Gefäßmedizinische Relevanz der Rauchentwöhnung

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Gemeinnützige Gesellschaft mbH

Karlsruhe

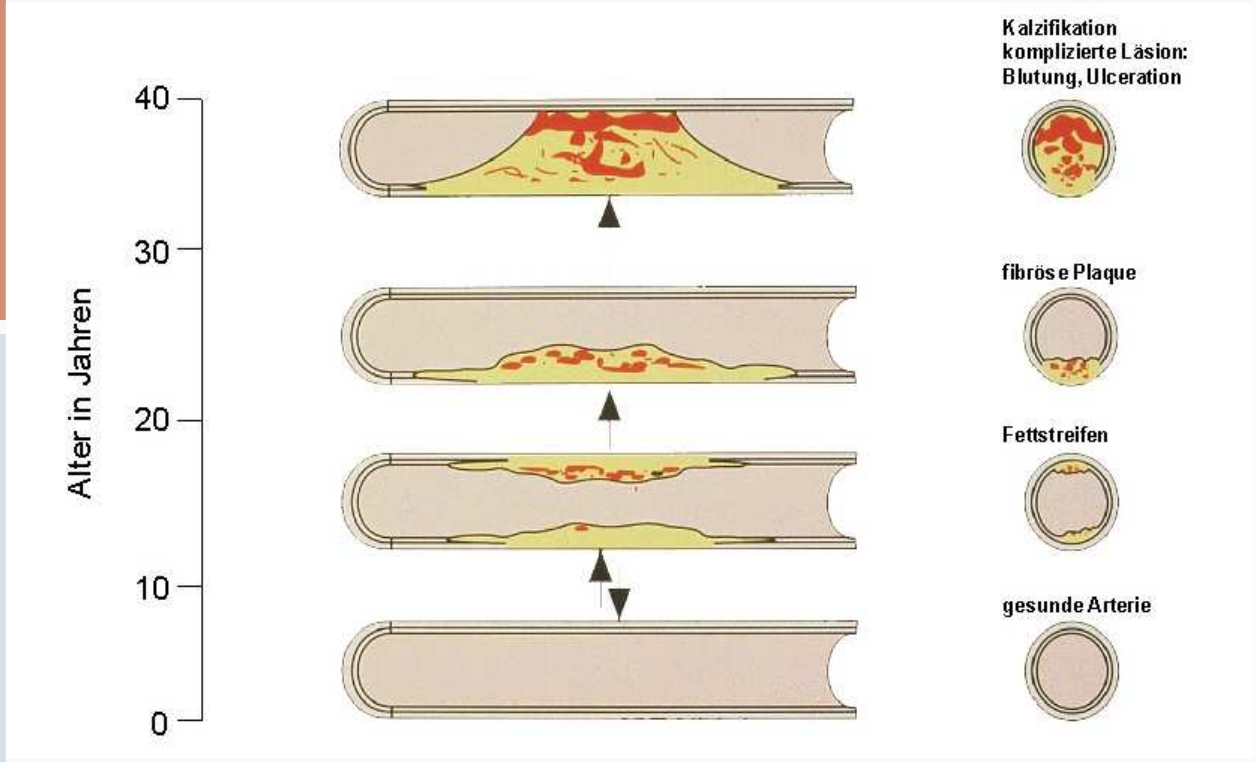
Interessenskonflikte

- Keine

- Beauftragter der Deutschen Gesellschaft
  für Gefäßchirurgie und Gefäßmedzin zur
  Rauchentwöhnung

- Referent und Mitglied versch. Expertengruppen
  (u.a. Deutscher Bundestag)

Smoking (tobacco combustion) is a main clinical risk factor for progression of atherosclosis



Jährliche Kosten des Rauchens

30,32 MRD
direkte Kosten durch Krankheit,
Behandlung etc.

66,92 MRD
sekundäre Kosten
(wirtschaftliche Ausfälle durch Krankheit, Tod,
Arbeitsunfähigkeit

DKFZ/Tabakatlas Deutschland 2020

Prevalence of electronic nicotine delivery systems and electronic non-nicotine delivery systems in children and adolescents: a systematic review and meta-analysis

Sze Lin Yoong, Alix Hall, Alecia Leonard, Sam McCrabb, John Wiggers, Edouard Tursan d'Espaignet, Emily Stockings, Hebe Gouda, Ranti Fayokun, Alison Commar, Vinayak M Prasad, Christine Paul, Christopher Oldmeadow, Li Kheng Chai, Bruce Thompson, Luke Wolfenden

