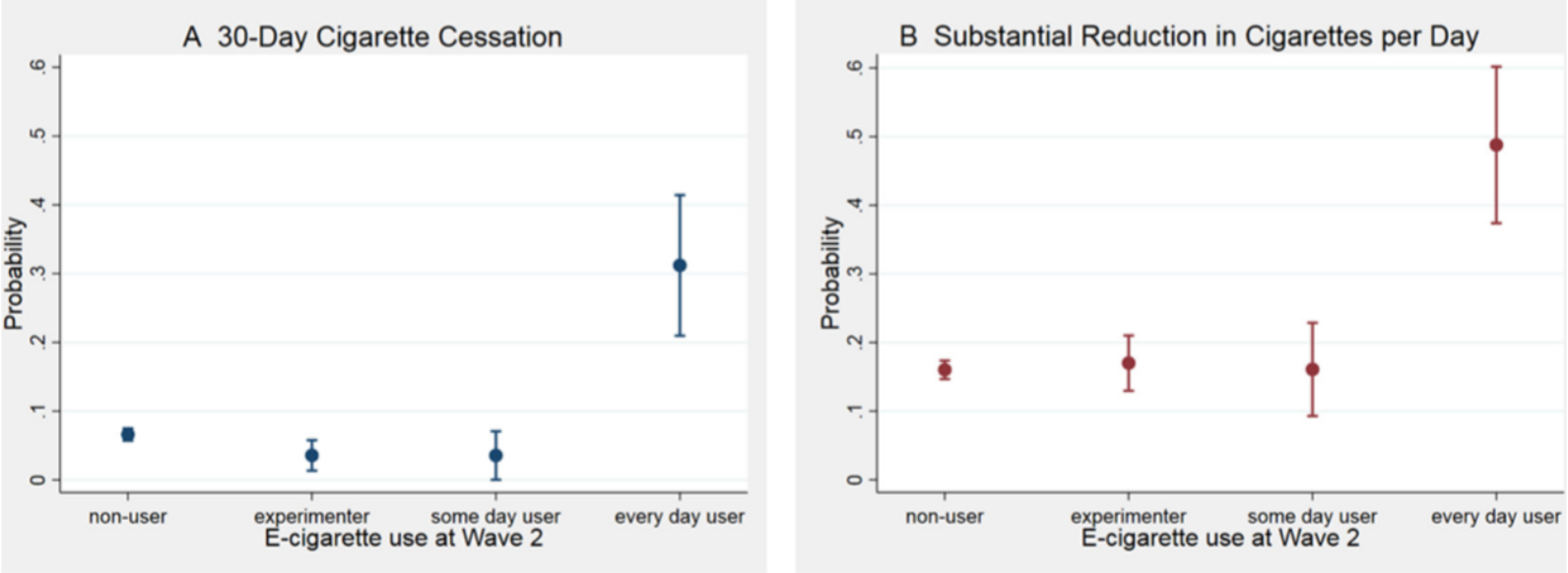



**Figure 1** Predicted probabilities of (A) cigarette cessation and (B) reduction at wave 2 by electronic cigarette (e-cigarette) initiation, Population Assessment of Tobacco and Health (2013–2015). Predicted probabilities of achieving 30-day cigarette cessation and reduction as a function of e-cigarette initiation between waves were calculated using coefficients estimated from the models shown in tables 2 and 3.

**Table 3** Logistic regression: at least 50% reduction in average cigarette consumption between wave 1 and wave 2, PATH (2013–2015) (n=4672)

| | Substantial reduction at wave 2 | | |
|---|---|---|---|
| | Adjusted OR | (95% CI) | P value |
| New e-cigarette use at wave 2 | | | |
| Non-user | Ref | – | – |
| Experimental e-cigarette user | 1.08 | (0.78 to 1.48) | 0.641 |
| Some-day e-cigarette user | 1.00 | (0.58 to 1.74) | 0.988 |
| Everyday e-cigarette user | 5.70 | (3.47 to 9.35) | <0.001 |

e-cigarette, electronic cigarette; PATH, Population Assessment of Tobacco and Health; Ref, reference.

# Conclusions

- **Daily e-cigarette initiators** were more likely to have **quit smoking cigarettes or reduced use** compared with non-users. However, less frequent e-cigarette use was not associated with cigarette cessation/reduction. These results suggest incorporating frequency of e-cigarette use is important for developing a more thorough understanding of the association between e-cigarette use and cigarette cessation

Nicotine Tob Res. 2018 Apr 11. doi: 10.1093/ntr/nty047. [Epub ahead of print]

# E-cigarettes May Support Smokers With High Smoking-Related Risk Awareness to Stop Smoking in the Short Run: Preliminary Results by Randomized Controlled Trial.

Masiero M[1,2], Lucchiari C[3], Mazzocco K[1,2], Veronesi G[4], Maisonneuve P[5], Jemos C[6], Salè EO[6], Spina S[4], Bertolotti R[7], Pravettoni G[1,2].

Author information

**전자담배 사용시 금연 확률 2.5배**

## Abstract

**INTRODUCTION:** E-cigarettes may be positively used in tobacco cessation treatments. However, neither the World Health Organization nor the American Food and Drug Administration has recognized them as effective cessation aids. Data about the efficacy and safety of e-cigarettes are still limited and controversial.

**METHODS:** This was a double-blind randomized controlled study. The main aim was to assess the efficacy of the use of e-cigarettes in a tobacco cessation program with a group of chronic smokers voluntarily involved in long-term lung cancer screening. Participants were randomized into three arms: e-cigarettes (Arm 1), placebo (Arm 2), and control (Arm 3). All subjects also received a low-intensity counseling.

**RESULTS:** About 25% of participants who followed a cessation program based on the use of e-cigarettes (Arm 1 and Arm 2) were abstinent after 3 months. Conversely, only about 10% of smokers in Arm 3 stopped. Participants in Arm 1 also reported a higher reduction rate (M = -11.6441, SD = 7.574) than participants in Arm 2 (M = -10.7636, SD = 8.156) and Arm 3 (M = -9.1379, SD = 8.8127).

**CONCLUSIONS:** Our findings support the efficacy and safety of e-cigarettes in a short-term period. E-cigarettes use led to a higher cessation rate. Furthermore, although all participants reported a significant reduction of daily cigarette consumption compared to the baseline, the use of e-cigarettes (including those without nicotine) allowed smokers to achieve better results.

**IMPLICATIONS:** E-cigarettes increased the stopping rate as well as the reduction of daily cigarettes in participants who continued smoking. In fact, although all participants reported a significant reduction of tobacco consumption compared to the baseline, the use of e-cigarettes allowed smokers to achieve a better result. It could be worthwhile to associate this device with new ICT-driven models of self-management support in order to enable people to better handle behavioral changes and side effects. This is true for ready-to-quit smokers (such as our participants) but can also be advantageous for less motivated smokers engaged in clinical settings.

Nicotine Tob Res. 2018 Sep 4;20(10):1272-1277. doi: 10.1093/ntr/ntx160.

# The Role of Nicotine Dependence in E-Cigarettes' Potential for Smoking Reduction.

Selya AS[1], Dierker L[2], Rose JS[2], Hedeker D[3], Mermelstein RJ[4].

