



Barts and The London
School of Medicine and Dentistry



Queen Mary
University of London

New evidence on e-cigarettes and other approaches to smoking cessation 2019

Professor Peter Hajek
Wolfson Institute of Preventive Medicine



UKCTAS

UK Centre for Tobacco & Alcohol Studies

Declaration of interest

- I have no links with any e-cigarette or tobacco manufacturers
- My research into safety and effects of EC is funded by the National Institute of Health Research, Public Health England, UK Centre for Tobacco and Alcohol Studies and UK Medicines Regulatory Agency

Developments in 2018-2019

- E-cigarettes for smoking cessation
 - New data on effects on smokers
 - Varenicline in dual users
- Other smoking cessation findings
 - Medications
 - Tobacco dependence

Electronic cigarettes versus nicotine replacement treatment

Hajek P, Phillips A, Przulj D, Pesola F, Myers K, Bisal N, Li J, Parrott S, Sasieni P, Dawkins L, Ross L, Goniewicz M, Wu Q, McRobbie H

The NEW ENGLAND JOURNAL of MEDICINE

ORIGINAL ARTICLE

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

This article was published on January 30, 2019, at NEJM.org.

DOI: 10.1056/NEJMoa1808779

Previous two RCTs, Cochrane verdicts

- EC better than placebo, same as patch
- Achieved with early EC models
 - Poor nicotine delivery, leakage, discontinued