Findings The most recent prevalence data from 26 national surveys representing 69 countries and territories, with a median sample size of 3925 (IQR 1=2266, IQR 3=10593) children and adolescents was included. In children and adolescents aged between 8 years and younger than 20 years, the pooled prevalence for ever (defined as any lifetime use) ENDS or ENNDS use was 17·2% (95% CI 15–20, I^2=99·9%), whereas for current use (defined as use in past 30 days) the pooled prevalence estimate was 7·8% (6–9, I^2=99·8%). The pooled estimate for occasional use was 0·8% (0·5–1·2, I^2=99·4%) for daily use and 7·5% (6·1–9·1, I^2=99·4%) for occasional use. Prevalence of ENDS or ENNDS use was highest in high-income geographical regions. In terms of study quality, all surveys scored had a low risk of bias for the sampling frame used, due to the nationally representative nature of the studies. The most poorly conducted methodological feature of the included studies was subjects and setting described in detail. Few surveys reported on the use of flavours or types of ENDS or ENNDS.

Occasional use: 0.8%

Daily use: 7.5%

- No Gateway for adolescents…

Lancet Public Health 2021

Published Online
July 15, 2021
https://doi.org/10.1016/
S2468-2667(21)00106-7

Erfolg der Rauchentwöhnung bei Gefässpatienten

Nebenbei, Selbstversuch	<10%
Strukturierte Programme	10-25%

Effects of Nicotine vs. Tabacco Smoke

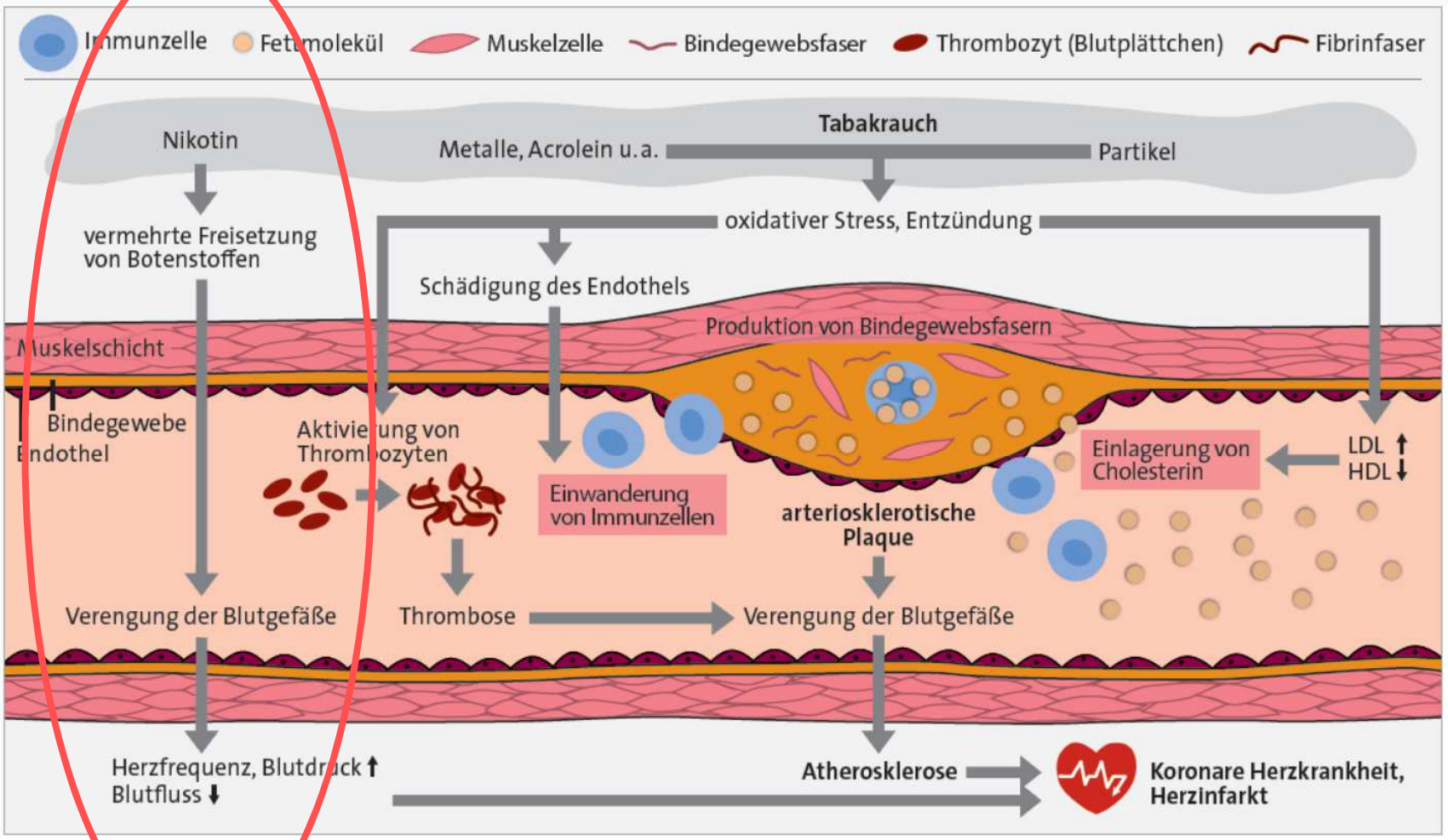
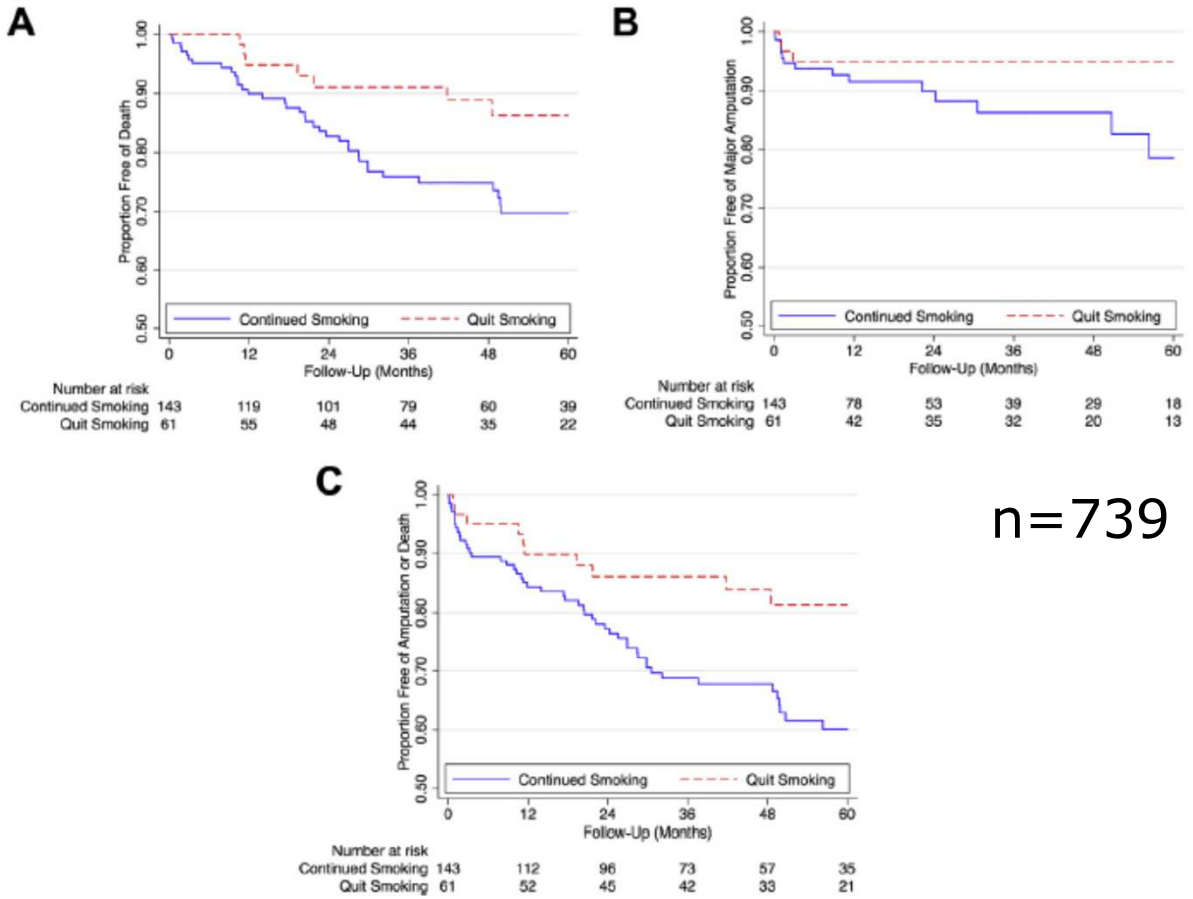


Abbildung 1: Mechanismen, über die Rauchen Herz-Kreislauferkrankungen verursacht[7,12]. Darstellung: Deutsches Krebsforschungszentrum, Stabsstelle Krebsprävention, 2018

Amputation rates in patients who quit smoking at time of surgery



n=739

Fig 1. Kaplan-Meier curves show (A) mortality, (B) rates of major amputation, and (C) amputation-free survival among patients who continued (*solid line*) vs quit (*dashed line*) smoking.