Author information

니코틴 의존 높은 사람에서
특히 전자담배가 금연에 도움

## Abstract

**INTRODUCTION:** E-cigarettes (Electronic Nicotine Delivery Systems, or ENDS) are an increasingly popular tobacco product among youth. Some evidence suggests that e-cigarettes may be effective for harm reduction and smoking cessation, although these claims remain controversial. Little is known about how nicotine dependence may contribute to e-cigarettes' effectiveness in reducing or quitting conventional smoking.

**METHODS:** A cohort of young adults were surveyed over 4 years (approximately ages 19-23). Varying-coefficient models (VCMs) were used to examine the relationship between e-cigarette use and conventional smoking frequency, and how this relationship varies across users with different nicotine dependence levels.

**RESULTS:** Lifetime, but not recent, e-cigarette use was associated with less frequent concurrent smoking of conventional cigarettes among those with high levels of nicotine dependence. However, nondependent e-cigarette users smoked conventional cigarettes slightly more frequently than those who had never used e-cigarettes. Nearly half of ever e-cigarette users reported using them to quit smoking at the last measurement wave. For those who used e-cigarettes in a cessation attempt, the frequency of e-cigarette use was not associated with reductions in future conventional smoking frequency.

**CONCLUSIONS:** These findings offer possible support that e-cigarettes may act as a smoking reduction method among highly nicotine-dependent young adult cigarette smokers. However, the opposite was found in non-dependent smokers, suggesting that e-cigarette use should be discouraged among novice tobacco users. Additionally, although a substantial proportion of young adults used e-cigarettes to help them quit smoking, these self-initiated quit attempts with e-cigarettes were not associated with future smoking reduction or cessation.

**IMPLICATIONS:** This study offers potential support for e-cigarettes as a smoking reduction tool among highly nicotine-dependent young adult conventional smokers, although the extent and nature of this remains unclear. The use of e-cigarettes as a quit aid was not associated with reductions in conventional smoking, consistent with most other quit aids in this sample except for nicotine replacement therapy, which was only effective for the most dependent smokers. Notably, these findings highlight the necessity of accounting for smokers' nicotine dependence levels when examining tobacco use patterns.

# 금연 방법

## 니코틴 대체 요법

RESEARCH

OPEN ACCESS

# Effects on abstinence of nicotine patch treatment before quitting smoking: parallel, two arm, pragmatic randomised trial

The Preloading Investigators

*BMJ*

- Participants: 1,792 daily smokers
- Interventions: Standard pharmacotherapy vs. supplemented by 4 weeks of 21 mg nicotine patch use before quitting: **"Preloading"**
- Outcome: biochemically confirmed abstinence at 6 months

**Table 4 Primary and secondary outcomes expressed as risk ratios and risk differences showing the effect of sequential planned adjustment in sensitivity analysis***

| | Unadjusted | | Adjusted† | | Adjusted‡ | | Adjusted§ | |
|---|---|---|---|---|---|---|---|---|
| **Outcomes** | **Estimate (95% CI)** | **P value** | **Estimate (95% CI)** | **P value** | **Estimate (95% CI)** | **P value** | **Estimate (95% CI)** | **P value** |
| **Primary outcome: 6 month Russell standard** | | | | | | | | |
| Estimated risks | 17.5 and 14.4 | | | | | | | |
| Risk ratio | 1.25 (0.97 to 1.62) | 0.08 | 1.21 (0.98 to 1.50) | 0.08 | 1.21 (0.98 to 1.50) | 0.08 | 1.27 (1.03 to 1.57) | 0.03 |
| Risk difference | 3.02 (−0.37 to 6.41) | 0.08 | 3.02 (−0.37 to 6.41) | 0.08 | 3.03 (−0.37 to 6.43) | 0.08 | 3.80 (0.41 to 7.18) | 0.03 |
| **Secondary outcomes** | | | | | | | | |
| 4 weeks Russell standard: | | | | | | | | |
| Estimated risks | 36.3 and 31.9 | | | | | | | |
| Risk ratio | 1.14 (1.00 to 1.29) | 0.05 | 1.14 (1.00 to 1.29) | 0.05 | 1.14 (1.00 to 1.29) | 0.05 | 1.19 (1.05 to 1.35) | 0.007 |
| Risk difference | 4.35 (−0.04 to 8.73) | 0.05 | 4.33 (−0.04 to 8.70) | 0.05 | 4.37 (−0.01 to 8.75) | 0.05 | 5.89 (1.60 to 10.19) | 0.007 |
| 4 weeks 7 day point prevalence: | | | | | | | | |
| Estimated risks | 35.5 and 32.3 | | | | | | | |
| Risk ratio | 1.10 (0.97 to 1.25) | 0.15 | 1.10 (0.97 to 1.25) | 0.15 | 1.10 (0.97 to 1.25) | 0.15 | 1.15 (1.02 to 1.31) | 0.03 |
| Risk difference | 3.23 (−1.15 to 7.61) | 0.15 | 3.22 (−1.15 to 7.59) | 0.15 | 3.22 (−1.17 to 7.60) | 0.15 | 4.86 (0.58 to 9.14) | 0.03 |
| 6 months 7 day point prevalence: | | | | | | | | |
| Estimated risks | 22.3 and 20.3 | | | | | | | |
| Risk ratio | 1.10 (0.92 to 1.31) | 0.31 | 1.10 (0.92 to 1.31) | 0.31 | 1.10 (0.92 to 1.32) | 0.28 | 1.15 (0.96 to 1.37) | 0.13 |
| Risk difference | 1.98 (−1.81 to 5.77) | 0.31 | 1.98 (−1.81 to 5.76) | 0.31 | 2.11 (−1.68 to 5.91) | 0.28 | 2.93 (−0.85 to 6.71) | 0.13 |
| 12 months Russell standard: | | | | | | | | |
| Estimated risks | 14.0 and 11.3 | | | | | | | |
| Risk ratio | 1.24 (0.97 to 1.58) | 0.09 | 1.24 (0.97 to 1.58) | 0.09 | 1.24 (0.97 to 1.58) | 0.09 | 1.30 (1.02 to 1.66) | 0.04 |
| Risk difference | 2.71 (−0.37 to 5.78) | 0.08 | 2.71 (−0.37 to 5.78) | 0.08 | 2.66 (−0.43 to 5.75) | 0.09 | 3.31 (0.22 to 6.39) | 0.04 |
| 12 months 7 day point prevalence: | | | | | | | | |
| Estimated risks | 22.4 and 19.0 | | | | | | | |
| Risk ratio | 1.17 (0.98 to 1.41) | 0.08 | 1.17 (0.98 to 1.41) | 0.08 | 1.17 (0.98 to 1.41) | 0.09 | 1.21 (1.01 to 1.45) | 0.04 |
| Risk difference | 3.32 (−0.43 to 7.07) | 0.08 | 3.32 (−0.42 to 7.06) | 0.08 | 3.28 (−0.48 to 7.04) | 0.09 | 3.98 (0.23 to 7.73) | 0.04 |

*All participants included in analysis and assumed to be smoking if true status was unknown. Denominators were 893 in control arm and 899 in preloading arm.
†Adjusted for research centre (primary analysis).
‡Adjusted for research centre, previous longest abstinence, baseline strength of urges to smoke (both continuous, following analysis plan).
§Adjusted for research centre, previous longest abstinence, baseline strength of urges to smoke (both continuous, following analysis plan), and varenicline prescribed at +1 week.

