VAPING IN YOUNG PEOPLE: IS THERE A "GATEWAY" EFFECT?

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Vaping and tobacco harm reduction

- Vaping may serve as a pathway **out** of smoking for established smokers
- Vaping may serve as a pathway **into** smoking for non-smokers (esp. young people)
- The costs and benefits of vaping will in large part depend on the balance of these two possible **causal pathways**

Vaping and smoking cessation

The NEW ENGLAND JOURNAL of MEDICINE

ORIGINAL ARTICLE

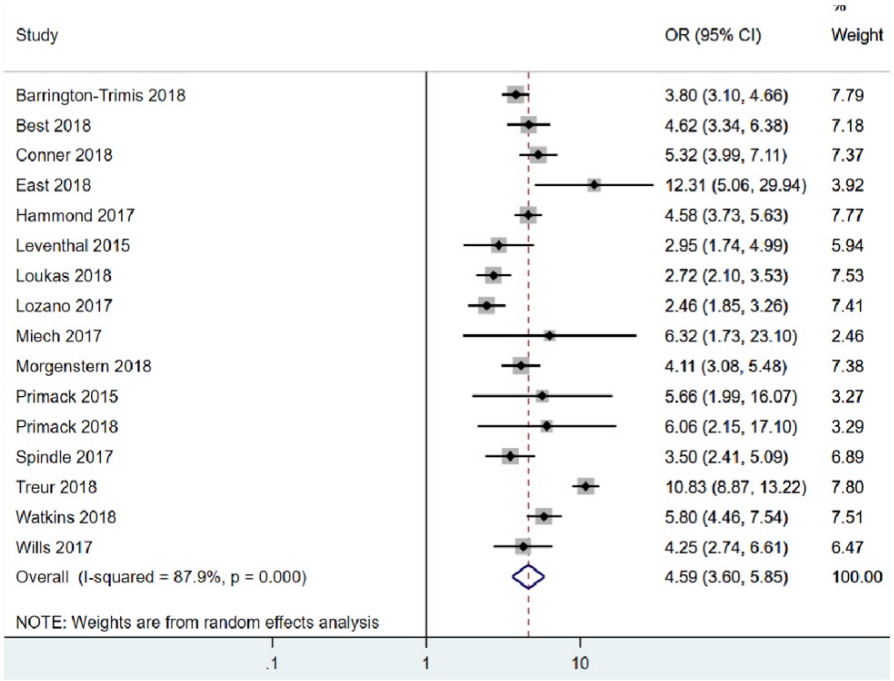
A Randomized Trial of E-Cigarettes versus Nicotine-Replacement Therapy

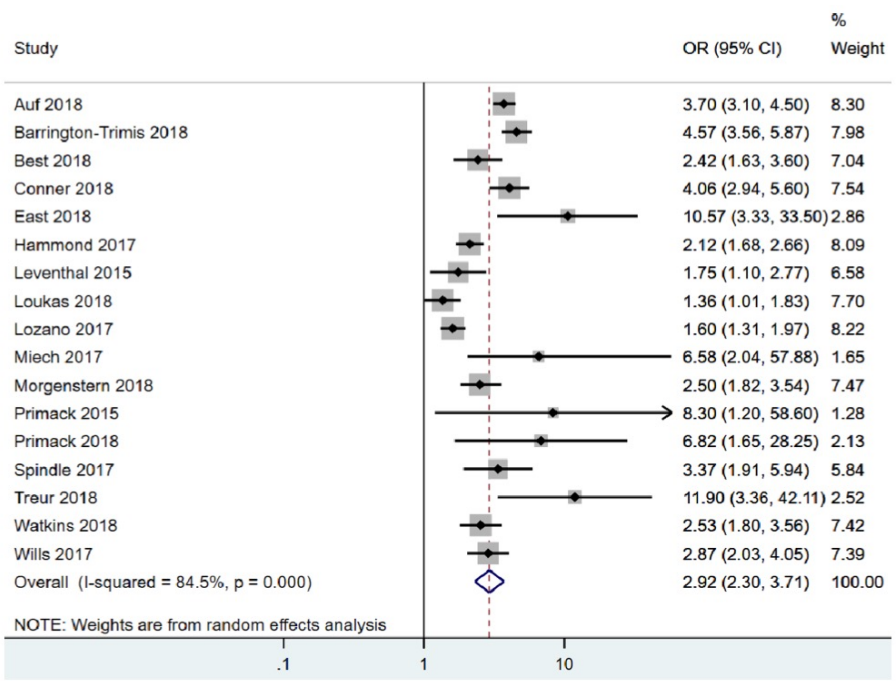
Table 2. Abstinence Rates at Different Time Points and Smoking Reduction at 52 Weeks.*