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

Nicotine effects: Misperception among US Physicians

Table 2 Prevalence and Adjusted Associations with Belief That Nicotine Directly Contributes to Development of Birth Defects, CVD, Cancer, and COPD ($N = 1020$)

	Birth defects		CVD		Cancer		COPD	
	%	APR (95% CI)	%	APR (95% CI)	%	APR (95% CI)	%	APR (95% CI)
Gender								
Female	36.3%	1.28 (1.07, 1.54)	81.4%	0.97 (0.92, 1.03)	78.7%	0.97 (0.91, 1.03)	78.5%	0.96 (0.90, 1.02)
Male	27.6%	Referent	85.9%	Referent	82.9%	Referent	84.1%	Referent
Age								
5 years	-	0.91 (0.88, 0.96)	-	0.99 (0.98, 1.00)	-	0.99 (0.98, 1.00)	-	0.99 (0.98, 1.01)
Specialty								
Cardiology	36.8%	1.78 (1.26, 2.50)	86.8%	Referent	82.6%	1.08 (0.95, 1.22)	81.9%	1.20 (1.06, 1.37)
Family medicine	36.1%	1.63 (1.18, 2.24)	88.6%	1.01 (0.93, 1.09)	87.1%	1.13 (1.01, 1.26)	87.6%	1.27 (1.13, 1.43)
Internal medicine	39.6%	1.86 (1.35, 2.57)	81.7%	0.94 (0.85, 1.04)	82.9%	1.08 (0.96, 1.21)	83.5%	1.22 (1.08, 1.38)
OB/GYN	21.4%	Referent	87.6%	1.00 (0.92, 1.09)	83.1%	1.08 (0.97, 1.21)	85.1%	1.25 (1.11, 1.40)
Oncology	30.9%	1.34 (0.93, 1.93)	80.2%	0.93 (0.83, 1.03)	77.2%	Referent	76.5%	1.12 (0.98, 1.29)
Pulmonary	32.4%	1.42 (1.01, 1.99)	73.4%	0.84 (0.75, 0.94)	68.2%	0.89 (0.78, 1.02)	68.2%	Referent

Prevalence ratios are adjusted for all variables in table and race/ethnicity (NH Black, Hispanic, NH Asian, NH other/unknown vs. NH White). We excluded 38 participants with missing responses for one or more analysis variables
CVD, cardiovascular disease; COPD, chronic obstructive pulmonary disease; APR, adjusted prevalence ratio; CI, confidence interval

J Gen Intern Med
DOI: 10.1007/s11606-020-06172-8
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RCT: EC vs. nicotine replacement: effect on smoking reduction at 52 weeks

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)‖

* Abstinence at 52 weeks was defined as a self-report of smoking no more than five cigarettes from 2 weeks after the target quit date, validated biochemically by an expired carbon monoxide level of less than 8 ppm at 52 weeks. Abstinence between week 26 and week 52 was defined as a self-report of smoking no more than five cigarettes between week 26 and week 52, plus an expired carbon monoxide level of less than 8 ppm at 52 weeks. Abstinence at 4 weeks was defined as a self-report of no smoking from 2 weeks after the target quit date, plus an expired carbon monoxide level of less than 8 ppm at 4 weeks. Abstinence at 26 weeks was defined as a self-report of smoking no more than five cigarettes from 2 weeks after the target quit date to 26 weeks; there was no validation by expired carbon monoxide level.

† The analysis was adjusted for trial center only.

‡ The analysis was adjusted for trial center, marital status, age at smoking initiation, and score on the Fagerström Test for Cigarette Dependence.

§ The analysis was adjusted for trial center, age, score on the Fagerström Test for Cigarette Dependence, and age at smoking initiation.

¶ The analysis was adjusted for trial center, education level, partner who smokes (yes or no), and score on the Fagerström Test for Cigarette Dependence.