# Conclusions

- **Evidence was insufficient** to confidently show that nicotine preloading increases subsequent smoking abstinence. The beneficial effect seems to have been masked by a concurrent reduction in the use of **varenicline** in people using nicotine preloading, and future studies should explore ways to mitigate this unintended effect

Cochrane Library

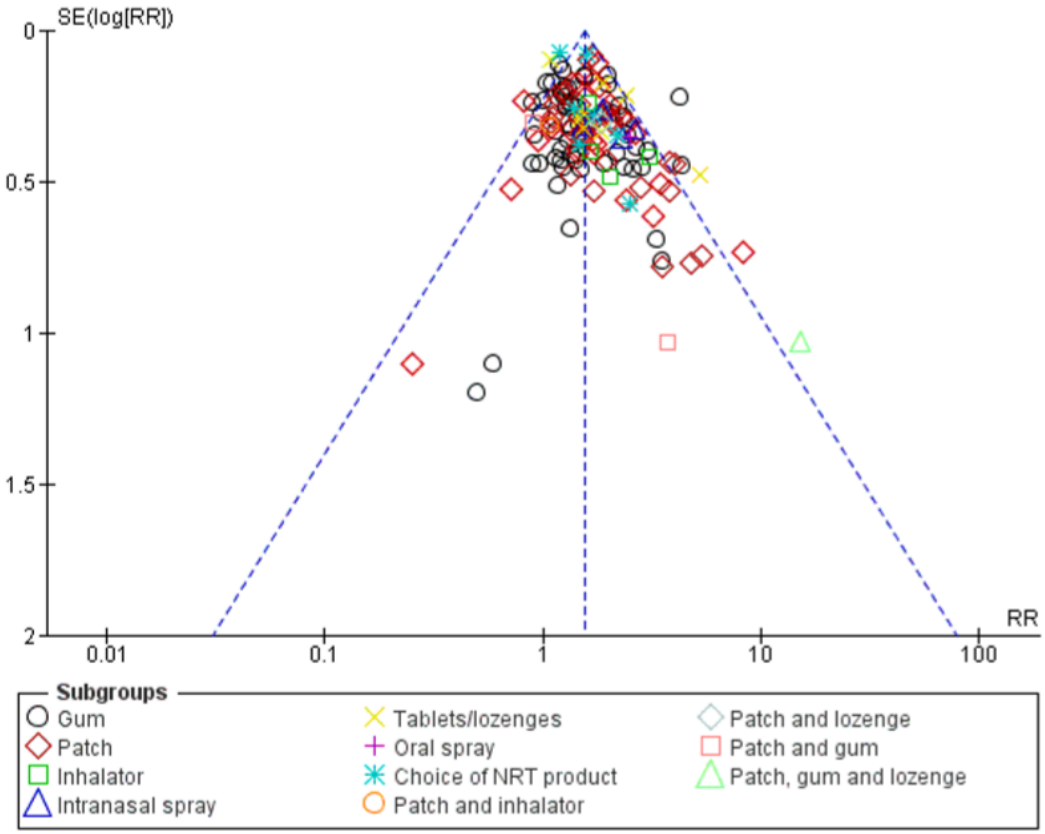
Cochrane Database of Systematic Reviews

N=136 trials of NRT, with 64,640 people

# Nicotine replacement therapy versus control for smoking cessation (Review)

Hartmann-Boyce J, Chepkin SC, Ye W, Bullen C, Lancaster T

**Figure 4. Funnel plot of comparison: 1 Any type of NRT versus placebo/no NRT control, outcome: 1.1 Smoking cessation at 6+ months follow up.**




**Conclusion:** We found evidence that all forms of **NRT** made it more likely that a person's attempt to quit smoking would succeed. The chances of **stopping smoking were increased by 50% to 60%.**

ADDICTION

SSA SOCIETY FOR THE STUDY OF ADDICTION

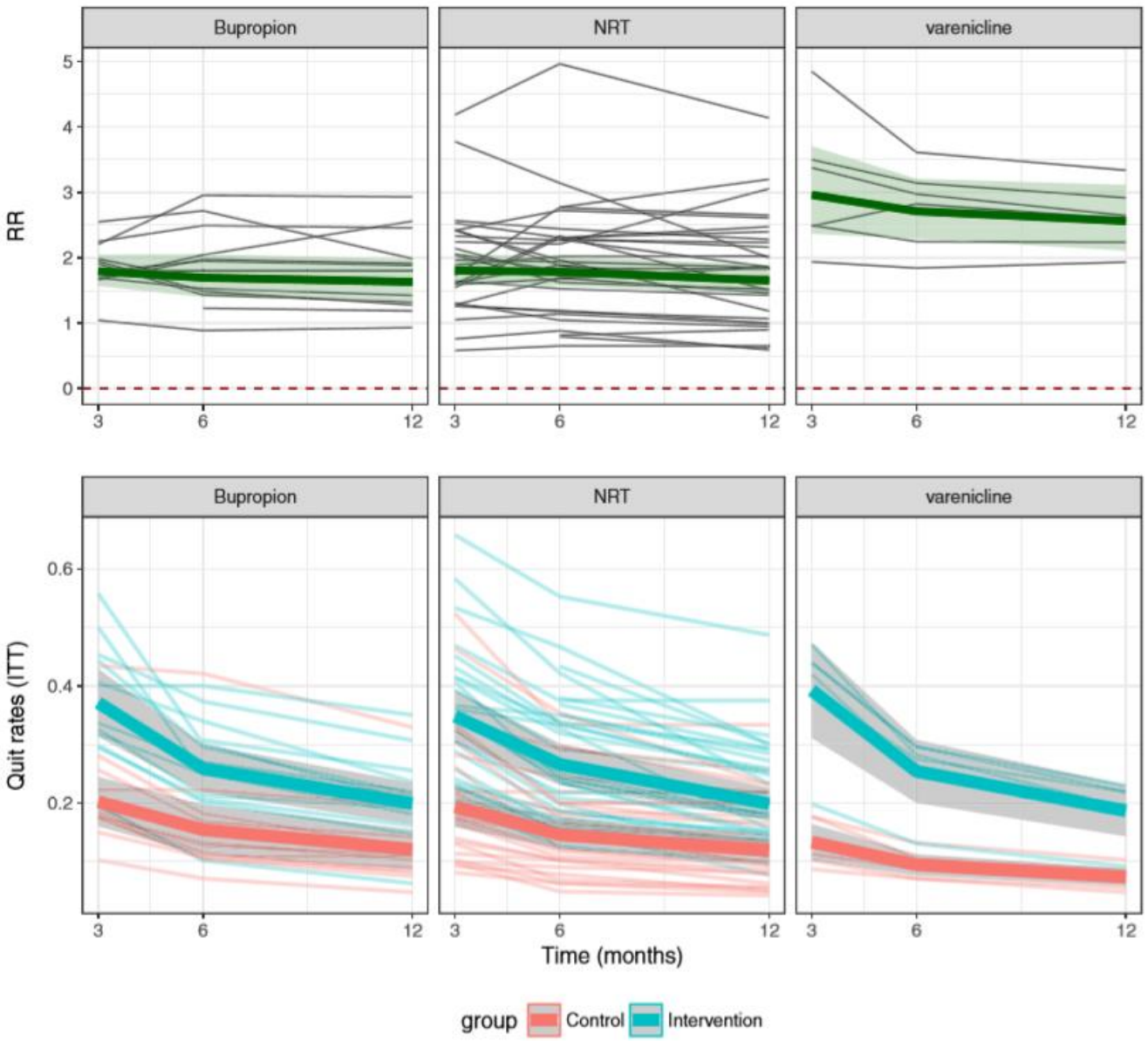
REVIEW

doi:10.1111/add.14134

# Diminishing benefit of smoking cessation medications during the first year: a meta-analysis of randomized controlled trials