Outcome	E-Cigarettes (N=438)	Nicotine Replacement (N=446)	Primary Analysis: Relative Risk (95% CI)†	Sensitivity Analysis: Adjusted Relative Risk (95% CI)
Primary outcome: abstinence at 52 wk — no. (%)	79 (18.0)	44 (9.9)	1.83 (1.30–2.58)	1.75 (1.24–2.46)‡
Secondary outcomes				
Abstinence between wk 26 and wk 52 — no. (%)	93 (21.2)	53 (11.9)	1.79 (1.32–2.44)	1.82 (1.34–2.47)§
Abstinence at 4 wk after target quit date — no. (%)	192 (43.8)	134 (30.0)	1.45 (1.22–1.74)	1.43 (1.20–1.71)¶
Abstinence at 26 wk after target quit date — no. (%)	155 (35.4)	112 (25.1)	1.40 (1.14–1.72)	1.36 (1.15–1.67)‡
Carbon monoxide–validated reduction in smoking of ≥50% in participants without abstinence between wk 26 and wk 52 — no./total no. (%)	44/345 (12.8)	29/393 (7.4)	1.75 (1.12–2.72)	1.73 (1.11–2.69)‖

Vaping and smoking initiation

Is e-cigarette use in non-smoking young adults associated with later smoking? A systematic review and meta-analysis





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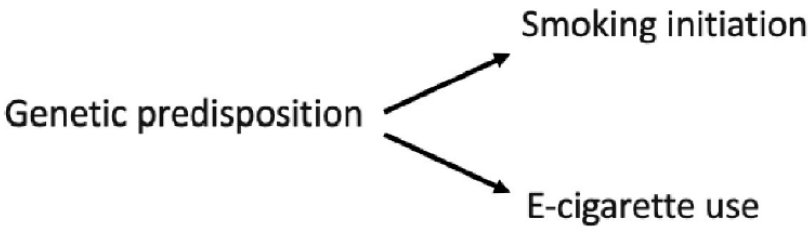
Correlation or causation?

a) Vertical pleiotropy

b) Horizontal pleiotropy



c) Common risk factor

Epidemiology


Daily Mail

DIANA: WHO THE FUCK STILL CARES?