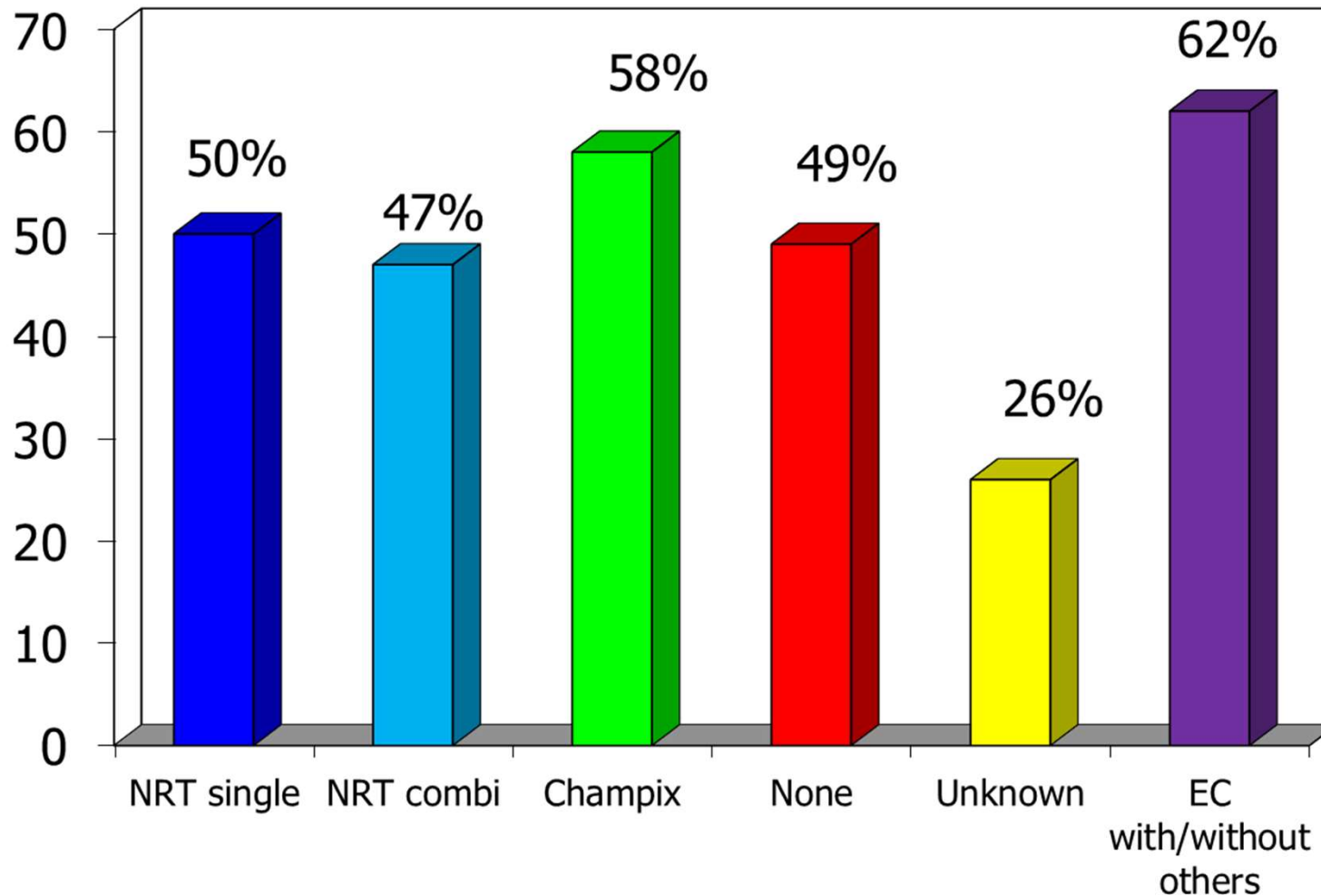
The first small trial with tank EC

- Smokers not intending to quit
- N=32 given refillable EC (18mg/mL)
- N=16 control group – no EC provided
- 2 months CO-validated quit rates
 - 34% vs 0%

Adriaens et al. 2014

Medications efficacy 2017-2018

4-week self-reported quit rate



TEC trial

- Smokers accessing service with no strong preference for EC or NRT
- Randomised on target quit date (TQD)
 - NRT arm: N=447; EC arm: N=439
- Followed up for one year, CO validation of abstinence
- Strict outcomes, drop-out or not validated=non-abstainer

NRT arm

- NRT of client choice
- Combinations recommended (88% used NRT combinations)
- Able to switch products (59% did)
- Provided for up to three months
- Guided by clinicians experienced in NRT use
- Mean cost £124

EC arm

- Starter pack: Refillable EC, one bottle of 18mg/ml e-liquid
- Instructed on use
- Advised to try other e-liquids and EC products via vape shops or internet
- Most switched to other e-liquids within a week (popularity of flavours: fruit, tobacco, mint, candy, others)
- Mean cost £20

Sample

- No between-arm differences
 - Mean age 43
 - 48% female
 - 40% entitled to free prescriptions
 - 80%+ tried meds before
 - 15 cigs/day
 - baseline CO=20

Abstinence rates

	EC N=438	NRT N=446	Relative Risk (95% CI)	P-value
Abstinence between weeks 2 and 52, N (%)	79 18%	44 10%	1.8 (1.3 to 2.6)	.001
Abstinence between weeks 24 and 52, N (%)	93 21%	53 12%	1.8 (1.3 to 2.4)	<.001

SSS evaluation using the same outcome criteria: 10% one-year quit rate for individual support – but 46% treated with varenicline

Long-term product use

- Abstainers in EC arm: 80% using EC; 3% using NRT
- Abstainers in NRT arm: 9% using NRT; 32% using EC
 - quit rates 20% vs 8% without 'contaminators'
- On-going vaping – good or bad thing?
 - Continuing nicotine use
 - But may alleviate withdrawal symptoms and weight gain and prevent relapse

Other outcomes

- EC received better ratings for helpfulness, satisfaction and taste
- Urges to smoke lower in EC arm at all time points
- Other withdrawal symptoms lower in EC arm in Week 1

Safety

- One death in each study arm (heart disease both)
- More nausea in NRT arm
- More throat/mouth irritation in EC arm
- Mostly mild, no difference in prevalence of severe effects (7% nausea both arms; mouth irritation 6% vs 4%)

Antibacterial effects of vaping?

	EC (N=315) N (%)		NRT (N=279) N (%)		P- value ^a
	Baseline	12 months	Baseline	12 months	
Shortness of breath	120 (38)	66 (21)	92 (33)	64 (23)	.2
Wheezing	102 (32)	74 (24)	97 (31)	59 (21)	.6
Cough	173 (55)	97 (31)	145 (52)	112 (40)	.005
Phlegm	137 (44)	79 (25)	122 (44)	104 (37)	.001

^a Logistic regression with symptoms at 12 months regressed onto study arm while adjusting for baseline scores and study centre

Conclusions

- EC are significantly more effective than NRT
- Including EC starter packs among treatment options can improve the efficacy of stop-smoking services
- It also reduces the service cost by some £100 per client who sets a quit date (almost twice as much per quitter)

EC vs usual care (RCT)

- Dental patients, N=80
- EC (as in TEC) vs usual care
- 6M CO-validated: **15% vs 5%, p<0.01**