Laura J. Rosen[1], Tal Galili[2], Jeffrey Kott[3], Mark Goodman[3] & Laurence S. Freedman[1,4]

N=61 studies,
with 27,647 participants


Bupropion
NRT
varenicline
RR
0
1
2
3
4
5
3
6
12
Quit rates (ITT)
0.2
0.4
0.6
Time (months)
group
Control
Intervention

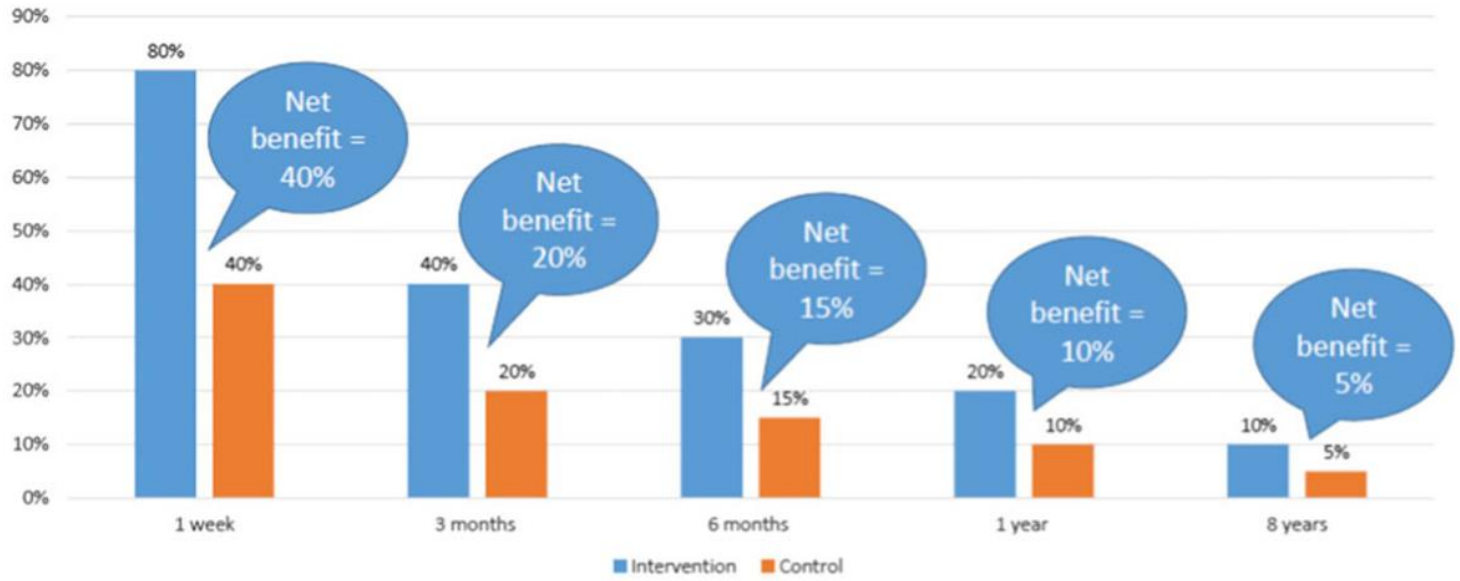



**Figure 3** Illustrative example using hypothetical data: how net benefit of medications decreases over time with declining quit rates and stable relative risk

**Conclusion:** The proportion of smokers who use smoking cessation medications who benefit from doing so decreases during the course of the first year, but a net benefit still remains at 12 months.

# 금연 방법

## Varenicline

Research

JAMA Psychiatry | Original Investigation

# Effect of Varenicline Combined With Medical Management on Alcohol Use Disorder With Comorbid Cigarette Smoking
## A Randomized Clinical Trial

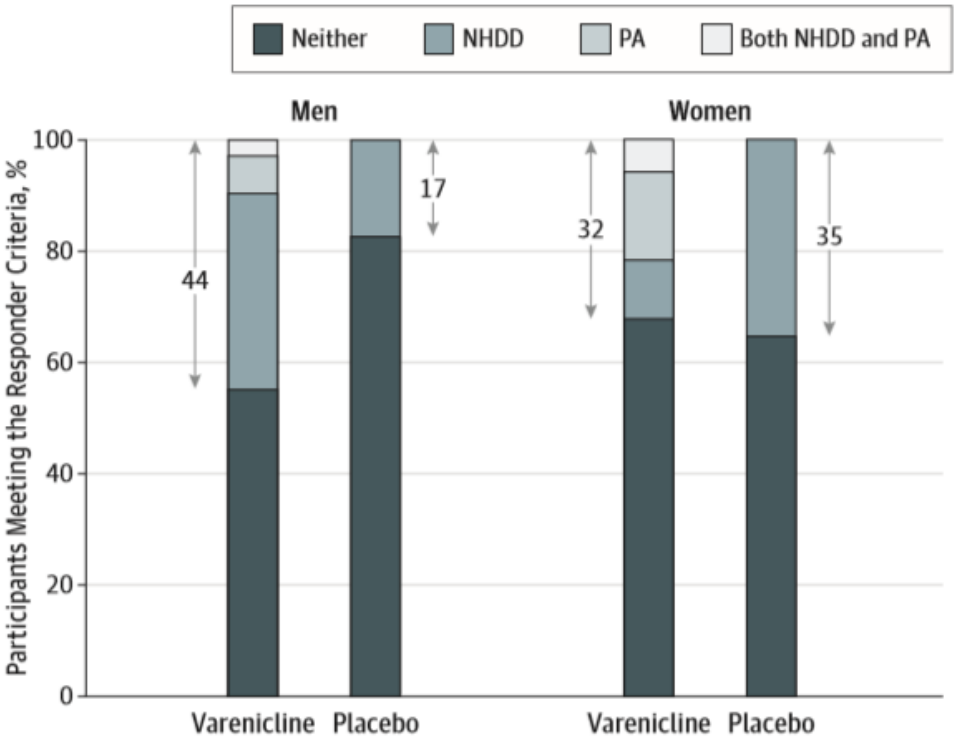
Stephanie S. O'Malley, PhD; Allen Zweben, PhD; Lisa M. Fucito, PhD; Ran Wu, MS; Mary E. Piepmeier, MA; David M. Ockert, PhD; Krysten W. Bold, PhD; Ismene Petrakis, MD; Srinivas Muvvala, MD, MPH; Peter Jatlow, MD; Ralitza Gueorguieva, PhD

**Participants**: 131 subjects with alcohol use disorder and comorbid smoking

**Design**: Phase 2, randomized, double-blind, parallel group, placebo-controlled trial

**Interventions:** Varenicline 1 mg twice daily (vs. placebo) for 16 weeks

Figure 3. Percentage of Participants Meeting the Responder Criteria by Treatment Group and Sex




Positive response on the integrated response measure was defined as either No Heavy Drinking Days (NHDD), Prolonged Smoking Abstinence (PA), or both during the last 28 days of treatment. Percentages within the arrows correspond to the percentage who had a good response on the integrated measure. Missing data were treated as nonresponse. Varenicline treatment had a higher integrated response rate than placebo for men (Cohen $h$ = 0.60) but not for women (Cohen $h$ = −0.06). Varenicline was given as varenicline tartrate.