IMMIGRATION SPIRALS AS WHITEHALL PARTIES

SEE PAGES 12-13

THE MAIL GET UPSET ON YOUR BEHALF

Health minister comes clean and tells Mail readers

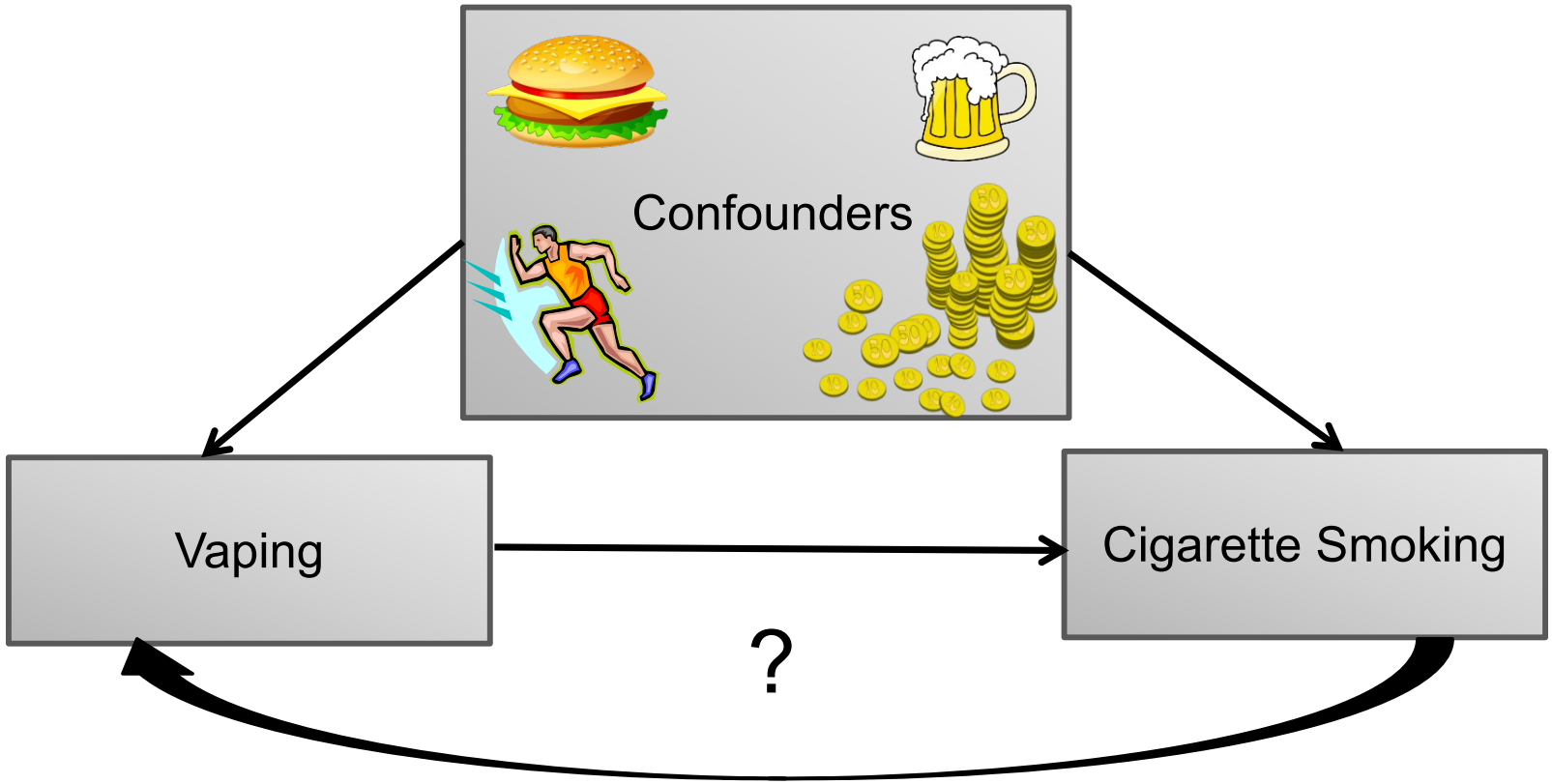
CANCER: READING THIS PAPER GIVES YOU DISEASE

Skinny Kiera finally eats


Seven cups of tea a day 'raises risk of prostate cancer by 50%'

'Coffee and alcohol intake'