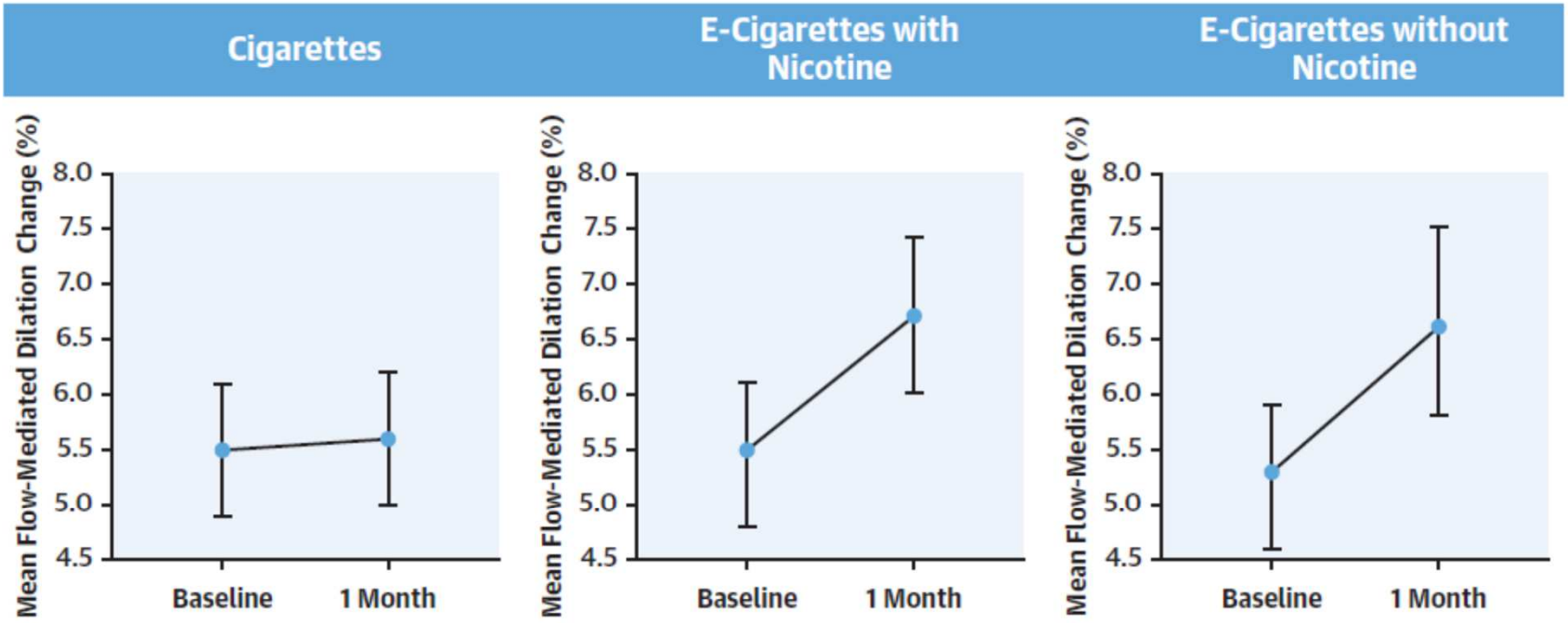
‖ The analysis was adjusted for trial center, sex, age, and partner who smokes (yes or no).

Hajek P, et al. NEJM 2019;Feb14;380(7):629-627

Improved endothelial function (vascular reactivity) in Tobacco Cigarettes vs. EC

CENTRAL ILLUSTRATION Change in Mean Flow-Mediated Dilation Among Tobacco Cigarettes and Electronic Cigarettes With and Without Nicotine

Randomisation 40:37:37



George, J. et al. J Am Coll Cardiol. 2019;■(■):■-■.

Adjusted mean percentage change in forearm flow-mediated dilation with 95% confidence intervals for subjects on electronic cigarettes (EC), EC-nicotine, and EC-nicotine-free.

George J et al. J Am Coll Cardiol 2019, epub ahead of print

Klinische Frage

Ist ein Wechsel auf E-Zigaretten oder Tabakerhitzer mit einem erhöhtem kardiovaskulären Risiko verbunden?