**Conclusion:** **Varenicline** with medical management resulted in **decreased heavy drinking** among men and **increased smoking abstinence** in the overall sample. Varenicline could be considered to promote improvements in men with these **dual behavioral health risks.**

ORIGINAL ARTICLE

# Cardiovascular and Neuropsychiatric Events after Varenicline Use for Smoking Cessation

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**Methods:** A population-based, self-controlled risk interval study using linked universal health administrative data from the diverse, multicultural population of Ontario, Canada, wasconducted.

Total N = 56,851 new users of varenicline

**Table 1.** List of Diagnosis Codes Used to Define Cardiovascular Events, Neuropsychiatric Events, and Lower Body Injuries

| Outcome | *ICD-10* | *DSM-IV* |
|---|---|---|
| Cardiovascular events | | Not applicable |
| Acute myocardial infarction | I21, I22, I25.2 | Not applicable |
| Unstable angina | I20.0 | Not applicable |
| Other ischemic heart diseases | I20.1-I20.9, I24.0, I24.8 I24.9, I25 (excluding I25.2), I70.0 | Not applicable |
| Ischemic stroke | I63, I64, G45 (excluding G45.4) | Not applicable |
| Heart failure | I11.0, I13.0, I13.2, I50, J81 | Not applicable |
| Cardiac dysrhythmias | I45.6-I459, I46.0 I46.9, I47, I48, I49 | Not applicable |
| Peripheral vascular disease | I65, I70 (excluding I70.0), I73.9, I74.2–I74.9, K55.0, K55.1 | Not applicable |
| Neuropsychiatric events | | |
| Intentional self-harm | X60–X84 | Not applicable* |
| Depressive or bipolar episodes | F30–F39 | 296, 311, 300.4, 301.13, 293.83 |
| Psychotic, anxiety, neurotic, or stress-related disorders | F20–F29, F40–F49 | 295, 301.22, 297.1, 298.8, 292.11, 291.5, 297.3, 293.81, 293.82, 298.9, 300 (excluding 3004), 308.3, 3098 |
| Insomnia | F51 | 307.4 |
| Hallucinations | R44 | Not applicable |
| Signs/symptoms of hostility and/or agitation | R45 | Not applicable |
| Lower-body injuries | | |
| Injury to the hip and thigh | S70–S79 | Not applicable |
| Injury to the knee and lower leg | S80–S89 | Not applicable |
| Injury to the ankle and foot | S90–S99 | Not applicable |

*Definition of abbreviations*: *DSM-IV = Diagnostic and Statistical Manual of Mental Disorders, 4th Revision*; *ICD-10 = International Classification of Diseases, 10th Revision*.

*In the Ontario Mental Health Reporting System, which captures all Ontario hospitalizations occurring to designated psychiatric beds, intentional self-harm events are captured in separate, specific data fields that do not use *DSM-IV* codes.

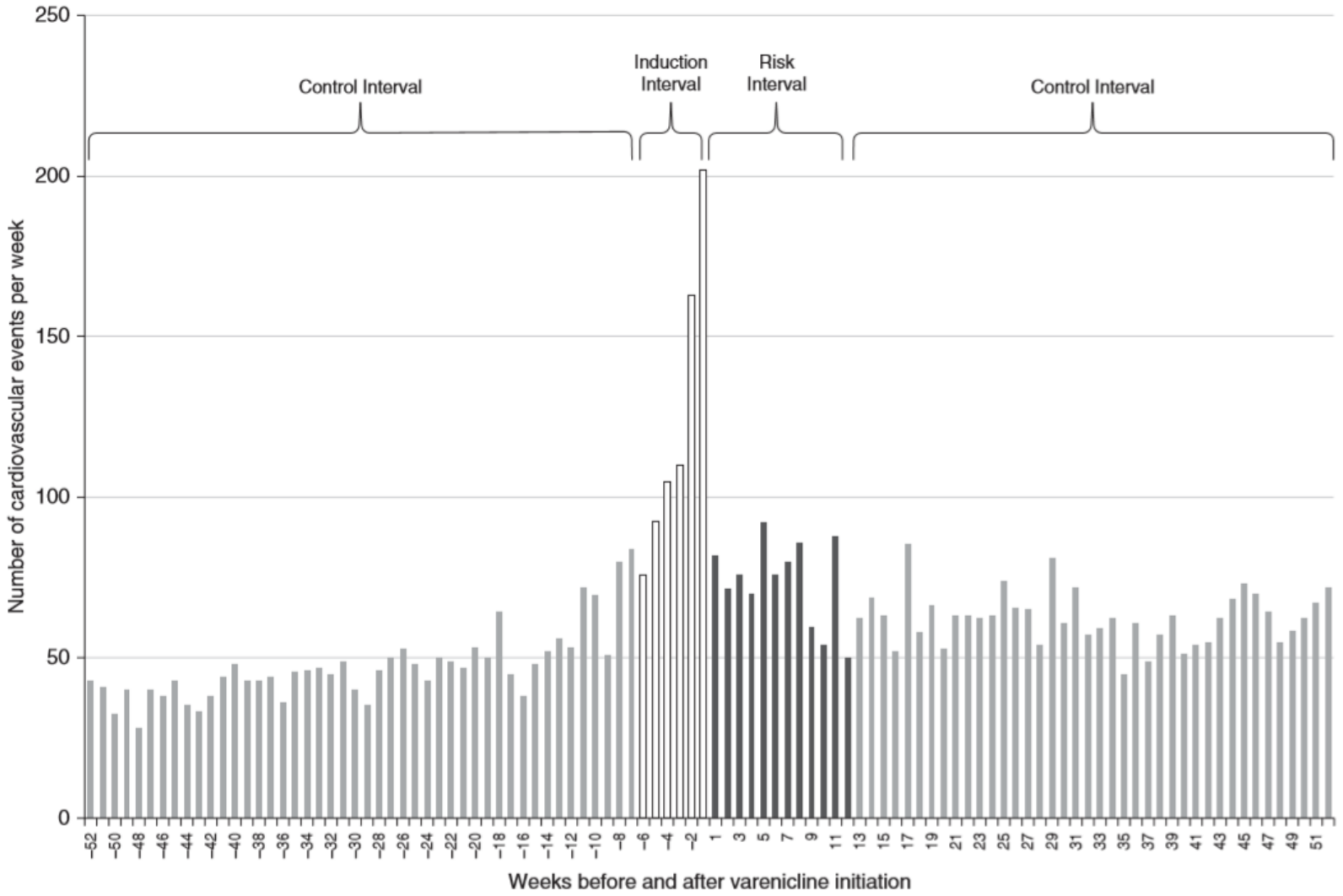


**Figure 1.** Weekly distribution of cardiovascular events before and after initiation of varenicline. The bar graph depicts the distribution in the number of cardiovascular events per week each week from 1 year before to 1 year after the date of varenicline initiation. The relative incidences of events and their 95% confidence intervals were determined by comparing the risk interval with the control intervals.