Epidemiology



Reverse causality

RESEARCH ARTICLE

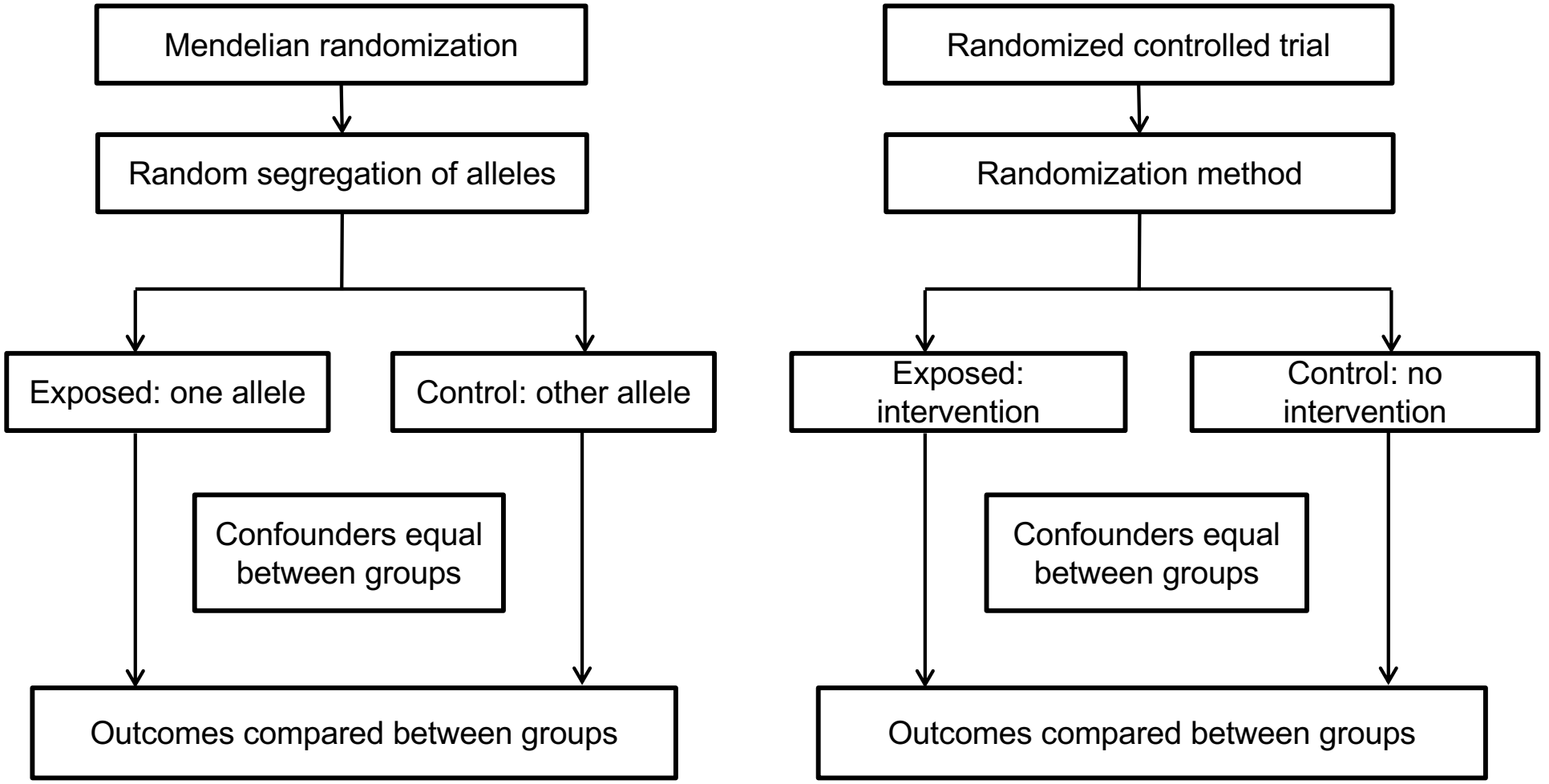
Investigating the added value of biomarkers compared with self-reported smoking in predicting future e-cigarette use: Evidence from a longitudinal UK cohort study

Jasmine N. Khouja[1,2,3]*, Marcus R. Munafò[1,3,4], Caroline L. Relton[1,2], Amy E. Taylor[2,4], Suzanne H. Gage[5], Rebecca C. Richmond[1,2]

Model	Active Smoking					
	Self-Report*			Cotinine		
	OR	95% CI	*p*-value	OR	95% CI	*p*-value
1	7.77	5.09, 11.85	< .001	10.47	4.88, 22.46	< .001
2	6.99	4.50, 10.86	< .001	8.06	3.69, 17.61	< .001
3	6.34	4.26, 10.34	< .001	7.24	3.29, 15.93	< .001

Self-report reference group = self-reported not current smoking; cotinine reference group = no exposure indicated by cotinine levels; OR = odds ratio; 95% CI = 95% confidence interval. Cotinine was treated as a categorical variable in these analyses. Active exposure is defined as cotinine levels exceeding 10 ng/ml in blood samples; no cotinine exposure is defined as cotinine levels of 0 ng/ml in blood samples. The basic model (model 1) was adjusted for age and sex. Model 2 was additionally adjusted for socioeconomic status, BMI and alcohol. Model 3 was additionally adjusted for passive smoke exposure (maternal smoking at 12 years).