Holliday R. et al. Pilot and Feasibility Studies 2019

EC vs NRT in pharmacy

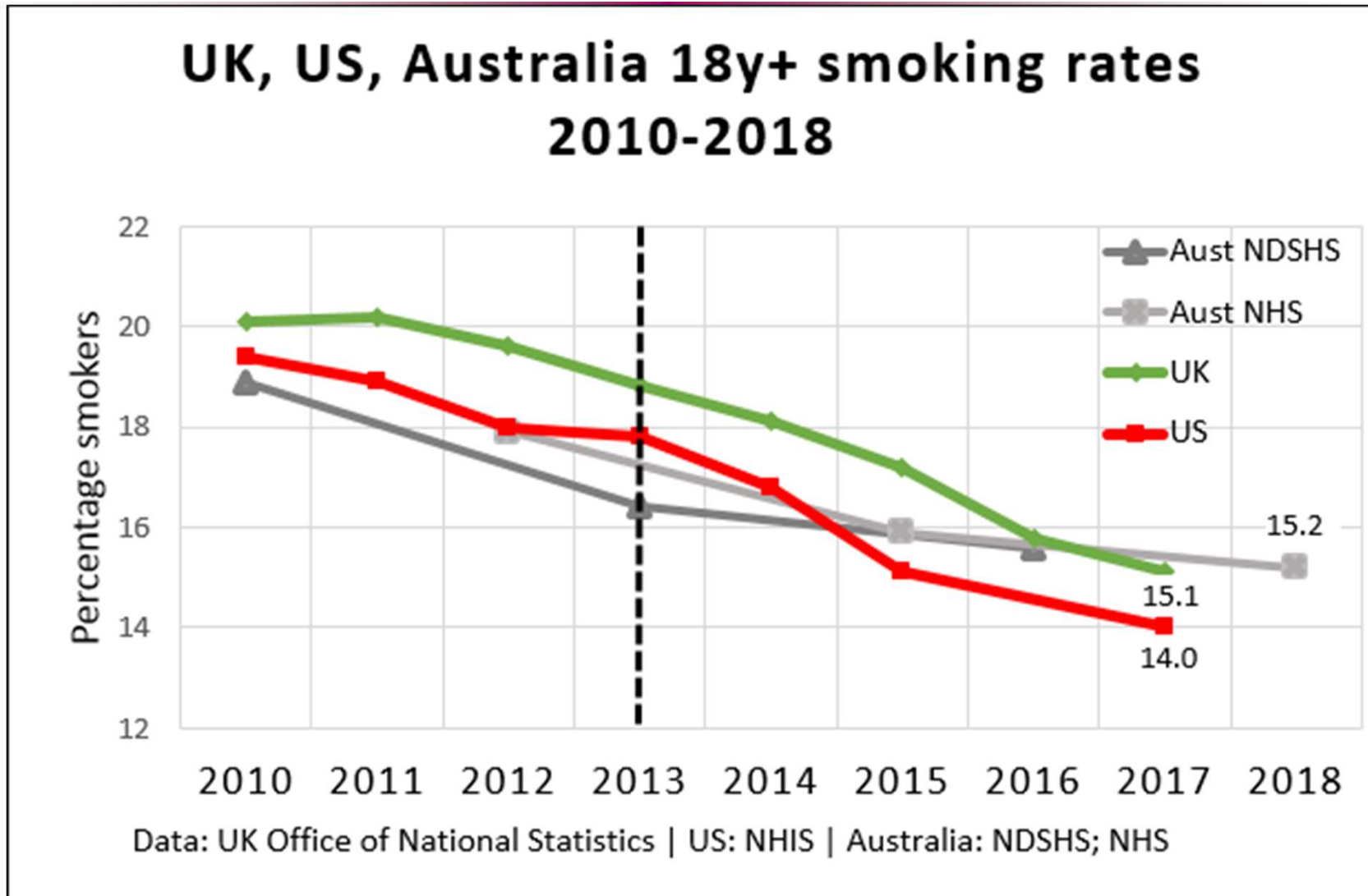
- N=115 could chose NRT, EC or both
- 4-6 weeks abstinence:
 - EC (N=37): 62%; EC+NRT (N=13): 62%
 - NRT (N=65): 35%
 - $p < 0.01$