Wrong Hypothesis: Myocardial infarction rate higher after switch to EC

Electronic Cigarette Use and Myocardial Infarction Among Adults in the US Population Assessment of Tobacco and Health

Dharma N. Bhatta, PhD, MPH; Stanton A. Glantz, PhD

Background—E-cigarettes are popular for smoking cessation and as an alternative to combustible cigarettes. We assess the association between e-cigarette use and having had a myocardial infarction and whether reverse causality can explain the observed cross-sectional association between e-cigarette use and

Methods and Results—Cross-sectional analysis of the Population Assessment of Tobacco and Health Wave 1 for association between e-cigarette use and having had an MI and analysis of Population Assessment of Tobacco and Health Waves 1 and 2 for reverse causality analysis. Logistic regressions were performed to determine the associations between e-cigarette initiation and MI, adjusting for cigarette smoking, demographic and clinical variables. Every-day (adjusted odds ratio, 2.25, 95% CI: 1.23–4.11) and some-day (1.99, 95% CI: 1.11–3.58) e-cigarette use were independently associated with increased odds of having had an MI with a significant dose-response ($P<0.0005$). Odds ratio for daily dual use of both products was 6.64 compared with a never cigarette smoker who never used e-cigarettes. Having had a myocardial infarction at Wave 1 did not predict e-cigarette use at Wave 2 ($P>0.62$), suggesting that reverse causality cannot explain the cross-sectional association between e-cigarette use and MI observed at Wave 1.

Conclusions—Some-day and every-day e-cigarette use are associated with increased risk of having had a myocardial infarction, adjusted for combustible cigarette smoking. Effect of e-cigarettes are similar as conventional cigarette and dual use of e-cigarettes and conventional cigarettes at the same time is risker than using either product alone. (***J Am Heart Assoc.*** **2019;8:e012317. DOI: 10.1161/JAHA.119.012317.)**

Key Words: e-cigarettes • epidemiology • myocardial infarction • smoking

Paper withdrawn

Prinzip der Harm Reduction

- Vermeiden der Schäden durch fortgesetztes Zigarettenrauchen
- Vermeiden toxischer Exposition bei Tabak-Verbrennung
- Nutzung alternativer Produkte mit relevant geringerem Risiko

Ziel:
Erreichen derjenigen Raucher die nicht willens oder in der Lage sind mit dem Zigaretten-Rauchen aufzuhören (80%)

Notwendig:
Information der Öffentlichkeit und der Medical Community

Letter to the Editor, News and Views | Open Access | Published: 05 May 2018

Levels of selected analytes in the emissions of "heat not burn" tobacco products that are relevant to assess human health risks

Nadja Mallock, Lisa Böss, Robert Burk, Martin Danziger, Tanja Welsch, Harald Hahn, Hai-Linh Trieu, Jürgen Hahn, Elke Pieper, Frank Henkler-Stephani, Christoph Hutzler & Andreas Luch

Archives of Toxicology **92**, 2145–2149(2018) | Cite this article

Bundesinstitut für Risikobewertung

Beispiel Tabakerhitzer

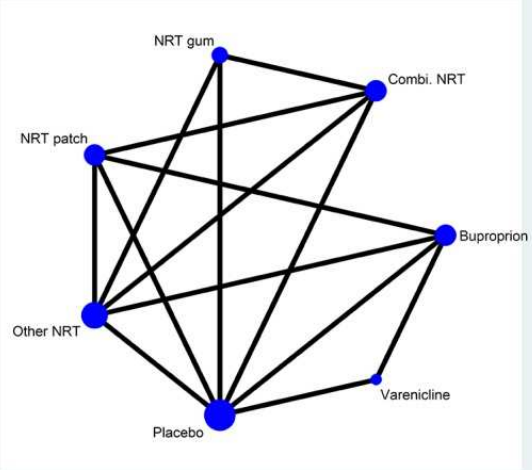
Parameter	Unit	Stick variant 1		Stick variant 2		Combustible cigarettes (Counts et al. 2005)	Reduction
		Mean ± SD	*n*	Mean ± SD	*n*	Min–max (mean ± SD)	%
Puff count	Puff/stick	12 ± 0		12 ± 0		5.5 ± 0.3–13.6 ± 0.5	
TPM	mg/stick	52.6 ± 3.2	24	51.2 ± 3.2	24	27.5 ± 2.4–60.9 ± 3.3	
Nicotine	mg/stick	1.1 ± 0.1	24	1.1 ± 0.1	24	1.07 ± 0.06–2.70 ± 0.14	
Water	mg/stick	31.7 ± 5.5	24	28.5 ± 4.6	24	9.82 ± 1.42–21.35 ± 2.23	
NFDPM	mg/stick	19.8 ± 6.5	24	21.6 ± 5.9	24	16.3 ± 1.3–37.6 ± 2.1	
Acetaldehyde	µg/stick	179.4 ± 10.5	18	183.5 ± 10.1	14	930 ± 85–1540 ± 153	80.5–88.2
Acrolein	µg/stick	9.9 ± 1.2	18	8.9 ± 1.0	14	89.2 ± 7.3–154.1 ± 13.6	89.5–93.9
Formaldehyde	µg/stick	5.3 ± 0.4	18	4.7 ± 0.3	14	29.3 ± 3.8–130.3 ± 10.8	82.9–96.2
Crotonaldehyde	µg/stick	< 3.0	18	< 3.0	14	32.7 ± 1.5–70.8 ± 9.0	
1,3-Butadiene	µg/stick	0.22 ± 0.02	6	0.20 ± 0.02	6	77.0 ± 4.8–116.7 ± 14.3	99.7–99.8
Benzene	µg/stick	0.63 ± 0.07	6	0.54 ± 0.05	6	49.7 ± 7.7–98.3 ± 4.3	98.8–99.4
Isoprene	µg/stick	2.10 ± 0.35	6	1.82 ± 0.24	6	509 ± 41–1160 ± 65	99.6–99.8
Styrene	µg/stick	0.47 ± 0.06	6	0.49 ± 0.09	6	15.4 ± 0.8–33.3 ± 2.8	96.9–98.6
Toluene	µg/stick	2.15 ± 0.37	6	1.96 ± 0.23	6	86.2 ± 11.0–176.2 ± 15.7	97.6–98.8