Mendelian Randomization



Shared genetic liability

RESEARCH ARTICLE

Association of genetic liability to smoking initiation with e-cigarette use in young adults: A cohort study

Jasmine N. Khouja[1,2,3]*, Robyn E. Wootton[1,2], Amy E. Taylor[2,4], George Davey Smith[1,2], Marcus R. Munafò[1,3,4]

Outcome *p*-value threshold	*n*	OR	95% CI	*p*
Ever e-cigarette use by age 24	2,894			
5×10^{-8}		1.24	1.14, 1.34	<0.001
0.0005		1.27	1.17, 1.38	<0.001
0.005		1.36	1.26, 1.48	<0.001
0.05		1.39	1.28, 1.51	<0.001
0.5		1.39	1.28, 1.51	<0.001

Epidemiology

Smoking as "independent" risk factor for suicide: illustration of an artifact from observational epidemiology?

GEORGE DAVEY SMITH ANDREW N. PHILLIPS JAMES D. NEATON

It may be argued that smoking is a plausible causal factor for suicide. The risk of being murdered has therefore also been analysed according to smoking status. As there are only 222 deaths due to homicide, smoking has been classified into three groups—no cigarettes, 1–39, and 40+. The relative rates (and 95% CI) of being murdered, adjusted for income and race which are both associated with risk of murder, are: 1·00, 1·71 (1·29–2·28), and 2·04 (1·32–3·15), respectively.

"Unless the provisional wing of the health education lobby has moved on to a direct action phase, during which they shoot smokers, this association is very unlikely to be causal".

Shared genetic liability

Outcome *p*-value threshold	*n*	OR	95% CI	*p*
11 or more sexual partners by age 23*	2,505			
5×10^{-8}		1.15	1.05, 1.26	0.003
0.0005		1.12	1.02, 1.23	0.019
0.005		1.18	1.08, 1.29	<0.001
0.05		1.25	1.14, 1.37	<0.001
0.5		1.30	1.19, 1.43	<0.001
Been in trouble with the law since 23rd birthday	2,928			
5×10^{-8}		1.00	0.79, 1.28	0.988
0.0005		1.12	0.88, 1.43	0.352
0.005		1.11	0.87, 1.41	0.407
0.05		1.04	0.82, 1.33	0.745
0.5		0.90	0.71, 1.15	0.394
Enjoys taking risks at age 24	2,932			
5×10^{-8}		1.06	0.98, 1.14	0.154
0.0005		1.05	0.98, 1.14	0.163
0.005		1.11	1.03, 1.19	0.005
0.05		1.09	1.01, 1.17	0.029
0.5		1.08	1.01, 1.16	0.033

Shared genetic liability

Outcome *p*-value threshold	*n*	OR	95% CI	*p*
Hyperactivity at age 7	5,227			
5×10^{-8}		1.02	0.96, 1.08	0.511
0.0005		1.10	1.04, 1.16	0.001
0.005		1.14	1.08, 1.20	<0.001
0.05		1.14	1.08, 1.21	<0.001
0.5		1.15	1.08, 1.21	<0.001
Conduct disorder at age 7	5,334			
5×10^{-8}		1.10	1.03, 1.17	0.004
0.0005		1.11	1.04, 1.19	0.001
0.005		1.11	1.04, 1.18	0.002
0.05		1.08	1.01, 1.15	0.021
0.5		1.08	1.01, 1.15	0.017
Oppositional defiant disorder at age 7	5,325			
5×10^{-8}		1.02	0.96, 1.08	0.496
0.0005		1.08	1.02, 1.14	0.013
0.005		1.04	0.98, 1.10	0.200
0.05		1.04	0.98, 1.10	0.173
0.5		1.02	0.96, 1.08	0.529

Conclusions

- There is a robust, replicable association between vaping initiation and smoking initiation
- Whether this represents a causal pathway is less clear; there is evidence for a common underlying phenotype
- Large-scale GWAS of vaping initiation will allow Mendelian randomization studies of vaping outcomes