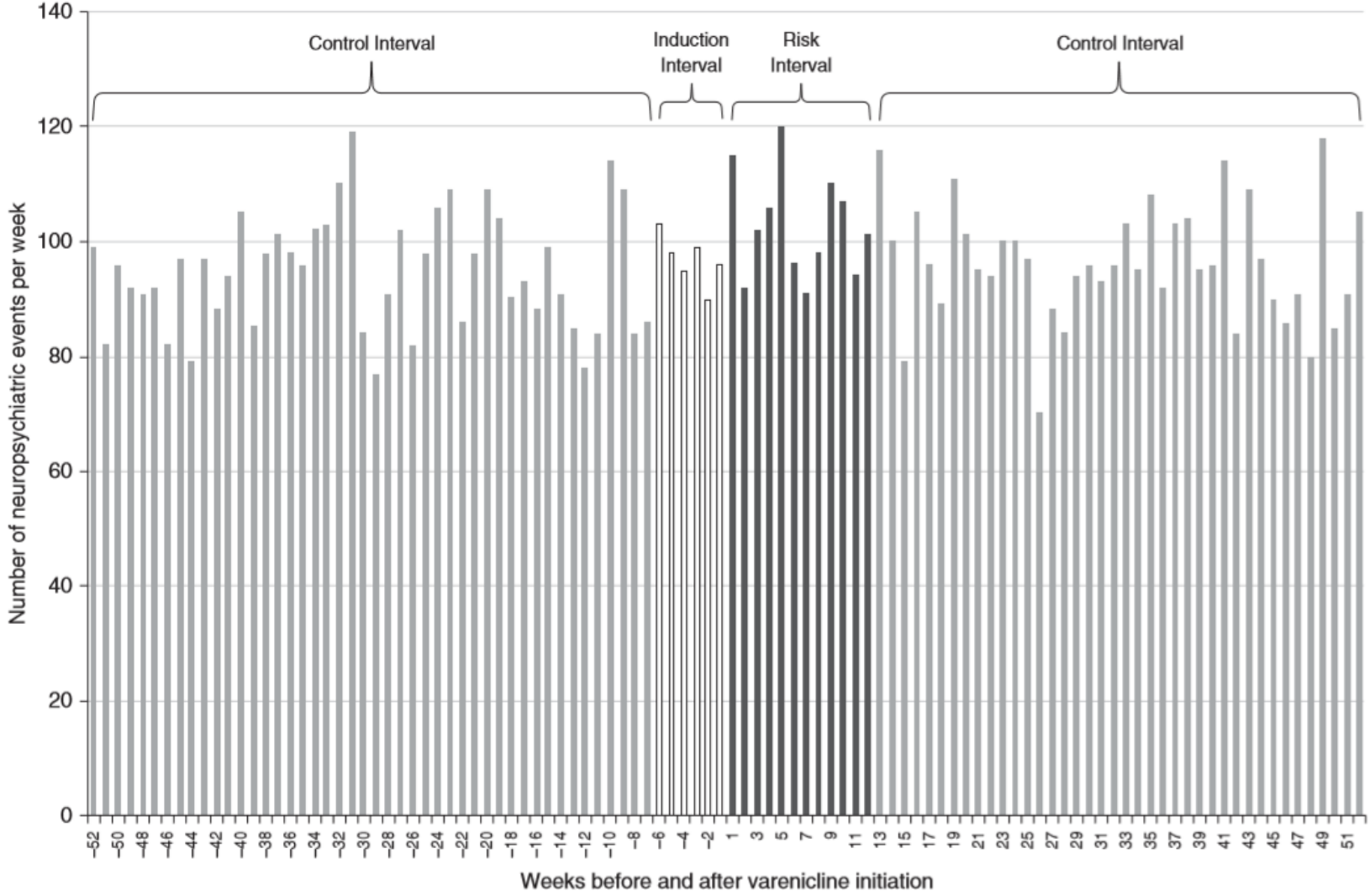


**Figure 2.** Weekly distribution of neuropsychiatric events before and after initiation of varenicline. The bar graph depicts the distribution in the number of neuropsychiatric events per week each week from 1 year before to 1 year after the date of varenicline initiation. The relative incidences of events and their 95% confidence intervals were determined by comparing the risk interval with the control intervals.

**Table 4.** Relative Incidence of Cardiovascular Events after Varenicline Initiation

| Analysis | Relative Incidence of Cardiovascular Events (95% Confidence Interval) | *P* Value |
|---|---|---|
| Primary analysis (risk interval was 12 wk after varenicline initiation; induction interval was 6 wk preceding varenicline initiation) | 1.34 (1.25–1.44) | <0.001 |
| Varying risk intervals | | |
| 4 wk after varenicline initiation | 1.30 (1.15–1.46) | <0.001 |
| 8 wk after varenicline initiation | 1.42 (1.31–1.55) | <0.001 |
| 16 wk after varenicline initiation | 1.30 (1.22–1.39) | <0.001 |
| Varying induction intervals | | |
| 1 wk preceding varenicline initiation | 1.27 (1.19–1.37) | <0.001 |
| 2 wk preceding varenicline initiation | 1.30 (1.21–1.40) | <0.001 |
| 4 wk preceding varenicline initiation | 1.33 (1.24–1.43) | <0.001 |
| 8 wk preceding varenicline initiation | 1.36 (1.27–1.46) | <0.001 |
| No induction interval | 1.24 (1.15–1.33) | <0.001 |
| Varying control intervals ± history of cardiovascular disease | | |
| Preexposure only | 1.54 (1.43–1.67) | <0.001 |
| Postexposure only | 1.17 (1.08–1.26) | <0.001 |
| Postexposure only, history of cardiovascular event before exposure | 1.22 (1.09–1.36) | <0.001 |
| Postexposure only, no history of cardiovascular event before exposure | 1.12 (1.01–1.25) | 0.033 |
| Subgroup analyses | | |
| Age < 65 yr* | 1.22 (1.10–1.34) | <0.001 |
| Age ≥ 65 yr* | 1.53 (1.38–1.70) | <0.001 |
| Male† | 1.28 (1.16–1.40) | <0.001 |
| Female† | 1.46 (1.30–1.63) | <0.001 |
| History of event before observation window‡ | 1.27 (1.13–1.43) | <0.001 |
| No history of event before observation window‡ | 1.39 (1.27–1.52) | <0.001 |
| Sensitivity analyses | | |
| Only hospitalization events | 1.36 (1.25–1.48) | <0.001 |
| Only ischemic-related cardiovascular events | 1.35 (1.21–1.51) | <0.001 |
| Only heart failure cardiovascular events | 1.31 (1.13–1.51) | <0.001 |
| Excluding those who died in the observation period | 1.27 (1.17–1.37) | <0.001 |
| Only considering patients' first event | 1.27 (1.16–1.40) | <0.001 |
| Including only patients who did not have a cardiovascular event within 4 mo of a previous cardiovascular event | 1.26 (1.16–1.38) | <0.001 |
| Primary analysis with adjustment for calendar month | 1.34 (1.24–1.44) | <0.001 |

*$P = 0.002$ for the interaction.
†$P = 0.075$ for the interaction.
‡$P = 0.250$ for the interaction.