Mallock et al., Levels of selected analytes in the emissions of "heat not burn" tobacco products that are relevant to assess human health risks, Arch Toxicol (2018). https://doi.org/10.1007/s00204-018-2215-y

Pieper et al., Tabakerhitzer als neues Produkt der Tabakindustrie: Gesundheitliche Risiken; Bundesgesundheitsblatt, 04 OKT 2018, https://doi.org/10.1007/s00103-018-2823-y

Möglichkeiten der Ersatztherapie
Metaanalyse 171 RCT‘s
UK National Institute of Health

Abnehmende Reihenfolge der Effektivität:



- E-Zigaretten
- Varenicline (Nikotin-Antagonist)
- Nikotinersatztherapie (Plaster, Kaugummi, …)
- Bupropion (Zyban) Antidepressivum, Amphetamin

Thomas KH, et al. Smoking cessation medicines and e-cigarettes:
A systematic review, network metaanalysis and cost-effective analysis.
Health Technology Assess 2021;25(59)

E-cigarettes better than nicotine replacement therapy for smoking cessation Cochrane Review 2020

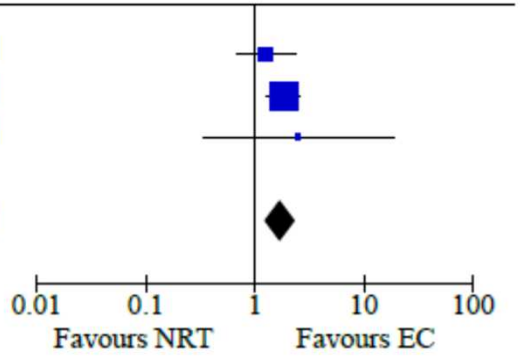
Analysis 1.1. Comparison 1: Nicotine EC versus NRT, Outcome 1: Smoking cessation

Study or Subgroup	EC Events	EC Total	NRT Events	NRT Total	Weight	Risk Ratio M-H, Fixed, 95% CI
Bullen 2013	21	289	17	295	27.2%	1.26 [0.68 , 2.34]
Hajek 2019	79	438	44	446	70.6%	1.83 [1.30 , 2.58]
Lee 2018	5	20	1	10	2.2%	2.50 [0.34 , 18.63]
Total (95% CI)		**747**		**751**	**100.0%**	**1.69 [1.25 , 2.27]**
Total events:	105		62			

Heterogeneity: $Chi^2 = 1.21$, $df = 2$ ($P = 0.55$); $I^2 = 0\%$

Test for overall effect: $Z = 3.46$ ($P = 0.0005$)

Test for subgroup differences: Not applicable



Hartmann-Boyce J, McRobbie H, Lindson N, Bullen C, Begh R, Theodoulou A, Notley C, Rigotti NA, Turner T, Butler AR, Hajek P. Electronic cigarettes for smoking cessation.
Cochrane Database of Systematic Reviews 2020, Issue 10. Art. No.: CD010216.
DOI: 10.1002/14651858.CD010216.pub4.