Cox et al. Addictive Behaviours, 2019

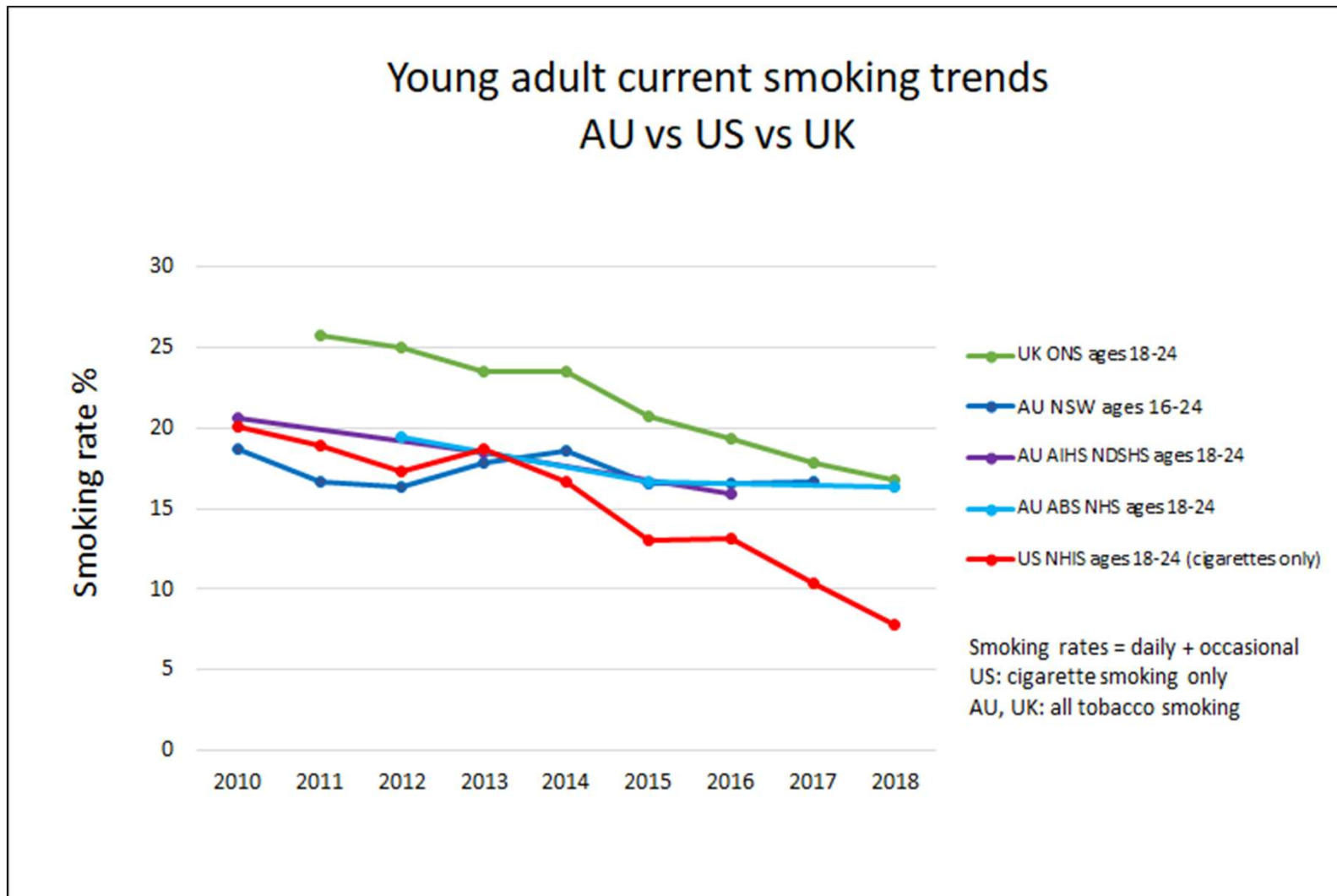
Effect of EC use on population level smoking cessation

- US CPS-TUS
- 2014-2015 (N=161,054); compared with previous 4 surveys
- Tried to quit? Quit for at least 3M?
- EC users quit rate: 8.2%; non-users: 2.5%-4.8%
- Population quit rate significantly increased

Natural experiment update: Australia vs US+UK



Rapid decline in smoking in young people (18-24) in US



Conclusions

- In clinical context, there is strong evidence that EC help smokers quit
- On the population level, EC use is associated with a reduction in smoking prevalence, but a formal analysis of time trends has not been done and other factors may be contributing