**Table 5.** Relative Incidence of Neuropsychiatric Events after Varenicline Initiation

| Type of Analysis | Relative Incidence of Neuropsychiatric Events (95% Confidence Interval) | *P* Value |
|---|---|---|
| Primary analysis (risk interval was 12 wk after varenicline initiation; induction interval was 6 wk preceding varenicline initiation) | 1.06 (1.00–1.13) | 0.042 |
| Varying different risk intervals | | |
| 4 wk after varenicline initiation | 1.04 (0.95–1.15) | 0.389 |
| 8 wk after varenicline initiation | 1.05 (0.98–1.13) | 0.163 |
| 16 wk after varenicline initiation | 1.06 (1.01–1.12) | 0.025 |
| Varying different induction intervals | | |
| 1 wk preceding varenicline initiation | 1.06 (1.00–1.13) | 0.045 |
| 2 wk preceding varenicline initiation | 1.06 (1.00–1.13) | 0.047 |
| 4 wk preceding varenicline initiation | 1.06 (1.00–1.13) | 0.046 |
| 8 wk preceding varenicline initiation | 1.06 (1.00–1.12) | 0.050 |
| No induction interval | 1.06 (1.00–1.13) | 0.045 |
| Observation time in control interval | | |
| Preexposure only | 1.07 (1.01–1.14) | 0.029 |
| Postexposure only | 1.05 (0.99–1.12) | 0.108 |
| Postexposure only, history of neuropsychiatric event before exposure | 1.08 (1.00–1.17) | 0.045 |
| Postexposure only, no history of neuropsychiatric event before exposure | 1.00 (0.88–1.12) | 0.913 |
| Subgroup analyses | | |
| Age $< 65$ yr* | 1.04 (0.98–1.11) | 0.192 |
| Age $\geq 65$ yr* | 1.44 (1.15–1.80) | 0.002 |
| Male† | 1.06 (0.97–1.16) | 0.177 |
| Female† | 1.07 (0.98–1.16) | 0.128 |
| History of event before observation window‡ | 1.03 (0.95–1.10) | 0.511 |
| No history of event before observation window‡ | 1.14 (1.03–1.27) | 0.010 |
| Sensitivity analyses | | |
| Only hospitalization events analyzed | 1.06 (0.96–1.17) | 0.280 |
| Only intentional self-harm neuropsychiatric events analyzed | 1.05 (0.91–1.20) | 0.525 |
| Excluding those who died in the observation period | 1.05 (0.99–1.12) | 0.086 |
| Only considering patients' first event | 0.98 (0.90–1.07) | 0.649 |
| Including only patients who did not have a cardiovascular event within four months of a previous cardiovascular event | 1.04 (0.96–1.12) | 0.336 |
| Primary analysis with adjustment for calendar month | 1.07 (1.00–1.13) | 0.037 |

*$P = 0.007$ for the interaction.
†$P = 0.923$ for the interaction.
‡$P = 0.081$ for the interaction.

# Conclusions

- Using self-controlled analyses, we assessed the **safety of real-world varenicline** use in a large population while minimizing confounding. Varenicline use was associated with a significant **increased risk of cardiovascular adverse events**—even in people with no cardiovascular disease history—and **no clear increase in neuropsychiatric adverse events**. These results can be used by patients and physicians when weighing the risks and benefits of varenicline use.

# 금연 방법

## 기타 보조 방법

Nicotine Tob Res. 2018 Jun 18. doi: 10.1093/ntr/nty126. [Epub ahead of print]

# Craving to Quit: A Randomized Controlled Trial of Smartphone app-based Mindfulness Training for Smoking Cessation.

Garrison KA[1], Pal P[2], O'Malley SS[1], Pittman BP[1], Gueorguieva R[1,3], Rojiani R[1], Scheinost D[1,4], Dallery J[5], Brewer JA[1,2,6].

Author information

스마트폰 앱 (negative results)

## Abstract

**INTRODUCTION:** Mindfulness training may reduce smoking rates and lessen the association between craving and smoking. This trial tested the efficacy of mindfulness training via smartphone app to reduce smoking. Experience sampling was used to measure real time craving, smoking and mindfulness.

**METHODS:** A researcher-blind, parallel randomized controlled trial compared the efficacy of mobile mindfulness training with experience sampling (MMT-ES; Craving to Quit) vs. experience sampling-only (ES) to (1) increase one-week point-prevalence abstinence rates at 6 months, and (2) lessen the association between craving and smoking. A modified intent-to-treat approach was used for treatment starters (MMT-ES n=143; ES n=182; 72% female, 81% white, age 41±12yr.).

**RESULTS:** No group difference was found in smoking abstinence at 6 months (overall, 11.1%; MMT-ES, 9.8%; ES, 12.1%; $\chi 2(1)=.43$, $p=.51$). From baseline to 6 months, both groups showed a reduction in cigarettes per day ($p<.0001$), craving strength ($p<.0001$) and frequency ($p<.0001$), and an increase in mindfulness ($p<.05$). Using experience sampling data, a craving by group interaction ($F(1,3785)=3.71$, $p=.05$) was observed, driven by a stronger positive association between craving and cigarettes per day for ES ($t=4.96$, $p<.0001$) versus MMT-ES ($t=2.03$, $p=.04$). Within MMT-ES, the relationship between craving and cigarettes per day decreased as treatment completion increased ($F(1,104)=4.44$, $p=.04$).

**CONCLUSIONS:** Although mindfulness training via smartphone app did not lead to reduced smoking rates compared with control, our findings provide preliminary evidence that mindfulness training via smartphone app may help lessen the association between craving and smoking, an effect that may be meaningful to support quitting in the longer-term.

**TRIAL REGISTRATION:** Clinicaltrials.gov NCT02134509. Registered 7 May 2014.

**IMPLICATIONS:** This is the first reported full-scale randomized controlled trial of any smartphone app for smoking cessation. Findings provide preliminary evidence that smartphone app-based mindfulness training with experience sampling may lessen the association between craving and smoking, an effect that did not lead to reduced smoking abstinence rates compared with control but may be meaningful to support quitting and prevent relapse in the longer-term.

Nicotine Tob Res. 2018 May 25. doi: 10.1093/ntr/nty108. [Epub ahead of print]

# Automated telephone follow-up for smoking cessation in smokers with coronary heart disease: a randomized controlled trial.