UPDATE:
Hartmann-Boyce J, McRobbie H, Butler AR, Lindson N, Bullen C, Begh R, Theodoulou A, Notley C, Rigotti NA, Turner T, Fanshawe TR, Hajek P. Electronic cigarettes for smoking cessation. Cochrane Database of Systematic Reviews 2021, Issue 9. Art. No.: CD010216. DOI: 10.1002/14651858.CD010216.pub6. Accessed 11 October 2021.

Cochrane Library
Cochrane Database of Systematic Reviews

Cochrane Review /Update 2021

"Nicotine e-cigarettes probably do help people to stop smoking for at least six months. They probably work better than nicotine replacement therapy and nicotine-free e-cigarettes.

They may work better than no support, or behavioural support alone, and they may not be associated with serious unwanted effects.

However, we need more evidence to be confident about the effects of e-cigarettes, particularly the effects of newer types of e-cigarettes that have better nicotine delivery than older types of e-cigarettes."

https://www.cochranelibrary.com/cdsr/doi/10.1002/14651858.CD010216.pub6/epdf/abstract

Zugriff 12.10.2021

Cochrane Library

Cochrane Database of Systematic Reviews

Langzeitergebnisse bzgl. E-Zigaretten liegen noch nicht vor

ESC European Society of Cardiology

Cardiovascular Research
doi:10.1093/cvr/cvz256

INVITED REVIEW

Cardiovascular risk of electronic cigarettes: a review of preclinical and clinical studies

Nicholas D. Buchanan [1,2], Jacob A. Grimmer [1,2], Vineeta Tanwar[1,2], Neill Schwieterman[1,2], Peter J. Mohler[1,3], and Loren E. Wold [1,2,3]*

[1]Dorothy M. Davis Heart and Lung Research Institute, College of Medicine, The Ohio State University, 473 W. 12th Avenue, Columbus, OH 43210, USA; [2]College of Nursing, The Ohio State University, Columbus, OH, USA; and [3]Department of Physiology and Cell Biology, The Ohio State University College of Medicine and Wexner Medical Center, Columbus, OH, USA

Received 5 April 2019; revised 8 August 2019; editorial decision 1 September 2019; accepted 4 October 2019

ESC
European Society of Cardiology
European Heart Journal (2019) **00**, 1–71
doi:10.1093/eurheartj/ehz425

ESC GUIDELINES

2019 ESC Guidelines for the diagnosis and management of chronic coronary syndromes

COMPETENCY IN MEDICAL KNOWLEDGE: Smoking tobacco cigarettes is known to be harmful. In theory, EC contain fewer harmful substances, but the health risks of EC are currently not fully known.

COMPETENCY IN PATIENT CARE AND PROCEDURAL SKILLS: Patients who wish to stop smoking TC should be offered less harmful options including switching to EC.

TRANSLATIONAL OUTLOOK: This study demonstrates the early vascular impact of switching from TC to EC. Therefore, switching to EC may be considered a vascular harms reduction measure.

Geplante klinische Studie

Multizentrische prospektive Studie bei Zigarettenrauchern < 80 Jahre (mit pAVK Std. II-IV)

Testung eines psychologisch-telemedizinischen Beratungskonzeptes /mobiles Endgerät vorhanden

Mehrstufiges Raucherentwöhnungsprogramm

Leitliniengerechte Therapie

Finanzierung durch GBA

Gefäßgesellschaft WEST
Studienleitung: Uniklinik Aachen RWTH

Studiendesign

0-2 Monate	Videosprechstunde, Beratung nach S3 LL, zu Beginn 3 x Woche 30 min, ab 3. Woche 2 x 30 min
Ab 9. Woche	
Videosprechstunde 1 x /Woche	plus Nikotinersatzpräparate (Pflaster, Kaugummi)
Videosprechstunde	plus Vareniclin (Champix®)
Videosprechstunde	plus Tabakerhitzer/E-Zigaretten

Insg. 43 Videosprechstunden

Studienleitung: Uniklinik Aachen RWTH

Schlussfolgerungen

- Gefässpatienten müssen effektiv vom Zigarettenrauch entwöhnt werden
- „Smoking History Bias“: prospektive Studien zur cardiovaskulären Risikoeinschätzung methodisch anspruchsvoll
- Langzeiteffekte von EC / HTP als mögliche Verfahren können heute noch nicht vorliegen
- Cochrane Analysen: Längstes F/U 2 Jahre.
  Evidenz für „nicotine-delivering EC“ in Studien besser als für Alternativen
- GBA Studie: liefert kontrollierte Daten bei pAVK Patienten bzgl. der verschiedenen Verfahren
- Keine Empfehlung für Raucher ist keine Option!