Reid RD[1], Aitken DA[1], Mullen KA[1], McDonnell L[1], Armstrong A[1], Leblanc AG[1], Slovinec-D'Angelo M[1], Pipe AL[1].

Author information

자동 전화 응답기

## Abstract

**INTRODUCTION:** Smokers with coronary heart disease (CHD) benefit from in-hospital cessation treatment, but relapse is common without ongoing support post-discharge. The purpose of this study was to determine if smoking abstinence would be higher after hospital discharge in smokers who received automated telephone follow-up (ATF) and nurse counseling, compared to a standard care (SC) control group.

**METHODS:** A total of 440 smokers hospitalized with CHD were randomly assigned to the ATF group (n=216) or to the SC group (n=224). Participants in the ATF group received automated phone calls three, 14, 30, 60, 90, 120, 150 and 180 days after hospital discharge. The ATF system posed questions concerning smoking status, confidence in staying smoke-free, and need for assistance. If flagged by the ATF system, a nurse-counselor provided additional counseling by phone. Self-reported continuous smoking abstinence was assessed 26 and 52 weeks post-discharge using intention-to-treat analysis. The main outcome measure was continuous abstinence for weeks 1-26 post-discharge.

**RESULTS:** Participants in the ATF group achieved higher abstinence rates for weeks 1-26 than those in the SC group (odds ratio [OR] 1.53, 95% confidence intervals [CI] 1.01-2.33). There was no significant difference between groups in abstinence rates for weeks 27-52 (OR 1.37; 95% CI 0.89 to 2.09).

**CONCLUSIONS:** ATF-mediated follow-up helped smokers with CHD achieve abstinence during the intervention period. There was a trend toward clinically important improvements for weeks 27-52; but between group differences for this time point did not achieve statistical significance. Clinical Trial Number: NCT00449852.

**IMPLICATIONS:** Automated telephone follow-up exerts its effect by reinforcing participants' efforts to be smoke-free and by proactively linking people requiring assistance to individualized support (e.g., telephone counseling). This study shows that automated telephone follow-up can assist smokers with coronary heart disease in remaining smoke free; however, success of automated telephone follow-up is limited to the treatment period and abstinence rates after the treatment period were not statistically different than among those receiving standard care. Extended treatment via automated telephone follow-up may provide a solution to extend cessation assistance beyond hospital discharge.

Nicotine Tob Res. 2018 Jan 23. doi: 10.1093/ntr/nty016. [Epub ahead of print]

# Effectiveness of a fully automated internet-based smoking cessation program: a randomized controlled trial (STAMP).

Nguyen Thanh V[1], Guignard R[1], Lancrenon S[2], Bertrand C[1], Delva C[2], Berlin I[3], Pasquereau A[1], Arwidson P[1].

Author information

인터넷 프로그램

## Abstract

**INTRODUCTION:** The internet offers an interesting alternative to face-to-face and telephone-based support for smoking cessation. This study was designed to assess the effectiveness of a personalized and automated internet-based program.

**METHODS:** French current adult smokers willing to quit within 2 weeks were recruited for a randomized controlled trial. The intervention consisted of an automated program of 45 e-mails ("e-coaching") sent over a 3-month period. The control group received a PDF version of a booklet on smoking cessation. Self-reported 7-day point prevalence smoking abstinence was measured at 6 months (primary outcome), at 3 and 12 months of follow-up (secondary outcomes).

**RESULTS:** 2,478 smokers were randomized (1,242 for e-coaching, 1,236 for the booklet). Cessation rate in the intention-to-treat population was not significantly different between the two groups at 6 and 12 months, but was higher in the e-coaching group at 3 months than in the control group (27.5% vs 23.5%, p=0.02, OR=1.24, CI=[1.03-1.49]). After adjustment for baseline conditions, the effect of the intervention in the per-protocol (PP) sample was significant at 3 months (aOR=1.72 [1.31-2.28], p<0.001, N=1042) and at 6 months (aOR=1.27 [1.00-1.60], p=0.05, N=1082). GLM repeated measure analyses showed significant group by time interaction in the ITT and a significant group effect in the PP population.

**CONCLUSIONS:** Analyzed intention-to-treat, e-coaching was superior to a booklet at 3 months (end of intervention) but no more superior at 6 and 12 months follow up. Among those who actually followed the program, the effectiveness is also observed 3 months after the intervention is stopped.

Nicotine Tob Res. 2018 Jun 7;20(7):859-866. doi: 10.1093/ntr/ntx244.

# Effects of 30% and 50% Cigarette Pack Graphic Warning Labels on Visual Attention, Negative Affect, Quit Intentions, and Smoking Susceptibility among Disadvantaged Populations in the United States.

Skurka C[1], Kemp D[1], Davydova J[1], Thrasher JF[2], Byrne S[1], Safi AG[3], Avery RJ[4], Dorf MC[5], Mathios AD[6], Scolere L[7], Niederdeppe J[1].

Author information

경고 표지

## Abstract

**INTRODUCTION:** Though the WHO Framework Convention for Tobacco Control (FCTC) calls for the implementation of large graphic warning labels (GWLs) on cigarette boxes, the courts have blocked the implementation of 50% labels in the United States. We conducted an experiment to explore whether changing the size of GWLs is associated with changes in visual attention, negative affect, risk beliefs, and behavioral intentions.

**METHOD:** We recruited adult smokers (N = 238) and middle-school youth (N = 237) throughout the state of New York in May 2016. We randomly assigned participants to one of three between-subject conditions (no GWL [control], 30% GWL, 50% GWL).

**RESULTS:** Adult and youth participants looked at the GWLs longer when the GWL covered 50% versus 30% of the pack's front. Increasing GWL size from 30% to 50% did not influence negative affect or risk beliefs, though both GWL sizes increased negative affect relative to the no-GWL control group. Exposure to 50% GWLs increased adult smokers' intentions to quit compared to no-GWL, but smokers exposed to 30% GWLs did not differ from control. There were no differences between 50% GWLs, 30% GWLs, and control on youth smoking susceptibility.

**CONCLUSIONS:** Findings provide some evidence of the benefits of a 50% versus 30% GWL covering the front of the pack for adult smokers and at-risk youth from socioeconomically disadvantaged backgrounds-though not on all outcomes.

**IMPLICATIONS:** This research shows that 30% GWLs on cigarette packages increase negative affect relative to packages without front-of-package GWLs. Larger GWLs on cigarette packages (50% vs. 30%) increase visual attention to the warning and its pictorial content among low-SES smokers and at-risk youth but do not further increase negative affect. A 50% GWL increased adults' quit intention compared to no GWL at all, but we were underpowered to detect modest differences in quit intentions between a 50% and 30% GWL. Future work should thus continue to explore the boundary conditions under which relatively larger GWLs influence cognitive, affective, and behavioral outcomes.

# Take home message

- **흡연의 유해성**
- Pregnancy-Children
- Various diseases in adults: Lung cancer, COPD…

- **금연의 이득** – 생존률 향상

- **금연 방법**
- 약물요법 + 보상
- **전자담배 (controversial),** varenicline, 기타 보조 요법


Severance
With the Love of God, Free Humankind from Disease and Suffering